UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Transmittal of OSWER Directive "Recommended Evaluation of Institutional Controls: Supplement to the 'Comprehensive Five-Year Review Guidance'"

FROM: James E. Woolford, Director
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TO: Superfund National Policy Managers, Regions 1 - 10

This memorandum transmits OSWER Directive 9355.7-18, entitled "Recommended Evaluation of Institutional Controls: Supplement to the 'Comprehensive Five-Year Review Guidance'".

This guidance supplements OSWER's 2001 *Comprehensive Five-Year Review Guidance* and provides recommendations for conducting five-year reviews for the IC component of remedies in a manner similar to the review of engineering or other remedy components. This document is designed primarily for U.S. Environmental Protection Agency Remedial Project Managers.

If you have any questions, please contact me or have your staff contact Steve Ridenour at ridenour.steve@epa.gov.

Attachments

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Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance"

OSWER Directive 9355.7-18

1.0 OVERVIEW

The purpose of this document is to provide guidance to support Five-Year Reviews (FYRs) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, where institutional controls (ICs) are included as components of site remedies.[1] Consistent with CERCLA section 121(c) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), FYRs generally are conducted where the chosen remedy leaves waste in place and does not allow for unlimited use and unrestricted exposure (UU/UE) at a site (see 40 C.F.R. § 300.430(f)(4)(ii)). This guidance supplements OSWER's 2001 *Comprehensive Five-Year Review Guidance* (FYR Guidance)[2] and provides recommendations for conducting FYRs for the IC component of remedies[3] in a manner similar to the review of engineering or other remedy components.

1.1 What are ICs?

EPA defines ICs as non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy.[4] ICs typically work by limiting land or resource use and/or by providing information that helps modify or guide human behavior at the site. For CERCLA cleanups, the NCP states that ICs can be used to supplement engineering controls during all phases of cleanup and may be a necessary component of the completed remedy.[5]

Generally, there are four categories of ICs for EPA cleanup programs:

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[1] This guidance supplement provides policy guidance to the staff of U.S. EPA on conducting five-year reviews for remedies that include ICs. The guidance is designed to help promote consistent national policy but it does not substitute for CERCLA or EPA's regulations, nor is it a regulation itself. Thus, it does not impose legally binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA, state, tribal, and local decision-makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular site will be made based on the applicable statutes and regulations.

[2] Comprehensive Five-Year Review Guidance, OSWER 9355.7-03B-P, EPA 540-R-01-007, June 2001 ("FYR guidance"). This document may be found at http://www.epa.gov/superfund/cleanup/postconstruction/5yr.htm

[3] As discussed in Section 1.2.2 of the FYR guidance, EPA as a matter of policy typically conducts five-year reviews at removal-only sites on the National Priorities List which leave hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure and where no remedial action has or will take place. Therefore, Regions also should consider the recommendations in this guidance for these removal-only sites.

[4] The term land use control (LUC) is generally used at federal facilities to describe ICs and may include engineering components.

[5] The NCP sets out general expectations for EPA to consider in developing remedial alternatives, including expectations regarding the use of ICs. For more information, see 40 CFR 300.430(a)(1)(iii)(A)). Also see Section 2.3 of *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites ("PIME guidance")*, (OSWER 9355.0-89, EPA-540-R-09-001), November 2010 (Interim Final). This document may be found at http://www.epa.gov/superfund/policy/ic/pdfs/PIME-IC-Guidance-Interim.pdf

(1) *Proprietary controls* refer to controls on land use that are considered private in nature because they tend to affect a single parcel of property and are established by private agreement between the property owner and a second party who, in turn, can enforce the controls. Common examples include easements that restrict use (also known as negative easements) and restrictive covenants. These types of controls can prohibit activities that may compromise the effectiveness of the response action or restrict activities or future resource use that may result in unacceptable risk to human health or the environment. State and tribal law authorize proprietary controls. In some states, the authority comes solely from common law. Other states enacted statutes that directly authorize these types of controls for the purpose of preventing use in conflict with environmental contamination or remedies. These statutes divide into ones modeled after the Uniform Environmental Covenants Act (UECA),[6] and other non-UECA statutes. These UECA and non-UECA state statutes tend to provide advantages over traditional common law proprietary controls;

