

HAZARDOUS WASTE FACILITY INVESTIGATIONS

TASK I

5/10/93

TASK I

| | | |
|----|---|----|
| A. | General Submittal Requirements | 1 |
| B. | Description of Current Conditions | 2 |
| 1. | General Facility Information | 2 |
| 2. | Land Use Information | 2 |
| 3. | Regional Information | 3 |
| 4. | Site Specific Information | 3 |
| 5. | Nature and Extent of Contamination | 6 |
| 6. | Summary of Remedial Actions Taken | 6 |
| 7. | Data Evaluation and Recommendations | 7 |
| C. | Preliminary Evaluation of Corrective Measure Technologies and Laboratory or Bench-Scale Studies | 7 |
| D. | Facility Investigation Workplan | 7 |
| 1. | Project Management Plan | 8 |
| 2. | Environmental Setting | 8 |
| a. | Soils and Bedrock | 8 |
| b. | Well Installation | 8 |
| c. | Other Investigative Work | 9 |
| d. | Field Direction | 9 |
| 3. | Contaminant Characterization | 9 |
| a. | Data Validation | 9 |
| b. | Source Characterization | 11 |
| c. | Groundwater | 11 |
| d. | Soils | 12 |
| e. | Surface Water and Sediment Contamination | 13 |
| f. | Air Contamination | 14 |
| g. | Subsurface Gas Contamination | 14 |
| h. | Other Sampling | 15 |
| 4. | Investigative Waste Management Plan | 15 |
| 5. | Ecological Evaluation | 15 |
| 6. | Health and Safety Plan | 16 |
| 7. | Community Relations Plan | 16 |
| E. | Progress Reports | 16 |

A. GENERAL SUBMITTAL REQUIREMENTS

All Task I reports shall be prepared in accordance with the following general requirements.

1. The appropriate review fee as specified in s. NR 680.45 shall be included as part of the report submittal.
2. Five (5) copies of the report shall be submitted. Two (2) copies shall be submitted to the appropriate District or Area Office and three (3) copies shall be submitted to the Hazardous Waste Management Section in Madison.
3. All reports and plan sheets shall be under the seal of and certified by a professional engineer registered in the State of Wisconsin. Modifications and subsequent submittal shall also meet this requirement. Engineering certification may be demonstrated by using the following language:

"I, _____, hereby certify that I am a registered Professional Engineer in the State of Wisconsin in accordance with ch. A-E4, Wis. Adm. Code and that this report has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code."

Signature, title and P.E. number P.E. Seal

4. Reports which include the interpretation of geology or hydrogeology shall be signed by a hydrogeologist meeting the definition contained in s. NR 600.03(98) Wis. Adm. Code. Modifications and subsequent submittals which include the interpretation of geology or hydrogeology shall also meet this certification requirement. Hydrogeologic certifications may be demonstrated by using the following language:

"I, _____, hereby certify that I am a hydrogeologist as defined in s. NR 600.03(98), Wis. Adm. Code, and that to the best of my knowledge all information contained in this document is correct."

Signature and Title

5. The report shall include maps, figures, photographs and tables as necessary to clarify the proposal. All maps, plan sheets, drawings, isometrics, cross-sections and aerial photographs shall meet the following requirements.
 - a. All visuals must be numbered, referenced in the narrative, titled, and presented in a legible form.
 - b. A north arrow, a legend of all symbols used, horizontal and vertical scales, and drafting and origination dates shall be included where applicable.
 - c. The appropriate scale shall be used to show all required details in sufficient clarity. Uniform scales should be used when possible.
 - d. Plan sheets shall be 24 inches x 36 inches. All other visuals shall be no larger than 24 inches x 36 inches and no smaller than 8 1/2 inches x 11 inches.
 - e. U.S.G.S. datum shall be used as a basis for all elevations.
 - f. A survey grid shall be developed based on monuments established in the field which is referenced to state plane coordinates.
 - g. The original topography and the grid system shall be used as a base map for other plan sheets.
 - h. The survey grid location shall be shown and major plan sheets shall be referenced on all cross-sections. A reduced diagram of a cross-section location plan view map shall be included on the sheets with the

cross-sections.

