EPA/ROD/R05-96/296
1996

EPA Superfund
Record of Decision:

RIPON CITY LANDFILL
EPA ID: WID980610190
OU 01
FOND DU LAC COUNTY, WI
03/27/1996

<IMG SRC 0596296>

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAR 27, 1996

REPLY TO THE ATTENTION OF:

R-19J

George E. Meyer
Secretary
Wisconsin Department of Natural Resources
101 South Webster
P.O.Box 7921
Madison, WI 53707

Dear Mr. Meyer:

The United States Environmental Protection Agency (U.S. EPA) hereby concurs with the remedy identified in the enclosed Record of Decision (ROD) completed by the Wisconsin Department of Natural Resources (WDNR) for the Ripon Landfill Site. Our concurrence is in accordance with 40 CFR 300.515(e) (2) (i) and (ii) and is based upon our review of the documents contained on the first enclosure to this letter. We were briefed on the ROD by a WDNR representative.

We look forward to our continuing involvement on the Ripon Landfill Site.

Sincerely yours,

<IMG SRC 0596296A>
Valdas V. Adamkus
Regional Administrator

Enclosures

Documents reviewed for the Ripon Landfill Site

1) Record of Decision

2) Responsiveness Summary

3) Remedial Investigation Report

4) Feasibility Study

SUMMARY OF REMEDIAL ALTERNATIVES SELECTION
RECORD OF DECISION (ROD)
RIPON FF/NN LANDFILL

Findings of Fact

The following findings of fact summarizes the information contained in the administrative record for the Ripon FF/NN landfill site. The selected source control and groundwater remedial actions are based upon information contained in the administrative record.

The Wisconsin Department of Natural Resources (WDNR) finds that:

I. SITE NAME, LOCATION AND DESCRIPTION

The Ripon FF/NN landfill was listed on the National Priorities list (NPL) by the U.S. Environmental Protection Agency (EPA) in May, 1994. The landfill is located in western Fond du Lac County, about two miles northwest of the City of Ripon, WI. More specifically, the site is located at the intersection of Highways FF and NN in the SE ¼ of the SE ¼ of Section 7, T16N, R14E. The landfill is 7.3 acres in size and has a volume of approximately 180,000 cubic yards of waste. The location is shown on Map 1.

Landfilling occurred between 1967 and 1983. Various entities operated the site over the years, although the City of Ripon and the Town of Ripon were responsible for operations during much of the life of the landfill. The property is owned by Mrs. Arline Sauer. The landfill accepted commercial, industrial and residential waste, including approximately 3 million gallons of municipal wastewater treatment plant sludge.

Between 1985 and 1992 the site was used to grow hay. Since 1992 the land has been planted in a grass cover. Agricultural crops are still grown on a property just east of the site. The site is fenced, but vehicle access is possible at two locations from CTH NN into the landfill. Across Highway NN to the west of the site is a sand & gravel quarry.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

In 1967, Speed Queen Corporation leased the property for disposal of industrial wastes from it's facility in Ripon. In 1968, the City of Ripon leased the property. In 1978, the City and the Town of Ripon were signatory to the lease. A license to operate the landfill was issued by WDNR to the City of Ripon in 1969. The site accepted wastes between 1967 and 1983. The site was capped in 1985 with a clay cap. Vegetation was established to minimize erosion. A gas venting system (trench with gooseneck vents) was placed in a north-south orientation along the western edge of the landfill.

A private residence is located approximately 350 feet south of the landfill. The water supply well to this home was monitored for VOCs in 1984 and a couple of VOCs were detected, including vinyl chloride. Subsequent sampling of the well by WDNR confirmed the presence of vinyl chloride. A replacement well was drilled for this household. Sampling of the replacement well also confirmed the presence of vinyl chloride. This well was abandoned in 1990. No water supply well exists on the property and nobody is currently living in the home.

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In the early 1980's the WDNR began evaluating municipal landfills for possible inclusion on the federal National Priorities List (NPL). A hazard assessment was completed by WDNR utilizing the EPA Hazard Ranking System. The site scored 51.9 and was recommended by WDNR to EPA for inclusion on the NPL. The site was listed on the NPL in May, 1994.

In response to the WDNR recommending the site to EPA for inclusion on the NPL, several Potentially Responsible Parties (PRPs) formed a group to investigate the degree and extent of the environmental problems related to the site. This group of PRPs entered into a contract with WDNR on August 14, 1992 to complete the following:

1. Conduct a remedial investigation (RI) which will adequately characterize the site.
2. Perform a feasibility study (FS) to identify and evaluate potential remedial options for the site.
3. Prepare plans and specifications for a landfill cap, and landfill gas extraction system, as determined necessary by WDNR. These plans and specifications are considered a source control operable unit.
4. Implement the source control operable unit.

Since the contract was signed, the PRP group has completed the RI and FS. Data contained in these documents, and others in the administrative record are used as the basis for this ROD.

III. Community Participation

The WDNR has established the administrative record for the site at the Ripon Public Library. Since the library is a centralized and easily accessible facility, the information at the library acts both as the administrative record and the information repository. All information related to the site is housed there. The library is located at 120 Jefferson Street in the City of Ripon.

In April, 1993 WDNR issued a fact sheet announcing the start of the RI. This fact sheet provided background and historical information about the site, as well as details about how the investigation into the environmental contamination would proceed. The fact sheet was followed by a public meeting held at the Ripon City Hall on April 20, 1993. Approximately 40 people attended the meeting. During the meeting, staff from WDNR and the Wisconsin Division of Health (DOH) presented a summary of the RI and also answered people's questions about how the site, or the investigation may affect them.

