MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

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February 6, 1991

TO: Environmental Response Division Field Staff

FROM: James G. Truchan, Chief
Environmental Response Division

SUBJECT: Updates to Act 307 Rules Implementation Manual

Enclosed are updates to the Act 307 Rules Implementation Manual. Changes to the Guidance manual include revisions to the Remedial Action Plan Checklist, Type B Cleanup Criteria sheet, and the addition of Type A and Type B Cleanup Criteria Checklists. Also, clarification was made to activities related to public participation and the administrative record. You will also find the pages numbered.

Please make the necessary changes to your manuals. I recommend you keep copies of the rule interpretation memos in your Guidance Manual so it can be used as a complete reference tool on Act 307/Bond projects.

These updates and all related material in the Implementation Manual are intended to provide guidance to division staff to foster consistent application of Act 307 and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Please contact Bob Basch, Dan Schultz or me if you have any questions, comments, or suggested modifications.

Enclosures

cc: Lynelle Marolf, MDNR
ERD Section and Unit Chiefs
Superfund Section Users
Compliance & Enforcement Section Users

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

November 30, 1990

TO: All Environmental Response Division Field Staff

FROM: James G. Truchan, Chief
Environmental Response Division

SUBJECT: Act 307 Rules Implementation Manual

Enclosed is the revised 307 Implementation Manual. Very few procedural changes have been implemented since the first draft of the manual was distributed last summer. The most significant change includes the necessity for both Type B and C criteria cleanup proposals to be technically evaluated by Lansing ERD staff. It remains the responsibility of the District Supervisor to determine the administrative completeness of any cleanup proposal prior to submittal to Lansing.

There will be mandatory training for all field staff on the Rules and this manual during the first two weeks of December. I want to emphasize the requirement that each of you become familiar with these rules to successfully implement and interpret them for the regulated community. I recognize that certain areas have required the development of policies and more formal interpretations. We now have a process in place to provide these to you through Jami McLain in the Special Services Section and electronically via PROFS. It is incumbent on all of you to understand the rules to recognize when a formal interpretation should be requested.

I cannot overstate the need for you to recognize your responsibilities on this issue. A large measure of our division's success in implementing these rules rests on staff being conversant in their requirements.

Please do not hesitate to contact me if you have any questions or comments.

cc: Lynelle Marolf, MDNR
Andrew Hogarth, MDNR
ERD Section Chiefs

I N T R O D U C T I O N

Incident Identification

1) Reports by DNR staff, public health authorities, local agencies, U.S. EPA.

2) Public complaints and reports.

3) Public water supply threatened by incident.

RULE 203: List Purpose

1) Relative risk rating is only one factor considered in preparation of funding recommendations (see Rule 301).

RULE 205: Distribution of List

RULE 207: Site List Hearings

1) Before adoption of site list need public hearing on previous year's list.

2) Public notice required 30 days prior to hearing.

3) All relevant comments received at public hearing or by the Department during comment period will be considered.

4) Government agencies will have right to comment.

5) Only sites subject to public hearing will appear on site list.

RULE 209: Notice to PRP(s) of Site Listing

1) Must attempt to notify PRP of inclusion of site on list 15 days prior to publication of public notice.

2) Inability to provide notice does not limit State's authority to:
   a) list a site,
   b) perform state funded response activities,
   c) continue PRP search, and
   d) request PRP undertake response action.

RULE 211: Inclusion of Sites on Site List; Criteria (Incident becomes a Site)

1) Incident shall be considered a site for inclusion on the list when:
   a) incident involves a hazardous substance at concentrations above Type B criteria AND EITHER b OR c are met. Rule also applies if there is not enough information to determine if the hazardous substance is at concentrations above Type B criteria,
   b) released to environment, OR
   c) potential for release to environment.

5) Funding recommendation shall specify response action and estimated cost at each site including:
   a) emergency response.
   b) limited investigations following state funded, emergencies to identify PRPs.
   c) Interim Response.
   d) RI.
   e) Implementation of remedy in approved RAP.
   f) continuation of previously funded site activities.

6) Estimated cost for above activities shall be lump sum for each type of activity.

7) Funding priority based on rank of most current list unless, the Director determines it is appropriate to fund a site out of rank order, when considering all the following:
   a) availability of other funding sources,
   b) readiness of a site for response action,
   c) human health or environmental or natural resources damage concerns,
   d) need for continuation of previously funded activities,
   e) availability of personnel.

RULE 303: Evaluation of Alternative Funding Options

Before recommending and funding sites, the Department may consider alternate funding sources:
   a) private party,
   b) federal,
   c) LUST,
   d) other

RULE 305: Site Eligibility for Funding

Any site subjected to risk assessment process is eligible for funding.

Part 4 - ALTERNATE WATER SUPPLIES

RULE 401: Definitions (as used in this part)

RULE 403: Michigan Department of Public Health (MDPH) approval of Permanent Alternate Water Supply

1) Installation of permanent alternate water supply must be approved by MDPH.

2) Funds shall not be used to pay for O & M of permanent replacement supply, treatment system, or cost of water.

3) Owner of existing or abandoned wells must agree in writing to plug wells before replacement wells funded. Replaced wells shall be abandoned unless agreed by DNR or MDPH.

6) Funding shall not be used for investigative purposes.

7) Monies spent by the local government for activities completed prior to the Department's approval for the project will not be counted toward local governments share of costs.

RULE 409: Service Area Boundaries

1) Before approval of funding for extending or constructing a water supply system, DNR and MDPH shall confer to determine the boundaries of the project service area.

2) Boundaries are established considering all of the following:
   a) extent of contamination,
   b) nature, concentration, and mobility of contamination,
   c) rate and direction of groundwater flow,
   d) whether the release has been controlled.
   e) If an extension, the attributes and limitations of the existing system.
   f) Probable impact of other remedial or control measures (i.e. shutdown of current wells and effect of purge and treat systems)

3) Boundaries are established to protect system owners from current and projected impacts of the contamination.

RULE 411: Responsibilities of Local Governing Entity

1) Public water supply construction or extension shall not be funded unless the owner has accepted in writing and before fund authorization, the responsibility for ownership, operation, and maintenance of the system.

2) Funds are not to be used for O & M costs.

3) Water supply owners are responsible for obtaining all necessary permits.

RULE 413: Distribution of Monies from the Fund; Lowest Cost Alternative

1) Funding for alternate water supply shall only be used for systems acceptable to MDPH. Lowest cost alternative is required.

2) Evaluation of alternatives include:
   a) well replacement,
   b) water supply treatment,
   c) connection to an existing system,
   d) construction of a public system.

3) If a higher cost alternative is selected, amount of funding will be equal to the lowest cost alternative.

RULE 415: Notice to Property Owners to be Served by Water System or Extension.

RULE 507: Emergency Response

Funds may be used for emergency response actions if the Department determines there is a threat and immediate action is necessary.

RULE 509: Interim Response Activities

1) The Department may request Interim Response activity to minimize impacts to public health, safety, welfare or environment or natural resource. All following factors shall be considered:
   a) actual or potential exposure to hazardous substances by humans, animals, or food chain.
   b) Actual or potential contamination of drinking water supplies or sensitive ecosystems.
   c) Presence of hazardous substances in containers that pose threat of release.
   d) High levels of hazardous substances in soil at or near surface and likely to migrate.
   e) Weather conditions that may cause hazardous substances to migrate or be released.
   f) Threat of fire or explosion.
   g) Availability of other federal or state response mechanisms to respond
   h) Other factors that pose threats to public health, safety or welfare or environment.

2) Interim Response activities may include:
   a) fences, warning signs or other security or site control to prevent direct access.
   b) Drainage controls to prevent spread of hazardous substances.
   c) Stabilization of berms, dikes or impoundments to maintain integrity of structures.
   d) Capping of contaminated soils or sludges.
   e) Uses of chemicals or other materials to retard spread of release or mitigate effects.
   f) Removal of contaminated soils from drainage or other areas to reduce spread of hazardous substances.
   g) Removal of containers with hazardous substances that may spill, leak, burn or exploded, or pose a direct contact hazard or exposure to humans, animals or the food chain.
   h) Groundwater control or removal systems.
   i) Alternate water supply.
   j) Temporary evacuation.
   k) Other measures determined by Department.

RULE 511: Remedial Investigation

1) Department may request that a RI be conducted.

2) Department may request preparation and approval of remedial investigation plan prior to initiation of investigation.

3) Remedial investigation plan or investigation conducted shall address the following (as appropriate to the site):

2) Study shall include: (as appropriate to the site)
   a) Development of alternative final remedies in each of the following categories:
      - Alternatives for treatment, disposal, waste minimization, recycling or destruction at an off-site facility.
      - Alternatives for the treatment, disposal, waste minimization, recycling, or destruction at an on-site facility.
      - No action alternative.
   b) Development of alternative final remedies that meet cleanup criteria.

3) Initial screening of alternatives to narrow list of potential remedies using the following criteria:
   a) Effectiveness in meeting cleanup criteria.
   b) Cost of remedial action.
   c) Acceptable engineering practices based on:
      - Feasibility for the location and conditions of release
      - Applicability to problem
      - Reliability

4) Detailed evaluation of the alternatives that will remain after initial screening is conducted. Detailed analysis includes:
   a) Assessment of effectiveness of alternative in protecting public health, safety or welfare or environment.
   b) *Refinement and specification of alternatives in detail.*
   c) Detailed cost estimation including O and M, of implementing final remedy.
   d) Evaluation in terms of engineering implementation, reliability and contractibility.
   e) Evaluation of technical feasibility.
   f) Analysis of whether recycling, reuse, waste minimization, waste biodegradation, waste destruction or other advanced, innovative, or alternative technologies are appropriate.
   g) Analysis of any adverse environmental impacts, methods of mitigation and costs of mitigation.
   h) Analysis of risks remaining after implementation of remedy.
   i) Analysis of extent that alternative meets or exceeds legally applicable or relevant and appropriate federal and state public health and environmental requirements.

RULE 515: Remedial Action Plan

1) Department may request a RAP be developed for any remedial action undertaken. The plan shall include all of the following:
   a) A description of the remedial action to be implemented, including:
      - An explanation of how that action will meet the cleanup criteria requirements of Rule 7.
      - An analysis of the selection of indicator chemicals. (If used)
      - *If appropriate, a description of the ambient air quality* monitoring activities to be undertaken during the implementation of the remedial action.
   b) An operation and maintenance plan as outlined in Rule 517, if required.
   c) A monitoring plan as outlined in Rule 519, if required.

j) Operation and maintenance plan for monitoring.
k) How data will be used to demonstrate response activities effectiveness.
l) Other to be determined by Department with explanation of need.

Part 6 - SELECTION OF REMEDIAL ACTION

RULE 601: Degree of Cleanup; Compliance with State and Federal Requirements; Cost

1) Under rules all remedial actions shall achieve cleanup protective of public health, safety, and welfare, and environment and natural resources.

2) Remedial actions shall meet legally applicable or relevant and appropriate state and federal requirements.

3) Cost shall only be a factor when choosing among alternatives that protect public health, safety, welfare, and environment and natural resources and meet cleanup requirements.

RULE 603: Evaluation of Remedial Action Alternatives

1) When evaluating remedial action alternatives consider the following:
   a) Effectiveness to protect public health, safety, and welfare and the environment and natural resources.
   b) Long-term uncertainties associated with remedial action.
   c) Goals, objectives, and requirements of Act 641, Solid Waste Management Act and Act 64, Hazardous Waste Management Act.
   d) Hazardous substance's persistence, toxicity, mobility, and propensity to bioaccumulate.
   e) Short and long-term potential exposure for adverse human health effects.
   f) Costs of action if protective of public health, safety, and welfare and environment.
   g) Reliability of alternatives.
   h) Potential for future costs if remedial action fails.
   i) Potential threat to human health, safety, and welfare and environment and natural resources associated with excavation, transportation, and redisposal or containment.
   j) Ability to monitor remedial performance.
   k) Public's perspective on the effectiveness of proposed plan to address the cleanup criteria in the rules.

2) Remedial actions that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances are preferred.

3) Where practicable treatment technologies are available, off-site transport and disposal of hazardous substances or contaminated materials without treatment shall be least favored remedial action alternative.

P A R T I

G E N E R A L P R O V I S I O N S

DRAFT

DEFINITIONS USED IN 307 RULES

AQUIFER (R299.5101)	A geological formation, group of formations, or part of a formation capable of yielding a signigicant amount of groundwater to wells or springs.
GROUNDWATER (R299.5101)	Water below the land surface in the zone of saturation.
BACKGROUND (R299.5701)	The concentration or level of a hazardous substance which exists in the environment at or regionally proximate to a site that is not attributable to any release at or regionally proximate to the site.
METHOD DETECTION LIMIT (R299.5703)	The minimum concentration of a substance which can be measured and reported, with 99% confidence, that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix that contains the analyte.
PRACTICAL QUANTITATION LEVEL (R299.5703)	The lowest level that can be reliably achieved within specified limits of precision and accuracy under routine laboratory conditions and based on quantitation, precision and accuracy, normal operation of the laboratory, and the practical need in a compliance monitoring program to have a sufficient number of laboratories available to conduct the analyses.

June 21, 1990 **Revised** 7/25/90

Rule 107. Applicability

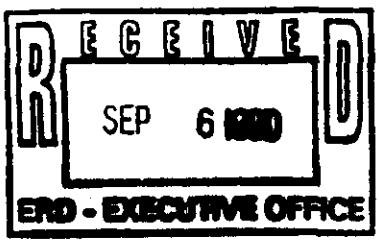
This rule provides that the provisions of parts 6 and 7 that deal with the selection of remedial action and cleanup criteria shall apply only to remedial actions undertaken after the effective date of the rules.

IMPLEMENTATION- If a final remedial action was approved by the Department prior to the effective date of these rules that included cleanup levels, parts 6 and 7 do not apply. For all subsequent remedial actions the Department applies these rules to, parts 6 and 7 apply. (NOTE- Other programs, such as RCRA, may implement other cleanup criteria, in which case parts 6 and 7 will not apply.)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

August 24, 1990



TO: Deputy Directors
~~Division and Office Chiefs~~

FROM: David F. Hales, Director

SUBJECT: Act 307 Rules

New administrative rules for the Environmental Response Act (1982 PA 307, as amended) became effective on July 11, 1990. These rules include requirements for evaluation of contamination sites, development of remedial action alternatives, selection of a remedial action, and cleanup standards which must be achieved by that remedial action. The purpose of this memorandum is to clarify how those rules will be used in the cleanup of environmental contamination sites across Department programs.

Part 7 of the Act 307 rules provides, in general, for three different types of cleanup criteria, designated Type A, Type B, and Type C. Type A criteria are based on reduction of hazardous substance concentrations to background or to analytical limits. Type B criteria are based on reduction of hazardous substance concentrations to an acceptable risk level using standardized exposure assumptions. The rules describe the process to be followed in developing Type C criteria on the basis of a site-specific assessment of risk to the public health, safety, and welfare and to the environment and natural resources. A combination of cleanup Types may be used to develop an acceptable remedial action. The cleanup Type(s) proposed is the option of the party proposing the remedial action, subject to review and approval by the Department as part of a comprehensive remedial action plan for each site. Criteria to be used by the Department in judging the adequacy of a remedial action plan, including the cleanup Type(s) proposed, are specified in the rules.

The Department will be guided by Parts 6 and 7 of the Act 307 rules in making remedy selection and cleanup criteria decisions, provided that such decisions are not inconsistent with the primary statute under which the cleanup activity is being conducted. The following are examples of situations where the Department's reliance on remedy selection procedures or cleanup standards in the Act 307 rules will be limited:

1. Interim status hazardous waste treatment, storage, or disposal facilities which are being "clean closed" pursuant to the closure requirements of the Hazardous Waste Management Act (1979 PA 64, as amended) and its rules. The Act and its rules require that "the owner or operator must remove or decontaminate...all...contaminated soils" as part of a facility closure. This example illustrates the case where a regulatory requirement of another program dictates a specific cleanup standard which limits the options for cleanup "Type" available under the Act 307 rules.

2. Sites where cleanup standards are part of a legally binding agreement which was in effect prior to July 11, 1990, unless the agreement includes a provision to reconsider the cleanup standards.

Waste Management Division will be proposing revisions to the Act 64 rules which would make its closure requirements for interim status facilities consistent with the options for Type A and Type B remedial actions under the Act 307 rules. The current Act 64 rules provide for a mechanism similar to the Act 307 Type C decision process through application for a post-closure permit. Unless and until these Act 64 rule changes are formally promulgated, new closure plans, and those currently under review, will have to meet the existing Act 64 standards.

When new or revised rules are developed for relevant programs, those proposals should include remedy selection and cleanup criteria provisions which are equivalent to those in the Act 307 rules.

I expect your full commitment to consistent application of the requirements for cleanup of contamination sites across all Department programs. Any questions about the Act 307 rules should be directed to James Truchan, Chief of the Environmental Response Division.

Attachment

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

August 27, 1990

SEP 4 1990

Environmental Response Division

TO: Regional Supervisors
District Supervisors
All LUST/MUSTFA Coordinators

FROM: James G. Truchan, Chief
Environmental Response Division

SUBJECT: Implementation of Act 307 Rules at LUST Sites

As I mentioned at the LUST coordinators meeting, the Act 307 rules legally apply only to state funded response activities under Act 307 and department approval of other response activities covered by the rules. As a matter of policy, however, we have chosen to use these rules as guidance for cleanups in other program areas where they do not conflict with specific requirements in other statutes or rules.

We are presently drafting rules for implementation of the LUST statute which will include cleanup standards. In the interim, until the LUST rules are finalized, we will use the following portions of the Act 307 rules as guidance for LUST site cleanups:

Rule 511(3)(a-w): Remedial investigations
Rule 515: Remedial Actions
Rule 517: Operation & Maintenance
Rule 519: Monitoring
Rule 601: Degree of Cleanup
Rule 603: Evaluation of Alternatives
Rule 605: Public Notice for Type C cleanup and for sites where there is significant public interest
Part 7: Clean up Criteria
Part 8: Site Assessment Model

Under the LUST Act, we will still be required to review site investigation work plans in 30 days and remediation work plans in 45 days, which is a much more rapid turnaround time than the 90 days required in the Act 307 rules. Since we will only be using portions of the Act 307 rules as guidance for remediating LUST sites and because the LUST Act takes precedence over our use of the Act 307 rules, we must comply with the more stringent time frames set up in the LUST Act. It is critical that we meet these statutory deadlines.

Additional guidance on implementation of the Act 307 rules will be provided in the future. Please share this information with your staff.

cc: Andy Hogarth
Gary Hughes
Tom Rohrer
Pat McKay
Anne Couture
Claudia Weaver
Carrie Olmsted

Rule 113. Identification of Potentially Responsible Parties

Rule 113 requires the Department to initiate appropriate actions to identify potentially responsible parties as soon as practicable.

IMPLEMENTATION: Pursuant to Rule 503, the Director shall determine which division shall take lead responsibility for securing appropriate response activity. Upon the designation of a lead division, it shall be the responsibility of the District Supervisor for that division to ensure compliance with this rule. For example, this may be accomplished by reviewing tax records, title searches, and/or corporation papers. It will be necessary to provide documentation for this activity, in coordination with Lansing Compliance and Enforcement staff, when seeking state funded activities at the site.