6. The report shall include a table of contents listing all sections of the submittal.
7. The report shall include an appendix listing names of all references, copies of all major approvals, all raw data, testing and sampling procedures used, any supporting calculations and any other information, as deemed appropriate. The appendix shall also include a summary of past permits or licenses requested and/or received, any enforcement actions and their subsequent responses and a list of documents and studies prepared for the facility.

A description of the procedures shall be included for all soils and groundwater sampling, soil boring, monitoring well installation and any other technical procedures used to investigate the facility. Standard procedures, such as those specified by ASTM or SW-846 shall be proposed whenever possible. When the procedures are identical to those contained in published documents (such as SW-846), a reference to the particular procedure is acceptable. Any proposed deviations from established procedures must include all appropriate supporting documentation. No modifications from standard procedures shall be implemented unless formally approved in writing by the Department.

B. DESCRIPTION OF CURRENT CONDITIONS

The Respondent shall submit a report providing the background information and history pertinent to the facility, contamination and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

1. General Facility Information

The report shall identify the following:

- a. Project name;
- b. Name, address and phone number of the primary contacts including the facility owner and any consultants;
- c. Present property owner;
- d. A general description of the facility location;
- e. The facility location by quarter-quarter section, township, range, town and county; and
- f. Total acreage of the property.

2. Land Use Information

The in-field conditions report shall discuss the present and former land uses at the facility and the surrounding area within one mile of the facility. At a minimum, the following items shall be addressed:

- a. Adjacent land owners shall be identified and located on a map that clearly delineates all property boundaries.
- b. A description of the present land uses in the area shall be included. Particular emphasis shall be placed on the discussion of known recreational, historical, archaeological or environmentally unique areas including natural or scientific areas, county forest lands and critical habitat. A letter from the Department's Bureau of Endangered Resources addressing the known presence of any endangered or threatened species, critical habitat and natural or scientific areas shall be included.

- c. Any wetlands which are located on the property or which could potentially be affected by the facility shall be identified.
- d. The history of any adjoining active or closed facilities or activities which may contribute to environmental contamination shall be discussed.

3. Regional Information

The report shall discuss the regional setting of the facility to provide a basis for comparison and interpretation of information obtained through field investigations. This discussion may be limited to information available from publications such as a hydrologic investigations atlas, water supply papers, informational circulars and technical bulletins published by the Wisconsin State Geologic and Natural History Survey (WSGNHS), the United States Geological Survey (USGS), the Wisconsin Department of Natural Resources (WDNR), U.W.-Extension, regional planning commissions and the Soil Conservation Service (SCS).

The regional setting to be described is the area which may affect or be affected by the facility. At a minimum, this will be the area within 5 miles of the property limits of the facility. The discussions shall be supplemented with available regional bedrock and glacial geology maps, USGS topographic maps, SCS soil maps and regional water table maps. The following items shall be specifically addressed:

- a. The existing topography including predominant topographic features.
- b. The surface water drainage patterns and significant natural and artificial hydrologic features such as surface waters, springs, surface water drainage basins, drainage divides, floodplains, wetlands and surface water containment areas.
- c. The origin, texture, nature and distribution of bedrock and unconsolidated units; and the texture and classification of the surficial soils.
- d. The depth to groundwater, groundwater flow directions and gradients, recharge and discharge areas, groundwater divides, aquifers and identification of the aquifers used by public and private wells in the region. All public and private wells within 1/2 mile of the facility shall be identified and the well logs provided, if available. An indication of which aquifer systems are most susceptible to contamination shall be made.
- e. Groundwater and surface water quality information available from the USGS, WGNHS, DNR, U.W.-Extension and regional planning commissions.