In June and July, 1993 WDNR and DOH interviewed 23 people who expressed interest in the site. These persons ranged from local politicians and local press, to residents who lived near the site. The persons interviewed expressed a good working knowledge of the site and it's history. The primary concern by almost all interviewed was groundwater quality. Everyone expressed interest in knowing how far the contamination had spread and whether the contamination would affect any private wells.

Local media also played a role in disseminating information about the site. Articles about the landfill and RI occurred in the Oshkosh Northwestern (local newspaper) on July 13 & 14, 1993. Also in July, 1993 WDNR staff took part in a call in radio show on Ripon radio station WCWC.

In May, 1994 WDNR released another fact sheet providing a summary of the RI up to that point in time. Most of the monitoring wells had been placed and results of sampling were available. This fact sheet generated about 5-6 calls to the WDNR project manager from persons requesting additional information about the site.

Also in May, 1994 WDNR prepared a Community Relations plan for the site. This plan provides background information about the City of Ripon, the landfill and other points of interest in western Fond du Lac County. The Community Relations Plan also summarizes information gathered from interested residents during the WDNR interviews held in June and July, 1993.

IV. Scope of the Remedy

This Record of Decision encompasses both source control and groundwater operable units. A source control remedy is designed to control (stop or reduce) the migration of contamination to the environment, including groundwater. For landfills the choice of source control options is rather limited. Essentially it involves placing a cover or cap over the landfill to reduce the amount of precipitation that can enter the waste. By reducing or eliminating precipitation from entering the waste, the potential for that liquid to extract contaminants from waste in the landfill is minimized.

For this situation, a composite landfill cap is the most effective way to minimize the amount of precipitation that can enter the waste. A composite cap has both soil and plastic components to it. The plastic membrane essentially eliminates the ability of precipitation to enter the waste. The soil components provide a stable surface on which the plastic membrane is applied, covers the membrane to protect it from damage, and provides a rooting and growing layer for vegetation to become established on the cap.

Constructed within the composite cap will be a gas venting system. As organic wastes decompose, they form a gas which is predominantly methane and carbon dioxide. The gas venting layer will allow this gas to escape from the landfill without damaging the cap.

The groundwater contamination from the site is fairly localized. While there are elevated concentrations of certain VOCs present in groundwater near the site, concentrations diminish greatly with distance away from the site. Data indicate that the wetland located southwest of the site is the discharge point for much of the groundwater. At the point of discharge into the wetland, VOC concentrations are so low as to not cause a problem to the biota of the wetland. To keep track of contaminant concentrations with time, a groundwater

monitoring plan will be developed. The goals of the plan are to:

- effectively monitor contaminant concentrations with time
- determine that contaminants from the landfill don't affect any of the private residences located near the site.

V. Summary of Site Characteristics

A. Topography

The landfill is located in a glaciated area of south central Wisconsin. The area near the site consists of poorly sorted ground and end moraine deposits. Outwash deposits of sand and gravel are evident in the quarry located just west of the site. The landscape slopes gently eastward. The landfill rises to an approximate elevation of CTH NN on the west (872 ft MSL) and slopes approximately 20 feet lower (850 ft MSL) on the east.

B. Geology/Hydrogeology

The geology of the site consists of approximately 180 feet of unconsolidated glacial deposits, primarily sand with some silty and clayey lenses and gravel overlying bedrock. The bedrock is a Cambrian sandstone unit which is approximately 150 feet thick near the site. The glacial unconsolidated deposits and the Cambrian sandstone are the two principal aquifers in this area. The municipal wells and many private wells use the sandstone as their water source. The lower limit of the Cambrian sandstone aquifer is delineated by the granite of the Precambrian at approximately 330 foot depth.

Depth to groundwater is variable and dependent upon topography. Groundwater is present at depths ranging from approximately 5 to 50 feet below ground surface with the water table occurring between 820 and 830 feet MSL. Shallow groundwater at or near the water table flows to the southwest towards a wetland. This flow system has an average horizontal gradient of approximately 0.01 ft/ft. Shallow piezometers screened between 30 and 40 feet below the water table were used to confirm a southwesterly flow direction in deeper unconsolidated deposits. The mean hydraulic gradient of the shallow potentiometric surface is approximately 0.005 ft/ft. Groundwater flow within the sandstone is believed to be westerly based on regional information.

C. Groundwater Contamination

A total of eight VOCs were detected in groundwater monitoring wells. Vinyl chloride, cis 1,2-DCE, benzene, TCE and PCE were present at concentrations exceeding NR 140 preventive action limits (PALs). Two of these compounds, vinyl chloride and cis 1,2-DCE exceeded NR 140, Wis. Adm. Code enforcement standards (ES). Three VOCs, vinyl chloride, cis 1,2-DCE and TCE, were detected in samples from more than one location.

Two metals, iron and manganese, were detected in samples at concentrations which exceed NR 140 ESs. Arsenic and cadmium were detected at concentrations exceeding NR 140 PALs. These metal concentrations are likely due to the natural geology of the glacial deposits and the landfill doesn't appear to be contributing significant quantities of metals to the groundwater.

Following the groundwater flow paths, contaminated groundwater exists from under the landfill and extends to the south, and southwest of the landfill. The discharge point for this contaminated groundwater is the wetland located southwest of the site. The highest concentrations of VOCs are present along the southern edge of the landfill. Concentrations decrease substantially with distance away from the landfill. Concentrations of VOCs in groundwater entering the wetland are low enough so as to not cause a problem to the wetland.

