

**Appendix A**  
**Community Involvement**

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## **Community Involvement**

This appendix provides a brief discussion about community involvement during the five-year review with a focus on the role of the 40 CFR §300 Community Involvement Coordinator (CIC), community involvement activities, notifying the community, additional recommended activities at high visibility sites, elements of a communications strategy, interviewing members of the community, an example timeline of communication activities, and sources for additional information on community involvement.

### **What is the role of the Community Involvement Coordinator (CIC)?**

The Community Involvement Coordinator (CIC) serves as a public participation and communications advisor. It is his/her job to ensure effective communications with the community. You should consult with the CIC about the most appropriate methods for notifying and involving the community in the five-year review process. The CIC may advise, develop and implement activities designed to notify the community and to involve the community. Part of the community involvement process should involve reviewing the existing Community Involvement Plan (CIP) for the site. The CIP typically describes the history of the site, including any community involvement activities conducted in the past or special needs of the community. Many changes may have taken place in the community since the CIP was last revised or since the last five-year review. For example, the demographics of the community may have changed and new businesses and residents may live in the area. Some residents may speak a language other than English. The CIC can arrange for an interpreter and written materials can be translated into the appropriate language.

### **When should I begin community involvement activities?**

You should begin working with the site's Regional CIC during the initial planning stages of the five-year review to determine the appropriate level of community involvement for the five-year review.

### **What points should be covered in notifying the community?**

At a minimum, community involvement activities during the five-year review should include notifying the community that the five-year review will be conducted and notifying the community when the five-year review is completed. The CIC can recommend appropriate communication vehicles for notifying the public (*e.g.*, publishing a public notice in the newspaper, radio announcement, etc).

The site team should determine the best means for notifying the community that the five-year review process is underway. In some communities, holding an open house or public meeting where community members may stop by and ask questions or pick up fact sheets, brochures, etc., may work effectively. Other activities may include broadcasting a public service

announcement on radio or television and mailing, posting, or handing out a fact sheet. Depending on the nature of the site and the interest in the community, another option for involving the public is to provide a public comment period on the findings of the five-year review.

Notice to the community that a five-year review will be conducted should at a minimum provide:

- The site name, its location and web address (if available);
- The lead agency conducting the review;
- A brief description of the selected remedy;
- A summary of contamination addressed by the selected remedy;
- How the community can contribute during the review process;
- A contact point and phone number for further information; and
- The scheduled date of completion of the five-year review.

Notice to the community that a five-year review has been completed should include some of the information given in the initial notice plus additional information. At a minimum, the notice that a five-year review has been completed should include:

- The site name, its location, and web address (if available);
- The lead agency conducting the review;
- A brief description of the selected remedy;
- A summary of contamination addressed by the selected remedy as provided in the initial notice;
- A brief summary of the results of the five-year review;
- The protectiveness statement(s);
- A brief summary of data and information that provided the basis for determining protectiveness, issues, recommendations, and follow-up actions directly related to the protectiveness of the remedy;
- Location(s) where a copy of the five-year review can be obtained or viewed (including site repositories);
- A contact name and telephone number where community members can obtain more information or ask questions about the results; and
- The date of the next five-year review or a statement and supporting rationale that five-year reviews will no longer be required.

## **Are there any additional recommended activities that I should consider at high visibility sites?**

At high profile sites or those with significant public interest, you should carefully consider methods for informing the community about the review. You should determine if additional or enhanced community involvement activities are appropriate. During the five-year review, active community members may be interested in some or all of the following topics:

- The five-year review process;
- How community members or groups can contribute information about site activities;
- Where to find written documentation about the review;
- What the protectiveness statements mean; and
- What happens after the review is complete, especially if the remedy is found to be not protective.

The CIC and other review team members that have knowledge of the community's needs and interests should be involved in decisions about the level of community involvement and appropriate activities.

## **What elements should I include when developing a communication strategy?**

It is always a good idea to develop a communication strategy for high profile sites. This strategy should:

- Describe the public's concerns and communication needs;
- Identify specific communication activities that you plan to conduct;
- Outline a proposed schedule for these activities, and assign responsibilities for carrying them out; and
- Present expected results.

Consult Section V of the *Superfund Community Involvement Handbook (OSWER Directive 9230.0-94)* and *Toolkit (OSWER Directive 9230.0-95)* for an example of a communication strategy. This strategy does not need to be added to the official record, and can be as informal or detailed as community needs demand.

## **How should I approach interviewing members of the community?**

In addition to notifying the community about the five-year review, you and the CIC, in conjunction with the site team, should consider interviewing community members (especially those living near the site) to get their views about site conditions and related concerns. If there is a Community Advisory Group or a group with a Technical Assistance Grant related to the site, they should be briefed at the outset of the five-year review process in addition to other interviews you may conduct.

You, the CIC, and other team members should review the community profile in the CIP to obtain useful information about the community, such as business owners or residents living near the site, and the past level of interest from individuals and groups in the community. The CIP can also be a source for identifying other stakeholders who have been active in site activities in the past and who could provide additional information about site conditions.

Other important sources of information are local officials. In many cases, the CIC may be the best person to consult local officials, because they may have met or spoken with them previously and established rapport.

See Appendix C, “Five-Year Review Interviews,” for additional information about conducting interviews as part of a five-year review.

## **What is the timeline for communication activities during a five-year review?**

Table 1, “Major Communication Milestones During a Five-Year Review,” outlines the major communication milestones during a five-year review and a suggested time frame for conducting communication activities, especially at high profile sites or those with a strong public interest. Consult the *Superfund Community Involvement Handbook and Toolkit* to determine which activities may be best suited for your community at each stage, and for details on the time frame and effort needed for each activity. Activities may be conducted before or at the outset of your five-year review and during or close to the time of the site inspection, depending on the community needs. Activities that you should conduct for all five-year reviews are identified in Table 1 with bolded text.

**Table 1: Major Communication Milestones During a Five-Year Review**

<b>When you or the CIC...</b>	<b>you should...</b>
<b>Planning the Review and Notifying the Community</b>	
1. review the existing CIP for potentially helpful information (the CIC should lead this effort),	begin planning immediately, so that if interaction with the community is needed, it is provided up-front.
2. develop a communication strategy,	prepare a communication strategy before notifying the community. Circumstances and the level of public interest may change throughout the process, so refer to and update the strategy regularly.
<b>3. notify the community that the five-year review will begin, using a communication activity appropriate to the specific community,</b>	notify the community that the five-year review process is beginning before the site inspection.
<b>Consulting the Community</b>	
4. interview community members to gather additional information about the site,	plan for about one month of coordination and gathering of information, depending on whether contact with the community is via telephone, in person, etc.
<b>Communicating the Results of the Five-Year Review</b>	
<b>When you or the CIC...</b>	<b>you should...</b>
5. plan and conduct additional communication activities tailored to community needs at each site,	plan your activities before releasing the results of the five-year review to the public. Try to complete these activities before the release of the report or within six months after the Five-Year Review report is complete.
<b>6. notify the community that the Five-Year Review report is complete, prepare and distribute a brief summary of the results, and place the report in the site information repositories,</b>	provide this information as quickly as possible after the Five-Year Review report is completed. Consult with the CIC before preparing the summary to determine which communication mechanism is most appropriate to the community's needs.

Note: Bolded activities are required

## More Information on Community Involvement

For more information on community involvement activities, please consult the following sources:

- ***The Superfund Community Involvement Handbook (OSWER Directive 9230.0-94) and Toolkit (OSWER Directive 9230.0-95).*** This two-volume handbook and toolkit includes guidance on community involvement policy throughout the Superfund pipeline, including special chapters on working at Federal facilities, risk communication, and multimedia sites. The toolkit components describe and provide over 100 tools that CICs can use to make their jobs easier, such as electronic and hard copy templates for public notices, press releases, fact sheets, communication strategies, etc.
- ***The Superfund Community Tools Home Page.*** There are a number of information resources available on the EPA Web Site. Point your Web browser to <http://www.epa.gov/superfund/action/community/index.htm> to access the Superfund Community Tools Home Page.

**Appendix B  
Document Review**

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## Document Review

The following six sections provide examples of potential documents to be reviewed as part of a five-year review. Each section addresses a different aspect of the document review. Documents commonly reviewed are displayed in a table in each section. Every site is different, so it may be necessary to review additional documents, such as relevant Memoranda of Understanding, to fully understand the remedial actions at a site. The tables and text below should be used as a guide.