4. Site Specific Information

The report shall present and discuss all available information, including data obtained through previous investigations, as follows:

- a. The Report shall include a description of the historical use of the facility for the treatment, storage or disposal of solid and hazardous waste and a discussion of all available information or possible source areas of contamination. At a minimum, this should include all regulated units, solid waste management units, spill areas, and any other suspected source areas where releases of hazardous constituents may have occurred. The report should include:
 - i. A description of the history of the facility including past ownership and a summary of their operations;
 - ii. The waste types and products historically managed at the facility;
 - iii. The methods of waste handling including all hazardous waste treatment, storage or disposal areas that were active on or after August 1, 1981;

- iv. An identification of all solid or hazardous waste treatment, storage or disposal areas, and when they began and terminated waste management activities;
 - v. Any available information on the characteristics of the wastes or products managed at the facility including: Material Safety Data Sheets (MSDSs), E.P. Toxicity testing, TCLP testing, totals analysis and any other type of data available; and
 - vi. The approximate dates of any product or waste spills including an identification of the material spilled, the amount spilled, the location of the spill, and a description of any response actions taken.
- b. The report shall include a discussion of the geologic conditions at the facility. Each major soil unit and bedrock formation shall be described using the data from any subsurface investigations and regional information. If sufficient data are available the descriptions shall include:
- i. Grain size distribution, geologic origin and classification of materials using the Unified Soil Classification System;
 - ii. The lateral and vertical extent of each major soil unit including a description of lenses or other heterogeneities and the strike and dip of rock formations;
 - iii. The presence and frequency of joints, fractures, voids, solution openings, faults or other structural features;
 - iv. Testing data summarized by major soil units in a table in the report. The table shall contain the following information, if available: sample identification number, geologic origin, percentages of gravel, sand, silt and clay sized material, p200 content, liquid limit, plasticity index, and laboratory and field hydraulic conductivity. If average values are calculated for any of these test results, a range and standard deviation shall also be presented.
- c. The report shall include a discussion of the hydrogeologic conditions at the facility. If sufficient data are available, the properties of each saturated soil unit or rock formation and its function in the groundwater flow system shall be described including the following:
- i. Hydraulic conductivity;
 - ii. Role as a confining unit;
 - iii. Hydraulic connection to other units;
 - iv. Actual or potential use as a water supply;
 - v. Depth to groundwater and seasonal variations in groundwater elevation;
 - vi. Location and extent of perched groundwater;
 - vii. Local and regional flow directions including the location of groundwater divides;
 - viii. Horizontal and vertical gradients, particularly between soil units of differing hydraulic conductivity and between unconsolidated deposits and bedrock; and
 - ix. The saturated thickness of the uppermost aquifer at the facility boundary, which can be expected to attenuate contaminants that may enter the groundwater flow system, and estimates of the quantity of flow passing under the facility.

- d. All supporting information shall be submitted as part of the Appendix to the report. This shall include:
- i. The following forms completed for each soil boring performed, each monitoring well installed and each well/boring that was subsequently abandoned:
 - a) 4400-122 "Soil Boring Log Information"
 - b) 4400-113A "Monitoring Well Construction"
 - c) 4400-113B "Monitoring Well Development"
 - d) 4400-39 "Facility Monitoring I.D. Form"
 - e) 4400-89 "Groundwater Monitoring Well Information Form"
 - f) 3300-5B "Well/Drill Hole/Borehole Abandonment"
 - ii. Soil tests;
 - iii. Pump test results;
 - iv. In-field hydraulic conductivity test results;
 - v. Water level measurements; and
 - vi. All raw data from previous investigations.
- e. The previous discussions shall be supplemented with engineering plans as follows:
- i. An existing conditions plan sheet shall be prepared that includes the following:
 - a) Buildings, utilities, paved areas, storm and sanitary sewer systems;
 - b) Property boundaries;
 - c) Access control such as fences and gates;
 - d) One hundred year floodplain area;
 - e) Surface waters and wetlands;
 - f) Surrounding land uses;
 - g) Public and private water supply wells;
 - h) Boring and well locations;
 - i) All past and present waste and product tank locations;
 - j) Other areas used for the treatment, storage or disposal of solid or hazardous waste; and
 - k) Areas where releases of hazardous wastes or hazardous constituents have occurred.
 - ii. Cross-sections shall be constructed through all borings, both perpendicular and parallel to the facility baseline, as well as along and across transects which include major geologic and geomorphic features such as ridges, valleys and buried bedrock valleys. At least one cross-section shall be constructed parallel to groundwater flow. Where more than one interpretation can be reasonably made, conservative assumptions shall be used when evaluating heterogeneities within the unconsolidated deposits. The following information shall be presented on the geologic cross-sections:
 - a) Inferred or questionable lithostatigraphic boundaries shall be shown with a dashed line or question mark.
 - b) For clarity, a number or symbol shall be used to label major soil units instead of extensive shading. A key shall be provided which contains a description of each major soil unit including geologic description and origin, USCS classification and color.
 - c) Boring logs showing the USCS classification of each major soil unit, the results of grain size analyses, Atterberg limits, lab and field hydraulic conductivity tests, and any chemical