D. Landfill Gas

The landfill does produce small volumes of landfill gas. Landfill gas is predominantly methane and carbon dioxide. Concentrations of methane have been detected in monitoring wells and gas vents at concentrations which exceed 25% of the lower explosive limit. Methane is a combustible gas which can cause an explosion under certain conditions. However, the risk of explosion is extremely low at this site. There aren't any

buildings or confined spaces which would allow the gas to collect. The gas is vented to the atmosphere as it leaves the site.

VI. SUMMARY OF SITE RISKS

The Wisconsin Division of Health completed a Public Health Assessment on the Ripon FF/NN landfill. This document qualitatively identifies past, present and future potential human health risks associated with environmental contamination at the site.

The Public Health Assessment concludes that groundwater beneath and next to the site is contaminated with VOCs at concentrations that could pose a health hazard if this water were used for domestic purposes such as drinking. In addition, leachate seeps along the eastern edge of the landfill could also represent health risks were people to come in contact with the seeps.

No one is currently using the contaminated groundwater. A house located approximately 350 feet south of the landfill is no longer occupied. The water supply well at this location has been abandoned and the house is vacant. Wis. Adm. Code NR 812 forbids construction of a public water supply well within 1200 feet of a landfill. Therefore, no well will ever be installed at this house in the future. Because the groundwater at this location is not being used, and exposure to the leachate seeps is restricted, the site doesn't currently pose a threat to human health.

The Public Health Assessment concludes that if use of the contaminated groundwater for domestic purposes is restricted, and exposure to the leachate seeps is eliminated, that the site will not pose a threat to human health in the future.

VII. ENVIRONMENTAL STANDARDS NOT MET AT THE SITE

The Ripon FF/NN landfill does not meet the following applicable State environmental standards:

NR 504.05(7), Wis. Adm. Code
Administrative code that requires facilities accepting waste which may generate explosive gases must effectively prevent the migration of the gas. The landfill has a gas venting system. However, the gas data from monitoring wells MW-103 and MW-104 indicate that gas migration is taking place.

NR 506.08(3), Wis. Adm. Code
Administrative code which states the Department may require the concentration of explosive gases not exceed the lower detection limit for that gas at the facility property boundary.

NR 445, Wis. Adm. Code
Administrative code that regulates the discharge of hazardous air contaminants.

NR 140, Wis. Adm. Code
Administrative code which regulates groundwater quality and actions which must be taken to restore groundwater quality. Tables 5 and 6 within NR 140 list potential actions to be taken when preventive action limits and enforcement standards are exceeded. Response actions listed in both Tables include a change in the design or construction of a facility, and a remedial action to prevent or minimize the further discharge or release of substances to groundwater. Changes to the landfill cover or gas removal systems would constitute a change in the design of a facility.

The installation of a properly designed gas venting system will help the landfill achieve compliance with the NR 500 series gas migration codes and NR 445 air discharge code. The new landfill cap and proper venting of the landfill gas will help to achieve compliance with NR 140 by removing volatile contaminants from the landfill before they are able to dissolve into the water within the waste.

VIII. DESCRIPTION OF THE REMEDIAL ALTERNATIVES

A. Remedial Action Objectives

Remedial action objectives were developed for this site to address the source of contamination, to provide short term and long term protection of human health and the environment, and to meet applicable or relevant and appropriate requirements. The site specific remedial objectives developed for this site include:

- prevent direct contact with landfill contents
- reduce contaminant leaching to groundwater
- control surface water runon, runoff and erosion
- prevent off-site migration of landfill gas
- restore groundwater quality to NR 140 standards
- monitor groundwater quality, landfill gas and leachate for environmental control.

B. Development of Alternatives

The remedial action objectives for this site involve limiting the potential for exposure to contaminants via inhalation, ingestion, and dermal absorption pathways, and controlling landfill gas emission and migration.

The remedial alternatives were assembled from applicable remedial technology options. The alternatives surviving the initial screening were evaluated and compared with respect to the nine criteria set forth in the National Contingency Plan ("NCP"). In addition to the remedial action alternatives, the NCP requires that a no-action alternative also be considered for the site. The no action alternative serves primarily as a point of comparison for the other alternatives.

C. Remedial Alternatives

Alternative A - No Action
Alternative B - Regrade Existing Landfill Surface
Alternative C - Construction of a Cover Layer on the Landfill
Alternative D - Reconstruct the Clay Cap
Alternative E - Construction of a Composite Cap on the Landfill
Alternative H - Passive Landfill Gas Venting
Alternative I - Active Landfill Gas Collection and Treatment
Alternative J - Groundwater Extraction, Treatment and Discharge to Surface Waters
Alternative K - Groundwater Extraction, Treatment and Discharge to an Infiltration Gallery
Alternative M - Groundwater Extraction, Treatment at Ripon POTW
Alternative O - Construction of a Composite Landfill Cap and Passive Gas Venting

A complete description of the various alternatives is provided in the Feasibility Study. A brief description is listed below:

Alternative A - No Action Alternative

The No Action alternative is used as a baseline in which to compare other alternatives against. Under this alternative essentially little to no remedial actions are taken and the site is basically left as it currently is. This represents the No Action alternative for both the source control and groundwater operable units.

The only actions taken under this alternative would be general maintenance of the site such as mowing and fixing erosion. A deed restriction prohibiting excavation and other intrusive uses of the property would be recorded in the Register of Deeds office. Monitoring of the groundwater, leachate and landfill gas is also part of this alternative.

Capping Alternatives

The deed restriction, maintenance and monitoring activities listed in Alternative A are also included with these alternatives.

Alternative B - Regrade the Existing Landfill Surface

This alternative would regrade the existing landfill surface to eliminate the low areas and provide for proper drainage.