- Basis for the Response Action;
- Implementation of the Response;
- Operation and Maintenance;
- Remedy Performance;
- Legal Documentation; and
- Community Involvement.

### Basis for the Response Action

Remedy decision documents, and Federal and State laws and regulations, provide the basis upon which the remedy was selected or modified. The documents in the table below identify the background and goals of the remedy and any changes in laws and regulations that may affect the remedy. Other sources of remedy decision information are the Remedial Investigation/Feasibility Study (RI/FS) Report, toxicological and chemical characteristics databases, and transcripts of public meetings.

Non-remedial responses have other types of documentation. For instance, removal actions frequently are documented through an Action Memorandum. You should adapt your review of those documents to the circumstances at your site.

Document	Purpose of Document	Use During the Five-Year Review
Decision Documents	– records remedial decision	– goals of the remedy
– RODs	– or other actions, and	– background information on the site
– ROD Amendments	– significant changes from	– basis for action
– Explanations of Significant Differences	– the original remedy	– cleanup levels and applicable or relevant and appropriate requirements (ARARs)
– Action Memoranda		– community concerns and preferences

<b>Document</b>	<b>Purpose of Document</b>	<b>Use During the Five-Year Review</b>
Federal Environmental Laws and Regulations	<ul style="list-style-type: none"> <li>– statutory and regulatory requirements that may affect the judgement as to whether the remedy protects human health and the environment</li> </ul>	<ul style="list-style-type: none"> <li>– changes in standards identified as ARARs in the ROD that provide a basis for cleanup levels/protectiveness of the remedy (only ARARs related to protectiveness need be reviewed)</li> <li>– pertinent laws and regulations promulgated since the signing of the ROD that are potentially applicable or relevant and appropriate and that potentially bear on the protectiveness of the remedy</li> </ul>
State Environmental Laws and Regulations	<ul style="list-style-type: none"> <li>– statutory and regulatory requirements that may affect the judgement as to whether the remedy protects human health and the environment</li> </ul>	<ul style="list-style-type: none"> <li>– more stringent State environmental laws and regulations have the same standing under the National Contingency Plan (NCP) as Federal laws and regulations, and should be reviewed in the same manner when they may call into question whether the remedy protects human health and the environment (the State typically should perform this component of the review)</li> </ul>

## Implementation of the Response

Implementation documents furnish information about design assumptions, design plans or modifications, and documentation of the completion of construction at operable units (OUs) and the site. Design reports, plans, and specifications are other documents that provide further information.

<b>Document</b>	<b>Purpose of Document</b>	<b>Use During the Five-Year Review</b>
Remedial Action Reports (both interim and final)	<ul style="list-style-type: none"> <li>– documents that for a single operable unit all construction activities are complete, the remedy is operational and functional, and that cleanup levels have been achieved</li> <li>– Interim Remedial Action Reports are used for long-term actions where cleanup levels have not yet been achieved</li> </ul>	<ul style="list-style-type: none"> <li>– detailed history and status of remedial actions</li> </ul>
As-built drawings	<ul style="list-style-type: none"> <li>– documents changes/modifications to the original design which occurred during the construction</li> </ul>	<ul style="list-style-type: none"> <li>– documentation of completed action and/or implemented remedy</li> </ul>

Document	Purpose of Document	Use During the Five-Year Review
Close Out Reports (Preliminary and Final)	<ul style="list-style-type: none"> <li>– the preliminary report documents that all physical construction for all operable units at a site is complete</li> <li>– the final report documents cleanup levels have been met</li> </ul>	<ul style="list-style-type: none"> <li>– background information and the status of the remedial actions at the site</li> </ul>

## Remedy Performance

Monitoring data, progress reports, and performance evaluation reports provide information that can be used to determine whether the remedial action continues to operate and function as designed (*e.g.*, extent of groundwater plume is well defined and update plume maps confirm containment), and has achieved, or is expected to achieve, cleanup levels. The data presented in these documents can also provide trend analysis which can be used to determine how well the remedy is performing and how long it will take to achieve remediation goals. These reports can also indicate whether monitoring activities are adequate to ensure the effectiveness of the remedy (*e.g.*, wells in locations that can show contaminant plume is contained and not migrating) and whether these activities are being conducted.

Document	Purpose of Document	Use During the Five-Year Review
Monitoring Information/Records/Progress Reports (information could include air sampling, groundwater monitoring data, survey/settlement monument records, and gas generation records data/performance evaluation)	<ul style="list-style-type: none"> <li>– records monitoring data and other information, including contaminant levels</li> <li>– trend analysis</li> <li>– containment evaluation</li> </ul>	<ul style="list-style-type: none"> <li>– to check whether contaminant levels are within established criteria</li> <li>– whether cleanup levels will be achieved</li> <li>– (for containment remedies) contaminant plumes are being contained</li> </ul>

## Operation and Maintenance (O&M)

O&M documents describe the ongoing measures at a site to ensure the remedy remains protective. (Long-term response actions to restore groundwater and surface water during the remedial phase are referred to as “system operations” in this guidance. Although this section refers to O&M documents, similar documents should be reviewed to assess system operations.) They provide the structure for O&M at the site and confirm that O&M is proceeding as planned. O&M documents that may be helpful are the O&M Manual, O&M Plan, the O&M Contract, O&M and Occupational Safety and Health Administration (OSHA) Training Records, permits and service agreements, and access and security logs. Other types of O&M data to be reviewed include permit compliance data such as air or water discharge sampling results, facilities operation data such as treatment train operational records, gas monitoring and leachate collection data, maintenance records and logs, and O&M cost data. These data demonstrate the proper O&M of the remedy.

Document	Purpose of Document	Use During the Five-Year Review
O&M Manual	<ul style="list-style-type: none"> <li>– contains technical information necessary to operate and maintain the remedy</li> </ul>	<ul style="list-style-type: none"> <li>– purpose and function of the equipment and systems which comprise the overall facility</li> </ul>
O&M Reports	<ul style="list-style-type: none"> <li>– documents O&amp;M activities, data, and costs</li> </ul>	<ul style="list-style-type: none"> <li>– to check whether O&amp;M is proceeding as planned</li> </ul>
Discharge Permits and Deviations*	<ul style="list-style-type: none"> <li>– notes contaminant levels for the discharge permits</li> <li>– notes contaminant levels for deviations</li> </ul>	<ul style="list-style-type: none"> <li>– to check whether the remedy is operating within design parameters</li> </ul>

\* Permits are not required for actions taken on site. Reviewer should focus on ensuring compliance with substantive requirements of otherwise permitted activities.

## Legal Documentation

Legal documentation pertinent to the site may specify responsibilities for conducting remedial actions, implementing institutional and access controls, O&M activities, and performing elements of the five-year reviews.

Document	Purpose of Document	Use During the Five-Year Review
Enforcement Documents <ul style="list-style-type: none"> <li>– Consent Decrees</li> <li>– Unilateral Administrative Orders</li> <li>– Administrative Orders on Consent</li> </ul>	<ul style="list-style-type: none"> <li>– commitments/agreements regarding implementation and operation of the remedy, and conduct of studies</li> <li>– access agreements that are needed</li> </ul>	<ul style="list-style-type: none"> <li>– responsibilities of the PRP for conducting remedial activities at various stages of site cleanup</li> <li>– O&amp;M requirements (when these documents are used to enforce the performance of O&amp;M, they may incorporate O&amp;M documents, such as the O&amp;M Manual)</li> </ul>
Institutional Controls (deed notices, easements, other conditions, covenants or restrictions on deeds, and groundwater and land use restriction documents)	<ul style="list-style-type: none"> <li>– means to restrict the use of a parcel or an associated resource, such as groundwater</li> </ul>	<ul style="list-style-type: none"> <li>– status of institutional controls</li> </ul>
Superfund State Contracts and Cooperative Agreements	<ul style="list-style-type: none"> <li>– State assurance letters to conduct O&amp;M</li> <li>– State authorities responsible for O&amp;M</li> <li>– specific O&amp;M requirements</li> <li>– agreements with Indian Tribes</li> </ul>	<ul style="list-style-type: none"> <li>– O&amp;M implementation and reporting requirements</li> <li>– roles of different agencies</li> </ul>
Interagency Agreements and Federal Facility Agreements	<ul style="list-style-type: none"> <li>– responsibilities of other agencies</li> </ul>	<ul style="list-style-type: none"> <li>– O&amp;M guidelines and rules in effect (sometimes other agencies adopt their own guidelines and rules, which must be consistent with those established by EPA)</li> </ul>

## Community Involvement

The Community Involvement Plan (CIP) may give you a better understanding of the history of community involvement, and of other activities at the site. In addition, the CIP may help you identify community members who would be valuable resources during the interview process.