(2) *Governmental controls* impose restrictions on land or resource use, using the authority of a government entity. Typical examples of governmental controls include zoning; building codes; state, tribal, or local ground water use regulations; and commercial fishing bans and sports/recreational fishing limits posed by federal, state and/or local resources and/or public health agencies. In many cases, federal landholding agencies, such as the Department of Defense, possess the authority to enforce ICs on their property. At active federal facilities, land use restrictions may be addressed in Base Master Plans, facility construction review processes, facility digging permit systems, and/or the facility well permitting systems;

(3) *Enforcement and permit tools with IC components* are legal tools, such as administrative orders, permits, Federal Facility Agreements (FFAs) and consent decrees (CDs), that limit certain site activities or require the performance of specific activities (e.g., monitor and report on IC effectiveness). These legal tools may be issued unilaterally or negotiated; and

(4) *Informational devices* provide information or notification as recorded notice in property records or as advisories to local communities, tourists, recreational users, or other interested persons that residual contamination remains on site. As such, informational devices do not provide enforceable restrictions. Typical informational devices include state registries of contaminated sites, notices in deeds, tracking systems, and fish/shellfish consumption advisories.

1.2 What is the purpose of a FYR for a remedy that includes ICs?

The purpose of a FYR is to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. When an IC is a component of a remedial action, the current and long-term effectiveness of that IC should be evaluated and relevant information about that IC should be included as part of the protectiveness determination. In addition to the protectiveness determination, FYRs may identify IC issues and recommend the need for additional evaluation and/or follow-up actions included as highlighted issues and recommendations. The protectiveness determination and

[6] UECA was developed by the National Conference of Commissioners on Uniform State Laws. See: http://www.environmentalcovenants.org/

related findings of the FYR provide for a periodic analysis of the remedy within the overall strategy for long-term site stewardship.

As part of the FYR protectiveness determination, the Region can analyze ICs during key FYR activities, such as:

- Document reviews;
- Site interviews[7];
- Site inspection; and
- Making a protectiveness determination

The remainder of this document elaborates on the above activities. When conducting these activities, Regions should keep in mind that ICs are generally protective when they are implemented and effective in the long-term. When reviewing remedy decision documents, the IC instruments, and related IC documents, Regions should consider the following key IC concepts:

Clarity of Use Restrictions and Exposure Pathways – decision documents and IC instruments should clearly articulate the substantive restrictions that are needed at a property to achieve overall remedial action objectives (RAOs). The Region should ensure land use assumptions that were made as part of the remedy decision continue to remain accurate.

Accuracy of Property Information and Mapping – all physical areas that do not support UU/UE should be identified and the administrative record should have information showing that ICs cover those areas through comparison with, for example, legal descriptions and scope of ordinances (e.g., ground water ordinance covers the entire current plume area).

Adequacy of Long-term Stewardship of ICs – planning documents such as IC Implementation and Assurance Plans (ICIAPs) and Land Use Control Implementation Plans (LUCIPs),[8] enforcement documents such as CDs and FFAs, as well as remedy selection-related documents such as the Record of Decision (ROD), Remedial Design (RD) or Remedial Action Work Plan (RAWP), should be in place and detail the long-term roles and responsibilities for implementing, maintaining[9], and enforcing ICs. Other available tools for evaluating long-term effectiveness of ICs may include State one-call

[7] As per the FYR Guidance, individuals with information relevant to the status of IC compliance and enforcement may include the site manager; site personnel; Federal, State and Tribal regulatory authorities; local officials; community action groups or associations; residents and businesses located near the site; and other pertinent organizations or individuals. It would also be helpful to interview site owners/lessees/site users, as well as PRPs, where appropriate.