Alternative C - Construction of a Cover Layer

The existing landfill cover was constructed without a protective soil layer above the clay. The purpose of the cover layer is to protect the clay from freeze/thaw action, and to provide a rooting zone for surface vegetation. This alternative would remove the topsoil and place a soil layer above the clay. The topsoil would then be replaced and re-vegetated.

Alternative D - Reconstruct the Clay Cap

The existing cover has approximately 2 feet of clay beneath approximately 6 inches of topsoil. This alternative would strip off the topsoil and as much clay as possible. A 2 foot clay layer would then be constructed in accordance with NR 504.07, Wis. Adm. Code. The other components of the soil cap listed in NR 504.07 would also be placed as the cap is reconstructed.

Alternative E - Construction of a Geosynthetic Cap over the Landfill

Under this alternative, a composite cap would be placed over the landfill. The cap would consist of (from top to bottom):

- 6 inches of topsoil with vegetation
- 18 to 30 inches of cover layer
- a drainage layer
- a plastic membrane
- 2 feet of compacted clay.

Gas Removal Alternatives

Alternative H - Passive LFG Venting

This alternative is designed to deal with LFG generated within the waste. This alternative would construct vents through the waste. The gas would enter the vent and then be discharged to the atmosphere. No treatment or destruction of the gas would occur.

Alternative I - Active LFG Collection and Treatment

Under this alternative the LFG generated within the waste would be actively collected through a series of gas extraction wells connected to a blower. The gas collected by the system would be destroyed via a flare.

Groundwater Treatment Alternatives

These alternatives are designed to remediate the contaminated groundwater. They could be implemented with both a capping and a gas control alternative.

Alternative J - Groundwater Extraction, Treatment and Discharge to a Surface Water

Under this alternative, contaminated groundwater downgradient of the site would be captured, treated and then discharged to a surface water body. The most likely discharge points would be one of the wetlands located northeast and southwest of the landfill.

Alternative K - Groundwater Extraction, Treatment and Discharge to an Infiltration Gallery

This alternative proposes extracting groundwater, treating it, and then discharging it to an infiltration gallery.

Alternative M - Groundwater Extraction, Treatment at the Ripon POTW

Under this alternative, groundwater would be extracted through pumping wells. Water treatment and discharge would take place at the Ripon POTW.

Alternative O - Construction of a Composite Landfill Cap and Passive Gas Venting

This alternative essentially combines components of Alternative E and Alternative H. A composite landfill cap would be placed over the landfill surface. A gas venting system would be incorporated into the composite cap to allow for the effective venting of gas to the atmosphere.

IX. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A. Introduction

U.S. EPA has established in the NCP nine criteria that balance health, technical, and cost considerations to determine the most appropriate remedial alternative. The criteria are designed to select a remedy that will be protective of human health and the environment, attain ARARs, utilize permanent solutions and treatment technologies to the maximum extent practicable, and to be cost effective. The relative performance of each of the remedial alternatives listed above has been evaluated using the nine criteria set forth in the NCP at 40 CFR 300.430(e)(9)(iii) as the basis of comparison. These nine criteria are summarized as follows:

THRESHOLD CRITERIA - The selected remedy must meet the threshold criteria.

1. Overall Protection of Human Health and the Environment

A remedy must provide adequate protection and describe how risks are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

A remedy must meet all applicable or relevant and appropriate requirements of federal/state laws. If not, a waiver may apply.

PRIMARY BALANCING CRITERIA are used to compare the effectiveness of the remedies.

3. Long-term Effectiveness and Permanence

Once clean up goals have been met, this refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time.

4. Reduction of Toxicity, Mobility or Volume Through Treatment

The purpose of this criteria is to anticipate the performance of the treatment technologies that may be employed.

5. Short-term Effectiveness

This refers to how fast a remedy achieves protection. Also, it weighs potential adverse impacts on human health and the environment during the construction and implementation period.

6. Implementability

This criteria requires consideration of the technical and administrative feasibility of a remedy, including whether needed services and materials are available.

7. Cost

Capital, operation and maintenance, and 30 year present worth costs are addressed.

MODIFYING CRITERIA deal with support agency and community response to the alternatives.

8. State Acceptance

After review of the Focused Feasibility Study and the Proposed Plan, support agency's concurrence or objections are taken into consideration.

9. Community Acceptance

This criteria summarizes the public's response to the alternative remedies after the public comment period. The comments from the public are addressed in the Responsiveness Summary attached to this ROD.

B. Evaluation of the Remedial Alternatives

1. Threshold Criteria

a. Overall Protection of Human Health and the Environment

All of the capping alternatives provide a soil barrier which eliminates the direct exposure to waste within the landfill. Fencing of the landfill will also minimize potential exposure pathways by restricting access to the landfill surface. The venting of landfill gas within the fenced circumference of the site will reduce the exposure to landfill gas.

Alternative A - This alternative fails to control the migration of landfill gas. Also, the landfill cover system currently on the site is allowing precipitation to enter the waste, collect contamination, and then enter groundwater. The existing cap fails to stop this additional loading of contaminants to groundwater. This alternative is not protective of human health and the environment and will not be considered further for the source control operable unit.

Alternative B - This alternative only slightly improves upon the existing cap. Regrading the landfill surface will have minimal impact on reducing the amount of precipitation entering waste and thus be available to affect groundwater quality. This alternative is not protective of the environment and will not be considered further.

Capping Alternatives (Alternatives C, D & E) - All of the capping alternatives provide a barrier to the waste, preventing the direct contact exposure pathway and reduce the amount of water entering the waste. Over the long term, limiting the amount of water entering the waste will have beneficial effects on groundwater quality. However, a capping alternative must be implemented with a measure to remove gas from the landfill. By itself the landfill cap doesn't provide all the necessary aspects to be a protective remedy. If implemented with a gas removal system, then all of the capping alternatives would provide source control that is protective of human health and the environment.