analyses. The data shall be correlated to the sample location.

- d) Well construction details shown to scale including the well screen and filter pack length, the location of the upper and lower seals and stabilized water level elevations measured on the same day. Where 2 or more water table observation wells are presented on a cross-section, a line representing the water table shall be drawn. The date the measurements were taken shall be specified in the key.
- iii. Water table maps showing the seasonal high and low water table shall be prepared. A bedrock piezometric map shall be included if three or more bedrock wells have been installed.
- iv. If at least three borings to bedrock have been made, a bedrock contour map shall be prepared from specific and regional data.

5. Nature and Extent of Contamination

The report shall describe and summarize the degree and extent of contamination based on existing information from potential source areas, soil testing, groundwater monitoring, surface water monitoring or other environmental monitoring data. The report shall also identify known and potential migration pathways for the facility.

6. Summary of Remedial Actions Taken

All remedial actions that were or are being undertaken at the facility shall be summarized and presented. This shall include:

- a. The objectives of the remedial actions;
- b. A summary of the design, construction, operation, and monitoring for each of the remedial actions implemented;
- c. Information on the performance of each implemented action including how well the action is mitigating the potential threat to human health and the environment;
- d. Whether any additional remedial actions are planned; and
- e. A discussion of how these remedial actions will be integrated into any long term solution at the facility.

7. Data Evaluation and Recommendations

720
The Respondent shall prepare an analysis of all previous facility investigations and their results. The objectives of this analysis are: to evaluate existing information on the type and extent of contamination at the facility including sources and migration pathways; to determine what information is lacking; and to assist in preparing a detailed workplan for investigating the facility.

The results from the ^{past?} sub-surface investigations, water quality sampling, and any other environmental monitoring shall be evaluated to determine:

- a. Whether soils have been impacted by the facility;
- b. Whether any groundwater standards have been attained or exceeded. If any preventive action limits or enforcement standards established under s. NR 140.10 or 140.12 have been attained or exceeded, the cause and significance of the exceedances shall be addressed, in accordance with the requirements of s. NR 140.24(b) or s. NR 140.26(b), Wis. Adm. Code;

- c. Whether surface water quality has been impacted by the facility;
- d. Whether gas migration is occurring and whether the concentrations exceed the limits established in ch. NR 506. If it is determined that gas migration is occurring, any residences, businesses, industries or other structures which have or may be affected by gas migration shall be identified;
- e. Whether air emissions are occurring which are in violation of rules established under the requirements contained in the NR 400 series, Wis. Adm. Codes.

C. PRELIMINARY EVALUATION OF CORRECTIVE MEASURE TECHNOLOGIES AND LABORATORY OR BENCH-SCALE STUDIES

test at old incinerator

The Permittee [Respondent] may conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions. These studies may be conducted at any time during the RFI; the intent is to collect information that will be useful in evaluating potential technologies and to conduct studies when sufficient data is available to be useful. The Permittee [Respondent] shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements. Table X presents standard data requirements for consideration in the technology decision process.