Document	Purpose of Document	Use During the Five-Year Review
Community Involvement Plan	– site communication strategy that specifies outreach activities	– community concerns/issues and identification of appropriate community members for interviews

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**Appendix C**  
**Five-Year Review Interviews**

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## Five-Year Review Interviews

Information gathered from interviews during the site inspection may be key to understanding site status. Interviews should be conducted with various individuals or groups, including the operation and maintenance (O&M) site manager, O&M staff, local regulatory authorities and response agencies, community action groups or associations, site neighbors, and other stakeholders.

When conducting an interview, the interviewer should note the date of the interview, and the name, title, and affiliation of the person interviewed. The interviewer should also indicate whether the interview was conducted at the site, the office, or by phone. Written documentation of the interview should briefly summarize the discussion, address any problems or successes with the implementation of the remedy, and provide suggestions for future reference. Forms to use during interviews are provided at the end of this appendix.

The following tables provide lists of potential individuals to interview and the type of information which may be obtained during the interviews. The potential individuals to be interviewed are categorized by their ability to provide the following types of information:

- Background information;
- State and local considerations;
- Construction considerations; and
- Performance, Operation and maintenance problems.

All of these individuals may be contacted during the five-year review. In most cases interviewing only a few key individuals will provide sufficient information for the review.

### Background Information

The individuals listed below may provide information concerning previous and current concerns about the site, influences that affected the remedy decision, and further clarification on decisions made during remedy selection.

Interview	Information Sought
Previous EPA Staff/Management	– staff members may offer insight and clarification on decisions made during remedy selection and implementation
Nearest Neighbors	– neighbors may provide insight into the enforcement of institutional controls, changes in land use, trespassing, and unusual or unexpected activity at the site

Interview	Information Sought
Community Representatives*	<ul style="list-style-type: none"> <li>– members of the community may provide a broader view of site activities and issues than can be obtained during the site inspection</li> </ul>

\* Several types of individuals may be interviewed: residents/businesses adjacent to or on the site; residents/businesses within the path of migration; local civic leaders, local officials, Community Advisory Group (CAG), Technical Assistance Grant (TAG) group, and local environmental groups; and other audiences listed in the community profile in the Community Involvement Plan.

Some example interview questions are given below.

1. What is your overall impression of the project? (general sentiment)
2. What effects have site operations had on the surrounding community?
3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
5. Do you feel well informed about the site's activities and progress?
6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

### State and Local Considerations

State and local authorities may provide you with information about changes in State laws and regulations and present and prospective land uses and restrictions.

Interview	Information Sought
State Contacts (including those responsible for State water quality, hazardous waste, and environmental health issues)	<ul style="list-style-type: none"> <li>– changes in State laws and regulations that may impact protectiveness</li> <li>– whether the site has been in compliance with permitting or reporting requirements</li> <li>– information on site activities, status, and issues</li> </ul>
Local Authorities (such as police, emergency response or fire departments, and local environmental or planning offices)	<ul style="list-style-type: none"> <li>– status of institutional controls, site access controls, new ordinances in place, changes in actual or projected land use, complaints being filed, and unusual activities at the site</li> </ul>

Some example interview questions are given below.

1. What is your overall impression of the project? (general sentiment)
2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.
4. Do you feel well informed about the site's activities and progress?
5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

### Construction Considerations

It is important for you to determine the status of construction at the site and to ensure that health and safety concerns are addressed.

Interview	Information Sought
Construction Contractor	<ul style="list-style-type: none"> <li>– progress of project and changes in design due to field conditions</li> <li>– revisions to the O&amp;M Manual, implementation of the Health and Safety Plan/Contingency Plan</li> <li>– insight into potential O&amp;M problems</li> </ul>
Construction Manager	<ul style="list-style-type: none"> <li>– overview of all contractor construction activities at the site, health and safety issues, site protectiveness during construction, and the quality of the construction</li> </ul>
Local Emergency Response Officials	<ul style="list-style-type: none"> <li>– adequacy of contractor's Health and Safety Plan and the contractor's implementation of the Plan</li> <li>– adequacy of contractor's emergency response duties as outlined in the Contingency Plan or Emergency Response Plan of the Health and Safety Plan</li> </ul>

Some example interview questions for remedial actions still under construction are given below.

1. What is your overall impression of the project? (general sentiment)
2. What is the current status of construction (*e.g.*, budget and schedule)?
3. Have any problems been encountered which required, or will require, changes to this remedial design or this ROD?

4. Have any problems or difficulties been encountered which have impacted construction progress or implementability?
5. Do you have any comments, suggestions, or recommendations regarding the project (i.e., design, construction documents, constructability, management, regulatory agencies, etc.)?

### Performance, Operation And Maintenance Problems

The following individuals may provide information to you regarding the performance of the remedy and status of O&M at the site so that the team can assess the progress of the implementation and effectiveness of the remedy, and any O&M problems.

Interview	Information Sought
O&M Manager/Operating Contractor	<ul style="list-style-type: none"> <li>– O&amp;M status of the remedy, compliance with permit and reporting requirements, and complaints filed</li> <li>– effectiveness of the O&amp;M Plan</li> <li>– information about any potential causes for concern about the remedy</li> <li>– progress and performance of the remedy</li> </ul>
O&M Staff	<ul style="list-style-type: none"> <li>– effectiveness of the O&amp;M Manual</li> <li>– information about any potential causes for concern about the remedy</li> <li>– Recommendations for adjusting the mode of operation or optimizing the operations protocol</li> </ul>
Remedial Design/Remedial Action Consultant	<ul style="list-style-type: none"> <li>– original concepts behind the O&amp;M of the remedy</li> <li>– questions about remedial design parameters, expected performance and cost, and changes that have occurred during implementation</li> </ul>

Some example interview questions are given below.

1. What is your overall impression of the project? (general sentiment)
2. Is the remedy functioning as expected? How well is the remedy performing?
3. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?
4. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.
5. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

6. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.
7. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.
8. Do you have any comments, suggestions, or recommendations regarding the project?

**INTERVIEW DOCUMENTATION FORM**

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

Name	Title/Position	Organization	Date
Name	Title/Position	Organization	Date
Name	Title/Position	Organization	Date
Name	Title/Position	Organization	Date
Name	Title/Position	Organization	Date
Name	Title/Position	Organization	Date
Name	Title/Position	Organization	Date

<b>INTERVIEW RECORD</b>		
<b>Site Name:</b>	<b>EPA ID No.:</b>	
<b>Subject:</b>	<b>Time:</b>	<b>Date:</b>
<b>Type:</b> <input type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
<b>Location of Visit:</b>		
<b>Contact Made By:</b>		
<b>Name:</b>	<b>Title:</b>	<b>Organization:</b>
<b>Individual Contacted:</b>		
<b>Name:</b>	<b>Title:</b>	<b>Organization:</b>
<b>Telephone No:</b>	<b>Street Address:</b>	
<b>Fax No:</b>	<b>City, State, Zip:</b>	
<b>E-Mail Address:</b>		
<b>Summary Of Conversation</b>		

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**Appendix D**  
**Five-Year Review Site Inspection Checklist**

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## Five-Year Review Site Inspection Checklist

### Purpose of the Checklist

The site inspection checklist provides a useful method for collecting important information during the site inspection portion of the five-year review. The checklist serves as a reminder of what information should be gathered and provides the means of checking off information obtained and reviewed, or information not available or applicable. The checklist is divided into sections as follows:

- I. Site Information
- II. Interviews
- III. On-site Documents & Records Verified
- IV. O&M Costs
- V. Access and Institutional Controls
- VI. General Site Conditions
- VII. Landfill Covers
- VIII. Vertical Barrier Walls
- IX. Groundwater/Surface Water Remedies
- X. Other Remedies
- XI. Overall Observations

Some data and information identified in the checklist may or may not be available at the site depending on how the site is managed. Sampling results, costs, and maintenance reports may be kept on site or may be kept in the offices of the contractor or at State offices. In cases where the information is not kept at the site, the item should not be checked as “not applicable,” but rather it should be obtained from the office or agency where it is maintained. If this is known in advance, it may be possible to obtain the information before the site inspection.