[8] A LUCIP is generally used at federal facilities to lay out the roles and responsibilities for implementing, maintaining, and enforcing LUCs. For purposes of this guidance, where concepts are enumerated for ICIAPs, they are also applicable to LUCIPs.

[9] As detailed in the PIME guidance, the term "maintenance" refers to those activities, such as monitoring and reporting, that ensures ICs are implemented properly and functioning as intended.

systems[10] which can protect the public and environment from uncontrolled excavation and help identify breaches to the ICs.

1.3 What is the role of potentially responsible parties (PRPs) in IC evaluations during the FYR?

EPA, not PRPs, is legally responsible for making the protectiveness determination during the FYR.[11] However, as stated in the EPA's "Enforcement First" guidance for ICs[12] and Section 2.3 of the FYR Guidance, PRPs may, and in appropriate circumstances should, be encouraged to perform certain support activities during the FYR process, as discussed below.

EPA may request that PRPs conduct specific evaluations related to IC effectiveness and provide an IC analysis that EPA may consider in making its protectiveness determination. EPA may send letters to PRPs in advance of the scheduled FYR and these letters may contain specific requests to carry out activities designed to help EPA evaluate IC effectiveness at the site. The role of PRPs may vary by site, depending on a number of factors, including cooperation by the PRPs. In particular, the Region:

- Should examine settlement and enforcement documents regarding PRP obligations with respect to ICs.
- May request[13] that PRPs gather and submit data, studies, or analyses about any ICs pursuant to appropriate provisions of enforcement documents. This request can be made in addition to, or in conjunction, with requests for sampling and monitoring data and reports. Possible requests EPA may make of PRPs include: 1) to obtain recorded copies of restrictive covenants or easements from the appropriate land records office; 2) to obtain title commitments or current ownership/encumbrances reports; and, 3) to obtain assurances/information sharing that ICs are implemented on non-source properties as well as the source properties.

2.0 RECOMMENDED COMPONENTS OF THE FYR PROCESS

2.1 Document review

Section 3.5.1 and page B-6 of the FYR Guidance contain information about IC-related documents that may be appropriate to review for the FYR. These documents provide information on the stages of the IC life-cycle to help evaluate whether ICs are being appropriately implemented, maintained, and enforced at the Site. The following sections provide a recommended list of items to consider by the type of document being reviewed.

[10] For more information about State one-call systems, see http://www.epa.gov/oswer/docs/iwg/onecall_systems.pdf

[11] For federal facility sites, the federal agency may make the protectiveness determination for the site. EPA may then concur or resolve through a dispute resolution process established in the FFA. For more information, see page 2-5 of the FYR guidance.

[12] See *Enforcement First to Ensure Effective Institutional Controls at Superfund Sites*, OSWER 9208.2, March 2006.

[13] Authority for a request may be addressed in the following provisions of a CD or UAO: 1)"periodic review" provision which requires PRPs to conduct studies determined to be necessary by EPA to conduct a periodic review (¶ 17 of the model RDRA CD or ¶ 43 of the model RDRA UAO); 2) additional work/modification of work provision (¶ 14 of the model RDRA CD or ¶ 44 of the model RDRA UAO); or 3) CD and UAO provisions requiring PRPs to maintain the effectiveness of the remedial action and other site-specific provisions of CD or UAO (e.g., ¶ 26(c) of Model RDRA CD requires a Settling Defendant to obtain a title commitment and title policy).

2.1.1 Remedy decision documents (e.g., RODs, ESDs, ROD Amendments)

Decision documents for remedies selected under CERCLA authority are intended to explain the remedial action for the site. When reviewing the remedy during the FYR, Regions should consider a number of factors such as whether:

- The remedy leaves waste on site which will limit site and/or resource use such that UU/UE is not achieved;
- The current remedy is meeting the RAOs in the decision document(s);
- The decision document(s) adequately specifies the RAOs to be achieved, the role of the IC component of the remedial action, and what land and/or resource uses the IC component is intended to restrict;[14]
- If IC(s) were not selected as part of the original remedy, do current conditions on site now indicate that ICs or other remedial action components are necessary as interim or final measures to help ensure protectiveness; and
- Do the decision document(s) adequately specify the long term roles and responsibilities for implementing, maintaining, and enforcing the ICs.