The Permittee [Respondent] shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Permittee [Respondent] shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Permittee [Respondent] shall prepare a report summarizing the testing program and its results (if studies are performed), both positive and negative.

D. FACILITY INVESTIGATION WORKPLAN

The Respondent shall prepare a proposed workplan for performing the laboratory and field investigations necessary to characterize the environmental setting of the facility along with the degree and extent of contamination. The proposed investigation shall be adequate to define the topography, subsurface soil conditions, depth to bedrock, type of bedrock, depth to groundwater, groundwater flow directions, horizontal and vertical gradients, areas designed or used for the treatment, storage or disposal of solid or hazardous waste, areas which have been contaminated as a result of releases of hazardous waste or hazardous constituents and the extent of that contamination, background soil conditions, background groundwater quality, surface water quality including the presence or location of any spills or other releases, concentration and extent of contaminants in the gas phase and the degree and extent of any groundwater contamination.

1. Project Management Plan

The Respondent shall prepare a project management plan which will include the projected schedule, the estimated cost of the investigation and the qualifications of the personnel performing or directing the investigation.

2. Environmental Setting

The Respondent shall prepare a plan for collecting information to supplement and verify any existing information on the environmental setting of the facility. The Respondent shall address all of the items specified below. If certain information is not applicable to the particular project, supporting justification shall be provided. At a minimum, the plan shall address the following items:

- a. Soils and Bedrock

The plan for investigation of the soils and bedrock shall include:

- i. The number, depth and location of borings which are sufficient to define the subsurface conditions;
- ii. Sampling interval and collection techniques for both soil and bedrock;
- iii. A visual description of each soil sample including: structure, mottling, voids, layering, lenses, geologic origin and classification according to the Unified Soil Classification System (USCS);
- iv. Number of grain size tests (including both mechanical and hydrometer) and Atterberg limit tests for each major soil unit encountered; (Note: The term major soil unit is defined in s. NR 500.03(84), Wis. Adm. Code.)
- v. The number of representative samples to be taken from each major soil unit and analyzed for laboratory hydraulic conductivity;
- vi. The frequency for obtaining bedrock core samples and the information to be recorded for each sample including: fracture frequency, Rock Quality Designation (RQD) and percent recovery of the sample; and
- vii. The time frame for retention of soil and bedrock samples.

(Note: Additional guidance for performing soil and bedrock investigations may be obtained from s. NR 512.11(1) and (4) Wis. Adm. Code.)

b. Well Installation

- i. The number, depth and location of groundwater monitoring wells, including both water table wells and piezometers, which are sufficient to define the hydrogeologic and groundwater quality conditions at the facility.
- ii. A description of the proposed well construction techniques to be utilized. (Note: All well construction procedures must follow the requirements contained in ch. NR 141, Wis. Adm. Code pertaining to Groundwater Monitoring Well Construction Requirements, unless an exemption is obtained from the Hazardous Waste Management Section.
- iii. The type and duration of in-field hydraulic conductivity tests to be performed at each on-site monitoring well.
- iv. A proposal for obtaining stabilized water level readings from each monitoring well, along with appropriate surface water bodies and private wells.

c. Other Investigative Work

Any other facility investigations such as pump tests, geophysical investigations or installation of soil vapor sampling devices shall be proposed along with all supporting information as part of the facility investigation workplan.

d. Field Direction

The qualifications of the person(s) responsible for observing and directing the drilling of all borings, installation and development of all wells, performing all in-field hydraulic conductivity tests and visually describing and classifying all of the geologic samples shall be included.