This checklist was developed by EPA and the U.S. Army Corps of Engineers (USACE). It focuses on the two most common types of remedies that are subject to five-year reviews: landfill covers, and groundwater pump and treat remedies. Sections of the checklist are also provided for some other remedies. The sections on general site conditions would be applicable to a wider variety of remedies. The checklist should be modified to suit your needs when inspecting other types of remedies, as appropriate.

The checklist may be completed and attached to the Five-Year Review report to document site status. Please note that the checklist is not meant to be completely definitive or restrictive; additional information may be supplemented if the reviewer deems necessary. Also note that actual site conditions should be documented with photographs whenever possible.

## Using the Checklist for Types of Remedies

The checklist has sections designed to capture information concerning the main types of remedies which are found at sites requiring five-year reviews. These remedies are landfill covers (Section VII of the checklist) and groundwater and surface water remedies (Section IX of the checklist). The primary elements and appurtenances for these remedies are listed in sections which can be checked off as the facility is inspected. The opportunity is also provided to note site conditions, write comments on the facilities, and attach any additional pertinent information. If a site includes remedies beyond these, such as soil vapor extraction or soil landfarming, the information should be gathered in a similar manner and attached to the checklist.

## Considering Operation and Maintenance Costs

Unexpectedly widely varying or unexpectedly high O&M costs may be early indicators of remedy problems. For this reason, it is important to obtain a record of the original O&M cost estimate and of annual O&M costs during the years for which costs incurred are available. Section IV of the checklist provides a place for documenting annual costs and for commenting on unanticipated or unusually high O&M costs. A more detailed categorization of costs may be attached to the checklist if available. Examples of categories of O&M costs are listed below.

Operating Labor - This includes all wages, salaries, training, overhead, and fringe benefits associated with the labor needed for operation of the facilities and equipment associated with the remedial actions.

Maintenance Equipment and Materials - This includes the costs for equipment, parts, and other materials required to perform routine maintenance of facilities and equipment associated with a remedial action.

Maintenance Labor - This includes the costs for labor required to perform routine maintenance of facilities and for equipment associated with a remedial action.

Auxiliary Materials and Energy - This includes items such as chemicals and utilities which can include electricity, telephone, natural gas, water, and fuel. Auxiliary materials include other expendable materials such as chemicals used during plant operations.

Purchased Services - This includes items such as sampling costs, laboratory fees, and other professional services for which the need can be predicted.

Administrative Costs - This includes all costs associated with administration of O&M not included under other categories, such as labor overhead.

Insurance, Taxes and Licenses - This includes items such as liability and sudden and accidental insurance, real estate taxes on purchased land or right-of-way, licensing fees for certain technologies, and permit renewal and reporting costs.

Other Costs - This includes all other items which do not fit into any of the above categories.

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Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

## Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

<b>I. SITE INFORMATION</b>			
<b>Site name:</b>	<b>Date of inspection:</b>		
<b>Location and Region:</b>	<b>EPA ID:</b>		
<b>Agency, office, or company leading the five-year review:</b>	<b>Weather/temperature:</b>		
<b>Remedy Includes:</b> (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment  <input type="checkbox"/> Access controls  <input type="checkbox"/> Institutional controls  <input type="checkbox"/> Groundwater pump and treatment  <input type="checkbox"/> Surface water collection and treatment  <input type="checkbox"/> Other _____            _____         </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation  <input type="checkbox"/> Groundwater containment  <input type="checkbox"/> Vertical barrier walls         </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls
<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls		
<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached			
<b>II. INTERVIEWS</b> (Check all that apply)			
<b>1. O&amp;M site manager</b> _____                      _____                      _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____			
<b>2. O&amp;M staff</b> _____                      _____                      _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____			



<b>III. ON-SITE DOCUMENTS &amp; RECORDS VERIFIED</b> (Check all that apply)			
1.	<b>O&amp;M Documents</b> <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____ _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____ _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	<b>O&amp;M and OSHA Training Records</b> Remarks _____ _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
4.	<b>Permits and Service Agreements</b> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____ _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	<b>Gas Generation Records</b> Remarks _____ _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
6.	<b>Settlement Monument Records</b> Remarks _____ _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
7.	<b>Groundwater Monitoring Records</b> Remarks _____ _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
8.	<b>Leachate Extraction Records</b> Remarks _____ _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
9.	<b>Discharge Compliance Records</b> <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____ _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	<b>Daily Access/Security Logs</b> Remarks _____ _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A

<b>IV. O&amp;M COSTS</b>																																											
1.	<b>O&amp;M Organization</b>	<input type="checkbox"/> State in-house <input type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Contractor for State <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Contractor for Federal Facility																																								
2.	<b>O&amp;M Cost Records</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached  <div style="text-align: center;">Total annual cost by year for review period if available</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">From _____</td> <td style="width: 20%;">To _____</td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 30%;"></td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> </table>			From _____	To _____				Date	Date	Total cost		<input type="checkbox"/> Breakdown attached	From _____	To _____			<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		<input type="checkbox"/> Breakdown attached	From _____	To _____			<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		<input type="checkbox"/> Breakdown attached	From _____	To _____			<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		<input type="checkbox"/> Breakdown attached
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From _____	To _____			<input type="checkbox"/> Breakdown attached																																							
Date	Date	Total cost		<input type="checkbox"/> Breakdown attached																																							
3.	<b>Unanticipated or Unusually High O&amp;M Costs During Review Period</b> Describe costs and reasons: _____ _____ _____ _____ _____																																										
<b>V. ACCESS AND INSTITUTIONAL CONTROLS</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A																																											
<b>A. Fencing</b>																																											
1.	<b>Fencing damaged</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Gates secured	<input type="checkbox"/> N/A																																							
	Remarks _____ _____																																										
<b>B. Other Access Restrictions</b>																																											
1.	<b>Signs and other security measures</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A																																								
	Remarks _____ _____																																										

<b>C. Institutional Controls (ICs)</b>			
1.	<b>Implementation and enforcement</b>		
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by) _____		
	Frequency _____		
	Responsible party/agency _____		
	Contact _____		
	Name	Title	Date
	Phone no.		
	Reporting is up-to-date	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Other problems or suggestions: <input type="checkbox"/> Report attached		
	_____		
	_____		
	_____		
2.	<b>Adequacy</b>	<input type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A
	Remarks _____		
	_____		
	_____		
<b>D. General</b>			
1.	<b>Vandalism/trespassing</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No vandalism evident
	Remarks _____		
	_____		
2.	<b>Land use changes on site</b>	<input type="checkbox"/> N/A	
	Remarks _____		
	_____		
3.	<b>Land use changes off site</b>	<input type="checkbox"/> N/A	
	Remarks _____		
	_____		
<b>VI. GENERAL SITE CONDITIONS</b>			
<b>A. Roads</b>			
	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A	
1.	<b>Roads damaged</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
	Remarks _____		
	_____		

<b>B. Other Site Conditions</b>			
Remarks _____ _____ _____ _____ _____			
<b>VII. LANDFILL COVERS</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Landfill Surface</b>			
1.	<b>Settlement</b> (Low spots) Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident	
2.	<b>Cracks</b> Lengths _____    Widths _____    Depths _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Cracking not evident	
3.	<b>Erosion</b> Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident	
4.	<b>Holes</b> Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident	
5.	<b>Vegetative Cover</b> <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____ _____	<input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> No signs of stress	
6.	<b>Alternative Cover (armored rock, concrete, etc.)</b> Remarks _____ _____	<input type="checkbox"/> N/A	
7.	<b>Bulges</b> Areal extent _____ Height _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident	

