

MODULE V SPECIAL CONDITIONS PURSUANT TO THE 1984 HAZARDOUS AND SOLID WASTE AMENDMENTS (HSWA) TO RCRA FOR PHILIPS, INC., FORMERLY KNOWN AS SIGNETICS CORPORATION, EPA I.D. NUMBER NMD000709782

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A. DEFINITIONS

For purposes of these special conditions pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA, the following definitions shall apply:

**"Administrative Authority"** means the New Mexico Environment Department, or his/her designee, or, in the case of HSWA provisions for which the State is not authorized, the United States Environmental Protection Agency (EPA).

**"CMS"** means Corrective Measures Study.

**"EPA"** means the United States Environmental Protection Agency.

**"Facility"** means all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.

**"HSWA"** means the 1984 Hazardous and Solid Waste Amendments to RCRA.

**"Hazardous constituent"** means any constituent identified in Appendix VIII of 40 CFR Part 261, or any constituent identified in Appendix IX of 40 CFR Part 264.

**"Hazardous waste"** means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. The term hazardous waste includes hazardous constituent.

**"NMED"** means the New Mexico Environment Department

**"Permit"** means the conditions embodied in these special conditions pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA.

**"Permittee"** means Signetics Corporation, 9201 Pan American Freeway, N.E., Albuquerque, New Mexico 877113, EPA ID Number NMD000709782.

**"RCRA"** means the Resource Conservation and Recovery Act of 1980 as amended by HSWA in 1984.

**"RCRA Permit"** means the full permit, with RCRA and HSWA portions.

"RFA" means RCRA Facility Assessment.

"RFI" means RCRA Facility Investigation.

"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents).

"Solid Waste Management Unit" (SWMU) means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

If, subsequent to the issuance of this permit, regulations are promulgated which redefine any of the above terms, the Administrative Authority may, at its discretion, apply the new definition to this permit.

B. STANDARD CONDITIONS

1. Waste Minimization

The permittee shall certify annually by October 1 for the previous year ending August 31, that the permittee:

- a. Has a program in place to reduce the volume and toxicity of all hazardous wastes which are generated by the permittee's facility's operation to the degree determined to be economically practicable; and
- b. that the proposed method of treatment, storage or disposal is that practicable method currently available to the permittee which minimizes the present and future threat to human health and the environment.

2. Dust Suppression

Pursuant to 40 CFR 266.23(b), the Permittee shall not use waste or used oil or any other material which is contaminated with dioxin, polychlorinated biphenyls (PCBs), or any other hazardous waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment. This section applies to the RCRA Permit.

*See B. 1. a. & b. for details*

*Language of 40 CFR 266.23(b) is not applicable*

### 3. Permit Modification

a. If at any time for any of the reasons specified in 40 CFR 270.41, the Administrative Authority determines that modification of this Permit is necessary, the Administrative Authority may require the Permittee to request a permit modification per Module V B.3.b or may initiate a modification according 40 CFR 124.5, as follows:

1) Notify the Permittee in writing of the proposed modification and the date by which comments on the proposed modification must be received.

2) Publish a notice of the proposed modification in a locally distributed newspaper, broadcast the notice over a local radio station, mail a notice to all persons on the facility mailing list maintained according to 40 CFR 124.10(c)(1)(ix), and place a notice in the facility's information repository (a central source of all pertinent documents concerning the remedial action, usually maintained at the facility or some other public place in the vicinity of the permitted facility, such as a public library).

3) If the Administrative Authority receives no written comment on the proposed modification, the modification will become effective five (5) calendar days after the close of the comment period. The Administrative Authority will:

a) Notify the Permittee in writing of the final decision.

b) Notify individuals on the facility mailing list in writing that the modification has become effective and shall place a copy of the modified permit in the information repository, if a repository is required for the facility.

4) If the Administrative Authority receives written comment on the proposed modification, the Administrative Authority will make a final determination concerning the modification after the end of the comment period. The Administrative Authority will:

a) Notify the Permittee in writing of the final decision.

b) Provide notice of the final modification decision in a locally distributed newspaper and place a copy of the modified permit in the information repository, if a repository is required for the facility.

b. The Permittee may initiate permit modifications proceeding under 40 CFR 270.42. All applicable requirements and procedures as specified in 40 CFR 270.42 shall be followed.

c. Modifications of the Permit do not constitute a reissuance of the Permit.

#### 4. Permit Review

This Permit may be reviewed by the Administrative Authority five years after the date of permit issuance and may be modified as necessary as provided for in Module V B.3. Nothing in this section shall preclude the Administrative Authority from reviewing and modifying the Permit at any time during its term. This section applies to the RCRA Permit.

#### 5. Compliance with Permit

Compliance with this Permit during its term constitutes compliance, for the purposes of enforcement, with 40 CFR Parts 264 and 266 only for those management practices specifically authorized by this Permit. The Permittee is also required to comply with Parts 260, 261, 262, and 263 as applicable.

#### 6. Specific Waste Ban

a. The Permittee shall not place in any land disposal unit the wastes specified in 40 CFR 268 after the effective date of the prohibition unless the Administrator has established disposal or treatment standards for the hazardous waste and the Permittee meets such standards and other applicable conditions of this Permit.

b. The Permittee may store wastes restricted under 40 CFR 268 solely for the purpose of accumulating quantities necessary to facilitate proper recovery, treatment, or disposal provided that it meets the requirements of 40 CFR 268.50(a)(2) including, but not limited to, clearly marking each tank or container.

c. The Permittee is required to comply with all requirements of 40 CFR 268.7 as amended. Changes to the waste analysis plan will be considered permit modifications at the request of the Permittee, pursuant to 40 CFR 270.42.

d. The Permittee shall perform a waste analysis at least annually or when a process changes, to determine whether the waste meets applicable treatment standards. Results shall be maintained in the operating record.

e. The Permittee must comply with requirements restricting placement of hazardous wastes in or on land which become effective by statute or promulgated under Part 268, regardless of requirements in the Permit. Failure to comply with the regulations may subject the Permittee to enforcement action under Section 3008 of RCRA.

This section applies to the RCRA Permit.

7. Information Submittal

Failure to comply with any condition of the Permit, including information submittal, constitutes a violation of the Permit and is grounds for enforcement action, permit amendment, termination, revocation, suspension, or denial of permit renewal application. Falsification of any submitted information is grounds for termination of this Permit (40 CFR 270.43).