3. Contaminant Characterization

The Respondent shall prepare a Contaminant Characterization plan for collecting the information necessary to adequately characterize the degree and extent of contamination including source areas, soils, groundwater and surface water, etc. All laboratory chemical analysis of soils, groundwater, surface water, sediment, air, and subsurface gas must be done in accordance with standard methods at a laboratory certified or registered by the Wisconsin Department of Natural Resources under ch. NR 149, Wis. Adm. Code. Standard procedures, such as those specified by ASTM or SW-846 shall be proposed whenever possible. At a minimum, the Contaminant Characterization plan shall also address the following items:

a. Data Validation

The Data Validation section of the Contaminant Characterization plan shall specify the following:

- i. Chain-of-Custody procedures including:**
- a) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
 - b) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
 - c) Specification of laboratory sample custody procedures for sample handling, storage, and dispersment for analysis.
- ii. Sample storage procedures and storage times;**
- iii. Sample preparation methods;**
- iv. Analytical procedures, including:**
- a) Scope and application of the procedure;
 - b) Sample matrix;
 - c) Potential interferences;
 - d) Precision and accuracy of the methodology; and
 - e) Method detection limits.
- v. Calibration procedures and frequency;**
- vi. Data reduction, validation and reporting;**
- vii. Internal quality control checks, laboratory performance and systems audits and frequency, including:**
- a) Method blank(s);
 - b) Laboratory control sample(s);
 - c) Calibration check sample(s);
 - d) Replicate sample(s);

- e) Matrix-spiked sample(s);
- f) "Blind" quality control sample(s);
- g) Control charts;
- h) Surrogate samples;
- i) Zero and span gases; and
- j) Reagent quality control checks.

[The Implementing Agency has the discretion to conduct performance audits of laboratories selected by the Permittee (Respondent) and field audits through corrective action oversight inspections.]

- viii. Preventive maintenance procedures and schedules;
- ix. Corrective action (for laboratory problems); and
- x. Turnaround time.

b. Source Characterization

A proposed sampling plan shall be included to determine the physical and chemical characteristics of any waste materials remaining on-site. At a minimum, the plan shall address the following items:

- i. The amount and the location of waste materials present at the facility;
- ii. The number and location of the samples to be taken to adequately define the characteristics of the waste;
- iii. The type of sampling to be performed (i.e., composite vs. grab);
- iv. The specific sampling procedures;
- v. The constituents to be sampled for; and
- vi. The proposed testing methods and the corresponding detection limits to be utilized.

c. Groundwater

A proposed sampling plan to characterize the degree and extent of any groundwater contamination shall be included. At a minimum, the plan shall address the following items:

- i. Procedures for measuring water levels including:
 - a) Type of equipment and
 - b) Decontamination procedures.
- ii. Well development procedures including:
 - a) Sequence for well development;
 - b) Type of equipment to be used;

- c) Well volumes to be removed;
 - d) Chemical analysis to confirm proper development; and
 - d) Decontamination procedures.
- iii. Sample withdrawal procedures including:
- a) Sequence for well sampling;
 - b) Type of equipment to be used;
 - c) Maximum time between purging and sampling; and
 - d) Decontamination procedures.
- iv. In-field measurements including:
- a) Identification of in-field measurements to be made;
 - b) Type of equipment to be used;
 - c) Calibration procedures including the frequency of calibrations; and
 - d) Sequence of in-field measurements.
- v. Field filtration procedures including:
- a) Equipment used for in-line sampling including a sketch of the set-up;
 - b) Type of filter to be used including the filter size and filter material;
 - c) Description of filtering procedures;
 - d) Volume of sample to be filtered prior to actual sample collection; and
 - e) Decontamination procedures.
- vi. Sample preservation procedures for each parameter or chemical group;
- vii. Chain of custody procedures including:
- a) Description of sample bottle labeling;
 - b) Use of sample seals;
 - c) Information to be recorded in the field notebooks;
 - d) Chain of custody reporting forms; and
 - e) Description of the sample analysis request sheet.
- viii. Quality Assurance/Quality Control (QA/QC) Procedures including:
- a) Overall field QA/QC procedures and
 - b) Number of trip blanks, field blanks, equipment blanks and duplicates.
- (Note: Additional guidance regarding the development of a groundwater sampling plan may be obtained from the following documents:
- 1) "Groundwater Sampling Procedures Guidelines", WDNR PUBL-WR-153, February, 1987.
 - 2) "Groundwater Sampling Procedures Field Manual", WDNR PUBL-WR-168, September, 1987.
- ix. Specific Sampling plan including:
- a) Well location;
 - b) Parameter list;
 - c) Type of sampling containers for each parameter type;
 - d) Proposed testing method; and
 - e) Proposed detection limits (Note: In accordance with the requirements contained in s. NR