ERD is currently in the process of developing Memorandum's of Understanding between ERD and pertinent Division's to ensure compliance with this rule.

DRAFT

June 21, 1990 **Revised** 7/25/90

Public Notice Requirements, Act 307 Rules

Responsible Party Notice:

Rule 115 requires the Department to notice potentially responsible parties prior to beginning state-funded response activity. The certified notice, to the most recent address known and copied to the local unit of government, shall include:

- A description of the proposed action and request that PRP carry out that action, with specific time frames for response included
- A description of the nature and extent of contamination
- The names and addresses of other PRP's who have been or will be noticed
- The location of the files
- Notice that upon failure, DNR will either:
  - Request AG assistance
  - Take corrective action and seek cost recovery

The requirements of this rule shall not apply when we can't identify any PRP(s), or when the action is an emergency response and the notice process would unreasonably delay the response.

IMPLEMENTATION - This notice shall be signed by the Director of MDNR, and, unless otherwise determined, generally after the Department has received the legislative appropriation providing the funds to accomplish the proposed activities. Preparation of the notice letters and work plans shall be completed by the District Supervisor (Enforcement Specialist VII's) and reviewed, as appropriate, by C & E Section staff. PRP responses shall be evaluated by the District Supervisor and C & E staff, providing recommendation to the ERD Chief on proceeding.

Attached is a draft standard cover letter to be sent to the local unit of government with the copy of the letter to the PRP in compliance with this rule.

Sample Letter - Notice to Local Unit of Government on Site Listing

(date)

Mr.(Ms.) , Clerk
Township
Road
, Michigan

Dear Mr.(Ms.) :

The site, 1/4 Section , Township, County, , Michigan, has been determined to be a site of environmental contamination pursuant to the Michigan Environmental Response Act (1982 P.A. 307, as amended). Enclosed is a copy of the letter notifying potentially responsible parties at the site that corrective actions are necessary to prevent injury to the public health, safety, or welfare, the environment, or natural resources, which may result from hazardous substance(s) located on the site. Potentially responsible parties include those persons, corporations, property owners, or other legal entities who may be liable for environmental contamination at this site and are responsible for taking the necessary corrective actions under state or federal law.

The Michigan Department of Natural Resources (MDNR) is notifying the potentially responsible parties in order to seek their voluntary action to clean up the environmental contamination. If the potentially responsible parties fail to perform the necessary corrective actions, the MDNR has been authorized by the Legislature to conduct investigative and cleanup activities at the site. The MDNR also may request the Attorney General to take enforcement action against the responsible parties and to seek recovery of state costs incurred to address environmental problems at the site.

This information is provided to you pursuant to the notification requirements of the Administrative Rules promulgated pursuant to 1982 P.A. 307 and is intended to assist you with information requests the public may have relative to this site. If you have questions or concerns regarding this notification letter, please direct them to , District Supervisor, Michigan Department of Natural Resources, District Office, Highway, , Michigan, at ( ).

Sincerely,

James G. Truchan, Chief
Environmental Response Division
517-373-9837

Enclosure

cc: Mr. (District Supervisor), MDNR
Mr. , Township Supervisor

PART II

SITE IDENTIFICATION AND LIST

DRAFT

June 21, 1990 **Revised** 7/25/90

Site List Hearings:

Rule 207 requires public hearings on the previous year's site list and any changes proposed in that list prior to adoption.

IMPLEMENTATION - The list unit of the Act 307 Section shall prepare the public notice advertisements for not less than three newspapers; provide comparable information to persons on the mailing list described in **Rule 205**; evaluate information provided at the public hearings, in conjunction with District staff, as to how it may effect site scoring and rankings; recommend changes in the site list and report to the Director; and consider information provided during the public comment period.

Notice to PRP's of proposed site listing:

Rule 209 requires the Department to make a reasonable attempt to notify PRP's of the decision to propose a site for listing at least 15 days before publication. This notice requirement applies only when the site is initially proposed for listing - not in successive years after listing.

IMPLEMENTATION - Rule 503 provides for the Director to designate the lead division for securing appropriate response activity. When other DNR divisions are designated the lead, they will be responsible for ensuring compliance with this requirement.

ERD has proposed the Director designate GSD the lead for Act 61 sites; WMD for TSD's regulated by RCRA/Act 64; and SWQD for proposed surface water projects pursuant to the Bond program. Those divisions will then be responsible to implement the requirements of all facets of the rules, with the exception of Rule 207. Staff in the front office are currently developing implementation procedures and responsibilities for the other divisions regarding these rules.

When ERD District staff are proposing a new site for scoring and/or site listing for the first time, it will be their responsibility to ensure, **once the decision is made to list the site**, that a notice is provided to the PRP(s) in compliance with this rule. If there are questions regarding the identity and appropriate notification of PRP's, District staff are to discuss and resolve those questions with the Act 307 list unit and C & E staff. PRP issues under dispute are to be identified and resolved by the Division Chief.

Ultimately, this responsibility will lie with staff doing the site scoring provided for in Section 8.

June 21, 1990 Revised 2- -91

Notice of Site Delisting

Rule 215 provides that if the director concludes the site is no longer a site of contamination and that circumstances warrant removal prior to the next regularly scheduled hearing, a notice of intent to remove the Site shall be prepared, published in one newspaper that serves the area, copied to the municipality where located, and providing for not less than 30 days for public input. The director may hold a public hearing.

IMPLEMENTATION - The process to be followed is outlined in the enclosed draft document titled "Act 307 Delisting Policy", dated June 1990. . .

The Site List Unit shall be responsible for removing the site from the list, as appropriate.

DRAFT

ENVIRONMENTAL RESPONSE DIVISION

Act 307 Delisting Policy

This policy provides direction to Environmental Response Division staff for the process by which sites of environmental contamination will be delisted from the Act 307 Site Lists.

Policy

1. Responsible party or State prepares and submits a Petition to Delist a site (See Attachment 1: Act 307 Petition to Delist).

2. District or Superfund staff reviews delisting petition for completeness and requests any missing information be submitted prior to further action being taken. District or Superfund staff may return, with an explanation of deficiencies, any delisting petition that is obviously without merit. Petitioners may appeal this decision to the ERD Regional Supervisor or Superfund Section Chief, as appropriate.

3. District or Superfund staff coordinates a technical and scientific review of the delisting petition to assess information in the petition and any additional information provided by District or Superfund staff regarding adequacy of cleanup and adequacy of cleanup documentation.

4. Environmental Response Division Chief, utilizing the petition to delist and information from the staff technical and scientific review, determines whether acceptable justification has been presented for site delisting.

5. If ERD Chief concurs that deletion is warranted, a draft Intent to Delist (ITD) is prepared by District or Superfund staff and submitted to the List Unit for review for state-wide consistency of content. District ITDs will be approved by the District Supervisor, Regional Supervisor and Division Chief. Superfund ITDs will be approved by the Unit Chief, Section Chief and Division Chief. This document (ITD) provides the authorization to public notice the proposed delisting and serves as a public information fact sheet for the public (See Attachment 2: Preparation of an Intent to Delist).

6. If the Director determines that the site has not been adequately remediated and cannot be delisted, then the ERD Division Chief will notify the Petitioner within 7 days of making that determination. District or Superfund staff will draft such letters of notification for the ERD Chief's signature.

7. Public noticing of the proposed site delisting will generally occur through publication in the Annual Proposed Act 307 Site List in which all proposed delistings are presented. Public hearings on the Proposed List would also serve as public hearings on the proposed delistings. The public comment period will be at least 30 days.

At the discretion of the Director, expedited public noticing may be accomplished through the use of newspaper advertisements (Notice of Intent to Delist) in one newspaper of general circulation that serves the area of the site, providing a minimum 30 day public comment period. Where requests for expedited public notices are approved by the Director, the cost of newspaper advertisements will be billed to the petitioner. A copy of this notice will be provided to the municipality in which the site is located. If there is significant controversy about the site, a public hearing may be scheduled to further inform the public and receive further public comment prior to a decision regarding delisting of the site. (See Attachment 3: Preparation of Delisting Public Notices).

9. Following the close of public comments, the List Unit staff will prepare a site delisting briefing paper for the Director which will include the ITD, a responsiveness summary for the public comments received, a recommended action, and a Delisting Authorization for the Director's signature (See Attachment 4: Delisting Authorizations).

10. The Director will notify the person who requested that the site be removed from the list of the Department's decision within 45 days of the close of the public comment period. List Unit staff will prepare such letters of notification for the Director's signature.

11. The List Unit will maintain a permanent file for all delistings. This administrative record will contain at a minimum: the delisting petition (including copies of the approved site cleanup plans, record of decisions or other relevant documents), Intent to Delist, public advertisements or notices, public comments and responsiveness summaries, and the Director's signed delisting authorization.

Approved: _____
Chief
Environmental Response Division

Date: _____

DRAFT

Attachment 1

Act 307 Petition to Delist

When a responsible party or the State believes that a site on the Act 307 Lists should be removed from that list, that party may petition the Michigan Department of Natural Resources to have the site removed. It is the responsibility of the person seeking the removal of a site to submit the documentation required in the petition. When the cleanup has been conducted by the State, the MDNR will prepare the necessary documentation.

Delisting petitions should be directed to the appropriate District office of the Environmental Response Division (ERD) and should follow the format outlined below. Delisting petitions may be submitted at any time. Persons preparing delisting petitions are encouraged to consult with ERD District staff in advance to identify site specific issues. District staff are encouraged to use the "Outline for Quality Review Board Consideration" (dated March 29, 1989) to identify site specific information needs which should be incorporated into the petition.

In addition to following the outline, maps and photographs are extremely useful to help assess and explain site conditions and cleanup actions. Generally, a minimum of two maps are needed: one area map which shows the location of the site in relation to surrounding features such as municipalities, lakes, streams, roads, etc.; and one site map which shows details such as monitoring points, locations of prior contamination, boundaries of excavations, property lines and other relevant site features. Additional site-specific information may be required by the Department in order to conduct an adequate review of site conditions and cleanup measures.

Delisting Petition Outline

1. Site Description and History
    - A. Site history
    - B. Site location
    - C. Operations, function, uses
    - D. Surrounding environment
        - Geology
        - Surface features
        - Groundwater, surface water use
        - Population
2. Nature and Extent of Contamination
    - A. Original basis for site listing
    - B. Nature of contaminant releases
        - Sources
        - Contaminants
        - Quantity
        - Duration
        - Physical state
    - C. Resources affected
        - Soil, groundwater, surface water
        - extent, concentration
        - Impacts

3. Description of Response Activities
   A. What was proposed in the site cleanup plan approved by ERD
   B. What were the approved target cleanup levels (TCLs)
   C. Who conducted the actions
   D. When were the cleanup actions performed
   E. Was the cleanup completed in accordance with the approved site cleanup plan. If not, explain any discrepancies.
4. Effectiveness of Response Activities
   A. Documentation that the cleanup was effective in attaining TCLs contained in the approved site cleanup plan
5. Conclusions for Delisting Recommendation

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Attachment 2

Preparation of an Intent to Delist

MICHIGAN ENVIRONMENTAL RESPONSE ACT

INTENT TO DELIST

Site Name and Location

Site name _____ County
Address _____ District
City or Township, Michigan SAS Score: ___

Background paragraph providing site name, location, size, and historical use. Discussion of incident and/or activities, etc. which caused the contamination. Discussion and documentation of the nature, concentrations and extent of contamination. Include other relevant information from remedial investigations here.

Paragraph discussing the feasibility study/design or responsible party site work plans. Include who developed it (state, EPA, RP) and when. Was it approved by DNR? When? Brief description of approved work plan, including cleanup technology(ies), target cleanup levels (TCLs) approved for each media type, etc.

Paragraph on the site cleanup describing what was done, by whom, when. Include volumes/quantities of material removed and its disposition. Document that TCLs were attained and with the number and type of samples. When was the cleanup completed?

All information regarding this site relates to _____ (types of) contamination. All known areas of ___ contamination have been reduced to levels below _____, the TCL in accordance with the approved work plan and do not require further remediation. _____ was/were the basis for the _____site's Act 307 listing, and the Department of Natural Resources is unable, for lack of information, to express any opinion as to whether the site is clean or not clean with regard to any other contaminant(s), or whether the site is clean or not clean with regard to any _____ contamination beyond that found and remediated in the cleanup area.

Delisting this site is proposed for administrative reasons relating to the management of the Act 307 Program. By delisting this site, the Department of Natural Resources makes no warranty or guarantee as to the fitness of this site for any general or specific use. Prospective purchasers or users of this site are advised to use due diligence in acquiring or using this site, particularly with regard to contaminants other than _____.

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The Department of Natural Resources intends to delist the _____ site from the Annual Act 307 Priority List, unless new information requiring reconsideration of the Department's position is brought forward during the public comment period. The Michigan Department of Natural Resources reserves the right to relist this site, pursuant to applicable regulations, should changed site conditions or additional information concerning site conditions become known or available. This document contains the full statement of position of the Michigan Department of Natural Resources regarding the possible delisting of this site, and no Department official or employee is authorized to give any warranty, guarantee, or assurance regarding the fitness of this site for any use.

Recommended by:

_____ _____
Date

District Supervisor
Environmental Response Division

Recommended by:

_____ _____
Date

Regional Supervisor
Environmental Response Division

Approved by:

_____ _____
James Truchan Date
Chief
Environmental Response Division

FORMITD.DEL

DRAFT

Attachment 2
Example 1

MICHIGAN ENVIRONMENTAL RESPONSE ACT

INTENT TO DELIST

Site Name and Location

Veldt Farm
Pichy Road
Dafter Township, Michigan

Chippewa County
Marquette District
SAS Screen: 04

The Veldt Farm comprises two 40 acre parcels located approximately 6 miles southwest of Sault Ste Marie. Silage mixed with polybrominated biphenyls (PBB) was received by the operator in the mid 1970's resulting in the contamination at this farm. Fifty-four Soil samples collected in 1979 revealed PBB concentrations up to 2030 parts per billion (ppb) in the vicinity of the farm buildings.

The Veldt Farm was acquired by the Michigan Department of Agriculture (MDA) in 1982 at a cost of $87,000. Approximately one acre of PBB contaminated soil, including the six PBB contaminated outbuildings, was fenced. The work plan for site cleanup was approved by MDA and the Michigan Department of Natural Resources. A decontamination level of 50 ppb was selected as the PBB target cleanup level. This standard, which was based upon instrument detection limits and technical feasibility, is 20 times more stringent than the cleanup level for PBB contaminated soils recommended by the U.S. Environmental Protection Agency. An area of 47,000 square feet and six farm buildings were found to contain PBB above the 50 ppb cleanup level and was designated for cleanup.

Site cleanup operations included the demolition of all six farm structures and the removal of the top 8 to 12 inches of PBB contaminated soil, where PBB levels were known to exceed 50 ppb. Approximately 4,500 cubic yards of soil and building debris were removed and transported to Wayne Disposal, a licensed disposal facility. Following the cleanup, 70 confirmatory soil samples were collected from the cleanup area and surrounding lands. All gas chromatography results were less than 50 ppb of PBB, the established target cleanup level. No related brominated compounds were detected in the analyses. PBB cleanup activities were completed in May, 1988 by MDA for a total project cost of $402,270.

All information regarding this site relates to PBB contamination. All known areas of PBB contamination have been reduced to levels below 50 ppb in accordance with the approved work plan and do not require further remediation. PBB was the sole basis for the Veldt Farm's Act 307 listing, and the Department of Natural Resources is unable, for lack of information, to express any opinion as to whether the site is clean or not clean with regard to any contaminant other than PBB, or whether the site is clean or not clean with regard to any PBB contamination beyond that found and remediated in the approximately 1.1 acre cleanup area.

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Delisting this site is proposed for administrative reasons relating to the management of the Act 307 Program. By delisting this site, the Department of Natural Resources makes no warranty or guarantee as to the fitness of this site for any general or specific use. Prospective purchasers or users of this site are advised to use due diligence in acquiring or using this site, particularly with regard to contaminants other than PBB.

The Department of Natural Resources intends to delist the Veldt Farm from the Annual Act 307 Priority List, unless new information requiring reconsideration of the Department's position is brought forward during the public comment period. The Michigan Department of Natural Resources reserves the right to relist this site, pursuant to applicable regulations, should changed site conditions or additional information concerning site conditions become known or available. This notice contains the full statement of position of the Michigan Department of Natural Resources regarding the possible delisting of this site, and no Department official or employee is authorized to give any warranty, guarantee, or assurance regarding the fitness of this site for any use.

Recommended by:

Earle Olsen — Date
Marquette District Supervisor
Environmental Response Division

Recommended by:

Earle Olsen — Date
Regional Supervisor
Environmental Response Division

Approved by:

James Truchan — Date
Chief
Environmental Response Division

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Attachment 2
Example 2

MICHIGAN ENVIRONMENTAL RESPONSE ACT

INTENT TO DELIST

Site Name and Location

Browning Ferris Industries
6233 Hagman Road
Erie, Michigan

Monroe county
Northville District
SAS Screen: 03

The Browning Ferris Industries Landfill (BFI) is an active Act 641 facility located in Erie, Michigan. Operation of the facility commenced in the late 1960s. Site conditions at the time of listing, 1984, included leachate outbreaks, apparent low level groundwater contamination and the suspicion that the landfill had accepted liquid and solid chemical waste. Leachate from the landfill contained up to 680 ppm COD and 240 ppm TOC.

Generally, COD and TOC levels have not exceed 24 ppm and 7.3 ppm, respectively. In 1982, groundwater data from four monitoring wells included one sample of 160 ppb total lead. In 1984 all monitoring was changed to dissolved lead analyses. Subsequent groundwater monitoring results indicated dissolved lead present at less than 1 ppb to 6 ppb, except for a single sample of 20 ppb which was not reproducible upon resampling. Organic solvents were not detectable in groundwater samples.

Beginning in 1985 and extending into 1987, BFI conducted remedial actions to control leachate from the landfill. A perimeter leachate collection system was installed with lateral collection lines extending into the fill areas where leachate outbreaks had previously occurred. Extensive regrading of the surface, over areas of past leachate problems, improved surface drainage to minimize infiltration. Both Michigan Department of Natural Resources and Monroe County Health Department staff inspections have documented the effectiveness of these actions in elimination of leachate outbreaks. Leachate is currently collected in a pond and is recirculated through the fill by pumping into trenches upgradient of the landfill. This is a temporary process as BFI has obtained authorization to haul collected leachate to the Toledo, Ohio municipal wastewater treatment plant for treatment.

All information regarding this site relates to leachate contamination and the potential for groundwater contamination. All known areas of leachate outbreaks have been eliminated by surface regrading and construction of the leachate collection system and the site, including groundwater, does not require further remediation.

DRAFT

The Department of Natural Resources intends to delist Browning Ferris Industries from the Annual Act 307 Priority List, and return the site to the regulatory authority of the Act 641 and the Department's Waste Management Division, unless new information requiring reconsideration of the Department's position is brought forward during the public comment period. The Michigan Department of Natural Resources reserves the right to relist this site, pursuant to applicable regulations, should changed site conditions or additional information concerning site conditions become known or available. This notice contains the full statement of position of the Michigan Department of Natural Resources regarding the possible delisting of this site.