2.1.2 IC instruments (e.g., proprietary and governmental controls, enforcement tools, and informational devices)

Depending on the specific type of IC implemented at a site, there may be a variety of issues to consider when reviewing the IC instrument. Unlike decision documents, most IC instruments are implemented by other parties (e.g., through local governments) and initially may not be part of the EPA site file. Once EPA obtains dated copies of filed documents, these IC instruments should be maintained in the site file and tracked in the IC tracking system.[15] All IC instruments should be reviewed to ensure that clear language is used to state the required use restrictions and that legal descriptions reflect current conditions at the site (e.g., ground water ordinance covers the entire current plume area). In addition, maps (e.g., geographic information systems (GIS)) that lay out the restricted area against the areas of known contamination often are important tools for documenting the extent of IC restrictions.

When reviewing the various types of IC instruments, Regions should, at a minimum, consider the following key issues and concepts:

Status of IC Implementation – Have dated copies of ICs (e.g., a proprietary control with a recorder's mark) been obtained to confirm that each has been implemented as envisioned in the decision documents? For proprietary controls and other ICs within the chain of

[14] If a FYR reveals that ICs are necessary to help ensure protectiveness at a site but were not selected as part of the original remedy, modification of the ROD generally would be appropriate. Any IC relied upon to help ensure protectiveness (e.g., a preexisting control based state or local law) generally should be incorporated in a decision document (i.e., Explanation of Significant Differences or ROD Amendment) if it is relied upon to help ensure protectiveness. For more information, see Section 4.1 of the PIME guidance, subsection entitled *Modifying Existing Response Action Decision Documents*.

[15] IC information typically is available to authorized users via EPA's SEMS Portal at https://sems.epa.gov/sems/welcome.do

title such as deed notices, this is normally accomplished by conducting a title search. If a title search was completed prior to the FYR (e.g., during the remedial action itself), it may be appropriate to rely on the existing title reports and other information obtained during the FYR to confirm effective implementation and operation of the IC. If site conditions have changed or new information calls into question the status and effectiveness of the IC (e.g., property ownership has changed hands, or new property encumbrances come to light), a new title search may need to be completed during the FYR. Regarding governmental controls, steps should be taken to verify that any controls relied upon are still in place and effective. If PRPs were obligated to implement ICs pursuant to a permit or enforcement tool, Regions should review those IC requirements to ensure they have been carried out properly.

Compliance with IC Obligations – Review any monitoring, reporting (e.g., recent inspection), enforcement, and certification requirements to ensure compliance with land and/or resource use restrictions. These may be built into enforcement tools or into the IC instrument itself. For instance, some states through legislation have created statutory environmental covenants that enable parties to build affirmative obligations into ICs, or alternatively, the legislation may require certain activities in conjunction with the environmental covenant.

Long-term Effectiveness and Enforceability of ICs – Ensure that the parties identified in the remedy decision documents or other documents that discuss ICs (e.g., CDs, ICIAPs, LUCIPs, RDs, FFAs, and RAWPs) have followed through with their obligations, which include implementing, maintaining, and enforcing ICs. Depending on the type of IC(s) used at a site, analyzing the long-term effectiveness of the control may be difficult, but a judgment based upon current and reasonably anticipated circumstances generally is appropriate. For example, a governmental control such as a zoning ordinance could be amended or repealed in between five-year review reports, thereby undermining its use as an effective IC. But if evidence suggests this type of action is not likely, and the governmental control does not contain a sunset provision, then it may be appropriate to assume (subject to periodic verification) that the control should be effective in the long-term. For proprietary controls, this evaluation may involve an analysis of several factors, such as whether: 1) real property title information (e.g., through a title search) shows that proprietary controls "run with the land;" 2) the controls are impacted by other interests that affect title to the property; 3) they have a legal basis for enforcing the use restrictions against current and future owners of the property; and 4) they otherwise comply with state law.