Gas Removal Alternatives (Alternatives H & I) - Removing the gas from the landfill and venting it or destroying it are effective measures for controlling landfill gas migration. However, these alternatives must be implemented with one of the capping alternatives (Alternatives C through E). If implemented with a landfill capping system, then either of these gas removal alternatives would provide source control that is protective of human health and the environment.

Groundwater Treatment Alternatives (Alternatives J, K & M) - These alternatives involve removal and treatment of groundwater. From a groundwater perspective, these alternatives are protective of human health and the environment. However, Alternative A, the No Action Alternative for groundwater would also be protective of human health and the environment since adequate source control will greatly decrease migration of additional contaminants to groundwater. Active groundwater restoration is then not necessary at this site.

Alternative O - This alternative combines a capping alternative with a venting alternative. This alternative is protective of human health and the environment.

b. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Capping Alternatives (Alternative C, D & E) - These alternatives all held to reduce the amount of water entering the waste. Minimizing the amount of water entering the waste will improve groundwater quality. However, the effectiveness in reducing the percolation of water varies with the design of these three capping alternatives. These capping alternatives comply with all relevant and appropriate requirements related to capping and groundwater quality.

Gas Removal Alternatives (Alternatives H & I) - These alternatives will minimize the uncontrolled migration of landfill gas. The venting or mechanical extraction of gas will comply with all relevant and appropriate requirements related to gas migration.

Groundwater Treatment Alternatives (Alternatives J, K & M) - All of these alternatives comply with all relevant and appropriate requirements related to groundwater.

Alternative O - This alternative complies with all applicable or relevant and appropriate requirements for capping, gas venting and groundwater quality. This alternative is very effective at reducing infiltration, and will help to achieve compliance with NR 140 groundwater standards within the shortest possible time of any of the capping alternatives.

2. Primary Balancing Criteria

Alternatives which satisfy the two threshold criteria are then evaluated according to the five primary balancing criteria.

A. Long-term effectiveness and permanence

Capping Alternatives (Alternatives C, D & E) - Capping a landfill is the most effective method to reduce the amount of contamination potentially leaching from the site. All of the capping alternatives will provide some measure of long-term effectiveness and permanence. However, the membrane capping alternative (Alternative E) is much more effective at reducing infiltration into the waste when compared to the soil capping alternatives.

Gas Removal Alternatives (Alternatives H & I) - Both of these alternatives offer long-term effectiveness and permanence. The passive system (Alternative H) will be easier to maintain over the long term when compared to an active gas extraction system. Also, the passive system would have greater effectiveness over the long-term because once designed, it will operate in perpetuity with very little annual maintenance required. An active gas system is only effective as long as it is operated.

Groundwater Treatment Alternatives (Alternatives J, K & M) - The groundwater alternatives all offer long-term effectiveness and permanence assuming that the active remediation systems would be run until they are no longer effective at removing contamination from the groundwater. Assuming implementation of an effective source control, minimal loading of contaminants to groundwater will take place.

Alternative O - This alternative offers long-term effectiveness and permanence. A membrane cap is very effective at limiting the amount of infiltration entering the waste. A passive gas venting system, once designed and installed, will effectively vent the gas as long as is necessary. A membrane cap and gas venting system would be the most effective remedy to reduce the over all impact to the groundwater from the landfill and, will only require simple, routine maintenance to keep acting as designed into the future.

b. Reduction in Toxicity, Mobility or Volume Through Treatment

Capping Alternatives (Alternatives C, D & E) - Capping a landfill minimizes the amount of infiltration that can enter the waste. This will reduce the mobility and volume of contamination leaving the waste. However,

this reduction is not due to treatment.

Gas Removal Alternatives (Alternatives H & I) - Proper venting or physical extraction of landfill gas will reduce it's mobility and keep the gas from migrating offsite. However, this reduction is not due to treatment. Alternative I, the active gas extraction alternative also involves destruction of the captured gas in a flare. Combustion of the gas in a flare constitutes treatment.

Groundwater Treatment Alternatives (Alternatives J, K & M) - An active groundwater capture system will reduce the mobility and volume of contaminants in groundwater. The captured water would be treated prior to discharge.

Alternative O - This alternative will greatly minimize the amount of water entering the waste. This will reduce the mobility and volume of potential contamination that may affect groundwater. The gas venting system will reduce the mobility of landfill gas and keep it from migrating. offsite. However, the improvements as a result of this remedy are not due to treatment.

c. Short-term Effectiveness

Capping Alternatives (Alternatives C, D & E) - These alternatives will reduce the amount of contamination coming from the landfill by reducing infiltration into the waste. These benefits will occur immediately after the landfill caps are in place. All of the alternatives could be implemented in a single construction season.

Gas Removal/Venting Alternatives (Alternatives H & I) - These alternatives will limit the migration of landfill gas. This benefit will occur after the gas system, whether it be venting or active extraction, is in place. A gas venting or extraction system can be implemented within a single construction season.

Groundwater Treatment Alternatives (Alternatives J, K & M) - An effective groundwater removal system will stop the spread of contaminated water. Any of these alternatives can be implemented within a single construction season.

Alternative O - This alternative will reduce the amount of contamination coming from the landfill by minimizing infiltration and by properly venting landfill gas to keep it from migrating offsite. These benefits can be realized within a single construction season.

All of the alternatives listed above have short term adverse impacts related to construction. All of the remedies include construction involving heavy machinery, movement of large quantities of soil, and disturbing the existing landfill cap. While using experienced contractors and proven construction techniques can minimize these risks, any activity involving large equipment can present potential hazards.