The Permittee shall ensure that all plans, reports, notifications, and other submissions to the Administrative Authority required in this Permit are signed and certified in accordance with 40 CFR 270.11. A summary of the planned reporting requirements pursuant to this Permit is found in Table 1. Two (2) copies and one (1) 3.5" IBM compatible disk copy each of these plans, reports, notifications or other submissions shall be submitted to the Administrative Authority by Certified Mail or hand delivered to:

U.S. EPA, Region 6  
Hazardous Waste Management Division  
1445 Ross Avenue  
Dallas, Texas 75202-2733

and

New Mexico Environment Department  
Hazardous and Radioactive Materials Bureau  
525 Camino De Los Marquez  
P. O. Box 26110  
Santa Fe, New Mexico 87502

8. Plans and Schedules Incorporation Into Permit

All plans and schedules required by this Permit are, upon approval by the Administrative Authority, incorporated into this Permit by reference and become an enforceable part of this Permit. Since required items are essential elements of this Permit, failure to submit any of the required items or submission of inadequate or insufficient information may subject the Permittee to enforcement action under Section 3008 of RCRA which may include fines, suspension, or revocation of the Permit.

Any noncompliance with approved plans and schedules shall be termed noncompliance with this Permit. Written requests for extensions of due dates for submittals may be granted by the Administrative Authority in accordance with Module V B.3.

If the Administrative Authority determines that actions beyond those provided for, or changes to what is stated herein, are warranted, the Administrative Authority may modify this Permit according to procedures in Module V B.3.

9. Data Retention

All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to this Permit shall be maintained at the facility during the term of this Permit, including any reissued Permits.

C. SPECIFIC CONDITION - SURFACE IMPOUNDMENTS AND LANDFILLS

1. Operation/Construction of Surface Impoundments and Landfills

The Permittee shall not place hazardous waste in any surface impoundment or landfill unless the unit meets the Minimum Technological Requirements outlined in 40 CFR 264.221(a) and 40 CFR 264.301(a). The Administrative Authority must approve plans and specifications for retrofitting or construction prior to commencement of construction by the Permittee.

2. Surface Impoundment and Landfill Specific Waste Ban

The Permittee shall not place hazardous waste prohibited by 40 CFR 268 in any surface impoundment or landfill unless:

- a. The waste meets treatment standards specified in 40 CFR 268.40, .41, .42, and .43;
- b. A variance from the treatment standards has been granted pursuant to 40 CFR 268.44;
- c. A petition has been granted on a case-by-case extension to the effective date, pursuant to 40 CFR 268.5;
- d. A "no-migration" petition has been granted pursuant to 40 CFR 268.6; or
- e. A surface impoundment is exempt under 40 CFR 268.4

D. SPECIAL CONDITIONS [RESERVED]

- a. Locate all water supply wells within a three (3) mile radius of the facility;
- b. Install additional groundwater monitoring wells, as necessary, to completely define the horizontal and vertical extent of the contaminant plume;
- c. Submit copies of installation logs for all monitoring wells
- d. Submit copies of all historical analytical data for monitoring wells

*Handwritten note:*  
 Permittee to  
 install 10  
 monitoring  
 wells

*Handwritten note:*  
 Analytical  
 data to be  
 submitted  
 quarterly

E. BIF RULE [RESERVED]

*Handwritten note:*  
 Analytical data  
 to be submitted  
 quarterly

F. AA-BB AIR REGULATIONS

The Permittee must comply with the requirements of 40 CFR 264 Subparts AA and BB, as applicable. Within 90 days of the effective date of this Permit, the Permittee shall submit to the Administrative Authority a report which must contain, at minimum, the following information:

*Handwritten note:*  
 Permittee to  
 submit report  
 within 90 days

1. An equipment list which includes all the information required under 264.1064(b)(1) for equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight, and a list of all process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction,

or air or steam stripping operations managing hazardous waste with organic concentrations of at least 10 percent by weight.

2. For the process vents listed above, the amount of vent emissions in lb/hr or kg/hr, and in lb/yr or kg/yr.
3. If the emissions in paragraph 2 of this section exceed the emission limits cited in 264.1032(a)(1), the report must detail the manner in which compliance will be obtained, i.e., by the reduction of total organic emissions to the limits in 264.1032(a)(1), or reduction by means of a control device per 264.1032(a)(2).
4. If a closed-vent system and control device is installed to comply with the requirements in 264.1032(a)(2), provide the following information:
  - a. An implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation per 40 CFR 264.1033(a)(2).
  - b. The type of control device under 264.1033 to be installed (e.g. vapor recovery, flare, etc.).
5. If the Permittee feels any of the requirements of this Module V F, or of 40 CFR 264 Subparts AA and BB, are not applicable to this facility, the Permittee must provide justification for this decision as part of the report.

#### G. CORRECTIVE ACTION

1. Corrective Action for Releases: Section 3004(u) of RCRA, as amended by HSWA, and 40 CFR 264.101, require that permits issued after November 8, 1984, address corrective action for releases of hazardous waste including hazardous constituents from any SWMU at the facility, regardless of when the waste was placed in the unit.
2. Releases Beyond Facility Boundary
  - a. The Permittee shall notify the Administrative Authority verbally, within 24 hours of discovery, of any release of hazardous waste or hazardous constituents that has the potential to migrate off-site.
  - b. Section 3004(v) of RCRA as amended by HSWA, and Federal regulations promulgated as 40 CFR 264.101(c), require corrective actions beyond the facility property boundary, where necessary to protect human health and the environment, unless the Permittee demonstrates that, despite the Permittee's best efforts, the Permittee was

unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where offsite access is denied.

3. **Financial Responsibility:** Assurances of financial responsibility for corrective action shall be provided as specified in the Permit following major modification for remedy selection.

4. **Dispute Resolution**

- a. The parties shall use their best efforts to informally and in good faith resolve all disputes or differences of opinion. If, however, disputes arise concerning the corrective action which the parties are unable to resolve informally, including but not limited to, disputes over implementation of workplans, approval of documents, scheduling of any work, selection, performance or completion of any corrective action, or any other obligation assumed hereunder, the Permittee shall present a written notice of such dispute and the basis for the objections to EPA within ten business days of the receipt of EPA's disapproval, decision or directive. The notice shall set forth the specific points of the dispute, the position the Permittee maintains should be adopted as consistent with the Permit's requirements, the basis therefore, and any matters which it considers necessary for EPA's proper determination. EPA shall provide to the Permittee a written statement of its decision on the pending dispute, which shall be incorporated into the final Permit unless the Permittee requests an opportunity for a conference in accordance with Module V G.4.b. The existence of a dispute as defined herein, and the consideration of such matters which are placed into dispute shall not excuse, toll, or suspend any compliance obligation or deadline while the dispute resolution process is pending.

- b. If the Permittee objects to any EPA determination regarding any requirement by EPA that the Permittee perform work, the Permittee shall, within ten days of its receipt of EPA's decision pursuant to Module V G.4.a, notify EPA in writing of its objections, and may request that the Hazardous Waste Management Division Director convene an informal conference. The Director shall state in writing his decision regarding the factual issues in dispute. Such decision shall be the final resolution of the dispute and shall be implemented immediately by the Permittee according to the schedule contained therein.