2.1.3 Other documents with IC information

Reviewing additional documents may be appropriate in evaluating any relevant information regarding ICs. Below is a list of documents that may contain additional IC information and other types of information or follow-up actions that may be relevant to the FYR:

- Risk Assessments, Remedial Investigation/Feasibility Study, As-built drawings, etc.
  - Ensure original land and resource use assumptions are still valid.

- Review any new information that calls into question the risk assumptions upon which the remedy decision and ICs are based.
- Review as-built drawings to see if they give information on the remedy components and dimensions such as a landfill cap that needs to be protected by an IC.

- RDs, RAWPs, and FFAs[16]
  - Determine whether other IC provisions using state or local authorities cover areas outside the boundaries of the site or federal facility if contamination extends beyond those boundaries
  - Determine if there are agreements between the current PRP and other parties not to modify ICs or land and/or resource use without prior approval from EPA and the State
  - Determine if these documents provide notification to the EPA and the State about breaches, changes in protectiveness status because of ICs, land/resource use changes, and property transfers
  - Determine if plans, designs, and reports (including periodic monitoring/inspection reports) that are to be submitted to EPA have occurred as scheduled.
- ICIAPs, LUCIPs, and Operations and Maintenance (O&M) plans[17]
  - Ensure that the plan has identified a responsible person or agency to maintain and enforce the ICs at the site
  - Ensure that monitoring/reporting requirements in the ICIAP and/or O&M plan are adequate to determine whether ICs remain in place, are effective, and are sufficient to determine whether violations are occurring or are imminent
  - Ensure that updated/correct maps (e.g., zoning, land use plans, etc.) relevant to site contamination or remedy components exist
  - Determine whether inspections to evaluate IC compliance have occurred as scheduled

2.2 Site interviews

Section 3.5.2 and Appendix C of the FYR Guidance contain recommendations on how to conduct interviews during the five-year review. Interviews can provide valuable information on ICs related to their implementation, maintenance, and enforcement. At many sites, interviews are likely the primary method for determining whether ICs are effective and/or if breaches are occurring. Below is a list of recommended questions the Region should ask:

- Authorities from State/local government agencies or federal facilities
  - Have any breaches of the ICs occurred, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?
  - Has the federal agency (for a federal facility site) reported on the status of the ICs or LUCs as required?
  - What type of monitoring is currently being conducted or has been conducted to determine IC compliance (e.g., follow-up inspections)?

[16] This is consistent with EPA's guidance entitled "Land Use Control Checklist for Federal Facilities" which can be found at http://www.epa.gov/fedfac/documents/icchecklist.pdf
[17] At federal facility sites, this information should also be captured in RDs and RODs.

- Are ICs being enforced? What is the enforcement plan in the event of an IC breach?
- Are there any new developments, either constructed or planned, in the area of which the entity is aware?
- Has land use changed or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?
- What procedures are in place for EPA and PRPs to receive notice of any proposed changes to the ICs?
- Does the entity have an IC tracking system or other applicable database (e.g., GIS maps) to keep information about ICs?
- Can the ICs or engineering controls be registered in the state's one-call system?
- How has the IC process been working and are there any suggestions for improvement?

- Property Owner/Lessee
  - Are property owners and lessees aware of, and complying with, ICs?
  - Does the property owner have any plans to lease, sell or transfer the property? If so, what are their plans regarding the property's ICs?
  - Are any covenants or easements relevant to the remedy held by the property owner in addition to those selected in the remedy decision documents?
  - Does the property owner/lessee have any plans to build new structures or drill wells on the property?

2.3 Site inspection

Section 3.5.3 and Appendix D of the FYR Guidance contain recommendations on site inspections. A site inspection usually provides the site manager the opportunity to evaluate the site and visually confirm the effectiveness of ICs and the engineering components of the remedy. Aerial photographs may be helpful as well in determining whether inappropriate land and/or resource use is occurring.