Another short-adverse impact due to these alternatives is increased truck traffic during construction. The capping alternatives will involve bringing soil and other materials to the site. This will increase truck traffic along Highways FF and NN creating the potential for traffic accidents with residents living near the site, or with trucks from the active sand & gravel quarry across the street from the site.

d. Implementability

Capping Alternatives (Alternatives C, D & E) - All of the capping alternatives are readily implementable using established construction techniques and materials.

Gas Removal/Venting Alternatives (Alternatives H & I) - The gas removal alternatives are all readily implemented using established construction techniques and materials.

Groundwater Treatment Alternatives (Alternatives J, K & M) - All of the groundwater removal and treatment alternatives are readily implementable using established construction techniques and materials.

Alternative O - This alternative can be readily implemented using established construction techniques and

materials.

All of these remedies will require some level of oversight by WDNR. Because of the common nature of these remedies, the remedies can be implemented without excessive administrative burdens.

e. Costs

Alternative C
Capital Costs - $631,000
Annual Costs - $33,000
Present Worth - $1,085,000

Alternative D
Capital Costs - $850,000
Annual Costs - $33,000
Present Worth - $1,304,000

Alternative E
Capital Costs - $1,171,000
Annual Costs - $33,000
Present Worth - $1,625,000

Alternative H
Capital Costs - $161,000
Annual Costs - $33,000
Present Worth - $202,000

Alternative I
Capital Costs - $165,000
Annual Costs - $19,000
Present Worth - $427,000

Alternative J
Capital Costs - $167,000 to $219,000 depending upon discharge location
Annual Costs - $50,000
Present Worth - $855,000 to $907,000 depending upon discharge location

Alternative K
Capital Costs - $170,000
Annual Costs - $51,000
Present Worth - $872,000

Alternative M
Capital Costs - $269,000
Annual Costs - $46,000
Present Worth - $898,000

Alternative O
Capital Costs - $1,220,000
Annual Costs - $34,000
Present Worth - $1,688,000

3. Modifying Criteria

a. State Acceptance

The WDNR is the lead agency on this case and authors this ROD.

b. Community Acceptance

The WDNR received one comment during the public comment period. This comment urged WDNR to consider the cost of the remedy and the burden to pay for this remedy on the responsible parties. A formal response to this comment is provided in the Responsiveness Summary attached to this ROD. However, the WDNR believes this remedy is cost effective and represents a balanced, practical solution to the environmental problems posed by this site.

c. Summary

The landfill cap that currently exists on the site is not very effective at limiting the amount of infiltration entering the wastes. Of the capping alternatives proposed, the composite cap will be most effective at minimizing precipitation into the waste. Over the long term, limiting the amount of water entering the waste will have beneficial effects on groundwater quality.

The waste does produce a small volume of landfill gas. Gas generation rates are not high enough to warrant an active landfill gas removal system. A properly designed gas venting system will limit the migration of landfill gas and greatly diminish any explosion hazard associated with the gas. Also, because of the small volume of gas generated by the site, the gas can be safely vented to the atmosphere without causing any exceedances of air emission standards.

Alternative O, along with an effective groundwater monitoring program, provides all of the factors necessary for a source control remedy which is protective of human health and the environment, complies with ARARs and is cost effective. The composite cap will greatly reduce infiltration when compared to a soil cap. This will have beneficial effects over time and warrants the additional cost of a composite cap relative to a soil cap. A proper gas venting system will limit landfill gas migration and remove contaminants present in the gas making them unavailable to dissolve into the leachate. The low gas generation rates don't warrant construction of an active gas extraction and treatment system.

Groundwater contamination does exists at the site. However, it's impacts are fairly limited. Contaminated groundwater is present between the site and the wetland to the southwest of the site. Concentrations of VOCs, namely vinyl chloride and cis 1,2-DCE are high near the waste boundary, but diminish greatly with distance from the site. VOC concentrations in the groundwater discharging to the wetland are low enough so as not to cause an adverse impact to the wetland. Active groundwater restoration efforts are not necessary for this site. A groundwater monitoring program that detects changes in groundwater quality, and is part of the source control remedy, provides protection to nearby residential wells and also works to make this remedy protective of human health and the environment. Therefore, the WDNR has determined that it is not necessary to supplement Alternative O with a groundwater removal and treatment alternative in order to comply with ARARs and achieve protection of human health and the environment. Therefore, Alternative A, the No Action Alternative for groundwater is the best solution for the groundwater operable unit at this site.

CONCLUSIONS OF LAW

The source control remedy, Alternative O, will protect human health and the environment, complies with all legally relevant and appropriate requirements for this site, and is cost effective. Alternative O utilizes alternative technologies to the maximum extent practicable, but does not satisfy the statutory preference for treatment as a principal element.

Alternative A, the No Action alternative for the groundwater operable unit, is protective of human health and the environment, complies with all applicable or relevant and appropriate requirements for this site, and is cost effective. The extent of groundwater contamination from this landfill is minimal and doesn't warrant active groundwater remedial measures.

A. Protection of Human Health and the Environment

The selected remedies provides protection of human health and the environment through capping to contain the wastes, which will alleviate threats from direct contact and minimize leachate generation. Proper venting of

the gas will limit the migration of gas offsite. An effective groundwater monitoring program will detect changes in groundwater quality, and make certain that contamination from the landfill doesn't affect nearby private wells.