## H. REPORTING REQUIREMENTS

1. The Permittee shall submit, in accordance with Module V B.7, signed quarterly progress reports of all activities (i.e., RFI, CMS) conducted pursuant to the provisions of this Permit beginning no later than ninety (90) calendar days from the effective date of this Permit. These reports shall contain:
  - a. A description of the work completed and an estimate of the percentage of work completed;
  - b. Summaries of all findings, including summaries of laboratory data;
  - c. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems;
  - d. Projected work for the next reporting period;
  - e. Summaries of contacts pertaining to corrective action or environmental matters with representatives of the local community, public interest groups or State government during the reporting period;
  - f. Changes in key project personnel during the reporting period; and
  - g. Summaries of all changes made in implementation during the reporting period.
2. Copies of other reports (e.g., inspection reports), drilling logs and laboratory data shall be made available to the Administrative Authority upon request.
3. In addition to the written reports, at the request of the Administrative Authority, the Permittee shall provide status review through semi-annual briefings with the Administrative Authority.

## I. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY-IDENTIFIED SWMUS

1. The Permittee shall notify the Administrative Authority, in writing, of any newly-identified SWMU(s) (i.e., a unit not specifically identified during the RFA), discovered in the course of ground water monitoring, field investigations, environmental audits, or other means, no later than thirty (30) calendar days after discovery. The notification shall include the following items, to the extent available:

- a. The location of the newly-identified SWMU in relation to other SWMUs;
  - b. The type and function of the unit;
  - c. The general dimensions, capacities, and structural description of the unit (supply any available drawings);
  - d. The period during which the unit was operated;
  - e. The specifics, to the extent available, on all wastes that have been or are being managed at the SWMU; and
  - f. Results of any sampling and analysis required for the purpose of determining whether releases of hazardous waste including hazardous constituents have occurred, are occurring, or are likely to occur from the unit.
2. Based on the results of this Notification, the Administrative Authority will determine the need for further investigations or corrective measures at any newly-identified SWMU(s). If the Administrative Authority determines that such investigations are needed, the Administrative Authority may require the Permittee to prepare a plan for such investigations. This plan will be reviewed for approval as part of the RFI Workplan or a new RFI Workplan under Module V L.3. The Permit will be modified according to Module V B.3 to incorporate the investigation requirements for the newly-identified SWMU(s), if required.

J. NOTIFICATION REQUIREMENTS FOR NEWLY-DISCOVERED RELEASES AT SWMU(s)

The permittee shall notify the Administrative Authority in writing, no later than fifteen (15) calendar days after discovery, of any release(s) of hazardous waste or hazardous constituents discovered during the course of ground water monitoring, field investigation, environmental auditing, or other means. Such newly-discovered releases may be from newly-identified units or from units for which, based on the findings of the RFA, the Administrative Authority had previously determined no further investigation was necessary. The Administrative Authority may require further investigation and/or interim measures for the newly-identified release(s), and may require the Permittee to prepare a plan for the investigation and/or interim measure. The plan will be reviewed for approval as part of the RFI Workplan or a new RFI Workplan under Module V L.3. The Permit will be modified according to Module V B.3 to incorporate the investigation, if required.

**K. INTERIM MEASURES**

1. If during the course of any activity initiated under this Permit, the Administrative Authority determines that a release or potential release of hazardous constituents from a SWMU poses a threat to human health and the environment, the Administrative Authority may require interim measures. The Administrative Authority shall determine the specific measure(s) or require the Permittee to propose a measure(s). The interim measure(s) may include a permit modification, a schedule for implementation, and a written plan. The Administrative Authority shall notify the Permittee in writing of the requirement to perform interim measures. The Administrative Authority shall modify this Permit according to Module V B.3 to incorporate interim measures into the Permit.
  
2. The following factors will be considered by the Administrative Authority in determining the need for interim measures:
  - a. Time required to develop and implement a final remedy;
  - b. Actual and potential exposure to human and environmental receptors;
  - c. Actual and potential contamination of drinking water supplies and sensitive ecosystems;
  - d. The potential for further degradation of the medium in the absence of interim measures;
  - e. Presence of hazardous wastes in containers that may pose a threat of release;
  - f. Presence and concentration of hazardous waste including hazardous constituents in soil that have the potential to migrate to ground water or surface water;
  - g. Weather conditions that may affect the current levels of contamination;
  - h. Risks of fire, explosion, or accident; and
  - i. Other situations that may pose threats to human health and the environment.

## L. RFI WORKPLAN

1. The RFI Workplan as specified in Module V T.3 shall be submitted to the Administrative Authority within 120 days of the effective date of this Permit. The RFI Workplan must address releases of hazardous waste or hazardous constituents to all media for those SWMUs listed in Table 2. The SWMU numbers are from the RFA Report, prepared by PRC Environmental Management, Inc., dated October 26, 1992.

- a. The Workplan shall describe the objectives of the investigation and the overall technical and analytical approach to completing all actions necessary to characterize the direction, rate, movement, and concentration of releases of hazardous waste or hazardous constituents from specific units or groups of units, and their actual or potential receptors. The RFI Workplan shall detail all proposed activities and procedures to be conducted at the facility, the schedule for implementing and completing such investigations, the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI. The Scope of Work for a RCRA Facility Investigation (RFI) is in Module V T.

- b. The RFI Workplan shall describe sampling, data collection quality assurance, and data management procedures, including formats for documenting and tracking data and other results of investigations, and health and safety procedures.

- c. Development of the RFI Workplan and reporting of data shall be consistent with the following EPA guidance documents or the equivalent thereof:

- 1) RCRA Facility Investigation Guidance Document (EPA 530/5W-89-031);

- 2) RCRA Groundwater Monitoring Technical Enforcement Guidance Document (OSWER 9950.1) September 1986; and

- 3) Test Methods for Evaluating Solid Waste (SW 846, 2nd ed.) 1982.

2. After the Permittee submits the Workplan, the Administrative Authority will either approve, disapprove, or modify the Workplan in writing.

If the Administrative Authority approves the workplan, the Permittee shall implement the plan within two weeks

(14 days) of receipt of approval, according to the schedule contained in the plan. All approved workplans become incorporated into this Permit as per Module V B.8.

In the event of disapproval (in whole or in part) of the workplan, the Administrative Authority shall specify deficiencies in writing. The Permittee shall modify the plan to correct these within the time frame specified in the notification of disapproval by the Administrative Authority. The modified workplan shall be submitted in writing to the Administrative Authority for review. Should the permittee take exception to all or part of the disapproval, the Permittee shall submit a written statement of the grounds for the exception within 10 days of receipt of the disapproval per Module V G.4.