3.0 ASSESSING THE PROTECTIVENESS OF THE REMEDY

The following section provides information on how to evaluate protectiveness for a site based on the IC component of the selected remedy. Often, some of these questions can be answered during the site inspection process. Further guidance for answering Questions A, B, and C and making a protectiveness determination for a site can be found in Section 4.0 of the FYR Guidance. Specific examples of IC situations in the technical assessment can be found in Section 5.0 below.

3.1 Recommended questions for the technical assessment

When you ask…	For ICs, you should consider whether…
Question A: *Is the remedy functioning as intended by the decision documents?*	• ICs are in place and effective for all areas of the site that do not achieve UU/UE • Exposures are occurring, or likely to occur, because ICs are not in place • ICs are tailored to the use restrictions specified in the decision documents • ICs that are needed to help ensure protectiveness were included in the Region's decision document • Additional ICs are needed to help ensure protectiveness
Question B: *Are exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?*	• Actual or potential change in exposure pathways has occurred due to changes in land use or zoning • Actual or potential change in exposure pathways has occurred due to changes in ground water or surface water use • New information or changed conditions results in new exposure pathways (e.g., vapor intrusion into homes and other structures)
Question C: *Has any other information come to light that could call into question the protectiveness of the remedy?*	• Indications that land or other resource uses may be changing in the area have occurred (e.g. redevelopment) • State or local land use law changed in a way that could significantly impact ICs at the site • Current conditions warrant a change to the ICs or changes to the ICs themselves have occurred (e.g., breaches).

3.2 Identifying issues

Issues that prevent the remedy from being protective in the short- and/or long-term should be identified in the FYR. Generally, sites that are protective of human health and the environment in the long-term will not have any issues that affect the Agency's protectiveness determination; however, the five-year review process may lead to the discovery of other issues that give rise to recommendations that could require additional work or study at the site.[18] Exhibit 4-3 located on page 4-11 of the FYR Guidance provides a recommended tabular format that can be considered when listing potential issues in the FYR. It is generally important to determine whether the issue(s) identified in the FYR affects current and/or future protectiveness of the remedy. Some examples of IC-related issues that may affect protectiveness and are typically identified in a FYR are:

[18] This may include issues related to remedy optimization, changes to interval sampling, or changes to the information contained in an ICIAP or O&M plan which do not affect protectiveness.

- ICs required by the decision documents are not implemented.
- ICs in place are not effective in achieving the use restrictions required by the decision documents in order to provide a remedy that is protective of human health and the environment.
- IC breaches are occurring because use restrictions are not being communicated.
- ICs are not identified in the site decision documents even though they are necessary to help ensure protectiveness at the site.
- The decision documents do not adequately specify the long term roles and responsibilities for implementing, maintaining, and enforcing the ICs

3.3 Developing recommendations

All recommendations and follow-up actions identified as part of the FYR protectiveness determination process, including those specifically related to ICs should be included in a table as recommended on page 4-13 of the FYR Guidance. Generally, it is also important to ensure that IC data is updated with any new IC information at the site and any information previously missed in the database. For the FYR, the following are examples of recommendations that may be appropriate for IC-related issues that need to be addressed to ensure protectiveness:

- Develop and implement a schedule for the selection and implementation of any remaining appropriate ICs
- Select additional ICs to "layer" with IC(s) already in place
- Develop and implement communication strategies with appropriate state/local governmental agencies and the community
- Use the remedy selection process to select or document ICs to supplement components of the current remedy (i.e., in a ROD Amendment, ESD or Action Memorandum[19])

3.4 Making a protectiveness determination[20]

Where ICs are a component of the overall remedy at the site, an IC-specific protectiveness statement generally is not needed. The evaluation of IC protectiveness should be combined with the evaluation of the other remedy components to develop an overall protectiveness statement, using the answers to recommended Questions A, B, and C and the information developed during the FYR process. However, it is recommended that ICs be mentioned specifically in the overall protectiveness statement when long-term protectiveness hinges on compliance with the ICs. The table below describes generic sample IC scenarios and how they generally may affect the overall protectiveness of a remedy.