8.	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____ _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map    Areal extent _____ <input type="checkbox"/> Location shown on site map    Areal extent _____ <input type="checkbox"/> Location shown on site map    Areal extent _____ <input type="checkbox"/> Location shown on site map    Areal extent _____
9.	<b>Slope Instability</b> <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____ _____	
<b>B. Benches</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	<b>Flows Bypass Bench</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____	
2.	<b>Bench Breached</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____	
3.	<b>Bench Overtopped</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____	
<b>C. Letdown Channels</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	<b>Settlement</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____    Depth _____ Remarks _____ _____	
2.	<b>Material Degradation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____    Areal extent _____ Remarks _____ _____	
3.	<b>Erosion</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____    Depth _____ Remarks _____ _____	

4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____ _____		
5.	<b>Obstructions</b>	Type _____	<input type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____ _____		
6.	<b>Excessive Vegetative Growth</b>	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____ _____		
<b>D. Cover Penetrations</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> N/A		
	Remarks _____ _____		
2.	<b>Gas Monitoring Probes</b>	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	Remarks _____ _____		
3.	<b>Monitoring Wells</b> (within surface area of landfill)	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	Remarks _____ _____		
4.	<b>Leachate Extraction Wells</b>	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	Remarks _____ _____		
5.	<b>Settlement Monuments</b>	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____ _____		

<b>E. Gas Collection and Treatment</b>			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Gas Treatment Facilities</b>	<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction	<input type="checkbox"/> Collection for reuse
	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance		
Remarks _____				
_____				
2.	<b>Gas Collection Wells, Manifolds and Piping</b>	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	
Remarks _____				
_____				
3.	<b>Gas Monitoring Facilities</b> (e.g., gas monitoring of adjacent homes or buildings)	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
Remarks _____				
_____				
<b>F. Cover Drainage Layer</b>			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Outlet Pipes Inspected</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks _____				
_____				
2.	<b>Outlet Rock Inspected</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks _____				
_____				
<b>G. Detention/Sedimentation Ponds</b>			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Siltation</b> Areal extent _____	Depth _____	<input type="checkbox"/> N/A	
	<input type="checkbox"/> Siltation not evident			
Remarks _____				
_____				
2.	<b>Erosion</b> Areal extent _____	Depth _____		
	<input type="checkbox"/> Erosion not evident			
Remarks _____				
_____				
3.	<b>Outlet Works</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks _____				
_____				
4.	<b>Dam</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks _____				
_____				

<b>H. Retaining Walls</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Deformations</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement_____	Vertical displacement_____	
	Rotational displacement_____		
	Remarks_____		
	_____		
2.	<b>Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks_____		
	_____		
<b>I. Perimeter Ditches/Off-Site Discharge</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Siltation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent_____	Depth_____	
	Remarks_____		
	_____		
2.	<b>Vegetative Growth</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent_____	Type_____	
	Remarks_____		
	_____		
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Areal extent_____	Depth_____	
	Remarks_____		
	_____		
4.	<b>Discharge Structure</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks_____		
	_____		
<b>VIII. VERTICAL BARRIER WALLS</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent_____	Depth_____	
	Remarks_____		
	_____		
2.	<b>Performance Monitoring</b>	Type of monitoring_____	
	<input type="checkbox"/> Performance not monitored		
	Frequency_____	<input type="checkbox"/> Evidence of breaching	
	Head differential_____		
	Remarks_____		
	_____		

<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
<b>A. Groundwater Extraction Wells, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	<b>Pumps, Wellhead Plumbing, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____
2.	<b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	<b>Collection Structures, Pumps, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
2.	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____

<b>C. Treatment System</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Treatment Train</b> (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____ _____		
2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____		
3.	<b>Tanks, Vaults, Storage Vessels</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____ _____		
4.	<b>Discharge Structure and Appurtenances</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____		
5.	<b>Treatment Building(s)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____ _____		
6.	<b>Monitoring Wells</b> (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____		
<b>D. Monitoring Data</b>			
1.	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality		
2.	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining		

<b>D. Monitored Natural Attenuation</b>	
1.	<b>Monitoring Wells</b> (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____
<b>X. OTHER REMEDIES</b>	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
<b>XI. OVERALL OBSERVATIONS</b>	
<b>A. Implementation of the Remedy</b>	
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).  _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
<b>B. Adequacy of O&amp;M</b>	
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.  _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	

**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

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**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

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**Appendix E**  
**Five-Year Review Report Template**

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## Five-Year Review Report Template

This appendix provides a suggested checklist and a format for Five-Year Review reports. The checklist appears first, followed by the report template. You are encouraged to follow the template to ensure national consistency in the structure of Five-Year Review reports. However, each report should take into account site-specific circumstances, and you should modify the report format and content accordingly. For example, in some cases the report may be clearer if organized by operable unit (OU), or you may need to include site-specific questions that do not appear in this appendix.

The suggested format for Five-Year Review reports includes three main components: cover material, summary information, and the report body. Templates for each of these components follow. These templates provide suggested standard formats, boilerplate text, subheadings, checklists, example tables, and protectiveness statements. Suggested boilerplate text is presented in text boxes. Within the boilerplate section, text enclosed in brackets (“[ ]”) should be added as appropriate, and *italicized* text denotes discussions that the reviewer should add.

You should use both the checklist and report template as guides for the types of information that should appear in the different sections of your Five-Year Review report. You should include information that is relevant to your site and needed to ensure that the rationale behind the protectiveness determination is adequately documented.

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## Content Checklist For Five-Year Review Reports

This checklist may be used by you, your managers, etc., to verify that you have included all of the appropriate information in your Five-Year Review report. Depending on site-specific circumstances, some items may not be applicable. For example, a report for a site just beginning construction will generally contain less data than for a site that has reached construction completion.

### General Report Format

- Signed concurrence memorandum (as appropriate)
- Title page with signature and date
- Completed five-year review summary form (page E-15)
- List of documents reviewed
- Site maps (as appropriate)
- List of tables and figures
- Interview report (as appropriate)
- Site inspection checklist
- Photos documenting site conditions (as appropriate)

### Introduction

- The purpose of the five-year review
- Authority for conducting the five-year review
- Who conducted the five-year review (lead agency) and when
  - Organizations providing analyses in support of the review (*e.g.*, the contractor supporting the lead agency )
  - Other review participants or support agencies
- Review number (*e.g.*, first, second)
- Trigger action and date
- Number, description, and status of all operable units at the site
- If review covers only part of a site, explain approach
  - Define which areas are covered in the five-year review
  - Summarize the status of other areas of the site that are not covered in the present five-year

### Site Chronology

- List all important site events and relevant dates (*e.g.*, date of initial discovery of problem, dates of pre-NPL responses, date of NPL listing, etc.)

**Background**

- General site description (*e.g.*, size, topography, and geology)
- Former, current, and future land use(s) of the site and surrounding areas
- History of contamination
- Initial response (*e.g.*, removals)
- Basis for taking remedial action (*e.g.*, contaminants)

**Remedial Actions**

- Regulatory actions (*e.g.*, date and description of Records of Decision, Explanations of Significant Difference, Administrative Orders on Consent, Consent Decrees and Action Memorandum)
- Remedial action objectives
- Remedy description
- Remedy implementation (*e.g.*, status, history, enforcement actions, performance)
- Systems operations/Operations & Maintenance
  - Systems operations/O&M requirements
  - Systems operations/O&M operational summary (*e.g.*, history, modifications, problems, and successes)
  - Summary of costs of system operations/O&M effectiveness (*i.e.*, are requirements being met and are activities effective in maintaining the remedy?)