Recommended by:

Oladipo Oyinsan — Date
Northville District Supervisor
Environmental Response Division

Recommended by:

Gerard Heyt — Date
Acting Regional Supervisor
Environmental Response Division

Approved by:

James G. Truchan — Date
Chief
Environmental Response Division

FORMITD3.DEL

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Attachment 2
Example 3

MICHIGAN ENVIRONMENTAL RESPONSE ACT

INTENT TO DELIST

Site Name and Location

Carlton Center Mobile Home Park
Barber Road
Carlton Center, Michigan

Barry County
Plainwell District
SAS Screen: 05

The Carlton Center Mobile Home Park was origionally screened in October, 1982 when a routine check of the water supply indicated the presence of Cis-1,2-Dichloroethylene (DCE) at 1 ppb. The Michigan Department of Public Health reviewed the water supply system and discovered that in an attempt to upgrade the system, the owner had used piping not approved for potable water. The owner has since corrected the piping to conform with potable water supply requirements. Samples taken by MDPH of the raw water, treated water, and distribution system have not detected any organic chemicals. It appears that the contamination origionally detected was not a groundwater problem, but rather the result of unapproved piping being used in the water supply system.

All information regarding this site relates to DCE contamination which was eliminated with the installation of proper piping and does not require further remediation. DCE was the sole basis for Carlton Mobile Home Park's Act 307 Listing, and the Department of Natural Resources is unable, for lack of information, to express any opinion as to whether the site is clean or not clean with regard to any contaminant other than DCE contained in the improper piping.

Delisting this site is proposed for administrative reasons relating to the management of the Act 307 Program. By delisting this site, the Department of Natural Resources makes no warranty or guarantee as to the fitness of this site for any general or specific use. Prospective purchasers or users of this site are advised to use due diligence in acquiring or using this site, particularly with regard to contaminants other than DCE.

The Department of Natural Resources intends to delist the Carlton Mobile Home Park from the Annual Act 307 Priority List, unless new information requiring reconsideration of the Department's position is brought foreward during the public comment period. The Michigan Department of Natural Resources reserves the right to relist this site, pursuant to applicable regulations, should changed site conditions or additional information concerning site conditions become known or available. This notice contains the full statement of position of the Michigan Department of Natural Resources regarding the possible delisting of this site, and no Department official or employee is authorized to give any warranty, guarantee, or assurance regarding the fitness of this site for any use.

DRAFT

Recommended by:

Galen Kilmer Date
Plainwell District Supervisor
Environmental Response Division

Recommended by:

Gerry Heyt Date
Acting Regional Supervisor
Environmental Response Division

Recommended by:

James Truchan Date
Chief
Environmental Response Division

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Attachment 3

Preparation of Delisting Public Notices

Act 307 sites which are proposed for delisting must be public noticed and will have a public comment period of not less than 30 days. The Act 307 Section List Unit is responsible for the public noticing of proposed delistings and the coordination of public comment responses.

Public noticing of the proposed site delisting will generally occur through publication in the annual Proposed Act 307 Site List in November of each year. This information on proposed delistings will include site name, site location, county, and reason for delisting. A copy of this information will be provided to the local governmental unit in which the site is located. Public hearings on the Proposed Lists will also serve as public hearings on the proposed delistings.

A site may be public noticed and removed from the site list prior to the regularly scheduled hearing for the annual Proposed Lists. The Director must approve such expedited action. The List Unit will seek such authorization when needed and prepare a Public Notice of Intent to Delist. The notice shall contain information on the authority for site listing and delisting, the contamination that resulted in the site listing, the basis for delisting, identification of who is requesting the delisting, a source for additional information, an address to which comments should be sent, and clearly identify the last day of a 30 day comment period (See attached example). This notice will be published as a display advertisement in one newspaper of general circulation that serves the area of the site. The display advertisement will not be less than three inches by four inches in size. A copy of this notice will be provided to the local governmental unit in which the site is located. Requests for publication of notices will be sent by registered mail, indicate last acceptable publication date, and will include a requirement for proof of publication (See attached example).

Responses to comments shall be made individually. If large numbers of letters/comments are received, responses will be prepared in the form of a responsiveness summary which will be sent to all individuals providing comments. The List Unit will coordinate comment responses with district staff.

PUBNOTIC.DEL

STATE OF MICHIGAN

Attachment 3
EXAMPLE

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

DRAFT

December 5, 1989

Marquette Mining Journal
249 West Washington
P.O. Box 430
Marquette, Michigan 49855

Dear Editor:

Enclosed is the copy for a Public Notice which we would like to have published as a display advertisement (approximately 4" x 6" box with bold type heading and regular type print for the body of the notice) in your newspaper. Please publish the notice once, no later than December 8, 1989.

Please send proof of publication, together with an invoice for any charges, to the following address:

Mr. Ronald Willson
Environmental Response Division
Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Please telephone me at the number below if you have any questions or need additional information. Thank you for your prompt attention to this matter.

Sincerely,

Ronald B. Willson
Environmental Response Division
517-373-4800

Attachment

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8/88

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Attachment 3
EXAMPLE

PUBLIC NOTICE

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

NOTICE OF INTENT TO DELIST A SITE OF ENVIRONMENTAL CONTAMINATION

Veldt Farm, Dafter Township, Chippewa County, Michigan

The Michigan Department of Natural Resources is proposing to delist the Veldt Farm Site from the Annual Act 307 Priority List pursuant to Rule 24 of the Emergency Rules (adopted February 10, 1989), promulgated pursuant to the Michigan Environmental Response Act (1982, P.A. 307, as amended). The Veldt Farm Site was included on the Act 307 Priority List because of polybrominated biphenyl (PBB) contamination. Cleanup activities at the site have been completed, and the site is proposed for delisting as a result of a request from the Michigan Department of Agriculture, which currently owns the site. This action will be taken unless new information requiring reconsideration of the Department's position is brought forward during the public comment period. The Michigan Department of Natural Resources reserves the right to relist this site, pursuant to applicable regulations, should changed site conditions or additional information concerning site condition become known or available.

Interested parties can request additional information from and submit comments in writing to the Michigan Department of Natural Resources, Environmental Response Division, Act 307 Section, P.O. Box 30028, Lansing, Michigan 48909.

Comments must be submitted to the Department of Natural Resources at the address specified above by 5 p.m., January 12, 1990.

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Attachment 4

Delisting Authorizations

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
MICHIGAN ENVIRONMENTAL RESPONSE ACT
DELISTING AUTHORIZATION

_____, _____ County, Michigan

The Environmental Response Division proposed delisting _____, _____ Township, _____ County, Michigan, from the annual Act 307 Priority List. A Notice of Intent to Delist this site was published in the _____ _____, with a public comment period extending from _____ _____ through _____. No new information was brought forward during the public comment period to require reconsideration of this proposed delisting. I approve the delisting of the _____, _____ County Site from the Michigan Environmental Response Act Sites of Environmental Contamination Priority Lists.

_____ _____
David F. Hales Date
Director

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Attachment 4
Example

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
MICHIGAN ENVIRONMENTAL RESPONSE ACT
DELISTING AUTHORIZATION

Veldt Farm, Chippewa County, Michigan

The Environmental Response Division proposed delisting Veldt Farm, Dafter Township, Chippewa County, Michigan, from the annual Act 307 Priority List. A Notice of Intent to Delist this site was published in the Lansing State Journal and the Marquette Mining Journal, with a public comment period extending from November 4, 1989 through January 11, 1990. No new information was brought forward during the public comment period to require reconsideration of this proposed delisting. I approve the delisting of the Veldt Farm, Chippewa County Site from the Michigan Environmental Response Act Sites of Environmental Contamination Priority Lists.

_____ _____

David F. Hales
Director

Date

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PART III

FUNDING

DRAFT

August 13, 2990 **Revised** _____

Rule 305. Any site which has been subjected to the risk assessment process described in section 6(b) of the act and part 8 of these rules is eligible for funding.

IMPLEMENTATION: This rule requires the Department to screen or score a site **prior to spending state funds on the site.** It shall be the responsibility of the District Supervisor to ensure compliance with this rule. This is especially important for emergency response activities where state funds are utilized. Documentation of this activity shall be made part of the file.

PART IV

ALTERNATE WATER SUPPLIES

DRAFT

August 13, 1990 **Revised** _____

PART 4. ALTERNATE WATER SUPPLIES

The Part 4 rules apply to the use of public funds to provide alternate water supplies. The rules are as follows:

401. Definitions
403. MDPH approval of permanent water supplies; limitations of use of funds
405. Conditions necessary to provide alternate water supplies
407. Funds used to address contamination of local gov't owned Type I water supplies
409. Service area boundaries; establishment
411. Responsibilities of local governing entity
413. Distribution of funds; lowest cost alternative
415. Notice to property owners in area to be served by public water supply system or extension

IMPLEMENTATION: When seeking funds for alternate water supplies, it shall be the responsibility of the MDPH staff (person(s) to be determined by MDPH) to ensure compliance with this part. They shall be responsible to submit documentation to the department certifying that all appropriate elements of this part have been completed when requesting funds. This documentation shall be submitted to the Bond Coordinator, ERD, for inclusion in the file, and shall be certified complete before funds will be approved.

DRAFT

June 21, 1990 **Revised** _____

PUBLIC WATER SUPPLY NOTICE TO PROPERTY OWNERS

Rule 415. Notice to property owners in area to be served by public water supply system or extension.

This rule requires that all property owners in an area proposed to be servedby a public water supply system or an extension of a system that is to be paid for by the funds shall be given written notice of the state's action. Such a notice shall include an explanation of the proposed action, including a description of the project area and proposed services.

IMPLEMENTATION- The Michigan Department of Public Health is responsible for the complete implementation of this rule.

PART V

RESPONSE ACTIVITIES

DRAFT

August 13, 1990 **Revised** _____

DRAFT

PART 5. RESPONSE ACTIVITIES

Rule 501 provides "The principal objective of all response activities is to ensure prompt and adequate response to known sites of environmental contamination." The rest of the rules from this part provide for information requests and evaluations, as follows:

Rule 503. Determination of Lead Responsibility
Rule 505. MDNR Request to PRP's to undertake response activities
Rule 507. Emergency Response Activities
Rule 509. Interim Response Activities
Rule 511. Remedial Investigations
Rule 513. Feasibility Studies
Rule 515. Remedial Action Plan
Rule 517. Operation and Maintenance Plan
Rule 519. Monitoring requirements

IMPLEMENTATION: Rule 503 - The Division assigned the lead role in the implementation of these rules shall be responsible to ensure compliance with the provisions of this part.

Rule 505 - The District Supervisor shall be responsible to ensure the PRP's are noticed in compliance with this rule. This activity will usually precede seeking state funds; therefore, this notice will normally be sent under the District Supervisor's signature. The enclosed documents identifying the elements needed to be incorporated in the response activities shall be sent with the District's correspondence, as appropriate.

Rule 507 - The District Supervisor shall be responsible for the declaration of an emergency necessitating the need to expend monies from the funds. Documentation of this declaration shall be made part of the file.

Rules 509, 511, 513, 517, and 519 - Again, the District Supervisor shall ensure compliance with these rules, utilizing the enclosed documents identifying the necessary elements specific to the various rules.

It shall be necessary to ensure that contractors, hired using monies from the funds, comply with the elements of these rules, as well. The District Supervisor is responsible to ensure that documentation exists demonstrating that the elements of these individual rules are addressed, for both PRP and State funded activities.

June 27, 1990 Revised 2/6/91

Remedial Action Plan Requirements

REMEDIAL ACTION PLAN:

Rule 515: The department may request that a remedial action plan be developed for any remedial action undertaken pursuant to the provisions of these rules and be submitted to the department for approval. Such a plan shall include all of the following:

1. A description of the remedial action to be implemented, including how it will meet the requirements of Part 7.

2. An analysis of the selection of the indicator chemicals to be used, if appropriate.

3. A description of ambient air quality monitoring activities during the remedial action, if appropriate.

4. An Operation and Maintenance Plan (O&M Plan), pursuant to Rule 517.

5. A Monitoring Plan pursuant to Rule 519 (Performance Monitoring) to determine any of the following:

   The effectiveness of the response activities in protecting the public health, safety, and welfare and the environment and natural resources.

   The effectiveness of the response activities in minimizing, mitigating, or removing environmental contamination at a site.

   The cost effectiveness of the response activities.

6. Land use restrictions (Rule 719 "on-site containment"), monitoring and enforcement, if required.

7. Schedule for implementation

8. Modifications to the Remedial Action Plan
   A. Unanticipated site conditions
   B. A change in site conditions.
   C. Proposed changes to the contents of the Remedial Action Plan described above.

All proposed changes shall be submitted to the department to assure consistency with **Part 5 (Response Activities), Part 6 (Selection of Remedial Action), and Part 7 (Cleanup Criteria).**

IMPLEMENTATION: Approval of Type A Criteria Remedial Action Plans proposed by PRP's will be the responsibility of the District Supervisor. Approval of State Funded and PRP Type B's and C's shall be approved by the ERD Chief. The project manager will review the items indicated on the enclosed checklist for completion. Following are RAP Review Procedures (next page).

Remedial Action Plan Review Procedures

Procedures to be used on all site cleanups where a final remedial action was not approved as of July 11, 1990. Does not apply to sites where a final remedy was approved and work plans, bid documents, or contractual obligations were provided prior to July 11, 1990.

1) If RAP required, it is submitted to District Supervisor for determination that all specified elements are addressed. District Supervisor has 10 days to complete this review. If RAP incomplete, returned to RP with deficiencies noted. If RAP complete, District Supervisor sends RP acknowledgement letter and the technical review begins.

2) Type A Cleanup -
District Supervisor:
   a) Determines if RAP meets requirements in Rule 601 and 603.
   b) If State funded, performs all Public Participation requirements in Rule 605
   c) Approves or rejects plan except in cases needing delisting, which requires peer review and Division Chief approval

3) Type B or C Cleanup -
District Supervisor:
   a) Within 5 days of determinating that all elmements are addressed, transfers proposal to ERD Division Chief
   b) If state-funded Type B, any Type C, or a site with significant public interest, District performs the public participation activities of Rule 605(1).

Lansing staff:
   a) perform technical review of RAP with District staff assistance

Division Chief:
   a) will approve or reject submitted plans

Remedial Action Plan Checklist Revised 1/31/91

SITE NAME: _____

DATE RECD: _____ ADM. REVIEW BY: _____

DUE DATE: _____ TECH. REVIEW BY: _____

Complete	Not App.	Item
___	___	Description of the Remedial Action meeting the requirements of Part 7 (attach Type A, B, or C checklist)
___	___	Indicator chemical selection criteria
___	___	Ambient air quality monitoring, as appropriate
___	___	Operation and Maintenance Plan (O&M), **Rule 517** ___ Name, phone number, and address of the person who is responsible for O&M ___ O&M schedule ___ Safety plan ___ Written and pictorial plan of O&M ___ Design and construction plans ___ Equipment diagrams, specifications, and manufactures' guidelines ___ Emergency plan, including emergency contact phone numbers ___ Spare parts list for emergency repairs ___ Other information as required by the department **(Specify need for and type of information)**
___	___	Monitoring Plan, **Rule 519** (Performance Monitoring) ___ Location of monitoring points ___ Environmental media to be monitored (soil, air, water, or biota) ___ Monitoring schedule ___ QA/QC ___ Monitoring methodology (sampling plan) ___ Parameters to be monitored, including criteria for indicator parameters ___ Laboratory methodology (lab name, detection limits, etc) ___ Data presentation and evaluation plan (data management plan) ___ Contingency plan to address ineffective monitoring ___ O&M plan for monitoring ___ How data will demonstrate effectiveness of response activities ___ Other elements required by the department **(Specify need for and type of elements)**

Sample Acknowledgement Letter to RP

(date)

(company or responsible party)
(address)
(city, state, zip)

Dear

This letter will acknowledge receipt of your proposal on (date of receipt) for a remedial action plan for the (site name) located in (township), (county name) County.

This proposal is determined to contain all necessary elements to begin the technical review process in conformance with the promulgated Rules pursuant to 1982 PA 307, as amended. The review process will include staff review by the Environmental Response Division in Lansing. You will be notified as soon as the review is complete.

(You have proposed a Type B/C criteria cleanup which requires public participation activities under Rule 599.5605. This office will be providing notice, as required by the Administrative Rule, in a newspaper of local and statewide distribution. You will be provided an opportunity to have input in that process. If a public hearing is conducted, you will be notified accordingly and provided an opportunity to attend.)

If you have questions concerning the above, please contact this office.

Sincerely,

(appropriate District Supervisor)

cc: Director David Hales, MDNR
Mr. Delbert Rector, MDNR
(appropriate Regional Deputy Director)
Dr. James G. Truchan, MDNR
Mr. Andrew Hogarth, MDNR
(appropriate Regional Supervisor)

June 21, 1990 Revised 2/6/91

Public Participation: RULE 605

Rule 605 requires the Department to do all the following prior to approval of a **remedial action** using state funds; where type C criteria are being proposed; or where the director determines there is significant public interest:

- Publish a notice and brief analysis of the recommended alternative in a major local newspaper of general circulation, and make available information at or near the site at issue.
- Make the feasibility study available to the public for review and comment for at least 30 calendar days.
- Provide an opportunity for a public meeting at or near the site.
- Prepare a document summarizing major issues raised by the public and how they are to be addressed by the final approved plan.
- Provide notice of the remedial action selected or approved and make available the plan to the public, containing a discussion of any significant changes in the proposed plan and a response to each of the significant comments, criticisms, and new data submitted during this process.

The Department may provide an opportunity for public comment and review on any interim response activity undertaken by the state, but this is not mandatory.

IMPLEMENTATION - First of all, "**remedial action**" is defined as "the cleanup, removal, containment, isolation, treatment, or monitoring of hazardous substances released into the environment, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate injury to the public health, safety, or welfare, the environment, or natural resources,..."

Since "**interim response activity**" is defined as action taken **prior** to the selection of a "remedial action", interim response activities at state expense are not subject to the provisions of this rule, although the Department has the option of providing the opportunity for public comment for these actions.

For the purpose of implementing this rule **for state funded activities**, any site where "approval" of a final remedial action had been granted by July 11, 1990, this rule does not apply (i.e. The selection of the final remedy was made prior to 7/11/90). If, however, District staff have not selected the final remedy, with the preparation of bid documents, etc., until after 7/11/90, the provisions of this rule applies, and District staff are responsible to ensure the provisions of this rule are carried out.

It must be clear that the provisions of this Rule apply, as defined in the previous paragraph, to state funded remedial actions for either Type A, B or C cleanups.

(continued)

The District Supervisor is responsible for the determination of the need to provide opportunity for public comment for other state funded actions (i.e. interim response activities or RI/FS's), or to provide recommendation to the Director where significant public controversy exists (for Type A and B proposed cleanups).