B. Attainment of ARARs

The selected remedies will be designed to meet all applicable, or relevant and appropriate requirements under federal and state environmental laws. Since the Ripon FF/NN landfill is a state lead cleanup, no CERCLA on site permit exemption is available. All permits and approvals required to implement the remedies must be obtained and strictly complied with. The primary ARARS that will be achieved by the selected remedies are:

1. Action Specific ARARs

Wisconsin Statutes, section 114.43 to 144.47

Wis. Adm. Codes, ss NR 504.05(7), NR 504.07(3), and NR 508.04 - landfill gas control. Standards for landfill gas control and monitoring practices. These requirements are applicable to the landfill gas venting system at the site.

Wis. Adm. Code, ss NR 514.07 and NR 516 - Landfill closure requirements. Substantive requirements for the design, construction, upgrading, maintenance and documentation of landfill caps. Cap design, construction, maintenance and documentation must comply with these applicable requirements.

Wis. Adm. Codes, ss NR 508.04 and NR 140 - Groundwater monitoring requirements. Substantive requirements for groundwater monitoring plans must meet these applicable requirements.

Wis. Adm. Code, NR 600 series - Hazardous waste requirements. This code was enacted to regulate the transportation, storage and disposal of hazardous waste. This code is neither applicable, nor relevant and appropriate for this site.

RCRA, Subtitle D - Solid waste requirements. Subtitle D are federal regulations enacted for solid waste disposal. The regulations are applicable to facilities which accepted waste after October 9, 1991. The Ripon FF/NN landfill closed in 1983. The Subtitle D regulations are neither applicable, nor relevant and appropriate for this site.

2. Chemical Specific ARARs

Clean Air Act [42 U.S.C. 7401 et seq.] ; Wisconsin Statutes, sections 144.30 to 144.426

40 CFR 50; Wis. Adm. Code, chs. NR 404, NR 415 to NR 449 - Emission Standards. Standards for emission of pollutants into ambient air and procedures for measuring specific air pollutants. Cap construction could cause air emissions of VOCs, particulate, fugitive dust or other contaminants which could adversely affect human health and the environment. The design of the remedy must reduce air emissions to acceptable levels or provide treatment to satisfy these applicable standards.

Wis. Adm. Code, NR 140 - Groundwater Quality Standards. The remedy is designed to reduce the amount of contamination entering groundwater and achieve compliance with standards found in NR 140.

C. Cost Effectiveness

The selected remedies call for overall cost effectiveness. While the composite landfill cap costs more than a soil cap, it is also much more effective in limiting infiltration into the waste. Less infiltration translates into less leachate production and this will have beneficial effects on groundwater quality. The additional cost of the composite landfill cap will significantly increase the remedy's effectiveness by reducing infiltration.

The site isn't producing enough landfill gas to warrant an active gas extraction system. A properly designed

gas venting system will effectively remove gas from the waste, and prevent it from migrating offsite or collecting in an area where it may pose an explosion hazard.

Groundwater contamination near the landfill is not severe enough to warrant an active groundwater remedial system. VOC concentrations decrease rapidly with distance from the waste boundary. An effective monitoring plan will track the changes in VOC concentrations with time, and make sure that contaminants don't affect residential water supply wells near the site.

D. Utilization of Permanent Solutions and Alternative treatment Technologies

The selected alternatives represent the best balance of the alternatives with respect to the nine criteria. The cap eliminates the direct exposure pathway and reduces the amount of leachate that will be generated by the waste. The gas venting system will vent the gas to the atmosphere at levels low enough not to cause any problems. Capping and venting are both permanent solutions for a landfill.

E. Preference for Treatment

The selected remedies don't satisfy the preference for treatment. However, capping the landfill, venting the landfill gas and monitoring the groundwater quality represents a practical solution for this site.

DECISION: THE SELECTED REMEDIES

Based on an evaluation of the alternatives, the Wisconsin Department of Natural Resources believes that Alternative O, the selected source control operable unit remedy, and Alternative A, the selected groundwater operable unit remedy, are protective of human health and the environment, comply with ARARs, are cost effective and use permanent remedies to the maximum extent practicable.

The selected source control operable remedy includes:

- constructing a composite landfill cover (i.e. a landfill cap made with both a plastic membrane and soil materials) over the entire landfill
- installing a passive landfill gas venting system as part of the composite cap to effectively vent landfill gas from the waste
- monitoring of the groundwater quality to determine the effectiveness of the landfill cap towards improving groundwater quality
- monitoring the landfill gas probes around the landfill to make sure that landfill gas is not migrating away from the site in an uncontrolled manner.
- maintenance of the landfill cap to repair erosion that may develop
- a restriction on the property deed prohibiting disturbing the landfill cap except for maintenance purposes
- fencing of the landfill perimeter to restrict access

At the 5 year evaluation of the remedies, a report documenting the following items shall be prepared and submitted to WDNR:

1. A summary of all groundwater quality data. Special mention should be made of changes in water quality and a comparison of the data to groundwater quality standards in NR 140.
2. A summary of all gas monitoring data.
3. A summary of all maintenance which has occurred to the cap or gas extraction system.
4. An evaluation as to whether the selected remedies are helping to improve groundwater quality, maintain a barrier to the waste, and properly vent gas from the site.

This report shall be submitted to WDNR by January 15, 2001.

The WDNR has determined that the selected source control operable unit remedy. Alternative O, and Alternative A, the selected groundwater operable unit remedy, will achieve the remedial action objectives for this site.

RESPONSIVENESS SUMMARY

The public comment period for the Ripon FF/NN Landfill Superfund site ran between August 31, and September 29, 1995. The WDNR received one comment during the comment period. A copy of the comment is attached to this Responsiveness Summary.

The main point of the comment is that the WDNR consider whether the proposed remedy is too costly in light of the identified need. The comment points out that the Public Health Assessment recommends that the site have a monitoring plan, that leachate in the site be controlled to prevent seepage, and that site access be restricted. The commentor believes that these goals can be achieved in a less costly manner than that proposed by WDNR.