**Progress Since Last Five-Year Review (if applicable)**

- Protectiveness statements from last review
- Status of recommendations and follow-up actions from last review
- Results of implemented actions, including whether they achieved the intended effect
- Status of any other prior issues

**Five-Year Review Process**

- Administrative Components
  - Notification of potentially interested parties of initiation of review process
  - Identification of five-year review team members (as appropriate)
  - Outline of components and schedule of your five-year review
- Community Involvement
  - Community notification (prior and post review)
  - Other community involvement activities (*e.g.*, notices, fact sheets, etc., as appropriate)
- Document review
- Data review
- Site inspection
  - Inspection date
  - Inspection participants

### Five-Year Review Process, cont'd.

- Site inspection scope and procedures
- Site inspection results, conclusions
- Inspection checklist
- Interviews
  - Interview date(s) and location(s)
  - Interview participants (name, title, etc.)
  - Interview documentation
  - Interview summary

### Technical Assessment

- Answer Question A: Is the remedy functioning as intended by the decision documents?
  - remedial action performance (*i.e.*, is the remedy operating as designed?)
  - system operations/O&M
  - cost of system operations/O&M
  - opportunities for optimization
  - early indicators of potential issues
  - implementation of institutional controls and other measures
- Answer Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
  - changes in standards, newly promulgated standards, TBCs
  - expected progress towards meeting RAOs
  - changes in exposure pathways
  - changes in land use
  - new contaminants and/or contaminant sources
  - remedy byproducts
  - changes in toxicity and other contaminant characteristics
  - risk recalculation/assessment (as applicable)
- Answer Question C: Has any other information come to light that could call into question the protectiveness of the remedy?
  - new or previously unidentified ecological risks
  - natural disaster impacts
  - any other information that could call into question the protectiveness of the remedy
- Technical Assessment Summary

### Issues

- Issues identified during the technical assessment and other five-year review activities
- Determination of whether issues affect current or future protectiveness

### **Issues, cont'd.**

- A discussion of unresolved issues raised by support agencies and the community (States, Tribes, other Federal agencies, local governments, citizens, PRPs, other interested parties), if applicable

### **Recommendations and Follow-up Actions**

- Required/suggested improvements to identified issues or to current site operations
- Note parties responsible for actions
- Note agency with oversight authority
- Schedule for completion of actions related to resolution of issues

### **Protectiveness Statements**

- Protective statement(s) for each OU (If the remedy is not protective of human health and/or the environment, have you provided supporting discussion and information in the report to make this determination, such as current threats or level of risk?)
- Comprehensive protectiveness statement covering all of the remedies at the site (if applicable)

### **Next Review**

- Expected date of next review
- If five-year reviews will no longer be done, provide a summary of that portion of the technical analysis presented in the report that provides the rationale for discontinuation of five-year reviews

**Five-Year Review Report**  
**(First, Second, etc.) Five-Year Review Report**

for

**Site Name**

**City**

**County, State**

**Month, Year**

**PREPARED BY:**

**Lead Agency  
Name and  
Location**

Approved by:

Date:

---

[Name]  
[Title]  
[Affiliation]

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## Five-Year Review Report

*The following Table of Contents notes typical major divisions and subheadings for Five-Year Review reports. Subheadings can be included as appropriate for a given review report. This is only a general example.*

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- Table 2 - Annual System Operations/O&M Costs
- Table 3 - Actions Taken Since the Last Five-Year Review
- Table 4 - Changes in Chemical-Specific Standards
- Table 5 - Changes in Action-Specific Requirements
- Table 6 - Changes in Location-Specific Requirements
- Table 7 - Issues
- Table 8 - Recommendations and Follow-up Actions

**Attachments**

- Site Maps (if not included in the body of the report)
- List of Documents Reviewed
- Tables and Figures documenting Remedy Performance and Changes in Standards (if not included in the body of the report)
- Interview Report (as appropriate)
- Photos Documenting Site Conditions

**Appendix**

- Comments received from Support Agencies and/or the Community

## **List of Acronyms**

*You should include a list of acronyms used in the report here.*

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## **Executive Summary**

*You should include an Executive Summary at the beginning of the report. The Executive Summary should be brief, and should include a reiteration of the protectiveness statements included in Section X of the Five-Year Review report.*

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## Five-Year Review Summary Form

### SITE IDENTIFICATION

Site name (from WasteLAN): \_\_\_\_\_

EPA ID (from WasteLAN): \_\_\_\_\_

Region:

State:

City/County: \_\_\_\_\_

### SITE STATUS

NPL status:  Final  Deleted  Other (specify) \_\_\_\_\_

Remediation status (choose all that apply):  Under Construction  Operating  Complete

Multiple OUs?\*  YES  NO

Construction completion date: \_\_\_ / \_\_\_ / \_\_\_\_\_

Has site been put into reuse?  YES  NO

### REVIEW STATUS

Lead agency:  EPA  State  Tribe  Other Federal Agency \_\_\_\_\_

Author name: \_\_\_\_\_

Author title: \_\_\_\_\_

Author affiliation: \_\_\_\_\_

Review period:\*\* \_\_\_ / \_\_\_ / \_\_\_\_\_ to \_\_\_ / \_\_\_ / \_\_\_\_\_

Date(s) of site inspection: \_\_\_ / \_\_\_ / \_\_\_\_\_

Type of review:

- Post-SARA     Pre-SARA     NPL-Removal only  
 Non-NPL Remedial Action Site     NPL State/Tribe-lead  
 Regional Discretion

Review number:  1 (first)  2 (second)  3 (third)  Other (specify) \_\_\_\_\_

Triggering action:

- Actual RA Onsite Construction at OU # \_\_\_\_\_     Actual RA Start at OU# \_\_\_\_\_  
 Construction Completion     Previous Five-Year Review Report  
 Other (specify) \_\_\_\_\_

Triggering action date (from WasteLAN): \_\_\_ / \_\_\_ / \_\_\_\_\_

Due date (five years after triggering action date): \_\_\_ / \_\_\_ / \_\_\_\_\_

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

## Five-Year Review Summary Form, cont'd.

**Issues:**

*Summarize issues (see Chapter 3).*

**Recommendations and Follow-up Actions:**

*Summarize recommendations and follow-up actions (see Chapter 3).*

**Protectiveness Statement(s):**

*Include individual operable unit protectiveness statements. For sites that have reached construction completion and have more than one OU, include an additional and comprehensive protectiveness statement covering all of the remedies at the site (see Chapter 4).*

**Other Comments:**

*Make any other comments here.*

## Five-Year Review Report

### I. Introduction

*Provide a synopsis of “who, what, where, when, and why.” Detail the following:*

- *The purpose of the review;*
- *The authority for conducting the five-year review;*
- *Who conducted the review, when, and for what site or portion of the site;*
- *Whether it is the first review or a subsequent review at the site;*
- *What action triggered the review; and*
- *A brief status of areas of a site not addressed in the current review and/or the status of five-year reviews for other areas of the entire site.*

Further explanation and boilerplate text are provided below. Additional explanation on the following topics is provided in Chapter 1.

#### The Purpose of the Review

*State the purpose of the five-year review specific to the site or portion of the site addressed in the review.*

The purpose of five-year reviews is to determine whether the remedy at a site [is/is expected to be] protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

#### Authority for Conducting the Five-Year Review

The Agency is preparing this five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104]*

*or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

### Who Conducted the Five-Year Review

*If the U.S. Army Corps of Engineers (USACE) or a contractor has conducted an analysis in support of a five-year review, you should include their name and the date of the analysis. When a contractor for a potentially responsible party (PRP) conducts analyses or provides information in support of a five-year review, you should identify the a contractor and their affiliation with the PRP in the Five-Year Review report. You should also identify who conducted the site inspection.*

Boilerplate text for the explanation of who conducted the review is provided in the box below. This text is written as though EPA is the lead agency and should be adapted when another agency or department serves as the lead agency.

The United States Environmental Protection Agency (EPA) Region [number] has conducted a five-year review of the remedial actions implemented at the [name] site in [location]. This review was conducted from [month, year] through [month, year]. This report documents the results of the review. [Please identify any party providing an analysis in support of the five-year review; also indicate the contractual arrangements under which this was done.]

### Other Review Characteristics

*State whether the review is the first or a subsequent five-year review for the site, what action or event “triggered” the review, and the date of this action. See Chapter 1, Section 1.2 of this guidance for a discussion of triggering events for the five-year review and indicate in your report whether the trigger for the current five-year review has been met.*

Boilerplate text for the explanation of other review characteristics is provided in the box below. Select text from brackets as appropriate.

This is the [first/second/etc.] five-year review for the [name] site. The triggering action for this review is the date of the [triggering action], as shown in EPA's WasteLAN database: [date]. [This discussion should also mention what is specifically activating the review, *i.e.*, that hazardous substances, pollutants, or contaminants are or will be left on site above levels that allow for unlimited use and unrestricted exposure.]