3. The Administrative Authority shall review for approval as part of the RFI Workplan or as a new workplan any plans developed pursuant to Module V I addressing further investigations of newly-identified SWMUs, or Module V J addressing new releases from previously-identified SWMUs.

#### M. RFI IMPLEMENTATION

Upon receipt of written approval from the Administrative Authority for the RFI Workplan, the Permittee shall implement the RFI according to the schedules and in accordance with the approved RFI Workplan and the following:

1. The Permittee shall notify EPA and NMED at least 10 days prior to any sampling, testing, or monitoring activity required by this Permit to give Agency personnel the opportunity to observe investigation procedures and/or split samples.
2. Deviations from the approved RFI Workplan which are necessary during implementation of the investigations must be approved by the Administrative Authority and fully documented and described in the progress reports and in the RFI Final Report.

#### N. RFI FINAL REPORT AND SUMMARY

1. Within sixty (60) calendar days after the completion of the RFI, the Permittee shall submit an RFI Final Report and Summary. The RFI Final Report shall describe the procedures, methods, and results of all investigations as described in Module V T.5. This includes SWMUs and their releases, the type and extent of contamination at the facility, sources and migration pathways, and actual or potential receptors. The RFI Final Report shall present all information gathered under the approved RFI Workplan.

The RFI Final Report must contain adequate information to support further corrective action decisions at the facility. The Summary shall summarize the RFI Final Report.

2. After the Permittee submits the RFI Final Report and Summary, the Administrative Authority shall either approve or disapprove them in writing.

If the Administrative Authority approves the RFI Final Report and Summary, the Permittee shall mail the approved Summary to all individuals on the facility mailing list established pursuant to 40 CFR 124.10(c)(1)(ix), within fifteen (15) calendar days of receipt of approval.

If the Administrative Authority determines the RFI Final Report and Summary do not fully meet the objectives stated in Module V T, the Administrative Authority may disapprove the RFI Final Report and Summary. If the Administrative Authority disapproves the Report, the Administrative Authority shall notify the Permittee in writing of the Report's deficiencies and specify a due date for submittal of a revised Final Report and Summary. Once approved, the Summary shall be mailed to all individuals on the facility mailing list as specified above.

#### O. DETERMINATION OF NO FURTHER ACTION

1. Based on the results of the RFI and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c).

If, based upon review of the Permittee's request for a permit modification, the results of the RFI, and other information, including comments received during the sixty (60) day public comment period required for Class III permit modifications, the Administrative Authority determines that releases or suspected releases which were investigated either are non-existent or do not pose a threat to human health and/or the environment, the Administrative Authority will grant the requested modification.

2. If necessary to protect human health or the environment, a determination of no further action shall not preclude the Administrative Authority from requiring continued or periodic monitoring of air, soil, ground water, or surface water, when site-specific circumstances indicate that releases of hazardous waste or hazardous constituents are likely to occur.
3. A determination of no further action shall not preclude the Administrative Authority from requiring further investigations, studies, or remediation at a later date, if new information or subsequent analysis indicates a release or likelihood of a release from a SWMU at the facility that is likely to pose a threat to human health or the environment. In such a case, the Administrative Authority shall initiate a modification to the Permit according to Module V B.3.

P. CMS PLAN

*Corrective Measures Study Plan*

1. If the Administrative Authority has reason to believe that a SWMU has released concentrations of hazardous constituents, or if the Administrative Authority determines that contaminants present a threat to human health or the environment given site-specific exposure conditions, the Administrative Authority may require a CMS and shall notify the Permittee in writing. The notification may also specify remedial alternatives to be evaluated by the Permittee during the CMS.
2. The Permittee shall submit a CMS Plan to the Administrative Authority within forty five (45) calendar days from notification of the requirement to conduct a CMS. The Scope of Work for a CMS Plan is in Module V U.3.

The CMS Plan shall provide the following information:

- a. A description of the general approach to the investigation, and potential remedies;
- b. A definition of the overall objectives of the study;
- c. Specific plans for evaluating remedies to ensure compliance with remedy standards;
- d. Schedules for conducting the study; and
- e. The proposed format for the presentation of information.

3. After the Permittee submits the CMS Plan, the Administrative Authority will either approve, disapprove, or modify the plan in writing.

If the Administrative Authority approves the CMS Plan, the Permittee shall implement the plan per Module V Q.

In the event of disapproval (in whole or in part) of the CMS Plan, the Administrative Authority shall specify deficiencies in writing. The Permittee shall modify the plan to correct these within the time frame specified in the notice of deficiency. The modified CMS Plan shall be submitted in writing to the Administrative Authority for review. Should the permittee take exception to all or part of the disapproval, the Permittee shall submit a written statement of the grounds for the exception within 10 days of receipt of the disapproval per Module V G.4.

#### Q. CMS IMPLEMENTATION

No later than fourteen (14) calendar days after the Permittee has received written approval from the Administrative Authority for the CMS Plan, the Permittee shall implement the Corrective Measures Study according to the schedules specified and in accordance with the approved CMS Plan. All approved plans become incorporated into this Permit as per Module V B.8.

#### R. CMS FINAL REPORT AND SUMMARY

1. Within sixty (60) calendar days after the completion of the CMS, the Permittee shall submit a CMS Final Report and Summary. The Summary shall summarize the Final Report. The CMS Final Report shall discuss the results of investigations of each remedy studied and of any bench-scale or pilot tests conducted. It must include an evaluation of each remedial alternative. The CMS Final Report shall present all information gathered during the CMS, and must contain adequate information to support the remedy selection process. In the CMS Final Report, the Permittee shall propose a corrective action program that shall:
  - a. attain compliance with corrective action objectives for hazardous constituents in each medium, as established in Module V U;
  - b. control sources of releases;
  - c. meet acceptable waste management requirements; and

- d. protect human health and the environment.
2. After the Permittee submits the CMS Final Report and Summary, the Administrative Authority will either approve or disapprove them in writing.

If the Administrative Authority approves the CMS Final Report and Summary, the Permittee shall mail the approved Summary to all individuals on the facility mailing list established pursuant to 40 CFR 124.10(c)(1)(ix), within fifteen (15) calendar days of receipt of approval.

If the Administrative Authority determines the CMS Final Report and Summary do not fully meet the objectives stated in Module V U, the Administrative Authority may disapprove the CMS Final Report and Summary. If the Administrative Authority disapproves the Report, the Administrative Authority shall notify the Permittee in writing of the Report's deficiencies and specify a due date for submittal of a revised Final Report and Summary. Once approved, the Summary shall be mailed to all individuals on the facility mailing list as specified above.