In the case of Type C criteria being proposed by a responsible party, the technical review of this proposal will, at least for the time being, be done in Lansing. To facilitate this process, the following will be necessary:

- Upon receipt of a Type C criteria proposal, the District staff shall ensure that all necessary elements are included in the proposal, utilizing the enclosed checklist. This shall be done within 10 working days of receipt of the proposal.
- If all required elements are not included, the District Supervisor shall return the proposal to the RP, rejecting the proposal and identifying the deficiencies.
- If all required elements of the proposal are included, the District Supervisor shall do the following: 1) Transfer the proposal to the ERD Division Chief; 2) Provide for the public notice process described in Rule 605; and 3) Provide an acknowledgement letter to the RP (Draft copy of letter is enclosed). This transfer is to occur within 5 days after the determination that the proposal is complete.
- Once transferred to the Division Chief, District staff will provide assistance on an as-needed basis for continued review.

- The District Supervisor reviewing the proposal shall be responsible for the requirements to: publish the notice; make the feasibility study available; provide the opportunity for a public meeting near the site; and preparation of the summary document. These elements are required under rule 605(1).
- After selection of the remedial action, Lansing ERD will be responsible to transfer all appropriate information on the approved RAP to the District Supervisor, who is then responsible for the completion of public participation activities under Rule 605(2). This includes publishing notice of the selection, making the final plan available to the public, identifying significant changes and the response to significant comments, criticisms, and new data. All public participation activites must be done within 90 days of receipt of a complete proposal.

Where Type A, B or C criteria are being proposed at state expense that necessitates this process, or where the Director determines there is significant public interest, the District Supervisor shall be responsible for providing the required public notification process outlined in Rule 605. Lansing staff will provide assistance on an as-needed basis.

If the District Supervisor determines there is a need for public input for any other state funded activity (i.e. Interim Response or RI/FS), he or she will be responsible for the notifications outlined in Rule 605; however, complete application of the entire rule is not mandatory.

Rule 605 Public Participation Requirements

****
ALL STEPS IN PUBLIC PARTICIPATION PROCESS MUST BE COMPLETED
WITHIN 90 DAY TIME PERIOD
****

Required for:
- Type C cleanups
- Stated Funded Actions
- Significant Public Interest as determined by the Director.

Optional when District Supervisor determines:
- Need on other state funded actions i.e. interim responses
- At any time and regardless of funding or cleanup type, District Supervisor can invoke all or any part of Rule 605

RULE 605 (1): Requirements prior to approval of RAP:
1) Publish notice and brief analysis of the recommended remedy in major local newspaper of general circulation
2) Have all information available at or near the subject site
3) Feasibility Study must be made available for public review and comment for at least 30 days
4) Provide an opportunity for a public meeting at or near the site
5) Prepare document summarizing major issues raised by the public and explanation on how final plan will address them

RULE 605 (2): Requirements upon approval of RAP and prior to implementation:
1) Publish notice of the final remedial action selected or approved
2) Make copy of RAP available to public including:
   (a) discussion of significant changes in the proposed plan;
   (b) response to significant comments, criticisms, and new data submitted as a result of public participation process.

Sample Notice

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June 1990 Revised 10/30/90

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL RESPONSE DIVISION

NOTICE OF PROPOSED REMEDIAL ACTION

Pursuant to the requirements of the Michigan Environmental Response Act, the Department of Natural Resources is providing notice of receipt of a Remedial Action proposal to address environmental contamination at (state name of site and location).

This notice is provided prior to approval of the proposed alternative. The remedial action being proposed at this site consists of the following:
Brief synopsis of alternative being considered

The proposed remedial action described above is proposed for the following area:

(INCLUDE A SITE MAP OR DRAWING IN THIS SPACE)

The complete remedial action proposal, which includes the feasibility study outlining various alternatives, may be reviewed at: (Name and address of appropriate District Office)
from 8 a.m. to 5 p.m. Monday thru Friday, and at (Local township hall or other appropriate nearby location)

The Department will conduct a public meeting in the vicinity of the proposed remedial action if requested by the local unit of government or by at least 25 local residents to discuss the proposal.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Environmental Response Division
Contact phone number (District Office no.)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

January 31, 1991

TO: All Environmental Response Division Staff

FROM: James G. Truchan, Division Chief
Environmental Response Division

SUBJECT: Rule Interpretation Memo #2
Applicability of Act 307 Administrative Rule 605

Act 307 Administrative Rule 605 discusses public participation requirements for Type C cleanup proposals, for sites where public monies are being spent, and for sites where there is significant public interest. Since many sites were in varying stages of the cleanup process prior to implementation of the rules, questions have come up as to when this rule applies.

According to Rule 107, "the provisions of Parts 6 and 7 of these rules that deal with the selection of remedial action and cleanup activity shall apply only to remedial actions undertaken after the effective date of these rules." Rule 605(1) requires public participation after the Remedial Investigation and Feasibility Study activities but before formal approval of the final cleanup plan. Also, Rule 605(2) requires public participation activities after approval of the final cleanup plan, but before the cleanup activities begin. Therefore, the date on which the remedial action was undertaken, as well as when it was approved must be considered in determining the applicability of Rule 605.

For those projects in process when the Rules became effective, Rule 605 applies as follows:

	Rule 605(1) applies	Rule 605(2) applies
1. Final cleanup plan not approved prior to July 11, 1990	YES	YES
2. Final cleanup plan approved and undertaken (including design work) prior to July 11, 1990	no	no
3. Final cleanup plan approved but not undertaken prior to July 11, 1990	no	YES

Approval of the remedial action means that the plan was taken to the Quality Review Board (QRB) and approved by the Division Chief prior to July 11, 1990. Discussing the site with the QRB is not sufficient to indicate the remedial action was approved prior to the effective date of the rules.

Although this rule may not apply to a site, public participation actions should be conducted as warranted. In other words, if Rule 605(1) or 605(2) does not apply, this simply relieves the project manager from the time frames and specific requirements of the rule. It has always been the policy of the Division to carryout warranted public participation to ensure an informed citizenry and to facilitate the remediation of sites.

This memo is intended to provide guidance to division staff to foster consistent application of Act 307 and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

If you have questions, please contact Jami DaDan-McLain, Special Services Section, at 517-335-3062.

cc: Lynelle Marolf, Assistant to Deputy Director
Jami DaDan-McLain, ERD

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

January 31, 1991

TO: All Environmental Response Division Staff

FROM: James G. Truchan, Division Chief
Environmental Response Division

SUBJECT: Rule Interpretation Memo #3
Administrative Rule 605 Time Frame Requirements

Act 307 Administrative Rule 605 addresses public participation requirements at two stages of the remediation process. When Rule 605 applies to a site, subrule 1 should be satisfied following the feasibility study and prior to initiation of the final design activity. More specifically, public participation activities under Rule 605(1) need to be completed, or at least in process, before the site is recommended for final design funding, if the funding request identifies the specific remedy that will be designed.

Subrule 2 identifies the public participation activities after selection of the remedial action plan. The requirements of subrule 2 must be satisfied before commencement of the remedial action. This means that subrule 2 public participation activities can be completed anywhere between the time the final remedy is selected and initiated. In most cases, this should be done prior to beginning final design activity.

Subrule 2 also requires that the remedial action plan must be made available to the public before commencement of any remedial action. The plan is a "living document," which will include information regarding the remedial action, and will grow over time.

This memo is intended to provide guidance to division staff to foster consistent application of Act 307 and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

If you have questions, please contact Jami DaDan-McLain, Special Services Section, at 517-335-3062.

cc: Lynelle Marolf, Assistant to Deputy Director
Jami DaDan-McLain, ERD

R 1030

67

June 21, 1990 Revised 2/6/91

Administrative Record:

Rule 607 requires the Department to compile an administrative record of the decision process leading to the selection of **"any final remedial action"**. This record applies regardless of funding source (State or responsible party), and regardless of whether it's a Type A, B or C cleanup. This record shall contain, as applicable, the following:

- Remedial investigation data
- The feasibility study and potential alternative actions
- Public comments, and how significant concerns are to be addressed
- For completed remedial actions, documentation identifying that all response activities required in the approved plan have been completed
- Other information appropriate to the site
- If either an RI or FS were not conducted, an explanation of why
- For any project subject to the public participation process in Rule 605 (i.e. Type C proposals; state funded remedial actions; controversial sites), a summary document explaining its decision
- Upon request, the execution of a document stating that all response activities required in the approved remedial action plan have been completed

IMPLEMENTATION - The administrative record shall be a separate component of the file, easily obtained and identified, with a cover checklist identifying the various components of the record. This checklist is enclosed in this packet of information. This record shall be kept up to date until such time as the document stating all response activities have been completed has been executed.

For Type A criteria proposals, the District Supervisor shall sign an "approval" document explaining rationale for the selection and make it part of the Administrative Record. For Type B & C RP proposals, Lansing ERD shall prepare a recommendation to the Division Chief, which explains the rationale for the selection of the final remedy, and the Division Chief shall formally "approve" the selection of the remedy. For State-funded B & C proposals, the District Supervisor shall be responsible for preparing the recommendation document. This approval document shall be part of the Administrative Record, and will be incorporated in the summary document completed pursuant to Rule 607(3).

The District Supervisor shall be responsible for the development of this record, regardless of the funding source or criteria type (A,B or C) proposed. Where RP's propose Type C criteria, the District Supervisor is responsible for obtaining and assembling the necessary documents from Lansing ERD staff.

This rule shall apply to all state funded final remedy sites and all sites that have not had an "approved" remedial action plan by 7/11/90. (i.e. If a site has an approved remedial action plan prior to 7/11/90, this rule does not apply.) "Approval" means the selection of the final remedy was made prior to 7/11/90.

DRAFT

June 21, 1990 **Revised** 8/13/90

Administrative Record Checklist

Rule 607 requires the Department to compile an Administrative Record which outlines the elements utilized in the determination of Final Remedy Selection. The Administrative Record will constitute a "stand alone" compilation of documents and reports that were relevant to the decision making process. Following is a checklist of necessary information.

NOTE: THIS RECORD IS NECESSARY FOR ANY FINAL REMEDIAL ACTION **APPROVED AFTER** JULY 10, 1990, INCLUDING TYPE A, B, OR C CLEANUPS.

_____ Date Site Identified

_____ Remedial Investigation Data

_____ Feasibility Study and Potential Alternative Actions

_____ Public Comments, with Summary Statement of how concerns are to be Addressed

_____ Other Information Appropriate to the Site (Identify and List)

_____

_____

_____ Explanation of why an RI/FS was not completed for the site, if that was the case

_____ Summary and approval document, signed by the Division Chief, ERD, explaining decision for a RA which is subject to the public participation rule 605, and/or proposes Type B criteria

_____ Approval document, signed by the District Supervisor, for Type A final remedial actions

_____ Date Site Has Approved Remedial Action Plan (Type A, B, or C)

_____ Date of document stating all response activities required in an approved remedial action plan have been completed

DRAFT

June 27, 1990 **Revised** 7/25/90

The following briefly describes the three cleanup "Types" provided under the administrative rules for Act 307. The definitions from the rules for the three Types are:

"**Type A**" means the degree of cleanup which reduces hazardous substance concentrations such that those concentrations do not exceed background or method detection limits for a hazardous substance, consistent with the provisions of R 299.5707.

"**Type B**" means the degree of cleanup which provides for hazardous substance concentrations that do not pose an unacceptable risk on the basis of standardized exposure assumptions and acceptable risk levels described in the provisions of R 299.5709 to R 299.5715.

"**Type C**" means the degree of cleanup which provides for hazardous substance concentrations that do not pose an unacceptable risk, considering a site-specific assessment of risk as provided for in R 299.5717.

Type A cleanups will generally apply to spills and situations where contamination is relatively limited, to contaminants which have risk-based (Type B) criteria that are below method detection limits, and to materials that occur naturally in the environment. **It shall be the goal of the District KRD staff to achieve Type A and/or B criteria levels to the extent possible. Cleanups addressed pursuant to the low environmental impact policy (KRD001-89) must achieve, and be in compliance with, Type A (or, in some instances, Type B) standards.**

Type B cleanups will generally apply at sites where the desired outcome is to allow the site to be returned to unrestricted use at the completion of the remedial action, but **generally takes a longer period of time to achieve than a Type A cleanup.**

Type C cleanups will generally apply at the largest and most complex sites, and at sites where the uses of the property are expected to be limited at the completion of the remedial action. This category will include large landfills and industrial sites which are expected to continue in that use. **Technical review of Type C proposals are to be done by Lansing KRD staff.**

The choice of cleanup Type is at the option of the party proposing the remedial action, subject to review and approval by the Department of Natural Resources.

Cleanup Criteria:

Rule 707. Type A criteria for all environmental media: Cleanup to background or method detection limits. Approved analytical methods for this determination are discussed in a memo from the Division Chief issued December 7, 1990 (copy is included under Part 7 references of this guidebook).

Rule 709. Type B Criteria for groundwater in aquifers: Cleanup must be the most restrictive of the following:

- 1 in 1,000,000 risk for carcinogens
- HLCS (Human Life Cycle Safe) concentration for non-carcinogens. . .
- SMCL's for substances that have them
- Taste, odor, appearance, or other aesthetic characteristic threshold levels

The point of compliance for this rule is any point in the affected aquifer. Groundwater not in an aquifer shall meet the Type B criteria for soils or Type C criteria. Approved analytical methods are the same as for Type A cleanups for water.

Rule 711. Type B Criteria for soils: Acceptable cleanup levels shall be set to protect the following:

- Levels required to protect aquifers (defined as any free flowing water - i.e. if a sample can be collected, it's an aquifer)
- Levels required to protect surface waters
- Levels required to protect against inhalation (odor threshold, not where it smells bad)
- Levels required to protect against direct contact
- Levels required to protect direct uses of the resource

Presently, acceptable soil and groundwater cleanup levels for selected parameters are provided on the Type B Criteria document (see Part 7 references). These levels are subject to change as the science changes or as more data becomes available. Acceptable analytical methods are identical to those for a Type A cleanup.

When evaluating a proposed Type B cleanup, a comparison of all the numbers relative to the protection of different exposure pathways must be done, including taste and odor values in soils, pursuant to Rules 709(2)(d) and 711. This will have been done for some of the parameters we routinely deal with; however, it remains to be done for many others, and, where applicable, the RP is responsible for providing this comparison.

Rule 717. Type C Criteria, all environmental media: Criteria shall based on a site-specific risk assessment.

IMPLEMENTATION - For all cleanups, regardless of type, analytical methods are identified as above, and verification sampling protocol is provided in the enclosed draft document entitled "Verification of Soil Remediation" (see general reference section). Also enclosed are checklist documents for the Administrative Record and Type C elements.

For Type A cleanups, the District Supervisor shall be responsible to ensure all necessary elements of the rules are addressed, as appropriate. Approvals or denials of proposals, workplans, implementation procedures, etc. shall be signed by the District Supervisor. The document indicating completion of all necessary activities pursuant to these rules shall also be signed by the District Supervisor.

For Type B Responsible Party cleanup proposals, the District Supervisor shall ensure that all necessary elements are included in the proposal. Formal approvals of proposals, workplans, etc., shall be signed by the **Division Chief, ERD,** until instructed otherwise. An administratively complete proposal shall be forwarded to the ERD Division Chief following the same procedures outlined for a Type C RP proposal (The technical review is to be done by Lansing ERD Staff.) An incomplete or otherwise unacceptable proposal shall be returned to the party making the proposal by the District Supervisor, indicating the reasons why it is unacceptable.

The District Supervisor will be responsible to ensure that all **state funded Type B proposals** meet the criteria established from the rules, with the concurrence of the ERD Division Chief. Because of the potential for change in these numbers, the Supervisor must be in frequent contact with Lansing ERD staff to ensure accuracy. A checklist for the necessary elements is enclosed, and must be made part of the file and/or administrative record.

For Type C RP proposals, it shall be the responsibility of the District Supervisor to ensure that all necessary elements are included in the proposal, utilizing the enclosed checklist, as appropriate. Once a submitted proposal contains all the necessary elements, it shall be forwarded to the ERD Division Chief following the procedures outlined under "Public Participation, Type C criteria proposed by a responsible party". Lansing ERD staff shall be responsible for ensuring consistent application of the content of Type C proposals, and the determination of the adequacy of the proposal shall be made by Lansing ERD staff. Approvals or denials shall be signed by the Division Chief, including the document indicating completion of all necessary elements.

For Type C state funded proposals, the District Supervisor shall ensure that all required elements are contained in the package, and that the site specific levels are provided by Lansing ERD staff. The Supervisor is responsible for tracking the proposal, and to ensure all public participation elements are met. Lansing staff must ensure consistent application of these standards.

Finally, **Rule 505** requires the Department to inform the person submitting any of the above requested plans on their acceptability **within 90 days of submittal. Therefore, each tracking checklist must contain pertinent dates to ensure compliance with this rule.**

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

February 6, 1991

TO: All Environmental Response Division Staff

FROM: James G. Truchan, Chief
Environmental Response Division

SUBJECT: Rules Interpretations Memo #4
Risk Assessment Process - Rules 101, 515, 723, 725

Developing risk- or health-based criteria requires the availability of adequate toxicological data. Long-term human data are preferred for generating cleanup criteria. In their absence, chronic or subchronic animal data are used. When these data are lacking, the minimum acceptable toxicity datum point is an oral, rat LD50. Unfortunately, we often must deal with site contaminants for which toxicity data are inadequate to generate health-based criteria. Potentially Responsible Parties (PRPs) have the following three options from which to choose when attempting to develop cleanup criteria for chemicals having no or inadequate toxicological data.

1. Type A Cleanup
The use of background or method detection limits as cleanup criteria is acceptable.

2. Generation of an Oral, Rat LD50 and Subsequent Type B or Type C Criteria
(Rule 725) PRPs can conduct an oral, rat LD50 study and use the results to generate cleanup criteria following guidance in the 307 Rules. Standard protocol must be followed for the LD50 study. Both the study and the Type B calculation will be evaluated by a staff toxicologist.

3. Use of Type B or Type C Criteria Generated from Indicator Chemicals
(Rules 101, 515, 723, 725) An indicator or substitute chemical may be used to generate Type B or Type C criteria for a site contaminant if it can be demonstrated that the indicator is similar in toxicity. The indicator chemical must also be similar in physical and chemical characteristics such as persistence, mobility, and remediation traits. It is not necessary for the indicator to be present at the site. Justification and support documentation must be scientifically sound and presented in detail. The justification must be accompanied by copies of all support documentation used. An attempt must be made to utilize any available structure-activity relationship data and whatever toxicity data are available. A proposal will not be accepted unless adequate justification is submitted. These reviews are expected to be time and energy intensive, so all necessary information must be provided. This option is not available if a minimum of a good quality, oral, rat LD50 study is available in the literature for the site contaminant in question. Final approval for this option must be provided by the Division Chief.

This memo is intended to provide guidance to division staff to foster consistent application of Act 307 and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

If you have questions, please contact Jami DaDan-McLain, Special Services Section at 517-335-3062 or Christine Flaga at 517-373-0160.

cc: Lynelle Marolf, Assistant to Deputy Director
Jami DaDan-McLain, ERD

acting

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

March 8, 1991

RECEIVED

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ERD-SUPERFUND

TO: All Environmental Response Division Staff

FROM: James G. Truchan, Chief
Environmental Response Division

SUBJECT: Rule Interpretation Memo #5 - **REVISED**
Administrative Rule 711(6)

This memo is a revision to the February 6, 1991 Interoffice Communication. Upon further review of the memo, it is necessary to update the previously issued guidance. Please substitute this correspondence for the earlier version.