*In addition, if separate five-year reviews are conducted for different areas of a site, you should include the following in this section:*

- *An explanation of this approach;*
- *A description of which areas are covered by this five-year review; and*
- *A brief synopsis of the remedial activities and the status of remedial measures and/or five-year reviews for other areas.*

## **II. Site Chronology**

*List all important site events and relevant dates in the site chronology, such as those shown in Table 1. The identified events are illustrative, not comprehensive.*

**Table 1: Chronology of Site Events**

Event	Date
Initial discovery of problem or contamination	
Pre-NPL responses	
NPL listing	
Removal actions	
Remedial Investigation/Feasibility Study complete	
ROD signature	
ROD Amendments or ESDs	
Enforcement documents (CD, AOC, Unilateral Administrative Order)	
Remedial design start	
Remedial design complete	

**Table 1: Chronology of Site Events**

Event	Date
Superfund State Contract, Cooperative Agreement, or Federal Facility Agreement signature	
Actual remedial action start	
Construction dates (start, finish)	
Construction completion date	
Final Close-out Report	
Deletion from NPL	
Previous five-year reviews	

### III. Background

*Describe the fundamental aspects of the site, providing a clear, succinct description of site characteristics. The purpose of this section is to identify the threat posed to the public and environment at the time of the ROD, so that the performance of the remedy can be easily compared with the site conditions the remedy was intended to address. Include all major site activities prior to the signing of the ROD. In addition to text, you may use site maps to help clarify the discussion. The following checklist may assist you in developing the text for this section.*

<b>Background Checklist</b>	
<b>Physical Characteristics</b> <i>Present the site's location and characteristics, including the following:</i>	
	Area of site, relation to parcel(s), extent and location of sources
	Whether site is located in a populated area or is near populated areas
	Whether site is located in an environmentally sensitive area or is near environmentally sensitive areas, where applicable
<b>Land and Resource Use</b> <i>Discuss the following:</i>	
	Former, current and projected land uses for the site, as identified in the ROD or other decision document
	Current and projected land uses for the area surrounding the site, at the time of the five-year review
	Human and ecological past, present and known future use of resources (e.g., groundwater or surface water as a drinking water supply) and any other current uses of the site not already addressed, as applicable

<b>Background Checklist</b>	
<b>History of Contamination</b> <i>Discuss the following:</i>	
	The historical activities that caused contamination, including the type of activity or process, when it took place, the specific type of hazardous substances, and their volumes/proportions, if known
	How contamination was discovered and problems resulting from contamination
<b>Initial Response</b> <i>Describe any pre-ROD cleanup activities at the site:</i>	
	CERCLA removal actions, non-CERCLA removals/responses, closures, the ceasing of operations, as well as governing agreements and parties involved in these activities
<b>Basis for Taking Action</b> <i>Describe the contaminants found at the site by appropriate media type (soil, groundwater, surface water, air). Note the effect or potential effect of the contamination on people, resources they use, or the environment. Examples of elements of this discussion include the following:</i>	
	Contaminated media and structures (summary of remedial investigation)
	Resources/targets that have been or could potentially be affected, results of risk assessments, determination of primary health threat

#### IV. Remedial Actions

*Discuss initial plans, implementation history, and current status of the remedy. Explain events identified in the chronology, and generally include discussions of remedy selection, remedy implementation, remedy performance, and system operations/O&M. Present – accurately, adequately, and concisely – relevant site activities from the signing of the ROD to the present. You should delineate all remedial measures, for instance, include monitoring, fencing, and institutional controls. Discuss any changes to or problems with remedial components. The following checklist may assist you in developing the text for this section.*

<b>Remedial Actions Checklist</b>	
<b>Remedy Selection</b> <i>Describe the remedial action objectives and the selected remedy. This discussion should explain the following:</i>	
	Scope and role of actions including definition of OUs related to each ROD and how they relate to each other
	Source documents listing remedial action objectives and the remedy (e.g., RODs, ESDs), including signature/filing date
	Statement of remedial action objectives, related to each OU or ROD
	Description of remedial actions/remedy, related to each OU or ROD, noting media addressed; all components of the remedy, including engineering controls, access controls, institutional controls, cleanup measures, treatment types, and required monitoring should be described

<b>Remedial Actions Checklist</b>	
<b>Remedy Implementation</b> <i>Discuss the history of and plans for implementation of the remedy. Discuss enforcement actions if applicable. The text may be presented either chronologically or by OU, and should include the following:</i>	
	Dates when remedial designs were started and completed
	Difficulties or changes that occurred during remedial design
	Dates when remedial actions were started and completed
	The performance of each remedial action since implementation
	Enforcement agreements, and parties involved in these agreements
	CERCLA removal actions or non-CERCLA removals/responses since the ROD
<b>System Operations/O&amp;M</b> <i>Describe system operations/O&amp;M requirements, activities to date, any problems that have arisen, and costs:</i>	
	System operations/O&M requirements, as noted in the system operations/O&M plan, system operations/O&M manual, enforcement documents, and monitoring plans
	System operations/O&M activities to date
	Problems in the implementation of system operations/O&M
	Originally estimated annual O&M costs
	Actual annual O&M costs over the review period
	Reasons for any unanticipated or unusually high O&M costs

*A table, such as Table 2, should be used to document total annual system operations/O&M costs during the period preceding the current five-year review. In the text, you should discuss significant variations from anticipated costs or between operating years.*

**Table 2: Annual System Operations/O&M Costs**

<b>Dates</b>		<b>Total Cost rounded to nearest \$1,000</b>
<b>From</b>	<b>To</b>	

*At the end of the remedial actions section, it is sometimes helpful for you to add a brief discussion of the current status of each of the components of the remedy. This discussion can be particularly helpful for large, complex sites.*

## V. Progress Since the Last Review

*Progress since the last review should be discussed when follow-up actions which impact protectiveness were noted in the previous Five-Year Review report. The following checklist may assist you in developing the text for this section.*

<b>Progress Since the Last Review Checklist</b>	
<b>Describe progress toward accomplishing recommendations and follow-up actions since the last five-year review was completed. Include the following:</b>	
	Protectiveness statements from the last review
	Status of recommendations and follow-up actions from last review
	Results of implemented actions, including whether they achieved the intended effect
	Status of any other prior issues

*Table 3 below presents one approach for providing information on the recommendations and follow-up actions stated in the past review and subsequent actions. The accompanying text should also discuss why any recommendations and follow-up actions have not been implemented if that is the case, and whether implemented actions achieved desired results.*

**Table 3: Actions Taken Since the Last Five-Year Review**

<b>Issues from Previous Review</b>	<b>Recommendations/ Follow-up Actions</b>	<b>Party Responsible</b>	<b>Milestone Date</b>	<b>Action Taken and Outcome</b>	<b>Date of Action</b>

## VI. Five-Year Review Process

*Describe activities performed during the five-year review process and provide a summary of findings when appropriate. The following checklist may assist you in developing the text for this section.*

<b>Five-Year Review Process Checklist</b>	
<b>Administrative Components of the Five-Year Review Process</b>	
	Notify potentially interested parties of start of five-year review
	Identify members of the review team
	Develop a review schedule

<b>Five-Year Review Process Checklist</b>	
<b>Community Notification and Involvement</b>	
	Community notification
	Other community involvement activities
<b>Document Review</b> See Appendix B for a full discussion of the document review	
	What documents were reviewed
	Identify document source of RAOs, ARARs and cleanup levels
<b>Data Review</b> <i>Discuss and present the following:</i>	
	What data were reviewed
	Relevant trends and levels, noting levels which are not currently compliant and whether future compliance can be expected without additional action
	Tables summarizing monitoring and sampling data
	Increase and/or decrease or non-presence of specific chemical compounds and recommended changes for future monitoring programs
<b>Site Inspection</b> <i>Summarize the site inspection and site conditions:</i>	
	Date of site inspection (if more than one inspection was conducted to allow for monitoring or further inspection, list all inspections and activities conducted, and the reasons for conducting each inspection)
	Who conducted and/or attended the inspection
	Activities conducted (scope and procedures)
	Summary of site conditions, inspection results, conclusions
<b>Interviews</b> <i>Discuss the following:</i>	
	Interviews conducted (name, title, organization, date, location(S))
	Interview documentation
	Interview summary
	Successes/problems in the implementation of access and institutional controls
	Successes/problems with the construction of the remedy
	Successes/problems with system operations/O&M
	Unusual situations or problems at the site

## VII. Technical Assessment

*Discuss how each of the three questions asked in the technical assessment were answered (e.g., yes, yes, no or a variation of this) and provide the information that presents the basis for each answer as a framework for your protectiveness determination(s). Explain the conclusions of*

your review, based on the information presented in the previous section. As explained in Chapter 4, the assessment should focus on answering three key questions:

- *Question A: Is the remedy functioning as intended by the decision documents?*
- *Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?*
- *Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*

Each question, and the associated information to be discussed, is presented in its own checklist which may assist you in developing the text for this section. Checklist items shown may be supplemented or modified based on site-specific circumstances.