3. Based on preliminary results and the CMS Final Report, the Administrative Authority may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

S. CORRECTIVE MEASURE (REMEDY) SELECTION AND IMPLEMENTATION

Within fifteen (15) calendar days from receipt of approval of CMS Final Report and Summary, the Permittee shall submit a Permit Modification request according to Module V B.3, for corrective measure (remedy) selection, based on the approved CMS Final Report. The resultant modified permit will include schedules for remedy implementation.

T. RFI SCOPE OF WORK

1. Purpose

The purpose of the RFI is to determine the nature and extent of releases of hazardous wastes or hazardous constituents from solid waste management units. The required information shall include each item specified under Tasks I-III. The Permittee shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RFI.

*Order per  
the guidelines*

If the Permittee believes that certain requirements of the Scope of Work are not applicable, the specific requirements shall be identified and a detailed rationale for inapplicability shall be provided.

2. Scope

The RFI consists of three tasks:

Task I: RFI Workplan

- a. Introduction
- b. Environmental Setting
- c. Source Characterization
- d. Contamination Characterization
- e. Potential Receptor Identification
- f. Data Collection Quality Assurance Plan
- g. Data Management Plan
- h. Health and Safety Plan
- i. Community Relations Plan
- j. Project Management Plan

Task II: RCRA Facility Investigation

Task III: RFI Final Report and Summary

3. Task I: RFI Workplan

The Permittee shall prepare a RFI Workplan as specified in Module V L and the following. The RFI Workplan shall provide for and address the following information needs:

a. Introduction

1) Facility Description

The introduction shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage, or disposal of solid and hazardous waste. Information from existing reports and studies is acceptable, as long as the source of this information is documented, pertinent, and reflective of current conditions. This section shall include:

a) Map(s) depicting the information specified below. All maps shall be consistent with requirements set forth in 40 CFR 270.14 and shall be of sufficient detail and accuracy to locate all current and future work performed at the site.

- (1) general geographic location;
  - (2) property lines, with the owners of all adjacent property clearly indicated, and all land previously owned and/or used by the Permittee around the facility;
  - (3) topography, waterways, wetlands, floodplains, water features, and drainage patterns;
  - (4) all tanks, buildings, utilities, paved areas, rights-of-way, and other features;
  - (5) all solid waste management units;
  - (6) all known past solid or hazardous waste treatment, storage and disposal areas or units regardless of whether they were active on November 19, 1980;
  - (7) surrounding land uses (residential, commercial, agricultural, recreational); and
  - (8) the location of all production and ground water monitoring wells. These wells shall be clearly labeled and ground and top of casing elevations included (these elevations may be included as an attachment).
- b) A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility.
  - c) A summary of approximate dates or periods of past waste releases, identification of the materials released, the amount released, the location released, and a description of the response actions conducted (local, state, or Federal response units, or private parties), including any inspection reports or technical reports generated as a result of the response.
  - d) A reference to all environmental, geologic, and hydrogeologic studies performed by all parties, at or near the facility, with a short summary of the purpose, scope, and significant findings thereof.
  - e) A reference to all environmental permits, applied for and/or received, the purpose thereof, and a short summary of requirements.

## 2) Nature and Extent of Contamination

- a) The Introduction shall summarize all possible source areas of contamination. This, at a minimum,

should include all SWMUs. For each area, the Permittee shall identify the following:

- (1) location of unit/area on a facility map;
- (2) quantities of solid and hazardous wastes;
- (3) quantities of hazardous constituents, to the extent known; and
- (4) identification of areas where additional information is necessary.

b) The Permittee shall prepare an assessment and description of the existing degree and extent of contamination. This should include:

(1) available monitoring data and qualitative information on locations and levels of contamination at the facility;

(2) all potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and

(3) the potential impact(s) on human health or the environment, including demography, ground water and surface water use, and land use.

### 3) Implementation of Interim Measures

The Permittee shall document and report on all interim measures which were or are being undertaken at the facility, including under state or Federal compliance orders, other than those specified in the Permit. This shall include:

a) Objectives of the interim measures: how the measure is mitigating a potential threat to human health or the environment and/or is consistent with and integrated into requirements for a long term solution;

b) Schedules for design, construction and monitoring; and

c) Schedule for progress reports.

### b. Environmental Setting

The Workplan shall provide for collection of information to supplement and verify existing information

on the environmental setting at the facility. The Workplan shall provide for characterization of the following:

1) Hydrogeology

The Workplan shall describe in detail a program to evaluate hydrogeologic conditions at the facility. This program shall provide for least the following information needs:

a) A description of the regional, local, facility-wide, and SWMU-specific geologic and hydrogeologic characteristics affecting ground water flow beneath the facility.

b) An analysis of any topographic features including surface water bodies that might influence the ground water flow system.

c) A representative and accurate classification and description of the hydrogeologic units which may be part of migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units) based on field data, tests (e.g., gamma and neutron logging of existing and new wells, piezometers and borings), and cores.

d) The extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of migration pathways based on field studies and cores, structural geology, and hydrogeologic cross sections, including:

(1) unconsolidated sand and gravel deposits;

(2) zones of fracturing or channeling in consolidated or unconsolidated deposits; and

(3) zones of high permeability or low permeability that might direct and restrict the flow of contaminants.

e) A description of representative water level or fluid pressure based on data obtained from ground water monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source. Information needs include: potentiometric surface maps; hydrologic cross sections showing vertical gradients; vertical and horizontal components of flow; temporal changes in hydraulic gradients; and flow nets.

f) A description of man-made influences that may affect site hydrogeology such as active and inactive local water-supply and production wells, pipelines, french drains, and ditches.

## 2) Soils

The Permittee shall describe in detail a program designed to characterize soil and rock units above the water table. Such characterization shall include, but is not limited to, the following information: surface soil distribution; soil profile, including ASTM and USCS classifications of soils; transects of soil stratigraphy; saturated hydraulic conductivity; porosity; cation exchange capacity (CEC); soil Ph; particle size distribution; depth to water table; moisture content; effect of stratification on unsaturated flow; infiltration; evapotranspiration; residual concentration of contaminants in soil; total natural organic carbon content; and mineral and metal content.

## c. Source Characterization

The Permittee shall describe in detail a program designed to completely characterize the wastes and the areas where wastes have been placed, including: type, quantity, physical form, composition, disposition (containment and nature of wastes), and the facility characteristics affecting releases (e.g., facility security, engineered barriers). This shall include quantification of the following specific characteristics, at each source area:

1) Unit/disposal area characteristics, including but not limited to: location of unit/disposal area; type of unit/disposal area; design features; operating practices (past and present); period of operation; age of unit/disposal area; general physical conditions; and method used to close the unit/disposal area.

2) Waste characteristics, including but not limited to: type of waste placed in unit (hazardous classification, quantity, chemical composition); physical and chemical characteristics (physical form, physical description, temperature, Ph, general chemical class, molecular weight, density, boiling point, viscosity, solubility in water, solubility in solvents, cohesiveness, vapor pressure); and migration and dispersal characteristics of the waste (sorption coefficients, biodegradability, photodegradation rates, hydrolysis rates, chemical transformations).