140.16(2), analytical methods should be selected which have limits of detection and limits of quantitation below the preventive action limits.

d. Soils

A proposed sampling plan to characterize the degree and extent of any soil contamination shall be included. At a minimum, the plan shall address the following items:

- i. Field screening techniques to be utilized during the drilling of all soil borings, such as Photoionization Detectors (PID) or Organic Vapor Analyzers (OVA), to assist in contaminant evaluation and for determining which samples will be retained for chemical analysis;
- ii. Calibration procedures for each of the field sampling devices;
- iii. Other procedures or methodologies to be used to determine whether specific soil samples warrant chemical analysis;
- iv. The specific soil sampling techniques to be utilized. In particular this should address:
 - a) The types of sampling devices to be used;
 - b) The type of sampling to be performed (i.e., composite vs. grab);
 - c) The decontamination procedures to be utilized to prevent contamination of the sampling equipment and cross-contamination between sampling points;
 - d) The types of sampling containers to be used;
 - e) Specific sample preservation methods;
 - f) The number and location of samples to adequately define the degree and extent of soil contamination, including duplicates and blanks; and
 - g) The constituents to be analyzed for and the detection limits to be utilized.
- v. Chain of custody procedures including:
 - a) Description of sample bottle labeling;
 - b) Use of sample seals;
 - c) Information to be recorded in the field notebooks;
 - d) Chain of custody reporting forms; and
 - e) Description of the sample analysis request sheet.
- vi. A description of the laboratory testing procedures to be utilized.

e. Surface Water and Sediment Contamination

A proposed sampling plan to characterize the degree and extent of any surface water and sediment contamination shall be included. At a minimum, the plan shall address the following items:

- i. Field screening techniques to be utilized in contaminant evaluation and for determining which samples will be retained for chemical analysis;
- ii. Calibration procedures for each of the field sampling devices;
- iii. Other procedures or methodologies to be used to determine whether specific chemical analyses are warranted;
- iv. The specific sampling techniques to be utilized. In particular this should address:

- a) The types of sampling devices to be used;
 - b) The type of sampling to be performed;
 - c) The decontamination procedures to be utilized to prevent contamination of the sampling equipment and cross-contamination between sampling points;
 - d) The types of sampling containers to be used;
 - e) Specific sample preservation methods;
 - f) The number and location of samples to adequately define the degree and extent of contamination, including duplicates and blanks; and
 - g) The constituents to be analyzed for and the detection limits to be utilized.
- v. Chain of custody procedures including:
- a) Description of sample container labeling;
 - b) Use of sample seals;
 - c) Information to be recorded in the field notebooks;
 - d) Chain of custody reporting forms; and
 - e) Description of the sample analysis request sheet.
- vi. A description of the laboratory testing procedures to be utilized.
- f. Air Contamination
- A proposed plan to characterize any air emission sources. At a minimum the plan shall include:
- i. Standard Meteorological conditions at the facility including:
 - a) Local precipitation information;
 - b) Temperature data;
 - c) Wind rosette with speed and direction data;
 - d) Relative humidity/dew point information; and
 - e) Barometric pressure data.
 - ii. Natural and man-made topographic features or other objects that could influence air inversions, downwashing and channelizing potential for the facility;
 - iii. Air pollution sources such as smokestack plume downwash or fugitive emissions of Volatile Organic Compounds, metals, and particulates that may have contributed to soil or groundwater contamination;
 - iv. An estimate of the potential loading rates to the soil and groundwater;
 - v. The specific sampling techniques to be utilized. In particular this should address:
 - a) The testing method to be used, such as those listed in 40 CFR Part 60 or alternatives;
 - b) The type of sampling to be performed;
 - c) The decontamination procedures to be utilized to prevent contamination of the sampling equipment;
 - d) Specific sample preservation methods;
 - e) The number and location of sampling;
 - f) The constituents to be analyzed for and the detection limits to be utilized.
 - vi. Chain of custody procedures including:
 - a) Description of sample container labeling;
 - b) Information to be included in the field notebooks;
 - c) Chain of custody reporting forms; and