Rule 711(6) allows for consideration of the issues of food chain contamination, phytotoxicity, physical hazards, and others to develop cleanup levels based on direct use of the soil resource. The rule is intended to allow the department to address circumstances where more restrictive cleanup standards are necessary to protect against adverse effects not addressed by the other Type B soil cleanup criteria. These elements of rule 711(6) are to be addressed by the parties proposing the cleanup **when the Director determines** that considerations outlined in rule 711(6) may cause a Type B standard to be lower. Staff responsible for reviewing remedial action plans should inform parties proposing cleanups that it is necessary to address rule 711(6) only if the Director has determined that one or more elements of this rule needs to be addressed and that information is available to establish acceptable cleanup levels.

To assist in determining if more restrictive standards are necessary, the division will develop and maintain a database of approximately 100 chemicals routinely found in cleanups, and will perform literature searches for other contaminants as needed. As the database is developed, division toxicologists will identify chemicals of concern that should be brought to the Director's attention. They will inform you of any such chemicals and notify you of any determinations by the Director.

This memo is intended to provide guidance to division staff to foster consistent application of the Michigan Environmental Response Act (1982 P.A. 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

If you have questions, please contact Jami DaDan-McLain, Special Services Section, at 517-335-3062.

Application of Type B Soils Criteria

Soil is not a resource which is directly regulated, as are groundwater, surface water and air. Consequently, the Type B soil cleanup criteria are based on impacts which contaminants in soil may have on other media, or on the public health.

In judging whether material meets Type B soils criteria, impacts on groundwater and through direct contact are always assumed to be pertinent exposure pathways, and are evaluated according to the algorithms in the rules. The inhalation pathway must be considered, but is not likely to be a controlling factor. ERD toxicologists can be consulted for advice about whether a particular material presents an inhalation risk. Potential impacts on surface water must be evaluated on a site specific basis, considering the physical setting of the site, the likely rate of transport of contaminated material to the surface water, and other pertinent factors. Concern for surface water impacts is likely to be the controlling factor only for persistent and bioaccumulative materials which have very low Rule 57 numbers. Concern for "other impacts", as provided for in R 299.5711(6), is accounted for only when data is available to demonstrate that the provisions of this rule dictate a more restrictive limit is appropriate. This subrule addresses phytotoxicity, food chain impacts, odors, etc.

The remedial action plan for any site must identify whether runoff to surface water, agricultural uses of the site, or other pathways are pertinent. Where they are found to be pertinent, they must be considered in the selection of the cleanup criteria. When they are not pertinent, the remedial action plan must provide a justification for that decision.

The soil cleanup criterion which will apply for a given contaminant under a Type B remedial action is the most restrictive of the following, considering migration pathways which are pertinent to the site (see R299.5711):

1. The level which protects aquifers from the effects of contaminants in soil. (Contaminants in soil must not produce a concentration in leachate that exceeds the groundwater standard, or the total concentration of a contaminant in soil must be less than 20 times the groundwater standard.)

2. The level which protects surface water from contaminants transported via runoff, erosion, etc. (Contaminant levels in soil must be reduced so that no violation of water quality standards will result.)

3. The level that protects against unacceptable risk from inhalation of contaminants in, or emanating from, soil. (Emissions must not exceed 1 in 1,000,000 risk for carcinogens or result in any injurious effects on human health, animal or plant life, or property.)

4. The level that protects against unacceptable risk from ingestion or dermal absorption of contaminants in soil. (Algorithm in rules allows for calculation of concentrations which are protective for this "direct contact" hazard.)

5. The level that is required to protect against other injury to the public health, safety, welfare or environment or natural resources resulting from contaminants in soil. (This rule allows us to address food chain impacts, agricultural impacts, non-systemic toxic effects, physical hazards, and so on.)

In most cases, the concentration which is protective of groundwater will be the controlling factor. For certain materials which do not readily enter the groundwater (e.g., PCBs), the direct contact hazard will be the controlling factor. Staff should keep in mind the other 3 categories and consider whether they are likely, because of the physical setting of the site or the nature of the contaminants, to be more restrictive than the groundwater or direct contact criteria.

February 6, 1991

TYPE A CLEANUP CRITERIA CHECKLIST

SITE NAME: _____

DATE RECD: _____ REVD. BY: _____

ITEMS:

_____ A. Proposed cleanup levels for contaminants below BACKGROUND concentration.
_____ Data establishing background concentrations -OR-
_____ Method to determine background levels

_____ B. Proposed cleanup levels for contaminants below METHOD DETECTION LEVELS
_____ MDLs for chosen laboratory within range of acceptable limits
_____ Analytical methods are appropriate

_____ C. Remedial Investigation Assessment of Site
Date RI approved _____

_____ D. Evaluation of alternatives addressed in Rule 603

_____ E. Determination that activites are consistent with "Verification of Soil Remediation" guidance document.

_____ F. Horizontal and vertical extent of contamination in an aquifer above the higher of either Type A or Type B concentrations shall not increase after initiation of remedial activity [Rule 705(5)].

_____ G. All remedial activities addressing an aquifer shall provide for cleanup either through active remediation or as a result of naturally occurring biological or chemical processes which can be documented to occur at the site [Rule 705(6)].

TYPE B CLEANUP CRITERIA CHECKLIST

SITE NAME: _____

DATE RECD: _____ REVD. BY: _____

ITEMS (check if complete, N/A if not appropriate to the site):

_____ A. Proposed cleanup levels for contaminants in **groundwater** (with appropriate documentation):

_____ 1 in 1,000,000 risk for carcinogens

_____ HLCS (Human Life Cycle Safe Concentration) for non-carcinogens

_____ SMCL for substances which have them

_____ Taste, odor, appearances or other aesthetic characteristic threshold levels

_____ Horizontal and vertical extent of contamination in an aquifer above the higher of either Type A or Type B concentrations shall not increase after initiation of remedial activity [Rule 705(5)]

_____ All remedial activities addressing an aquifer shall provide for cleanup either through active remediation or as a result of naturally occurring biological or chemical processes which can be documented to occur at the site. [Rule 705(6)]

_____ B. Proposed cleanup levels for contaminants in **soil** (with appropriate documentation) addresses:

_____ Protection of aquifers from effects of contaminants in soil

_____ Protection of surface water from contaminants via runoff, erosion, or other pathways

_____ Levels in compliance with other water quality standards

_____ Protection against unacceptable risk from inhalation of contaminants in, or emanating from, soil (1 in 1,000,000 risk for carcinogens or result in any injurious effects on human health, animal or plant life, or property)

_____ Protection against direct contact [See Rule 711(5)]

_____ Protection against other injury to public health [Rule 711(6)]

_____ C. Remedial Investigation Assessment of Site
Date RI completed _____

_____ D. Evaluation of alternatives addressed in Rule 603

June 21, 1990 **Revised** 2-6-91

DISTRICT CHECKLIST FOR TYPE C CRITERIA PROPOSAL

_____ Date site identified
_____ Date Type C proposal submitted
_____ Date Proposal determined to contain all necessary elements
_____ Date submitted to ERD Division Chief

ELEMENTS: (write N/A if not applicable to the site)

_____ Demonstration that proposed criteria are appropriate (717,2.a)
_____ Accounting of foreseeable uses and natural resources (717.2.b)
_____ Appropriate factors as follows:
- ____ Potential exposure of human and natural resource targets
- ____ Affected environmental media
- ____ Geology
- ____ Hydrology
- ____ Soils
- ____ Hydrogeology
- ____ Other appropriate physical characteristics
- ____ Hazardous substance information (amount, concentration, form, mobility, persistence, bioaccumulative properties, environmental fate, other appropriate characteristics)
- ____ Extent of contaminant migration, and expected extent
- ____ Impact of future migration
- ____ Current or future contribution to food chain contamination
- ____ Climate
- ____ Technical feasibility and cost-effectiveness of other alternatives, including Type B criteria
- ____ Evaluation required by Rule 603
- ____ Uncertainties of the risk assessment
- ____ Monitoring of remedial performance
- ____ As appropriate, consistency with the Great Lakes water quality agreement of 1978
- ____ Other factors appropriate to the site
- ____ Remedial action that addresses a genotoxic or germ line mutagen
- ____ Remedial action that addresses surface water or sediments, as required by 717.5.a-1

Additional requirements for certain Type C proposals
- ____ For on-site containment proposal, long term monitoring to assure effectiveness and integrity, land use restrictions, and financial responsibility in a legally enforceable document (?)
- ____ Land Use restrictions containing the following:
  - ____ Prohibition of activities interfering with RA
  - ____ Prohibition of activities resulting in human exposure
  - ____ Notice of intent of convey interest
  - ____ MDNR right to enter
  - ____ Allows state to enforce covenant restrictions
  - ____ Installation of permanent marker
  - ____ Description of allowed uses

DRAFT
6/22/90/CF

Selected Type B Cleanup Criteria
(all values in ppb)

(Note: Type B remediation criteria values were calculated June 22, 1990 based on currently available toxicological data using the algorithms set forth in the Act 307 rules. These values may change if new toxicological data become available. Proposals for Type B remediations must also address the additional criteria detailed in the Act 307 rules to determine appropriate target remediation levels for each site.)

Chemical	Groundwater Criteria	Soil Criteria	Basis for Soil Criteria
CARCINOGENS			
Aldrin	0.002	0.04	20X groundwater criteria
Aniline	6.0	120.	20X groundwater criteria
Arsenic	0.02+	0.4+	20X groundwater criteria
Benzene	1.0	20	20X groundwater criteria
Bromodichloromethane	0.2	4.	20X groundwater criteria
Chlordane	0.03	0.6	20X groundwater criteria
Chloroform	6	120	20X groundwater criteria
1,2-Dichloroethane	0.4	8	20X groundwater criteria
DDD	0.1	2	20X groundwater criteria
DDE	0.1	2	20X groundwater criteria
DDT	0.1	2	20X groundwater criteria
Dieldrin	0.002	0.04	20X groundwater criteria
Dichlorvos	0.1	2	20X groundwater criteria
Heptachlor	0.008	0.2	20X groundwater criteria
Heptachlor epoxide	0.004	0.08	20X groundwater criteria
Lead	5.0+	local background	
Methylene bis-2-chloroaniline (MBOCA)	0.04	1000	direct contact hazard
Methylene chloride	5.0	100	20X groundwater criteria
PCBs	0.02	1000	direct contact hazard
PNAs			
Benzo(a)anthracene	0.003	100	direct contact hazard
Benzo(b)fluoranthene	0.003	100	direct contact hazard
Benzo(k)fluoranthene	0.003	100	direct contact hazard
Benzo(a)pyrene	0.003	100	direct contact hazard
Chrysene	0.003	100	direct contact hazard
Dibenzo(a,h)anthracene	0.003	100	direct contact hazard
Indeno(1,2,3-cd)pyrene	0.003	100	direct contact hazard
Tetrachloroethylene	0.7	14	20X groundwater criteria
1,1,2-Trichloroethane	0.6	12	20X groundwater criteria
Trichloroethylene	3	60	20X groundwater criteria
Vinyl chloride	0.02	0.4	20X groundwater criteria

Chemical	Groundwater Criteria	Soil Criteria	Basis for Soil Criteria
NONCARCINOGENS			
Acetone	700	14,000	20X groundwater criteria
Atrazine	35	700	20X groundwater criteria
Barium	5,000	100,000+	20X groundwater criteria
2-Butanone	350	7,000	20X groundwater criteria
Butyl benzyl phthalate	1,400	28,000	20X groundwater criteria
Cadmium	4+	local background	
Chloride	250,000	500,000	agricultural impacts
Chlorobenzene	140	2,800	20X groundwater criteria
Cyanide	140	2,800	20X groundwater criteria
1,2-Dichlorobenzene	600	12,000	20X groundwater criteria
trans-1,2-Dichloroethylene	140	2,800	20X groundwater criteria
Di-n-butylphthalate	700	14,000	20X groundwater criteria
1,1-Dichloroethane	700	14,000	20X groundwater criteria
Ethylbenzene	30*	600	20X groundwater criteria
Hexachlorocyclopentadiene	50	1,000	20X groundwater criteria
Mercury	2	local background	20X groundwater criteria
4-Methyl-2-pentanone (methyl isobutyl ketone)	350	7,000	20X groundwater criteria
Methyl(tert)butylether (MTBE)	20*	400	20X groundwater criteria
Naphthalene	40	800	20X groundwater criteria
Phenol	300*	6,000	20X groundwater criteria
PNAs			
Acenaphthene	400	8,000	20X groundwater criteria
Anthracene	2,000	40,000	20X groundwater criteria
Fluorene	300	6,000	20X groundwater criteria
Fluoranthene	300	6,000	20X groundwater criteria
Pyrene	200	4,000	20X groundwater criteria
Sodium	150,000		
Toluene	40*	800	20X groundwater criteria
Trichlorofluoromethane	2,000	40,000	20X groundwater criteria
1,1,1-Trichloroethane	200	4,000	20X groundwater criteria
Xylenes	20*	400	20X groundwater criteria

+ If local background is greater than these health-based criteria, the average local background can be used as a final cleanup goal.
* Secondary Maximum Contaminant Level or taste/odor threshold value, if lower than toxicologically-based standard.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

August 14, 1991

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **MERA Operational Memorandum #1 — Release Reporting Pursuant to** Section 10a of 1982 PA 307, as amended

The release reporting requirements of Section 10a(1)(c) of 1982 PA 307, as amended, the Environmental Response Act (MERA), will be implemented as described below. This memorandum supplements instructions given in Section B of the Act 307 Reference Manual dated June 26, 1991.

REPORTING REQUIREMENTS

For releases that occurred prior to July 1, 1991, AND where knowledge of that release was obtained prior to that date, only those releases that were required to be reported to the U.S. Environmental Protection Agency (EPA) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which have not yet been reported, must be reported under MERA. Historic releases of petroleum products containing hazardous substances that are exempted from CERCLA do not need to be reported under MERA.

For releases that occur on or after July 1, 1991, or where knowledge of a historical release is obtained on or after July 1, 1991, any release of a hazardous substance in a reportable quantity (based on the 1989 CERCLA list), that occurred within a 24-hour period, must be reported under MERA. This includes releases of petroleum products, which are exempted under CERCLA, that contain hazardous substances in excess of reportable quantities.

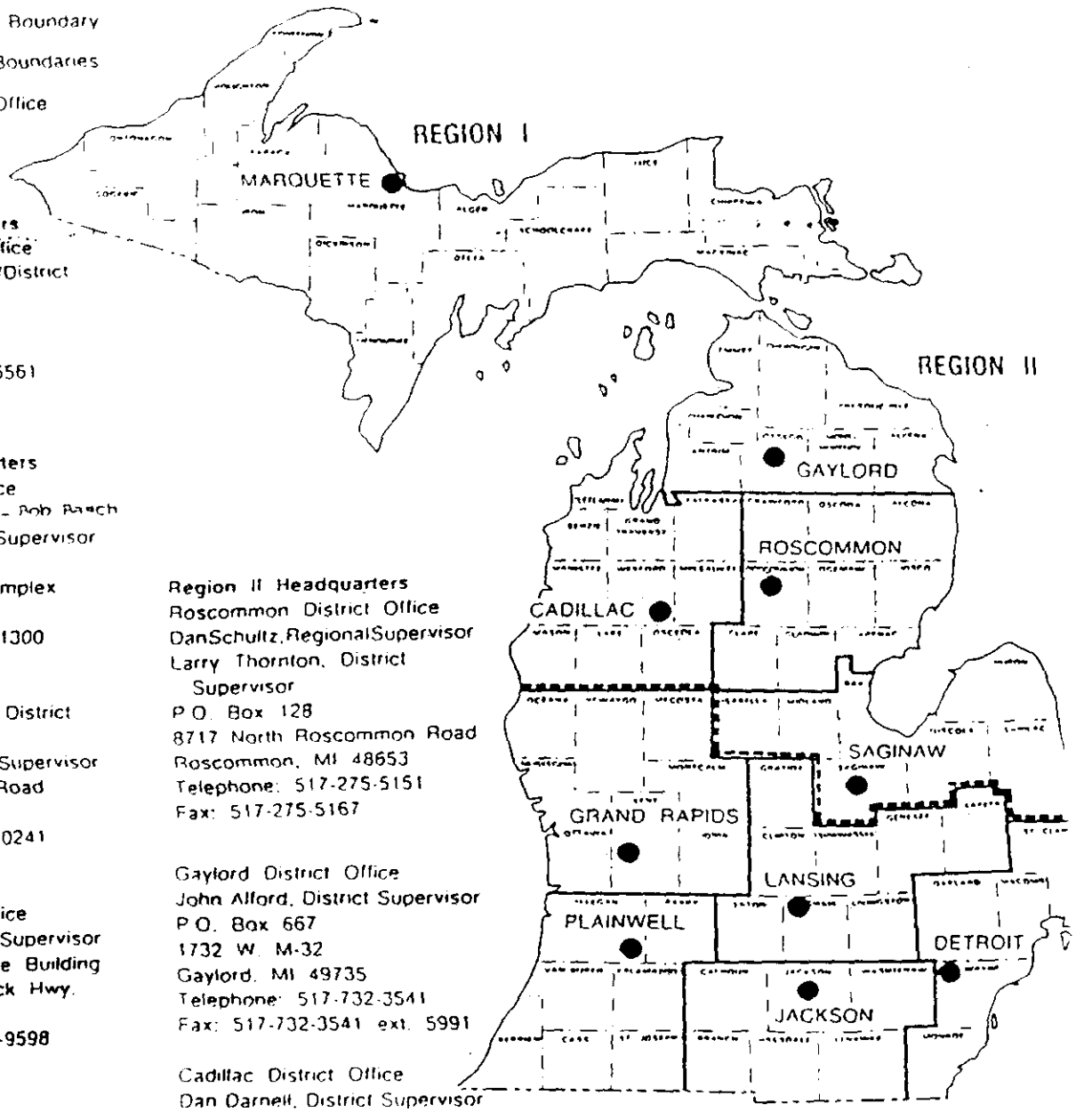
The Department intends to incorporate this position in administrative rules pursuant to the authority provided in Sections 10a(1)(c) and (2).

HOW TO REPORT

For releases that occurred prior to July 1, 1991:
Release reports should be filed in writing with the Department of Natural Resources (DNR) District Office in the area where the release occurred (see attached map). These reports must be filed by **October 1, 1991** to avoid potential enforcement action.