#### d. Contamination Characteristics

The Permittee shall describe in detail a program to collect analytical data on ground water, soils, surface water, sediment, and subsurface gas contamination when necessary to characterize contamination from a SWMU. The data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data required shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individual(s) performing the sampling and analysis. Each medium (ground water, surface water and sediments, soil, air, and gas) must be investigated. If the permittee believes certain media could not be affected by a release from a specific unit, a detailed justification for not investigating those media must be provided. The Permittee shall address the following types of contamination at the facility:

##### 1) Ground Water Contamination

The Workplan shall describe in detail a program of ground water investigation to characterize any plumes of contamination at the facility. The program shall at a minimum provide for the following information needs:

- a) a description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;
- b) the horizontal and vertical direction of contamination movement;
- c) the velocity of contaminant movement;
- d) the horizontal and vertical concentrations of any 40 CFR 264 Appendix IX constituents;
- e) an evaluation of factors influencing the plume movement; and
- f) an extrapolation of future contaminant movement.

##### 2) Soil Contamination

The Permittee shall describe in detail a program to characterize contamination of soil and rock units above the water table in the vicinity of the contaminant release. The program shall provide for the following information needs:

a) a description of the vertical and horizontal extent of contamination;

b) a description of contaminant and soil chemical properties within the contaminant source area. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, natural total organic carbon content, and other factors that might affect contaminant migration and transformation.

c) plume migration and transformation; specific contaminant concentrations; the velocity and direction of contaminant movement; and an extrapolation to future contaminant movement.

### 3) Surface Water and Sediment Contamination

The Permittee shall describe in detail a program to characterize contamination in surface water bodies and sediment resulting from contaminant releases at the facility. The investigation shall at minimum include the following:

a) a description of the surface water body including location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies, drainage patterns, and evapotranspiration rates.

b) a description of sediment characteristics including depositional area, thickness, mineralogy, grain size, density, ion exchange capacity, and total natural organic carbon content.

c) maps for all areas included in surface water and sediment investigations which meet requirements in 40 CFR 270.14 and which are sufficiently detailed and accurate to depict all the information required.

d) a description of the horizontal and vertical extent of any immiscible or dissolved plumes originating from the facility, and the extent of contamination in the underlying sediments;

e) the horizontal and vertical direction and velocity of contaminant movement;

f) an evaluation of the physical, biological, chemical, and radiochemical factors influencing contaminant movement;

g) an extrapolation to future contaminant movement;

h) a description of the chemistry of the contaminated surface waters and sediments. This includes Ph, temperature, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, and specific contaminant concentrations.

#### 4) Air Contamination

The Permittee shall describe in detail a program to characterize particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information: a description of the horizontal and vertical direction and velocity of contaminant movement; the rate and amount of the release; and the chemical, radiochemical, and physical composition of the contaminants released, including horizontal and vertical concentration profiles.

#### 5) Subsurface Gas

The Permittee shall describe in detail a program to characterize the nature, rate and extent of releases of reactive gases from the units. Such a program shall include, but is not limited to: provisions for monitoring subsurface gases released from the unit, and an assessment of the potential for threat to human health and/or the environment.

#### e. Potential Receptors

The Permittee shall describe in detail a program to collect data to describe human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical and radiochemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be required. The following characteristics shall be identified:

1) Local uses and possible future uses of ground water, including:

a) type of use (i.e., potable, domestic, agricultural, residential, industrial, municipal)

b) location of all ground water wells, names of owners or tenants at those locations, USGS/DODT well designations, and current use of those wells within a 3 mile radius of facility.

2) Local uses and possible future uses of surface waters within a 1.5 mile radius of the facility, including domestic and municipal, recreational, agricultural, industrial, and environmental.

3) Human use of or access to the facility and adjacent lands, including but not limited to recreation, hunting, residential, commercial, and industrial.

4) A demographic profile of people who use or have access to the facility and adjacent land, including, but not limited to age, gender, and sensitive subgroups.

5) A description of the local ecology, including biota in surface water bodies on, adjacent to, or affected by the facility, and a description of any endangered or threatened species near the facility.

f. Data Collection Quality Assurance Plan

The Permittee shall prepare a plan to document all monitoring procedures: sampling, field measurements, and sample analysis performed at the facility during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented.

1) The strategy section of the Data Collection Quality Assurance Plan shall include but not be limited to the following:

a) description of the intended uses for the data, and the necessary level of precision and accuracy for those intended uses;

b) description of methods and procedures to be used to assess the precision, accuracy and completeness of the measurement data; and

c) schedule and information to be provided in quality assurance reports, including at least:

(1) periodic assessment of measurement data accuracy, precision, and completeness;

(2) results of performance audits;

(3) results of systems audits; and

(4) significant quality assurance problems and resolutions.

2) The Sampling and Field Measurements Section of the Data Collection Quality Assurance Plan shall at least discuss:

a) selecting appropriate sampling and field measurements locations, depths, etc.;

b) providing a statistically sufficient number of sampling and field measurement sites;

c) determining conditions under which sampling or field measurements shall be conducted;

d) determining which parameters are to be measured and where;

e) selecting the frequency of sampling and length of sampling period;

f) selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;

g) delineating procedures designed to prevent contamination of sampling or field measurements equipment and cross contamination between sampling points;

h) documenting field sampling operations and procedures;

i) selecting appropriate sample containers;

j) preserving samples;

k) controlling chain-of-custody; and

l) disposing of all contaminated materials generated by activities in a manner compliant with all state and Federal regulations.

3) The Sample Analysis shall include:

a) chain-of-custody procedures;

b) sample storage procedures and holding times;

c) sample preparation methods;

d) analytical procedures;

- e) calibration procedures and frequency;
- f) data reduction, validation and reporting; and
- g) frequency of internal quality control checks and laboratory performance audits.

g. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures (data record), project file requirements, and project-related progress reporting procedures and documents.

1) The data record shall include at least the following for all sample and field measurements: unique measurement code; measurement location; measurement type; laboratory ID number; property or component analyzed; and results of analysis.