[19] For additional guidance on modifying remedy decisions, see A *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, OSWER 9200.1-23P, EPA 540-R-98-031, July 30, 1999.
[20] See Section 4.5 of the 2001 FYR guidance for more information on making protectiveness determinations.

If the IC situation is such that…	Then the overall protectiveness of the remedial action may be...
ICs are implemented and effective and no exposures are occurring	Protective
Construction of the remedy is underway, no exposures are occurring, and implementation of ICs is not yet complete	Will be protective once the remedy is completed[21]
Implementation of ICs is not complete, but exposures are not occurring	Protective in the short-term*
Implementation of ICs is not complete and exposures are occurring	Not protective
Not clear if ICs are functioning as intended and/or if exposures exist	Protectiveness is deferred until further information is obtained

*At some sites, particular circumstances (e.g., the nature of contaminants left on site) may present unique challenges. For example, remedies addressing explosive contaminants (e.g. unexploded ordnance) may present a potentially immediate and high-level risk if the restrictions in the IC component of the remedial action (e.g., prevent excavation) are not yet implemented to prevent exposure. In such circumstances, it may be appropriate for the Region to find the remedy not protective of human health and the environment until such time that ICs are implemented to effectively prevent exposures from occurring.

3.5 Additional IC-related information in the FYR

Several additional items may be useful to include in the FYR. Maps that illustrate the areas of remaining contamination (e.g., contaminated ground water plume), parcel boundaries, and an overlay of any ICs that may be in place often are useful visual tools (see Appendix 2 for an example IC overlay map). The FYR can also include tables that describe any proposed or existing use restrictions for particular media and parcels at a given site. An example table is provided below:

[21] The "will be protective" determination is available for sites that have not yet met the construction completion milestone but should not be used for sites that have met construction completion. See Exhibit 4-6 of the FYR guidance.

Sample Areas of IC Interest – xxx Superfund Site					
Contaminated Media	**ICs Needed**	**ICs Called for in the Decision Documents**	**Impacted Parcel(s)**	**IC Restriction/Objective**	**Instrument in Place**
Ground Water	Yes	No	Parcel ID# 1234; contained plume within factory property	Restrict use of ground water and well installation.	2001 Declaration of Covenants and Restrictions
Soil	Yes	Yes	Parcel ID# 5678; on-site soils	Prohibit any activity that may disturb the integrity of the engineering controls and limit future land use to industrial.	2001 Declaration of Covenants and Restrictions

Additional explanation of the ICs in the text of the FYR may be useful to provide information on the IC's effectiveness, related enforcement efforts, breaches of ICs, or other relevant information that may affect the protectiveness of the remedy. A separate section on ICs may be appropriate within Section IV "Remedial Actions" of the FYR.

4.0 ADDITIONAL GUIDANCE

Existing IC guidance may be helpful in implementing follow-up actions. This includes the following:

Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups, September 2000 (OSWER 9355.0-74FS-P, EPA 540-F-00-005); *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*, (OSWER 9355.0-89, EPA-540-R-09-001), November 2010 (Interim Final); and *Institutional Controls: A Citizen's Guide to Understanding Institutional controls at Superfund, Brownfields, Federal Facilities, Underground Storage Tank, and Resource Conservation and Recovery Act Cleanups*, February 2005 (OSWER 9355.0-98, EPA-540-R-04-003). These and other IC-related documents can be found on the Superfund IC web site at http://www.epa.gov/superfund/policy/ic/index.htm.

For federal facilities, see EPA's *Sample Federal Facility Land Use Control ROD Checklist with Suggested Language, October 2006.* This guidance can be found at http://www.epa.gov/fedfac/documents/icchecklist.pdf

Additional information about proprietary controls can be found in *Transmittal of Institutional Controls: Third-Party Beneficiary Rights in Proprietary Controls*, April 2004. This guidance can be found at http://www.epa.gov/compliance/resources/policies/cleanup/superfund/ic-thd-pty-rights.pdf

5.0 EXAMPLE IC SITUATIONS IN THE TECHNICAL ASSESSMENT

Exhibit 4-5 in the FYR Guidance presents sample protectiveness determinations and recommendations for various remedies. Provided here are some IC-specific samples to clarify the types of protectiveness determinations that may be appropriate for remedies with IC components based on the Technical Assessment Summary (see Section 3.1 above) and observations in the FYR report. This is not meant to be an exhaustive list of samples. If site-specific circumstances arise that don't appear to resemble these samples, please contact your Regional coordinator in Headquarters for further assistance.