For releases that occur on or after July 1, 1991:
Owners and Operators (including Persons in Charge) of a facility from which a hazardous substance has been released should call the Pollution Emergency Alerting System (PEAS) at 1-800-292-4706 within 24 hours after obtaining

Department of Natural Resources
Environmental Response Division
Division, Region and District Offices



Region I Headquarters
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Earl Olsen, Regional/District Supervisor
1990 U.S. 41 South
Marquette, MI 49855
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Fax: 906-228-5245

Region III Headquarters
Lansing District Office
Regional Supervisor - Bob Rasch
Rod Mosier, District Supervisor
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State Secondary Complex
Lansing, MI 48909
Telephone: 517-322-1300
Fax: 517-322-6311

Southeast Michigan District Office
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Larry Thornton, District Supervisor
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John Alford, District Supervisor
P.O. Box 667
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Gaylord, MI 49735
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Cadillac District Office
Dan Darnell, District Supervisor
R# 1, 8015 South Mackinaw Trail
Cadillac, MI 49601
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Superfund Fax: 517-335-4887
Special Services Fax: 517-335-3624

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

August 28, 1991

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **NERA Operational Memorandum #2 — Requirements for Remedial Action in Previously Impacted Areas**

Rule 299.5701(c) defines background as "the concentration or level or a hazardous substance which exists in the environment at or regionally proximate to a site that is not attributable to any release at or regionally proximate to the site." However, there are a number of locations where hazardous substance concentrations are observed at levels above those expected to occur naturally, even though activities at the site may not have resulted in the release of the hazardous substance(s) in question. In some instances Type B criteria may be exceeded. This memo is intended to provide guidance to Environmental Response Division staff regarding remedial action in these previously impacted areas. Examples of situations where this guidance applies are areas of widespread historical fill, and sites where human activity has resulted in impacts on large areas not attributable to a release from a particular source or sources. This memo is not intended to modify the definition of background or the application of Type A criteria but to help guide their application.

Response activity designed to address specific source areas within previously impacted areas (e.g., a leaking underground storage tank in an area of historically contaminated fill material) may be approved as an acceptable response action if the response activity reduces hazardous substance concentrations to local background or levels which existed prior to the release addressed by the current response activity. Additional response or site-wide action may be required, however, if the levels of hazardous substances remaining after the current response activity pose an imminent threat, considering current uses of the site and potential resource impacts. Hazardous substance levels which do not pose an imminent hazard but exceed Type B criteria must be evaluated and must be remediated when there is a threat to the public health, safety, welfare, environment or natural resources. Subsequent remedial action at such sites must conform to Type A, Type B or Type C criteria as provided for in Rule 299.705.

Approval of a response action to address a specific source area within a previously impacted area does not mean that the cleanup endpoint for that action is acceptable for the site as a whole or that the endpoint for the focused response action constitutes "background" at the site as defined by Rule 299.701(c).

Site characterization typically defines the complete vertical and horizontal extent of contamination (i.e., the limits of hazardous substance migration as defined by background or method detection limits). In previously impacted areas characterization efforts must define, in a statistically valid manner, contamination levels in the area proposed to be addressed by the focused response activity and the extent of contaminant migration from the release that the response is designed to address. In areas that have been previously impacted, it may not be necessary to completely define the overall limits of contamination beyond that of the immediate release in the typical manner if one or more of the following conditions exist:

- Hydrogeological conditions at the site and/or the nature of the release being addressed by the response activity are such that the migration of hazardous substances is clearly confined (e.g., a sudden, limited release of a hazardous substance and/or the presence of non-fractured, low-permeability soils which in staff's judgment, would prevent the migration of hazardous substances).

- Data indicate a clear progression toward background or method detection limits and professional judgment dictates that the area has been sufficiently characterized.

- The hazardous substance(s) in question exceed Type A and/or Type B criteria and are prevalent at the site as a result of releases other than that being addressed by the current response activity. In this case, sampling must define the extent of migration from the release being addressed by the current response activity.

Statewide constituent concentrations for soil types typical of the area where the site is located may be used where it is impracticable to establish an unimpacted background value.

Staff must inform the party proposing response activity as described above that evaluation and other response activity to address site-wide contamination apart from the current release may be required pursuant to Rule 299.5505 and Section 10a of Act 307. Responsible parties may be required to provide a schedule for site-wide remedial action consistent with these requirements.

This memo is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Questions about this matter should be directed to Lynelle Marolf at 517-373-9893.

rev. 0

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 29, 1991

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **MERA Operational Memorandum #3 — R 299.5211 and R 299.5215**
Inclusion of Incidents on the Site List
Removal of Sites from the Site List

In order to assure that only documented sites of environmental contamination are included on the annual Site List, the following guidance will be used in interpreting Rules 211 and 215.

Site Listing

For incidents to be included on the Site List, there must be a release of a hazardous substance or a potential release of a discarded hazardous substance. The total quantity of hazardous substance(s) must present a threat to the public health, safety, or welfare, or the environment or natural resources. When analytical data exists, it must document the presence of hazardous substances at concentrations above Type B criteria. A site may be included on the list without supporting analytical documentation if it meets one or more of the following conditions:

1. It is a release or threat of release reported by an owner or operator.
2. It is a release directly observed by staff.
3. It involves abandoned or discarded containers of hazardous substances.

An incident with analytical data showing hazardous substance concentrations below Type B criteria, but which is not adequately characterized, may require additional response activity prior to the listing decision. Information about incidents where analytical data does not confirm contamination above Type B levels will be maintained in the Incident Tracking System until data are available to confirm or rule out the presence of hazardous substances at levels greater than Type B criteria.

Removal of Sites from the Site List

Sites on the current Site List will be proposed for deletion from the FY1993 Site List unless the documentation described above is available. The deletion process can also be used for sites that are the result of activity which, under the terms of the Act 307 amendments, is no longer considered a "release". The delisting (in contrast to deletion) procedure

described in Rule 215 must be followed, however, for any site which has previously been documented to have had a release of hazardous substance(s) which remain at concentrations greater than Type B criteria.

This memo is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision..

Any questions about this memorandum should be directed to Lynelle Marolf at 517-373-9893.

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 29, 1991

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **MERA Operational Memorandum #4 — Type C Remedial Actions**

Since assuming the role of Environmental Response Division (ERD) Chief, I have heard a number of comments from the regulated community that the Division is not open to consideration of Type C remedial action plans. This memo will clarify that any of three Types of remedial action provided for in Part 7 of the Act 307 Rules, or a combination of those Types, may be proposed as part of the remedial action plan for any site. No categories of sites, or portions thereof, are excluded from consideration for any Type, nor is a particular Type required for any site category. Rule 299.5705(4) specifically provides that the party proposing the remedial action shall have the option of proposing the Type of cleanup. The Department will approve of cleanups which comply with the criteria set forth in Parts 5, 6 and 7 of the rules.

Guidance to Division staff included in the Rules Implementation Manual (Part VII, Page 1) stated in part that "[i]t shall be the goal of the District ERD staff to achieve Type A and/or Type B criteria levels to the extent possible". I want to make clear that our goal is to achieve cleanups which are protective of the public health, safety, and welfare and the environment and natural resources. This includes all three Types of cleanups. The statute and rules do not provide a preference for one Type of cleanup over another.

Type C remedial action plans (i.e., site specific risk assessments as opposed to the standard exposure assumptions used for Type B cleanup criteria) are an acceptable means of developing cleanup criteria at all sites, regardless of the size, current land use or land use restrictions, or potential future land use. It is our responsibility in reviewing these plans to assure that the risk assessment methodology accurately reflects the risks that would be posed by the site at the completion of the proposed remedy, if any. The determination of the acceptable exposure scenario for a Type C cleanup (e.g., residential, commercial, recreational, industrial) must take into account reasonably foreseeable future uses of the site and natural resources in question (see Rule 299.5717(2)(b)). A Type C remedy does not necessarily require institutional or engineering controls at a site, provided that human health and the environment are protected.

This memorandum is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Any questions about this memorandum should be directed to me at 517-373-9837 or to Lynelle Marolf at 517-373-9893.

rev. 0

A. Howard

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 29, 1991

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **MERA Operational Memorandum #5** — Environmental Assessments and Audits (formerly Environmental Response Division Policy ERD005-90)

The following guidance replaces Environmental Response Division Policy ERD005-90 dated December 6, 1990. It has been modified to conform with amendments to the Environmental Response Act (1982 PA 307, as amended) which took effect on July 1, 1991 and to reflect current practices.

Environmental assessments and audits are now commonly being conducted by prospective purchasers of commercial and industrial property prior to property transfers. The primary reason purchasers are conducting such studies is to ascertain if property is contaminated, since under state and federal law, an owner of property is strictly liable for contamination on that property; no causation must be proven to impose cleanup liability.

However, federal and state law provide a defense to liability for a property owner who undertakes all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practices. This pre-acquisition inquiry is known as performing "due diligence" prior to the purchase of property. In other words, if a person purchases property that turns out to be contaminated, but that person exercised due diligence prior to the purchase (and that due diligence investigation revealed no contamination), that person would then have a defense to liability. Statutes that provide for legal defenses to liability through the exercise of due diligence include the Comprehensive Environmental Response, Compensation, and Liability Act, the Leaking Underground Storage Tank Act, and the Environmental Response Act (Act 307).

There are no standards for performing "due diligence" assessments. The laws allow the courts to take into account any specialized knowledge or experience of the buyer, the relationship of the purchase price to the value of the property, the obviousness of the presence of contamination, and the ability to detect the contamination. Each individual is responsible for providing the documentation that due diligence was undertaken.

Environmental Response Division (ERD) staff frequently receive environmental assessments or audits and, in some instances, are being asked to review and provide judgment on the adequacy of the studies and to determine whether the site is clean.

It is the responsibility of the person undertaking the environmental assessment to ascertain whether the property is contaminated. General inquiries to staff regarding the adequacy of environmental assessments or audits should be referred to the private sector (i.e., consultants who routinely do these evaluations). If information is provided to ERD which identifies a site of environmental contamination, the appropriate parties should be advised of their obligations for further investigation and/or cleanup. Because there are no standards for performing an environmental assessment or audit, ERD staff is not to make any statements about whether a party has performed due diligence or otherwise fulfilled their obligations under state or federal law to perform an environmental assessment.

Environmental assessments or audits submitted to ERD shall be handled in accordance with the Division's existing methods for prioritizing work. All assessments provided to ERD which reveal or indicate a site of environmental contamination will be subject to the Act 307 site assessment and listing process. A decision about whether the assessment or audit identifies a site of environmental contamination which should be included in the annual site list will be made in accordance with Rule 299.5211 and Operational Memorandum #3.

This memorandum is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Any questions about this memorandum should be directed to Lynelle Marolf at 517-373-9893.

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 1, 1991

TO: All Environmental Response Division Staff

FROM: Alan J. Howard, Chief
Environmental Response Division

SUBJECT: **MERA Operational Memorandum #6: Analytical Detection Level Guidance for Environmental Contamination Response Activities under Act 307 Rules (Replaces Rule Interpretation Memo #1 dated April 1, 1991)**

This memo replaces the April 1, 1991 Rule Interpretation memo on the above subject. The attached list includes new compounds and revised detection limits. Changes are summarized in the attached list.

Division staff will frequently be involved in the design, review, and approval of cleanup plans, monitoring plans, consent decrees, and similar documents where analytical methods and method detection limits are specified for final cleanups. Act 307 rules require cleanups to comply with Type A, B, or C criteria. Type A criteria require cleanup to either background levels or method detection limits (Rule 707). Type B criteria are risk-based numbers and will frequently be below method detection limits. When Type B criteria are <u>below</u> method detection limits, the cleanup level is generally established <u>at</u> method detection limits [Rule 721(a)]. However, measured levels exceeding method detection limits but less than the practical quantitation level may be *sufficient for cleanup where the difference between the method detection limit* and measured level(s) is determined not to be statistically significant by a method acceptable by the department [Rule 721(b)].

Method detection limits may vary considerably between laboratories performing the same analysis. However, because it is important to conduct site cleanup work consistently, a list of acceptable method detection levels was developed as a guide to identify suitable detection levels for site cleanup work.

The acceptable method detection levels listed in Table 1 were developed by reviewing the method detection limit based data reporting levels of government and commercial laboratories, selecting those levels which are below the Type B risk-based criteria wherever practical, and are achievable and available from a reasonable number of laboratories. Table 1 also identifies analytical methods capable of achieving these acceptable method detection levels using method reference numbers. Table 2 identifies the specific methods associated with these reference numbers as well as the source documents.

All site analyses need not be performed at these low levels. The primary purpose of these low levels is to determine the extent of contamination [Rules 511(3)(a) and 511(3)(v)] and to evaluate final cleanups [Rule 513(1)(b)]. Less sensitive methods (higher detection limits) may be acceptable for other purposes, such as in the case of preliminary site evaluation work or to determine off-site waste disposal requirements.

This list will be reviewed periodically and revised as new methodology is developed, as laboratory instrumentation is improved, and as new substances are added. Risk-based cleanups and clean closure type activities under RCRA, Superfund, and state programs will influence detection capabilities and provide incentives to labs and instrument manufacturers to achieve lower levels.

This memo is intended to provide guidance to division staff to foster consistent application of the Michigan Environmental Response Act (P.A. 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Use of acceptable method detection limits and associated methods as outlined in this interoffice communication will be considered demonstration of compliance with rules related to method detection limits, specifically Rule 721(a). The list does not include all possible contaminants and will be updated as new methods and method detection capabilities become available. Contact George Jackson at 373-3561 for detection limit information for contaminants not included on this list.

Attachment

cc: Air Quality Division
Surface Water Quality Division
Waste Management Division

Compounds with Increased Acceptable Method Detection Levels (ppb)

		April 1, 1991 Value	October 1, 1991 Value
Acetone	gw	5	50
	soil	10	100
MEK	gw	5	50
	soil	10	100
MIBK	gw	5	50
	soil	10	100
2-Hexanone	gw	5	50
	soil	10	100
MTBE	gw	5	50
	soil	10	100
Arsenic	soil	50	100
Cadmium	soil	5	50
Copper	gw	1	25
	soil	25	1000
Lead	soil	125	1000
Mercury	soil	50	100
Nickel	gw	2	50
	soil	125	1000
Selenium	gw	2	5
Silver	soil	25	500
Zinc	soil	50	1000

Compounds Added to 10/1/91 List of Acceptable Method Detection Levels

1,4-Dioxane
Carbon Disulfide
Acetonitrile
Acrylonitrile
Ethylene Dibromide
Styrene
Benzidine
3,3-Dichlorbenzidine
Octachlorocyclopentene
Ethylene Glycol
Propylene Glycol
Methanol
Ethanol
Formaldehyde
Cyanide
Sulfide
Aluminum
Antimony
Chromium III and VI (instead of total Cr)
Iron
Manganese
Thallium

Table 1. Acceptable Method Detection Levels for Environmental Contamination Response Activities under Act 307 Rules.

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method Detection Level	Method Reference Numbers
Volatile Organics				
Chloromethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Bromomethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Vinyl Chloride	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Chloroethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Methylene Chloride	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Acetone	50	2,4,5,6,7,9,10-13	100	4,5,6,7,13
1,1-Dichloroethene	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,1-Dichloroethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,2-Dichloroethene(cis)	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,2-Dichloroethene(trans)	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Chloroform	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,2,-Dichloroethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
2-Butanone (MEK)	50	2,4,5,6,7,9,10-13,22	100	4,5,6,7,13,22
1,1,1-Trichlorethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method Detection Level	Method Reference Numbers
Carbon Tetrachloride	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Bromodichloromethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,2-Dichloropropane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,3-Dichloropropene(cis)	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Trichloroethene	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Dibromochloromethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
1,1,2-Trichloroethane	1	1,3,5,6,7,9,10-13	10	3,5,6,7,13
Benzene	1	2,4,5,6,7,8,10-13	10	4,5,6,7,13
1,3-Dichloropropene(trans)	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Bromoform	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Tetrachloroethene	1	1,3,5,6,7,9,10-13	10	3,5,6,7,13
Toluene	1	2,4,5,6,7,9,10-13	10	4,5,6,7,13
1,1,2,2-Tetrachloroethane	1	1,3,5,6,7,8,10-13	10	3,5,6,7,1
4-Methyl-2-pentanone(MIBK)	50	2,4,5,6,7,9,10-13,22	100	4,5,6,7,13,22
2-Hexanone	50	2,4,5,6,7,9,10-13	100	4,5,6,7,13
Chlorobenzene	1	1,3,5,6,7,8,10-13	10	3,5,6,7,13
Ethylbenzene	1	2,4,5,6,7,9,10-13	10	4,5,6,7,13
Xylene	1	2,4,5,6,7,9,10-13	30	4,5,6,7,13
Methy(tert)butylether (MTBE)	50	2,4,5,6,7,9,10-13	100	4,5,6,7,13

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
1,4-Dioxane	10	2,4,5,6,7,9,10-13	50	4,5,6,7,13
Carbon Disulfide	50	6,7,11,12,13,14	100	6,13,14
Acetonitrile	1	6,7	10	6,7
Acrylonitrile	1	6,7	10	6,7
Ethylene Dibromide (1,2-Dibromoethane)	1	1,3,5,6,7,9,10-13	10	3,5,6,7,13
Styrene	1	2,4,5,6,7,9,10-13	10	4,5,6,7,13
PHENOLS				
2-Chlorophenol	5	13,15,20	330	13,14
2-Nitrophenol	5	13,15,20	330	13,14
Phenol	5	13,15,20	330	13,14
2,4-Dimethylphenol	5	13,15,20	330	13,14
2,4-Dichlorophenol	5	13,15,20	330	13,14
2,4,6-Trichlorophenol	5	13,15,20	330	13,14
4-Chloro-3-methylphenol	5	13,15,20	330	13,14
2,4-Dinitrophenol	20	13,15,20	1700	13,14
2-Methyl-4,6-dinitrophenol	20	13,15,20	1700	13,14
Pentachlorophenol	20	13,15,20	1700	13,14

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
4-Nitrophenol	20	13,15,20	1700	13,14
Alcohols				
Methanol	800	22	800	22
Ethanol	1000	22	1000	22
Aniline Compounds				
4-Chloroaniline	20	13,15,20	1700	13,14
2-Nitroaniline	20	13,15,20	1700	13,14
3-Nitroaniline	20	13,15,20	1700	13,14
4-Nitroaniline	20	13,15,20	1700	13,14
Aniline	20	13,15,20	1700	13,14
Benzidines				
Benzidine	50	15,20	5000	15
3,3-Dichlorobenzidine	20	15,20	2000	15

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Chlorinated Hydrocarbons (GC/MS) 2				
2-Chloronaphthalene	5	13,15,20	330	13,14
1,2-Dichlorobenzene	5	13,15,20	330	13,14
1,3-Dichlorobenzene	5	13,15,20	330	13,14
1,4-Dichlorobenzene	5	13,15,20	330	13,14
Hexachlorobenzene (C-66)	5	13,15,20	330	13,14
Hexachlorobutadiene (C-46)	5	13,15,20	330	13,14
Hexachlorocyclopentadiene (C-56)	5	13,15,20	330	13,14
Hexachloroethane	5	13,15,20	330	13,14
1,2,4-Trichlorobenzene	5	13,15,20	330	13,14
Octachlorocyclopentene (C-58)	5	13,15,20	330	13,14
Chlorinated Hydrocarbons (GC-EC) 3				
2-Chloronaphthalene	1.0	18	330	18
1,2-Dichlorobenzene	.2	18	330	18
1,3-Dichlorobenzene	.2	18	330	18
1,4-Dichlorobenzene	.2	18	330	18

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Hexachlorobenzene (C-66)	.01	18	50	18
Hexachlorobutadiene (C-46)	.01	18	50	18
Hexachlorocyclopentadiene (C-56)	.01	18	50	18
Hexachloroethane	.01	18	50	18
1,2,4-Trichlorobenzene	.02	18	330	18
Octachlorocyclopentene (C-58)	.01	18	50	18
Glycols				
Ethylene Glycol	5000	21	5000	21
Propylene Glycol	5000	21	5000	21
Haloethers				
Bis(2-chloroethyl)ether	5	13,15,20	330	13,14
Bis(2-chloroethoxy)methane	5	13,15,20	330	13,14
Bis(2-chloroisopropyl)ether	5	13,15,20	330	13,14
4-Bromophenyl phenyl ether	5	13,15,20	330	13,14
4-Chlorophenyl phenyl ether	5	13,15,20	330	13,14