2) The Data Management Plan shall provide the format to be used to present the data and conclusions of the investigation, etc.

a) The following shall be presented in tables: raw data; data sorted by significant features such as location, media, constituent; data reduction for statistical analysis; and summary data.

b) The following shall be presented in graphical formats (e.g., bar graphs, line graphs, plan maps, isopleth plots, cross-sections, three-dimensional displays, etc.): sampling location and grid; levels of contamination at each sampling location; geographical extent of contamination; and changes in concentration relative to source, time, depth, and other parameters.

h. Health and Safety Plan

1) The Permittee shall prepare a facility Health and Safety Plan, which shall include:

a) a description of the facility including availability of resources such as roads, water supply, electricity and telephone service;

b) a description of the known hazards and evaluation of the risks associated with each activity conducted, including but not limited to on and off-site exposure to contaminants during implementation of interim measures;

c) a list of key personnel and alternatives responsible for site safety, response operations, and for protection of public health;

d) a delineation of the work area;

e) a description of levels of protection to be worn by personnel in the work area;

f) procedures established to control site access;

g) decontamination procedures for personnel and equipment;

h) site emergency procedures;

i) emergency medical care procedures for injuries and toxicological problems;

j) requirements for an environmental field monitoring program;

k) routine and special training requirements for responders; and

l) procedures for protecting workers from weather-related problems.

2) The Facility Health and Safety Plan shall be consistent with:

a) NIOSH Occupation Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);

b) EPA Order 1440.1 - Respiratory Protection;

c) EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;

d) approved Facility Contingency Plan;

e) EPA Operating Safety Guide (1984);

f) OSHA regulations, particularly 29 CFR 1910 and 1926;

g) State and local regulations; and

h) other EPA guidance as provided.

i. Community Relations Plan

The Permittee shall prepare a plan for dissemination of information to the public regarding investigation activities and results.

j. Project Management Plan

The Permittee shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and key project personnel. The project management plan will also include a description of qualifications of key project personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

4. Task II: RCRA Facility Investigation

The facility investigation activities shall follow the RFI Workplan. All sampling and analyses shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map. During the RFI, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate the facility specific situation.

The Permittee shall conduct investigations of SWMUs previously identified with known or suspected releases of contamination to characterize the facility (Environmental Setting), define the source (Source Characterization), define the degree and extent of contamination (Contamination Characterization), and identify actual or potential receptors.

The investigations should result in data of adequate technical quality to develop and evaluate corrective measures alternatives during the Corrective Measures Study, when necessary.

5. Task III: RFI Final Report and Summary

The Permittee shall analyze all facility investigation data collected during the RFI process and prepare a detailed report on the type and extent of contamination at the facility including sources and migration pathways. All information generated during the investigation shall be presented and analyzed. All evidence and procedures used for making any determinations (e.g., velocity of groundwater, extent of contamination) shall be fully documented. The report shall describe extent of contamination (qualitative/quantitative) in relation to

background levels indicative for the area. The report shall contain the results of all tests, calculations, inspections, record searches, and observations. It shall contain soil and ground water contamination profiles, statistical comparisons, and the results of all sampling events conducted as part of the investigation. It shall display results in tables, graphs, maps, and cross sections as discussed in the Data Management Plan and Module V T.3.g.2).

The Permittee shall identify all relevant and applicable standards for the protection of human health or the environment (e.g., National Ambient Air Quality Standards, Federally-approved State water quality standards, ground water protection standards, etc.)

Data shall be evaluated to ensure it is sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, to evaluate the potential threat to human health or the environment, and to support a CMS, if required. The report shall present all data in an Appendix.

6. General RFI Reporting Requirements

a. Two hard copies and one IBM compatible disk copy of all reports and data shall be submitted by the Permittee to the Administrative Authority as specified in Module V B.7.

b. The RFI Workplan shall be submitted by the Permittee to the Administrative Authority as described in Module V L.

c. The RFI Final Report and Summary shall be submitted by the Permittee to the Administrative Authority as described in Module V N.

d. Within 90 days of the effective date of this Permit, the Permittee shall provide the Administrative Authority with signed, quarterly progress reports as specified in Module V H.1.

U. CMS SCOPE OF WORK

1. Purpose

The purpose of the CMS is to develop and evaluate corrective measures alternatives and to recommend the corrective measure or measures to be taken. The required information shall include each item specified under CMS

Tasks IV-VI. The Permittee will furnish the personnel, materials, and services necessary to prepare the CMS, except as otherwise specified.

If the Permittee believes that certain requirements of the Scope of Work are not applicable, the specific requirements shall be identified and the rationale for inapplicability shall be provided.

2. Scope

The Corrective Measure Study consists of three tasks:

Task IV: CMS Plan

- a. Description of Current Situation
- b. Establishment of Corrective Action Objectives
- c. Description of Approach to CMS
- d. Schedule for CMS

Task V: Corrective Measures Study

- a. Identification of Corrective Measures Alternatives(s)
- b. Screening of Corrective Measures Alternatives(s)
- c. Development of Corrective Measures Alternative(s)
- d. Evaluation of Corrective Measures Alternative(s)
- e. Selection of Corrective Measures Alternative(s)

Task VI: CMS Final Report and Summary

3. Task IV: CMS Plan

a. Description of Current Conditions

The Permittee shall briefly describe current conditions at the facility to update information provided in the RFI Final Report and Summary. This shall include previous and/or ongoing remedial activity or interim measures.

b. Establishment of Corrective Action Objectives

The Permittee shall propose to the Administrative Authority for review and approval, facility specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA guidance, and the requirements of any applicable Federal statutes and regulations.

c. Description of Approach to CMS

The Permittee shall describe the general approach to the corrective measures study. The approach shall include identification, development, screening, and evaluation of the corrective measures alternatives, as discussed in detail in Module V U.4. The Permittee shall describe specific plans for laboratory and bench-scale studies, or field studies, if needed. Specific plans for evaluating remedy effectiveness shall also be developed. The approach shall specify formats to be used for data presentation, including raw data, maps, charts, graphs, engineering schematics, construction design, etc.

d. Schedule

The Permittee shall develop a schedule for implementing the corrective measures study, and a schedule for submitting quarterly progress reports on the study implementation.

4. Task V: Corrective Measures Study

The CMS consists of five parts: identification, screening, development, evaluation, and selection of the corrective measures alternative(s).

a. Identification of Preliminary Corrective Measures Alternative(s)

Based on the results of the RFI and the CMS Plan objectives, the Permittee shall identify all possible alternatives for removal, containment, treatment and/or other remediation of the contamination.

b. Screening of Preliminary Corrective Measures Alternatives

The Permittee shall screen the identified preliminary corrective measures alternatives to eliminate those that may not prove feasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective action objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technological limitations.

Site, waste, and technological characteristics which are used to screen inapplicable technologies are described in more detail below:

1) Site Characteristics. Site data should be reviewed to identify conditions which may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration;

2) Waste Characteristics. Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by waste characteristics should be eliminated from consideration.

3) Technological Limitations. The level of technology development, performance record, and operation and maintenance problems shall be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process.

#### c. Development of Corrective Measures Alternatives

The Permittee shall develop corrective measures alternatives based on corrective measures objectives, and identification and screening of preliminary alternatives. The Permittee shall rely on engineering practice to determine which of the previously identified and screened technologies appear most suitable for the site. Technologies can be combined to form the overall corrective measures alternatives. The alternatives developed should represent a workable number of options that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies.