The WDNR believes that the selected remedies for source control and groundwater are not excessive measures to achieve the recommendations made in the Public Health Assessment. WDNR believes that control of leachate within the site will be most effectively maintained with the composite cap. The composite cap will essentially eliminate movement of water into the waste, something that a soil only cap is unable to do. This will in turn essentially eliminate leachate generation. Leachate is the source of contamination to groundwater. Stopping the creation of additional leachate will stop the movement of contamination into the groundwater. Even though it is limited in it's extent, groundwater contamination is present at the site. Eliminating further leachate generation will have beneficial effects on groundwater quality. Improving groundwater quality is clearly one of the remedial objectives for this site. The WDNR believes that the increased effectiveness of a membrane cap make it worth the additional cost when compared to the cost of a soil only cap.

September 13, 1995

Memo for Steve Ales, Project Manager or "To Whom It May Concern":

This is a written response to your public hearing tonight which I cannot attend because of a prior engagement.

Writing both as a member of the common council and as head of one of the participating PRPs, I wish to urge that the DNR think kindly about Ripon and that a prescribed "cleanup action" be reasonable.

It would be very important to those of us who must pay the bill for "capping" this site to insist on an appropriate "cost benefit" program. One that none of us will be able to label as "overkill.

A predicted cost of $1.2 million (plus annual maintenance or other costs of $34,000) as now recommended by the DNR seems excessive to this writer.

This is stated keeping in mind the recently released "Health Assessment" report filed with the city by the Wisconsin Department of Health and Social Services working with the U.S. Department of Health and Human Services (Agency for Toxic Substances and Disease Registry).

This report recommends action, of course. However, it states that "No community health concerns related to the site have been reported" (page 16). "Current information about the site indicates that existing private wells are not likely to be threatened by groundwater contamination from the site." Nevertheless, it recommends that a monitoring plan be established (Page 17).

In it's recommendations, it states 1. the need for a monitoring plan, (certainly a reasonable suggestion) 2. that leachate in the landfill should be controlled to prevent possible seepage and 3. that site access should be limited.

This would be fulfilled with your Alternative O, I appreciate. However, I would like to urge that the DNR consider a less expensive method for achieving Number 2 above (controlling the materials--leachite-- in the site.)

No doubt you will be discussing these alternatives at the meeting tonight. I certainly hope so, and I hope local PRPs are on hand to offer input.

I would just like to urge consideration for the public and corporate pocketbook and that the remedy be simply appropriate to the identified need and not excessive and heavy handed.

Sincerely,

Doug Lyke,
Alderperson City of Ripon
Chairman of Ripon Community Printers

RECORD OF DECISION

REMEDIAL ACTION FOR THE SOURCE CONTROL AND GROUNDWATER OPERABLE UNITS

RIPON FF/NN LANDFILL, RIPON, WI

Site Name and Location

The Ripon FF/NN landfill Superfund site is located at the intersection of Highways FF and NN in the Town of Ripon, Fond du Lac County, Wisconsin. It is approximately two miles northwest of the City of Ripon, WI. The site is located in the SE ¼ of the SE ¼ of Section 7, T16N, R14E.

Statement and Basis of Purpose

This decision document represents the selected source control and groundwater remedial action for the Ripon FF/NN landfill, developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan. The attached summary of remedial alternatives identifies the information contained in the administrative record for this site upon which the selection of the remedial action is based.

Assessment of the Site

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the remedial action selected in this Record of Decision (ROD), may present an imminent and substantial danger to public health, welfare or the environment.

Description of the Selected Remedial Actions

The Department of Natural Resources has evaluated remedial alternatives for two operable units at the site: a source control operable unit and a groundwater operable unit. The selected source control remedy is Alternative O, Composite Landfill Cap and Passive Gas Venting in conjunction with a groundwater monitoring plan. Details of the selected source control operable unit remedy can be found in the Feasibility Study. The specific components of the source control operable unit remedy include:

- constructing a composite landfill cover (i.e. a landfill cap made with both a plastic membrane and soil materials) over the entire landfill
- installing a passive landfill gas venting system as part of the composite cap to effectively vent landfill gas from the waste
- monitoring of the groundwater quality to determine the effectiveness of the landfill cap towards improving groundwater quality
- monitoring the landfill gas probes around the landfill to make sure that landfill gas is not migrating away from the site in an uncontrolled manner.
- maintenance of the landfill cap to repair erosion that may develop
- a deed restriction prohibiting disturbing the landfill cap except for maintenance purposes
- fencing of the landfill perimeter to restrict access

For the groundwater operable unit, the Department has selected Alternative A, the No Action alternative. The groundwater contamination that has migrated from this landfill is not severe enough to warrant active groundwater remedial measures to restore groundwater quality. The implementation of the source control operable unit remedy will result in decreased migration of contaminants from the landfill to the groundwater.

Statutory Determination

These remedies are protective of human health and the environment, comply with Federal and State requirements that are legally applicable or relevant and appropriate requirements (ARARs) for this action, and are cost effective. These remedies utilize permanent solutions and alternative treatment to the maximum extent practicable for this site. However, because treatment of the principal threats of the site was not found to

be practicable, these remedies do not satisfy the statutory preference for treatment as a principal element. Because these remedies will result in hazardous substances being left on site, a review of the remedies will be conducted to ensure that the remedies continue to provide adequate protection of human health and the environment. That review of the remedies will take place within 5 years after the remedial actions have been implemented.

<IMG SRC 0596296C>
GEORGE MEYER, SECRETARY Date
Wisconsin Department of
Natural Resources