- d) Description of the sample analysis request sheets.
- vii. A description of the laboratory testing procedures to be utilized.
- g. Subsurface Gas Contamination

A proposed sampling plan to characterize the degree and extent of any soil gas contamination shall be included. At a minimum, the plan shall address the following items:

- i. Field screening techniques to be utilized in contaminant evaluation;
- ii. Calibration procedures for each of the field sampling devices;
- iii. The specific sampling techniques to be utilized. In particular this should address:
 - a) The types of sampling instrumentation to be used such as pressure transducers and manometric gauges;
 - b) The type of sampling to be performed;
 - c) The decontamination procedures to be utilized to prevent contamination of the sampling equipment;
 - d) Specific sample preservation methods;
 - e) The number and location of samples to adequately define the degree and extent of contamination, and
 - f) The constituents to be analyzed for and the detection limits to be utilized.
- iv. Chain of custody procedures including:
 - a) Description of sample container labeling;
 - b) Information to be recorded in the field notebooks;
 - c) Chain of custody reporting forms; and
 - d) Description of the sample analysis request sheet.
- v. A description of the laboratory testing procedures to be utilized.
- h. Other Sampling

Based on the site specific conditions at the facility being investigated, it may be necessary to undertake other sampling in order to properly define the extent of contamination present. If testing of these other media are necessary, the Respondent shall prepare a detailed sampling plan along with all supporting justification and include the plan as part of the facility investigation work plan.

4. Investigative Waste Management Plan

The Respondent shall prepare a detailed plan for characterizing and properly managing all soil cuttings, wash waters, purge waters and any other investigative wastes which will be generated during work at the facility.

5. Ecological Evaluation

A brief discussion shall be included that identifies the probable adverse and beneficial impacts of the proposed Facility Investigation Workplan. At a minimum the evaluation shall include a discussion of:

- a. Wetlands. If wetlands have been identified on or adjacent to the facility, the respondent must evaluate whether the activities proposed as part of the facility investigations workplace are in compliance with the requirements contained in ch. NR 103, Wis. Adm. Code regarding Water Quality Standards for Wetlands;

*Contact
Bureau of
Ecological
Resources*

- b. Endangered or threatened species;
- c. Critical habitat;
- d. Special resources such as archaeological, historical, state natural areas and prime agricultural lands; and
- d. Dominant aquatic and terrestrial plant and animal species and habitats found in the area.

6. Health and Safety Plan

The Respondent shall prepare a Health and Safety Plan in accordance with the requirements contained in 29 CFR 1910.120. (Note: WDNR does not approve health and safety plans.)

7. Community Relations Plan

The Respondent shall prepare a plan for disseminating information to the public regarding investigation activities and results.

E. PROGRESS REPORTS

The Respondent shall include a plan for preparing bi-monthly progress reports which contain:

- 1. A description and estimate of the percentage of the report completed;
- 2. Summaries of all findings;
- 3. Summaries of all changes made during the reporting period;
- 4. Summaries of all contacts with representatives of the local community, public interest groups or government agencies during the reporting period;
- 5. Summaries of all problems or potential problems encountered during the reporting period;
- 6. Actions being taken to rectify problems;
- 7. Changes in personnel during the reporting period; and
- 8. Projected work for the next reporting period.