<b>Checklist for Question A: Is the remedy functioning as intended by the decision documents?</b>	
<b>Remedial Action Performance</b> <i>Discuss the following:</i>	
	Whether the remedial action continues to be operating and functioning as designed
	Whether the remedial action is performing as expected and cleanup levels are being achieved
	Whether containment is effective
<b>System Operations/O&amp;M</b> <i>Discuss the following:</i>	
	Whether operating procedures, as implemented, will maintain the effectiveness of response actions
	Whether large variances in O&M costs could indicate a potential remedy problems or remedy issues
<b>Opportunities for Optimization</b> <i>Discuss the following:</i>	
	Whether opportunities exist to improve the performance and/or reduce costs of monitoring, sampling, and treatment systems
<b>Early Indicators of Potential Issues</b> <i>Discuss the following:</i>	
	Whether frequent equipment breakdowns or changes indicate a potential issue
	Whether issues or problems could place protectiveness at risk
<b>Implementation of Institutional Controls and Other Measures</b> <i>Discuss the following:</i>	
	Whether access controls are in place and prevent exposure (e.g., fencing and warning signs)
	Whether institutional controls are in place and prevent exposure
	Whether other actions (e.g., removals) necessary to ensure that immediate threats have been addressed are complete

	<b>Checklist for Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?</b>
<b>Changes in Standards and TBCs</b> <i>Discuss the following:</i>	
	Whether standards identified in the ROD have been revised and call into question the protectiveness of the remedy
	Whether newly promulgated standards call into question the protectiveness of the remedy
	Whether TBCs used in selecting cleanup levels at the site have changed and could affect the protectiveness of the remedy
<b>Changes in Exposure Pathways</b> <i>Discuss the following:</i>	
	Whether land use or expected land use on or near the site changed
	Whether human health or ecological routes of exposure or receptors have been newly identified or changed in a way that could affect the protectiveness of the remedy
	Whether there are newly identified contaminants or contaminant sources
	Whether there are unanticipated toxic byproducts of the remedy not previously addressed by the decision documents
	Whether physical site conditions or the understanding of these conditions have changed in a way that could affect the protectiveness of the remedy
<b>Changes in Toxicity and Other Contaminant Characteristics</b> <i>Discuss the following:</i>	
	Whether toxicity factors for contaminants of concern at the site have changed in a way that could affect the protectiveness of the remedy
	Whether other contaminant characteristics have changed in a way that could affect the protectiveness of the remedy
<b>Changes in Risk Assessment Methods</b> <i>Discuss the following:</i>	
	Whether standardized risk assessment methodologies have changed in a way that could affect the protectiveness of the remedy
<b>Expected Progress Towards Meeting RAOs</b>	
	Whether the remedy is progressing as expected

*When a standard or requirement has changed, a table can be used to record the nature of the change. Tables 4, 5, and 6 below demonstrate potential ways for you to note changes in chemical-specific, action-specific, or location-specific requirements, respectively.*

**Table 4: Changes in Chemical-Specific Standards**

Contaminant	Media	Cleanup Level	Standard		Citation/Year
Chemical A	e.g., groundwater	e.g., 0.XX mg/L	Previous	e.g., 0.XX mg/L	e.g., SDWA 1988
			New	e.g., 0.YY mg/L	e.g., SDWA 1995
Chemical B			Previous		
			New		

**Table 5: Changes in Action-Specific Requirements**

Action	Requirement		Prerequisite	Citation/Year
Action A (e.g., landfill)	Previous	Include original ARAR here; if none applies, state "None"		
	New			

**Table 6: Changes in Location-Specific Requirements**

Location	Requirement		Prerequisite	Citation/Year
Location A (e.g., critical habitat upon which endangered or threatened species depend)	Previous	Include original ARAR here; if none applies, state "None"		
	New			

	<b>Checklist for Question C: Has any other information come to light that could call into question the protectiveness of the remedy?</b>
<b>Other Information</b> <i>Discuss the following:</i>	
	Whether newly identified ecological risks been found
	Whether there are impacts from natural disasters
	Whether any other information has come to light which could affect the protectiveness of the remedy

**Technical Assessment Summary**

*Discuss how each of the three questions were answered and provide the information that presents the basis for each answer as a framework for your protectiveness determination(s).*

### VIII. Issues

*Detail issues related to current site operations, conditions, or activities, noting which issue, if any, currently prevent the remedy from being protective. You may use a table such as Table 7 to note the issues identified.*

**Table 7: Issues**

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)

### IX. Recommendations and Follow-up Actions

*Specify the required and suggested improvements to current site operations, activities, remedy, or conditions. Note the parties responsible for actions, milestone dates, and which agencies have oversight authority. At a minimum, address all issues that currently affect current and/or future protectiveness. Table 8 illustrates one way to include the necessary information.*

**Table 8: Recommendations and Follow-up Actions**

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future

### X. Protectiveness Statement(s)

*Include a protectiveness statement for each OU at which a remedial action has begun. For sites that have reached construction completion and have more than one OU, you should develop and include an additional comprehensive site-wide protectiveness statement covering all of the remedies at the site. You should not include this additional protectiveness statement until construction completion because, until then, all remedies at the site have not necessarily been selected and constructed.*

In order to promote consistency, you are strongly encouraged to model your protectiveness statements on the sample protectiveness statements provided in Chapter 4, Exhibits 4-6 and 4-7. Your Five-Year Review report should present the protectiveness statements at the beginning of a

discussion that should explain and provide the supporting rationale of the protectiveness determination.

Suggested statements are as follows:

If the remedial action at the OU is under construction, then use this statement:

**Protective or will be protective:**

“The remedy at OU X is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.”

**Not protective:**

“The remedy at OU X is not protective because of the following issues [describe the issue(s)]. The following actions need to be taken [describe the actions needed to ensure protectiveness].”

**Protectiveness deferred:**

“A protectiveness determination of the remedy at OU X cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions [describe the actions]. It is expected that these actions will take approximately [insert time frame] to complete, at which time a protectiveness determination will be made.”

If the remedial action at the OU is operating or completed:

**Protective:**

“The remedy at OU X is expected to be or is protective of human health and the environment, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.”

**Protective in the short-term:**

“The remedy at OU X currently protects human health and the environment because [describe the elements of the remedy that protect human health and the environment in the short term]. However, in order for the remedy to be protective in the long-term, the following actions need to be taken [describe the actions needed to ensure long-term protectiveness].”

**Not protective:**

“The remedy at OU X is not protective because of the following issue(s) [describe the issue(s)]. The following actions need to be taken [describe the actions needed to ensure protectiveness].”

**Protectiveness deferred:**

“A protectiveness determination of the remedy at OU X cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions [describe the actions]. It is expected that these actions will take approximately [insert time frame] to complete, at which time a protectiveness determination will be made.”

For Sites That Have Reached Construction Completion:

**If the remedy(s) is/are protective then use:**

“Because the remedial actions at all OUs are protective, the site is protective of human health and the environment.”

**If the remedy is not protective then use:**

“The remedial actions at OUs X and Y are protective. However, because the remedial action at OU Z is not protective, the site is not protective of human health and the environment at this time. The remedial action at OU Z is not protective because of the following issue(s) [describe the issue(s)]. The following actions need to be taken [describe the actions needed to ensure protectiveness].”

**XI. Next Review**

*Discuss whether another five-year review will be conducted and the date on which that report will be due. If no additional five-year reviews are to be conducted, explain why and provide a justification for discontinuation of reviews.*

**Attachments**

- Site Maps (if not included in the body of the report)
- List of Documents Reviewed
- Tables and Figures Documenting Remedy Performance and Changes in Standards  
(If not included in the body of the report)
- Interview Report (as appropriate)
- Photos Documenting Site Conditions

**Appendix**

- Comments received from Support Agencies and/or the community