Parameter Group	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Nitrosamines				
N-Nitrosodiphenylamine	5	13,15,20	330	13,14
N-Nitrosodi-n-propylamine	5	13,15,20	330	13,14
Nitroaromatics				
2,4-Dinitrotoluene	5	13,15,20	330	13,14
2,6-Dinitrotoluene	5	13,15,20	330	13,14
Isophorone	5	13,15,20	330	13,14
Nitrobenzene	5	13,15,20	330	13,14
Phthalates				
Bis(2-ethylhexyl)phthalate	5	13,15,19,20	330	13,14,19
Butyl benzyl phthalate	5	13,15,19,20	330	13,14,19
Di-n-butyl phthalate	5	13,15,19,20	330	13,14,19
Diethyl phthalate	5	13,15,19,20	330	13,14,19
Dimethyl phthalate	5	13,15,19,20	330	13,14,19
Di-n-octyl phthalate	5	13,15,19,20	330	13,14,19

Parameter Group	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Polynuclear Aromatic Hydrocarbons				
Acenaphthene	5	13,15,17,20	330	13,14,17
Acenaphthylene	5	13,15,17,20	330	13,14,17
Anthracene	5	13,15,17,20	330	13,14,17
Benzo(a)anthracene	5	13,15,17,20	330	13,14,17
Benzo(b)fluoranthene	5	13,15,17,20	330	13,14,17
Benzo(k)fluoranthene	5	13,15,17,20	330	13,14,17
Benzo(a)pyrene	5	13,15,17,20	330	13,14,17
Benzo(g,h,i)perylene	5	13,15,17,20	330	13,14,17
Chrysene	5	13,15,17,20	330	13,14,17
Dibenzo(a,h)anthracene	5	13,15,17,20	330	13,14,17
Fluoranthene	5	13,15,17,20	330	13,14,17
Fluorene	5	13,15,17,20	330	13,14,17
Indeno(1,2,3-cd)pyrene	5	13,15,17,20	330	13,14,17
Naphthalene	5	13,15,17,20	330	13,14,17
Phenanthrene	5	13,15,17,20	330	13,14,17
Pyrene	5	13,15,17,20	330	13,14,17

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Pesticides				
Aldrin	0.01	13,16	1.7	14,16
a-BHC	0.01	13,16	1.7	14,16
b-BHC	0.01	13,16	1.7	14,16
g-BHC	0.01	13,16	1.7	14,16
r-BHC	0.01	13,16	1.7	14,16
a-chlordane	0.01	13,16	1.7	14,16
g-chlordane	0.01	13,16	1.7	14,16
4,4'-DDD	0.01	13,16	3.3	14,16
4,4'-DDE	0.01	13,16	3.3	14,16
4,4'-DDT	0.01	13,16	3.3	14,16
Dieldrin	0.01	13,16	3.3	14,16
Endosulfan I	0.01	13,16	3.3	14,16
Endosulfan II	0.01	13,16	3.3	14,16
Endosulfan Sulfate	0.01	13,16	3.3	14,16
Endrin	0.01	13,16	3.3	14,16
Endrin Aldehyde	0.01	13,16	3.3	14,16
Heptachlor	0.01	13,16	1.7	14,16

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Heptachlor epoxide	0.01	13,16	1.7	14,16
Toxaphene	0.1	13,16	170	14,16
PCB 1016	0.1	13,16	33	14,16
PCB 1221	0.1	13,16	33	14,16
PCB 1232	0.1	13,16	33	14,16
PCB 1242	0.1	13,16	33	14,16
PCB 1248	0.1	13,16	33	14,16
PCB 1254	0.1	13,16	33	14,16
PCB 1260	0.1	13,16	33	14,16
Miscellaneous Organic Compounds				
Formaldehyde	100	23,24	500	23,24
Inorganic Compounds[4]				
Sulfide	200	100	5000	100/101
Cyanide	5	102-103	100	104

Parameter Group	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Metals[4]				
Aluminum	20	30-33	500	31,33
Antimony	5	32-35	500	33-35
Arsenic	1	32,33,36-39	100	33,37,39
Barium	200	30-33	1000	31,33
Cadimium	0.2	32,33,40,41	50	33,41
Chromium (III)	50	30-33,44,45	2500	31,33,43,45
Chromium (VI)	1	46-48	200	46,48
Copper	25	30-33,49-52	1000	31,33,50,52
Iron	100	30-33,53-56	2000	31,33,54,56
Lead	3	32,33,57,58	1000	33,58,59
Manganese	20	30-33,60-63	2000	31,33,61,63
Mercury	0.2	64,65,67	100	66,68
Nickel	50	30-33,69,70	1000	31,33,71
Selenium	5	32,33,72-75	500	33,73,75
Silver	0.5	32,33,76,77	500	33,77
Thallium	2	32,33,78,79	500	33,79

	Groundwater (ug/l)		Soil (ug/Kg-dry wt.)	
Parameter Group	Acceptable Method Detection Level	Method Reference Numbers	Acceptable Method[1] Detection Level	Method Reference Numbers
Zinc	20	30-33,80-83	1000	31,33,79,81

[1]All acceptable method detection levels for soil are based on dry weight. The purpose of using dry weight is to standardize detection based cleanup levels by omitting variability caused by varying moisture levels. This requirement means that laboratories must target their wet weight reporting levels at 20-50% below the levels in this list in order to achieve the listed levels after correction for percent moisture.

[2]Use Chlorinated hydrocarbon GC/MS methodology for routine investigations where there is no reason to expect chlorinated hydrocarbon contamination.

[3]Use chlorinated hydrocarbon GC/EC methods for routine investigations and as Type A cleanup criteria where chlorinated hydrocarbons and/or C series contaminants are likely to be present. Known sites with C-series waste include Hooker Chemical (Muskegon Co.), Approved Industrial Removal (Kent Co.), Central Sanitary Landfill (Montcalm Co.), and Berlin and Farro (Genessee Co.). Known sites with dichlorobenzene and/or hexachlorobenzene contamination include Metamora Landfill (Lapeer Co.), Tittabawassee River (Midland Co.), and Res. Wells, Erwin Rd. (Manistee Co.).

[4]Use local background if less restrictive than criteria and representative of true background.

Table 2a Recommended Methods for Environmental Contamination Response Activities under Act 307 Rules

Reference Number	Method	Method Title	Source Document
1	601	Purgeable Halocarbons	A
2	602	Purgeable Aromatics	A
3	8010A	Halogenated Volatile Organics by Gas Chromatography	B
4	8020A	Aromatic Volatile Organics by Gas Chromatography	B
5	8021	Halogenated and Aromatic Volatiles by Gas Chromatography using Electrolytic Conductivity and Photoionization Detectors in series: Capillary Column Technique	B
6	8240A	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Packed Column Technique	B
7	8260	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Capillary Column Technique	B
8	502.1	Volatile Halogenated Organic Compounds in Water by Purge and Trap Gas Chromatography	C
9	503.1	Volatile Aromatic and Unsaturated Organic Compounds in Water by Purge and Trap Gas Chromatography	C
10	502.2	Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series	C
11	524.1	Measurement of Purgeable Organic Compounds in Water by Packed Column Gas Chromatography/Mass Spectrometry	C
12	524.2	Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry	C
13	N/A	U.S. EPA Contract Laboratory Program (CLP), Statement of Work (SOW) for Low Concentration Water for Organic Analysis (4/90) (draft)	NA

Reference Number	Method	Method Title	Source Document
14	N/A	U.S. EPA Contract Laboratory Program Statement of Work for Multi-Media, Multi-Concentration Organic Analysis (Document Number OLM01.7)	N/A
15	8270	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) Capillary Column Technique	B
16	8080	Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography	B
17	8310	Polynuclear Aromatic Hydrocarbons by High Performance Liquid Chromatography	B
18	8120	Chlorinated Hydrocarbons by Gas Chromatography as modified for water and soils by the DNR lab (see scan 3)	B
19	8060	Phthalate Esters by Gas Chromatography	B
20	525	Determination of Organic Compounds in Drinking Water by Liquid-Solid Extraction and Capillary Column GC/MS	C
21	N/A	GC/FID, Tenax Column, direct injection similar to Method 8015A	N/A
22	8015A	Nonhalogenated Volatile Organics	B
23	8411	Formaldehyde: Acidic Medium	E
24	8315	Formaldehyde by High Performance Liquid Chromat.	F
25-29	Reserved		
30	200.7	Inductively Coupled Plasma	D
31	6010	Inductively Coupled Plasma	B
32	200.8	Inductively Coupled Plasma/Mass Spectrometry	G
33	6020	Inductively Coupled Plasma/Mass Spectrometry	F
34	204.2	Antimony, Furnace	D
35	7041	Antimony, Furnace	B
36	206.2	Arsenic, Furnace	D
37	7060A	Arsenic, Furnace	B
38	206.3	Arsenic, Furnace	D
39	7061	Arsenic, Furnace	B

Reference Number	Method	Method Title	Source Document
40	213.2	Cadmium, Furnace	D
41	7131A	Cadmium, Furnace	B
42	218.2	Chromium (III), Furnace	D
43	7191	Chromium (III), Furnace	B
44	218.1	Chromium (III), Direct Aspiration	D
45	7190	Chromium (III), Direct Aspiration	B
46	7195	Chromium (VI), Coprecipitation	B
47	218.4	Chromium (VI), Chelation/Extraction	D
48	7197	Chromium (VI), Chelation/Extraction	B
49	220.1	Copper, Furnace	D
50	7211A	Copper, Furnace	B
51	220.2	Copper, Direct Aspiration	D
52	7190	Copper, Direct aspiration	B
53	236.2	Iron, Furnace	D
54	7381	Iron, Furnace	B
55	236.1	Iron, Direct Aspiration	D
56	7380	Iron, Direct Aspiration	B
57	239.2	Lead, Furnace	D
58	7421	Lead, Furnace	B
59	7420	Lead, Direct aspiration	B
60	243.2	Manganese, Furnace	D
61	7461	Manganese, Furnace	B
62	243.1	Manganese, Direct Aspiration	D
63	7460	Manganese, Direct Aspiration	B
64	245.1	Mercury, Cold Vapor, Manual	D
65	245.2	Mercury, Cold Vapor, Automated	D
66	245.5	Mercury, Cold Vapor, Sediments	D
67	7470	Mercury, Cold Vapor, Liquid	B
68	7471	Mercury, Cold Vapor, Solid	B

Reference Number	Method	Method Title	Source Document
69	249.2	Nickel, Furnace	D
70	249.1	Nickel, Direct Aspiration	D
71	7520	Nickel, Direct Aspiration	B
72	270.2	Selenium, Furnace	D
73	7740	Selenium, Furnace	B
74	270.3	Selenium, Hydride	D
75	7741	Selenium, Hydride	B
76	272.2	Silver, Furnace	D
77	7711	Silver, Furnace	B
78	279.2	Thallium, Furnace	D
79	7841	Thallium, Furnace	B
80	289.2	Zinc, Furnace	D
81	7951	Zinc, Furnace	B
82	289.1	Zinc, Direct Aspiration	D
83	7950	Zinc, Direct Aspiration	D
84-99	Reserved		
100	376.2	Sulfide Colorimetric, methylene blue	D
101	1311	Toxicity Characteristic Leaching Procedure, Zero-Head Space Extraction using a neutral pH extraction fluid with all dissolved oxygen removed	B
102	335.2	Cyanide, Total, Titrimetric, Spectrophotometric	D
103	335.3	Cyanide, Total, Colorimetric, Automated UV	D
104	9011	Cyanide Extraction Procedure for Solids and Oils	B

Table 2b. Source Documents for Recommended Methods

A. Guidelines Establishing Test Procedures for the Analysis of Pollutants. 40 CFR Part 136.

B. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Revision 1, 1st Update, January 1990, U.S. EPA, Office of Solid Waste.

C. Methods for the Determination of Organic Compounds in Drinking Water, U.S. EPA, EMSL, Cincinnati, EPA-600/4-88/039, 12/88.

D. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Revised March 1983.

E. Proposed Sampling and Analytical Methodologies for Addition to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, U.S. EPA 1984, NTIS PB85-103026.

F. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Revision 1, 2nd Update, U.S. EPA Office of Solid Waste.

G. Methods for the Determination of Metals in Environmental Samples, EPA-600/4-91-010, June 1991, U.S. EPA, EMSL, Cincinnati.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 21, 1991

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **NERA Operational Memorandum #7** — Disposition of Contaminated Excavated Soils

Environmental Response Division (ERD) staff has previously been directed to require that excavated contaminated soil be disposed of in a landfill or that it be treated in the wastepile before being replaced in the excavation. That direction is hereby rescinded.

The decision about whether to return contaminated soil to an excavation rests with the party undertaking the remedial action. Staff should reiterate that the responsible party has an obligation to provide for a remedial action which complies with the Act 307 rules. If soil with hazardous substance levels in excess of Type B criteria (or Type A criteria, if Type A is greater than Type B) is replaced in the excavation, further remedial measures will be required. The decision to return contaminated fill to the excavation without treatment should take into account at least the following factors:

- whether returning contaminated material to the excavation will exacerbate the problem;
- the feasibility of in-situ treatment of the contaminated soils as part of an overall remedial action which complies with Act 307 cleanup requirements;
- the appropriateness of using contaminated soil as fill around new tanks or other equipment.

This memorandum is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Any questions about this memorandum should be directed to Lynelle Marolf at 517-373-9893.

rev. 0

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

January 8, 1992

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: **NERA Operational Memorandum #8** — Type B Criteria
Rules 299.5709, 299.5711(2), 299.5711(5) and 299.5713

The attached table lists Type B cleanup criteria which have been developed according to the algorithms set forth in the specific rules identified below. This table replaces the previously issued list of Type B criteria dated June 22, 1990. The criteria were developed using currently available toxicological and other data and are subject to change as new data become available. A list of Type B criteria reflecting the most recent data will be available to staff on the OV/VM bulletin board under the "ERD CLEANUP; RULES" category. This memo will be updated periodically to provide a list which can easily be distributed to interested parties outside the Department. Criteria on these lists should be considered draft; final cleanup criteria will be confirmed by Environmental Response Division (ERD) toxicologists and approved as part of a site-specific remedial action plan. This table addresses only those rules which include a specific algorithm or regulatory standard. Staff are reminded that Type B remedial action plans must address all elements required by the rules, including those for which specific criteria are not shown here. Additional guidance for applying the criteria for each rule follows.

Note that in cases where Type B criteria are less than Type A criteria (either method detection limits or background), Type A criteria become the cleanup goal. Type B criteria are not applicable in these cases.

Rule 299.5709 — Groundwater in aquifers

Subrules (2)(a) and (b) of this rule specify the criteria for carcinogens and noncarcinogens, respectively. The values in the first column of the table were developed using the algorithms in Rules 299.5723 (for carcinogens) and 299.5725 (for noncarcinogens). The values in the second column of the table were established, where sufficient data are available, to protect against adverse aesthetic impacts of hazardous substances on groundwater.

The most restrictive of the values in the first two columns of the table is the cleanup criteria required to satisfy Rule 299.5709. Note that this rule requires that aquifer cleanup criteria take into account adverse aesthetic impacts resulting from one or a combination of hazardous substances. If adverse aesthetic impacts remain when health based criteria have been achieved, further remedial measures may be required. Consult your Supervisor if you encounter such a case.

Rule 299.5711 — Soil

The table presents values for the subrules that are most often expected to be the controlling factor in determining soil cleanup criteria. However, a Type B remedial action plan must include rationale that supports the conclusions drawn from the assessment of pertinent pathways (i.e., some discussion of each pertinent pathway must be included which assesses whether more restrictive criteria are required; See R 299.5711(1)(a-e) and Rule Interpretation Memo #5 dated March 8, 1991).

Note that the rules allow for a value higher than twenty times the groundwater cleanup criteria to be established as the soil cleanup criteria protective of groundwater through the use of a leachate test or other method which better represents in situ conditions. The "20X" values in the table are provided for convenience and are not mandatory if leachate tests or other methods support the use of a higher value. For certain materials, namely PCBs, carcinogenic PNAs, 4,4'-methylene-bis-2-chloro-aniline (MBOCA), which strongly adsorb to soil and are known not to leach at significant concentrations, the direct contact value is accepted as the soil cleanup criteria without site-specific leachate tests or other evaluations to determine mobility. Consult an ERD toxicologist if you have questions about whether other substances may be handled in this manner.

Rule 299.5713 -- Impacts of groundwater contaminants on surface water

The third column in the table will list values based on calculations done by Surface Water Quality Division (SWQD) in accordance with Rule 323.1057 of the Water Resources Commission Act (1929 PA 245, as amended). These Rule 57 values will be released by the SWQD on February 1, 1992. At that time, the table will be completed, and this memorandum and the table provided to interested parties outside the Department. If Rule 57 values are needed prior to February 1, one of the ERD toxicologists should be consulted. For use in ERD programs, the Rule 57 values have been identified as the groundwater surface water interface (GSI) value. The GSI values are the criteria used to judge compliance with Rule 299.5713. GSI values are developed for surface water which serves as a source of drinking water and also for surface water which is not a source of drinking water. Numbers that will be added to the table will be shown for both types of use. In cases where data are inadequate to calculate a GSI value, the party proposing the remedial action may generate the minimum data necessary to propose a value for Department review and approval.

Rule 299.5713 requires that the GSI value not be exceeded at a point where groundwater naturally discharges to surface water. Demonstration of compliance with this rule may be made by monitoring at the groundwater-surface water interface, or by predictive modeling. It is not necessary that the GSI value be achieved throughout the aquifer; however, a remedial action plan which proposes to meet the GSI value throughout the aquifer in lieu of monitoring at the interface or modeling will be acceptable. Note that the sixth column on the table will show 20 times the GSI values. This value is shown for ease of reference in cases where soil is to be remediated to that level as a source control measure. Rule 299.5711 does not require that soil meet the "20 times GSI values", as long as the GSI value is not exceeded at the groundwater-surface water interface.

Acceptable Method Detection Limits

The table includes the acceptable method detection limit for each hazardous substance, where one has been determined. These acceptable method detection limits are taken from Operational Memorandum #6, dated October 1, 1991 and are provided to allow for convenient comparison between Type B criteria and potential Type A criteria. Consult Operational Memorandum #6 for a full description of the use of acceptable method detection limits and proper methods for analysis.

Keep in mind that use of particular methods and detection limits listed in Operational Memorandum #6 are not mandatory. Other methods or detection limits may be approved as part of a site-specific remedial action plan.

These acceptable method detection limits are applicable to environmental investigations and monitoring performed pursuant to Act 307 response activities. These detection limits may not be applicable to environmental monitoring activities performed pursuant to other environmental statutes. Facilities subject to regulation under other environmental statutes should consult with the appropriate DNR Division for further information regarding appropriate analytical detection limits.