When a new technology is proposed or similar waste streams have not routinely been treated or disposed of using the technology, the Permittee shall conduct laboratory and/or bench-scale studies to determine the applicability to facility conditions. The Permittee shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

1) The Permittee 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.

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

3) The Permittee shall prepare a report summarizing the testing program and its results, both positive and negative.

d. Evaluation of Corrective Measures Alternative(s)

The Permittee shall evaluate each corrective measures alternative developed in Module V U.4.c. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates for each corrective measure.

1) Technical, Environmental, Human Health, and Institutional Concerns

The Permittee shall provide a description of each corrective measures alternative which includes but is not limited to the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Permittee shall evaluate each alternative in the four following areas:

a) Technical

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

(1) The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

(a) Effectiveness shall be evaluated in terms of the ability to perform intended functions such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should

also consider the effectiveness of combinations of technologies.

(b) Useful life is defined as the length of time the level of effectiveness can be maintained. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

(2) The Permittee shall provide information on the reliability of each corrective measure including operation and maintenance requirements and demonstrated reliability:

(a) Operation and maintenance requirements include the frequency and complexity of operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered.

(b) Demonstrated and expected reliability is a way of measuring risk and effect of failure. The Permittee should evaluate whether technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

(3) The Permittee shall describe the implementability of each corrective measure including relative ease of installation (constructibility) and total time required to achieve a given level of response:

(a) Constructibility is determined by conditions both internal and external to facility conditions and includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of facility (i.e., remote location vs. congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under site specific conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability,

and the location of suitable off-site treatment or disposal facilities.

(b) Time has two components to be addressed: the time it takes to implement a corrective measure and the time it takes to see beneficial results. Beneficial results are defined as the reduction of contaminants to acceptable levels as established in the corrective measures objectives.

(4) The Permittee shall evaluate each corrective measures alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider include fire, explosion, and exposure to hazardous substances.

b) Environmental

The Permittee shall perform an Environmental Assessment for each alternative. The assessment shall focus on facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include at a minimum, an evaluation of the short- and long-term beneficial and adverse effects of the response alternative, evaluation of any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate adverse impacts.

c) Human Health

The Permittee shall assess each alternative in terms of the extent to which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or regulations acceptable to the Administrative Authority.

d) Institutional

The Permittee shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, State, and Local environmental and public health

standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative shall be considered.

2) Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measures alternative and for each phase or segment of the alternative. The cost estimate shall include capital, and operation and maintenance costs.

a) Capital costs consist of direct and indirect costs.

(1) Direct capital costs include:

(a) Construction costs: Cost of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measures alternative;

(b) Equipment costs: Costs of treatment, containment, disposal and/or servicing of equipment used to implement the action;

(c) Land and site development costs: Expenses associated with purchase of land and development of existing property; and

(d) Building and services costs: Costs of process and non-process buildings, utility connections, purchased services, and disposal costs.

(2) Indirect capital costs include:

(a) Engineering expenses: Costs of administration, design, construction, supervision, drafting, and testing of corrective measures alternatives;

(b) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;

(c) Start-up and shakedown costs: Costs incurred during corrective measure start-up; and

(d) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances such as adverse weather conditions, strikes, and inadequate facility characterization.

b) Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee shall consider the following operation and maintenance cost components:

(1) Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operation;

(2) Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

(3) Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;

(4) Purchased services: Sampling costs, laboratory fees, and professional fees which can be predicted;

(5) Disposal and treatment: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operation;

(6) Administrative costs: Costs associated with administration of corrective measures operation and maintenance not included under other categories;

(7) Insurance, taxes, and licensing costs: Costs of such items as liability and accident insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;

(8) Maintenance reserve and contingency funds: Annual payments into escrow funds to cover costs of anticipated replacement or rebuilding of equipment, and any large unanticipated operation and maintenance costs; and

(9) Other costs: Items that do not fit any of the above categories.

e. Selection of Corrective Measures Alternative(s)

The Permittee shall select a corrective measures alternative using technical, human health, and environmental criteria. At a minimum, the following criteria shall be used to select the final corrective measure or measures.

### 1) Technical

a) Performance. Corrective measure or measures which are most effective at performing their intended functions and maintaining performance over extended periods of time will be given preference;

b) Reliability. Corrective measure or measures which do not require frequent or complex operation and maintenance activities and have proven effective under conditions similar to those anticipated will be given preference;

c) Implementability. Corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and

d) Safety. Corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

### 2) Human Health

The corrective measure or measures must comply with existing EPA criteria, standards, or regulations for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

### 3) Environmental

The corrective measure or measures imposing the least adverse impact or greatest improvement on the environment over the shortest period of time will be preferred.

## 5. Task VI: CMS Final Report and Summary

The Permittee shall prepare a CMS Final Report and Summary presenting the results of the CMS and recommending a corrective action program. The Report shall at a minimum include:

a. A summary of all the corrective measures alternatives originally identified, and the screening rationale employed. The results of development of each alternative shall be described, and the evaluation of those developed shall be presented in detail. The report will describe the rationale for selection of a corrective measures

Table 1: RFI/CMS SUBMISSION SUMMARY

Below is a summary of the planned reporting requirements pursuant to this Permit:

<u>Actions</u>	<u>Due Date</u> (examples)
Progress reports on all activities	quarterly; no later than ninety (90) calendar days after effective date of Permit
RFI Workplan	120 calendar days after the effective date of the Permit
Revised RFI Workplan	as determined by Administrative Authority, usually within thirty (30) calendar days of receipt of NOD
RFI Report and Summary	sixty (60) calendar days after completion of RFI
Revised RFI Report and Summary	as determined by Administrative Authority, usually within thirty (30) calendar days of receipt of NOD
Notification of newly-identified SWMUs	thirty (30) calendar days after discovery
Notification of newly-discovered releases	fifteen (15) calendar days after discovery
Interim Measures Plan	as determined by Administrative Authority
Revised Interim Measure Plan	as determined by Administrative Authority
CMS Plan	forty five (45) calendar days after notification of requirement to perform CMS

Revised CMS Plan

as determined by Administrative Authority, usually within thirty (30) calendar days of receipt of NOD

CMS Final Report and Summary

sixty (60) calendar days after completion of CMS

Revised CMS Final Report

as determined by the Administrative Authority, usually thirty (30) calendar days after receipt of NOD

Demonstration of Financial Assurance at Facility

one hundred and twenty (120) calendar days after permit modification to implement corrective measures

**Table 2: SWMUS REQUIRING AN RFI**

Below is a list of the SWMUs requiring an RFI.

1. SWMU No. 8 Coronado Municipal Landfill