This memo is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Questions about values in the attached table should be directed to one of the ERD toxicologists: Chris Flaga, telephone 517-373-0160; Felix Adatsi, telephone 517-335-3078; or Jeff Crum, telephone 517-335-3092. Other questions about this memorandum should be directed to Lynelle Marolf at 517-373-9893.

Attachment
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ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10^{6} is reported as 2E+6.

	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
CARCINOGENS								
1,1,1,2-Tetrachloroethane	1	ID		1	20		10,000	10
1,1,2,2-Tetrachloroethane	0.2	ID		1	4		2,000	10
1,1,2-Trichloroethane	0.6	ID		1	12		7,000	10
1,2,3,7,8-Pentachlorodibenzofuran	4E-6	ID		ND	8E-5		0.2	ND
1,2-Dichloroethane	0.4	ID		1	8		4,000	10
1,2-Dichloropropane	0.5	ID		1	10		6,000	10
1,3-Dichloropropene	0.2	ID		1	4		2,000	10
1,4-Dichlorobenzene	1	ID		5	20		20,000	330
1,4-Dioxane	3	ID		1	60		40,000	5
2,3,4,7,8-Pentachlorodibenzofuran	4E-7	ID		ND	8E-6		0.02	ND
2,3,7,8-Heptachlorodibenzo-p-dioxin	2E-5	ID		ND	0.0004		0.9	ND
2,3,7,8-Heptachlorodibenzofuran	2E-5	ID		ND	0.0004		0.9	ND
2,3,7,8-Hexachlorodibenzo-p-dioxin	2E-6	ID		ND	4E-5		0.09	ND
2,3,7,8-Hexachlorodibenzofuran	2E-6	ID		ND	4E-5		0.09	ND
2,3,7,8-Pentachlorodibenzodioxin	4E-7	ID		ND	8E-6		0.02	ND
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2E-7	ID		ND	4E-6		0.009	ND
2,3,7,8-Tetrachlorodibenzofuran	2E-6	ID		ND	4E-5		0.09	ND
2,4,6-Trichlorophenol	3	ID		5	60		1E+5	330
2,4-Dinitrotoluene	0.05	ID		5	1		2,000	330
3,3'-Dichlorobenzidine	0.08	ID		20	1.6		3,000	2000

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10^6 is reported as 2E+6.

	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
CARCINOGENS								
4,4'-Methylene-bis-2-chloroaniline	0.04	ID		ND	--(M)		1,000	ND
Acrylamide	0.008	ID		ND	0.16		300	ND
Acrylonitrile	0.06	ID		1	1.2		700	10
Alachlor	0.4	ID		ND	8		20,000	ND
Aldrin	0.002	ID		0.01	0.04		80	1.7
alpha Hexachlorocyclohexane	0.006	ID		0.01	0.12		200	1.7
Aniline	6	ID		20	120		70,000	1,700
Arsenic	0.02	ID		1	0.4(D)		800(D)	100
Atrazine	0.2	ID		ND	4		6,000	ND
Azobenzene	0.3	ID		ND	6		10,000	ND
Benzene	1	ID		1	20		10,000	10
Benzidine	0.0002	ID		50	0.004		6	5,000
Benzo(a)anthracene	0.003	ID		5	--(M)		100	330
Benzo(a)pyrene	0.003	ID		5	--(M)		100	330
Benzo(b)fluoranthene	0.003	ID		5	--(M)		100	330
Benzo(k)fluoranthene	0.003	ID		5	--(M)		100	330
Benzyl Chloride	0.2	ID		ND	4		2,000	ND
beta-Hexachlorocyclohexane	0.02	ID		0.01	0.4		700	1.7
bis(2-Chloroethyl)ether	0.03	ID		5	0.6		400	330
bis(2-Ethylhexyl)phthalate	2	ID		5	40		90,000	330
Bromodichloromethane	0.3	ID		1	6		3,000	10

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil Scientific notation is represented by E+ or E- a value, for example, 2 X 10^6 is reported as 2E+6.

	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
CARCINOGENS								
Bromoform	4	ID		1	80		50,000	10
Carbon tetrachloride	0.3	ID		1	6		3,000	10
Chlordane	0.03	ID		0.01	0.6		1,000	1.7
Chloroethane	9	ID		1	180		1E+5	10
Chloroform	6	ID		1	120		60,000	10
Chloromethane	3	ID		1	60		30,000	10
Chrysene	0.003	ID		5	--(M)		100	330
DDD	0.1	ID		0.01	2		5,000	3.3
DDE	0.1	ID		0.01	2		4,000	3.3
DDT	0.1	ID		0.01	2		4,000	3.3
Dibenzo(a,h)anthracene	0.003	ID		5	--(M)		100	330
Dibromochloromethane	0.4	ID		1	8		5,000	10
Dichlorovos	0.1	ID		ND	2		4,000	ND
Dieldrin	0.002	ID		0.01	0.04		80	3.3
Epichlorohydrin	4	ID		ND	80		40,000	ND
Ethylene dibromide	0.0004	ID		1	0.008		5	10
Gentian violet	0.3	ID		ND	6		10,000	ND
Heptachlor	0.008	ID		0.01	0.16		300	1.7
Heptachlor epoxide	0.004	ID		0.01	0.08		100	1.7
Hexachlorobenzene (C-66)	0.02	ID		0.01(J)	0.4		800	50(J)
Hexachlorobutadiene (C-46)	0.4	ID		0.01(J)	8		5,000	50(J)

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10^6 is reported as 2E+6.

	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
CARCINOGENS								
Hexachlorodibenzo-p-dioxin, mixture	6E-6	ID		ND	0.00012		0.2	ND
Hexachloroethane	2	ID		0.01(J)	40		30,000	50(J)
Indeno(1,2,3-cd)pyrene	0.003	ID		5	--(M)		100	330
Isophorone	8	ID		5	160		90,000	330
Lindane	0.03	ID		0.01	0.6		1,000	1.7
Methylene chloride	5	ID		1	100		50,000	10
n-Nitroso-di-n-Propylamine	0.005	ND		5	0.1		50	330
N-Nitrosodiphenylamine	7	ID		5	140		3E+5	330
Octachlorodibenzo-p-dioxin	0.0002	ID		ND	0.004		9	ND
Octachlorodibenzofurans	0.0002	ID		ND	0.004		9	ND
Pentachlorophenol	0.3	ID		20	6		10,000	1,700
Polybrominated biphenyls	0.004	ID		ND	0.08		100	ND
Polychlorinated biphenyls	0.02	ID		0.1	--(M)		1,000	33
Styrene	1	ID		1	20		10,000	10
Tetrachloroethylene	0.7	ID		1	14		8,000	10
Toxaphene	0.03	ID		0.1	0.6		400	170
Trichloroethylene	3	ID		1	60		40,000	10
tris(2,3-Dibromopropyl)phosphate	0.02	ID		ND	0.4		700	ND
Vinyl chloride	0.02	ID		1	0.4		200	10

(A) Groundwater surface water interface (GSI) values are based on Rule 57 of Act 245. The Rule 57 values have been rounded to one significant figure for use in the 307 program and presentation on this list. The GSI values are presented only to establish groundwater criteria which are protective of surface water. Type B surface water criteria established for surface water remediation must be developed separately.

(B) Acceptable method detection limits for groundwater samples

(C) Acceptable method detection limits for soil samples.

(D) Use local background if less restrictive than criteria and representative of background as defined in Rule 701.

(E) GSI value is hardness dependent. Value generated assuming hardness of 178 mg/l CaCO3. If site-specific hardness is expected to be significantly different, please contact an ERD toxicologist.

(F) GSI value is pH dependent. Value generated assuming a pH of 7.7. If site-specific pH is expected to be significantly different, please contact an ERD toxicologist.

(G) Lead classified as probable human carcinogen but cannot be assessed quantitatively in the same manner typical of most carcinogens. Contact a toxicologist for details.

(H) Professional judgment used to determine that 50 ppb of aluminum in drinking water is protective of human health.

(I) Under review

(J) Different method detection limit acceptable with appropriate analytical method. Please refer to Operational Memorandum #6 (dated 10/1/91) for details.

(K) GSI values for 307 Program developed using Toxicity Equivalency Factors. Rule 57 values not available under Act 245.

(L) GSI value for 307 Program developed using Toxicity Equivalency Factors. Act 245 Rule 57 value is different because TEFs not used.

(M) Chemical not expected to leach through soil...soil direct contact criterion assumed to be protective of groundwater.

(N) Chemical has either not been evaluated or an inadequate data base precludes the development of a Rule 57 value. MDNR should be contacted to determine whether a chemical is being evaluated or has been evaluated since this list was prepared. If no value exists, the responsible party (RP) may develop a proposed Rule 57 value for MDNR review and approval. Guidance can be obtained from MDNR. If a Rule 57 value cannot be developed from data in the scientific literature, the RP can either perform a Type A cleanup or generate the minimum toxicity data required to develop the Rule 57 value.

ID = Insufficient data

ND = Not determined

MDNR = Michigan Department of Natural Resources

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10^6 is reported as 2E+6.

	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
NONCARCINOGENS								
1,1,1-Trichloroethane	200	ID		1	4,000		2E+6	10
1,1,2-Trichloro-1,2,2-trifluoroethane	2E+5	ID		ND	4E+6		2E+9	ND
1,1-Dichloroethane	700	ID		1	14,000		8E+6	10
1,1-Dichloroethylene	7	ID		1	140		80,000	10
1,2,3-Trichloropropane	40	ID		ND	800		5E+5	ND
1,2,4,5-Tetrachlorobenzene	2	ID		ND	40		80,000	ND
1,2,4-Trichlorobenzene	9	ID		5	180		1E+5	330
1,2-Dichlorobenzene	600	ID		5	12,000		7E+6	330
1,3-Dichlorobenzene	600	ID		5	12,000		7E+6	330
1-Ethyl-2-methylbenzene	ID	ID		ND	ID		ID	ND
2(2,4,5-Trichlorophenoxy)propionic acid	50	ID		ND	1,000		2E+6	ND
2,4,5-Trichlorophenol	700	ID		5	14,000		8E+6	330
2,4-Dichlorophenoxyacetic acid	70	ID		ND	1,400		8E+5	ND
2,4-Dimethylphenol	400	ID		5	8,000		1E+7	330
2,6-Dimethylphenol	4	ID		ND	80		2E+5	ND
2-Butanone	400	ID		50	8,000		4E+6	100
2-Chloroethyl vinyl ether	ID	ID		ND	ID		ID	ND
2-Chlorophenol	40	ID		5	800		1E+6	330
2-Hexanone	ID	ID		50	ID		ID	100
2-Methyl-4,6-dinitrophenol	3	ID		20	60		1E+5	1,700

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
NONCARCINOGENS								
1,1,1-Trichloroethane	200	ID		1	4,000		2E+6	10
1,1,2-Trichloro-1,2,2-trifluoroethane	2E+5	ID		ND	4E+6		2E+9	ND
1,1-Dichloroethane	700	ID		1	14,000		8E+6	10
1,1-Dichloroethylene	7	ID		1	140		80,000	10
1,2,3-Trichloropropane	40	ID		ND	800		5E+5	ND
1,2,4,5-Tetrachlorobenzene	2	ID		ND	40		80,000	ND
1,2,4-Trichlorobenzene	9	ID		5	180		1E+5	330
1,2-Dichlorobenzene	600	ID		5	12,000		7E+6	330
1,3-Dichlorobenzene	600	ID		5	12,000		7E+6	330
1-Ethyl-2-methylbenzene	ID	ID		ND	ID		ID	ND
2(2,4,5-Trichlorophenoxy)propionic acid	50	ID		ND	1,000		2E+6	ND
2,4,5-Trichlorophenol	700	ID		5	14,000		8E+6	330
2,4-Dichlorophenoxyacetic acid	70	ID		ND	1,400		8E+5	ND
2,4-Dimethylphenol	400	ID		5	8,000		1E+7	330
2,6-Dimethylphenol	4	ID		ND	80		2E+5	ND
2-Butanone	400	ID		50	8,000		4E+6	100
2-Chloroethyl vinyl ether	ID	ID		ND	ID		ID	ND
2-Chlorophenol	40	ID		5	800		1E+6	330
2-Hexanone	ID	ID		50	ID		ID	100
2-Methyl-4,6-dinitrophenol	3	ID		20	60		1E+5	1,700

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10^6 is reported as 2E+6.

	Groundwater		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water(B)	Soil			Acceptable Method Detection Limit in Soil(B)
Chemical	Health-Based Drinking Water Value (ug/l)(A)	Aesthetic Drinking Water Value (ug/l)(A)	GSI Value(A) (ug/l)		20X Drinking Water Value (ug/kg)	20X GSI Value	Direct Contact Value (ug/kg)	
NONCARCINOGENS								
Cadmium	4 (D)	ID		0.2	80(D)		1E+5	50
Carbon disulfide	700	ID		50	14,000		8E+6	100
Chloride	ND	250,000		ND	5E+6		ID	ND
Chlorobenzene	100	ID		1	2,000		2E+6	10
Chromium (III)	7,000(D)	ID		50	1.4E+5(D)		3E+8	2,500
Chromium (VI)	100(D)	ID		1	2,000(D)		1E+6	200
cis-1,2-Dichloroethylene	70	ID		1	1,400		8E+5	10
Copper	1,000(D)	ID		25	2E+4(2E+4)		1E+7	1,000
Cyanazine	7	ID		ND	140		3E+5	ND
Cyanide (Free)	100	ID		5	2,000		2E+6	100
Di-n-butyl phthalate	700	ID		5	14,000		3E+7	330
Di-n-octyl phthalate	100	ID		5	2,000		5E+6	330
Dibenzofuran	ID	ID		ND	ID		ID	ND
Dibromomethane	70	ID		ND	1,400		8E+5	ND
Dichlorodifluoromethane	1,000	ID		ND	20,000		2E+7	ND
Diethyl ether	1,000	ID		ND	20,000		2E+7	ND
Diethyl phthalate	6,000	ID		5	1.2E+5		2E+8	330
Dinoseb	7	ID		ND	140		3E+5	ND
Endosulfan	0.4	ID		0.01	8		10,000	3.3
Endrin	2	ID		0.01	40		80,000	3.3
Ethyl acetate	6,000	ID		ND	1.2E+5		7E+7	ND

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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	Groundwater		Groundwater/ Surface Water Interface (GSI)		Soil			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil(C)
NONCARCINOGENS								
Ethylbenzene	700	70		1	1,400		8E+6	10
Ethylene glycol	10,000	ID		5000	2E+5		5E+8	5000
Fluoranthene	300	ID		5	6,000		1E+7	330
Fluorene	300	ID		5	6,000		1E+7	330
Fluoride	2,000(D)	2,000		ND	40,000(D)		8E+7	ND
Formaldehyde	1,000	ID		100	20,000		1E+7	500
Hexabromobenzene	10	ID		ND	200		5E+5	ND
Hexachlorocyclopentadiene (C-56)	50	ID		0.01(J)	1,000		2E+6	50(J)
Iron	ID	300 (D)		100	6,000(D)		ID	2000
Isobutyl alcohol	2,000	ID		ND	40,000		2E+7	ND
Lead(G)	(I)	ID		3	--		--(I)	1000
Manganese	700	50 (D)		20	1,000(D)		3E+7	2000
Mercury (Inorganic)	2	ID		0.2	40(D)		80,000	100
Methanol	4,000	ID		800	80,000		4E+7	800
Methoxychlor	40	ID		ND	800		1E+6	ND
Methyl-tert-butyl ether	500	ID		50	10,000		6E+6	100
N,N-Dimethylaniline	10	ID		ND	200		5E+5	ND
N-Hexane	400	ID		ND	8,000		5E+6	ND
Naphthalene	30	ID		5	600		1E+6	330
Nickel (Soluble salts)	100(D)	ID		50	2,000(D)		4E+6	1000
Nitrate	10,000	ID		ND	2E+5		4E+8	ND

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	Groundwater		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water(B)	Soil			Acceptable Method Detection Limit in Soil(C)
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]		20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	
NONCARCINOGENS								
Nitrite	700	ID		ND	14,000		3E+7	ND
Nitrobenzene	4	ID		5	80		40,000	330
Pentachlorobenzene	6	ID		ND	120		2E+5	ND
Phenanthrene	ID	ID		5	ID		ID	330
Phenol	4,000	ID		5	80,000		5E+7	330
Propylene glycol	1E+5	ID		5000	2E+6		2E+9	5000
Pyrene	200	ID		5	4,000		6E+6	330
Pyridine	7	ID		ND	140		80,000	ND
Selenium	40 (D)	ID		5	800(D)		1E+6	500
Silver	40 (D)	100		0.5	800(D)		1E+6	500
Sodium	150,000	ID		ND	3E+6(D)		1E+10	ND
Tetrahydrofuran	200	ID		ND	4,000		3E+6	ND
Thallium	0.5(D)	ID		2	10(D)		20,000	500
Toluene	1,000	800		1	16,000		2E+7	10
trans-1,2-Dichloroethylene	100	ID		1	2,000		2E+6	10
Trichlorofluoromethane	2,000	ID		ND	40,000		3E+7	ND
Xylenes	10,000	300		1	6,000		2E+8	30
Zinc	1,000(D)	5,000		20	20,000(D)		5E+7	1000

(A) Groundwater surface water interface (GSI) values are based on Rule 57 of Act 245. The Rule 57 values have been rounded to one significant figure for use in the 307 program and presentation on this list. The GSI values are presented only to establish groundwater criteria which are protective of surface water. Type B surface water criteria established for surface water remediation must be developed separately.

(B) Acceptable method detection limits for groundwater samples.

(C) Acceptable method detection limits for soil samples.

(D) Use local background if less restrictive than criteria and representative of background as defined in Rule 701.

(E) GSI value is hardness dependent. Value generated assuming hardness of 178 mg/l CaCO3. If site-specific hardness is expected to be significantly different, please contact an ERD toxicologist.

(F) GSI value is pH dependent. Value generated assuming a pH of 7.7. If site-specific pH is expected to be significantly different, please contact an ERD toxicologist.

(G) Lead classified as probable human carcinogen but cannot be assessed quantitatively in the same manner typical of most carcinogens. Contact a toxicologist for details.

(H) Professional judgment used to determine that 50 ppb of aluminum in drinking water is protective of human health.

(I) Under review.

(J) Different method detection limit acceptable with appropriate analytical method. Please refer to Operational Memorandum #6 (dated 10/1/91) for details.

(K) GSI values for 307 Program developed using Toxicity Equivalency Factors. Rule 57 values not available under Act 245.

(L) GSI value for 307 Program developed using Toxicity Equivalency Factors. Act 245 Rule 57 value is different because TEFs not used.

(M) Chemical not expected to leach through soil...soil direct contact criterion assumed to be protective of groundwater.

(N) Chemical has either not been evaluated or an inadequate data base precludes the development of a Rule 57 value. MDNR should be contacted to determine whether a chemical is being evaluated or has been evaluated since this list was prepared. If no value exists, the responsible party (RP) may develop a proposed Rule 57 value for MDNR review and approval. Guidance can be obtained from MDNR. If a Rule 57 value cannot be developed from data in the scientific literature, the RP can either perform a Type A cleanup or generate the minimum toxicity data required to develop the Rule 57 value.

ID = Insufficient data

ND = Not determined

MDNR = Michigan Department of Natural Resources