Example 1: Soil cap with ICs in place

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Landfill cap • IC(s) that prevent the disturbance of cap and any residential use of the property	• IC(s) (e.g. restrictive covenant) have been implemented, preventing any use of the property that interferes with the cap on the property and any residential use of the property • No evidence of cracking, sliding, settling of cap, or other indicators of cap breaches • No evidence of exposure	The remedy would generally be considered ***protective***. Long term protectiveness normally should be ensured by continued compliance with effective ICs**.**	none

Example 2: Soil cap with no ICs in place and no exposures occurring

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Landfill cap • IC(s) that prevent the disturbance of cap and any residential use of the property	• IC(s) (e.g. restrictive covenant) have not been implemented • No evidence of cracking, sliding, settling of cap, or other indicators of cap breaches • No evidence of exposure	The remedy would generally be considered ***protective in the short-term***; follow-up actions to ensure compliance with effective ICs normally should be taken to ensure that the remedy is protective in the long-term	• Develop and implement a plan for implementation of a restrictive covenant or other ICs, which normally should include procedures for notification of EPA in the event of a breach. • Work with the owner to ensure the implementation of an effective restrictive covenant or other IC that may include features like the IC "runs with the land," is not hindered by prior-in-time encumbrances, provides adequate notice to future owners, and can be maintained and enforced to ensure its continued effectiveness.

Example 3: Soil cap with no ICs in place and exposures occurring

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Landfill cap • IC(s) to prevent disturbance of cap and any residential use of the property	• IC(s) (e.g. restrictive covenant) have not been implemented • Cracking, sliding, settling of cap, or other indicators of cap breaches • Evidence of exposure due to trespassing and use of the cap that violates necessary IC restrictions.	The remedy would generally be considered ***not protective***; implementing a restrictive covenant designed to prevent exposure to contaminants and taking steps to prevent trespassers from entering the area normally should be taken to ensure long-term protectiveness	• Develop and implement a plan for implementation of a restrictive covenant or other ICs, which normally should include procedures for notification of EPA in the event of a breach. • Work with the owner to ensure the implementation of an effective restrictive covenant or other IC that may include features like the IC "runs with the land," is not hindered by prior-in-time encumbrances, provides adequate notice to future owners, and can be maintained and enforced to ensure its continued effectiveness.

Example 4: Soil cap with ICs in place but proposed reuse that may be inconsistent with ICs

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Landfill cap • IC(s) to prevent disturbance of cap and any residential use of the property	• The IC(s) (e.g. restrictive covenant) have been implemented. • No evidence of cracking, sliding, settling of cap, or other indicators of cap breaches • City has proposed redevelopment of the site but the redevelopment plan hasn't been reviewed by EPA yet to determine if additional ICs are needed.	***A protectiveness determination should be deferred*** until enough information is obtained. In the meantime, the restrictive covenant can be reviewed. A protectiveness determination generally can be made once it is determined whether conditions at the site allow for the current redevelopment.	• Review restrictive covenant and redevelopment plan to determine whether use restrictions are being violated by the current redevelopment. • Evaluate the need for any additional ICs which normally should include procedures for notification of EPA in the event of a breach.

Example 5: Ground water restoration with ICs in place

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Long-term operation of a ground water pump-and-treat system • Restoration of ground water to MCLs • Reliance on existing City Ordinance to restrict drilling of ground water wells and prohibit ingestion of, or other contact with ground water until MCLs are reached	• Contaminant levels above MCLs • No known current exposure • Effective well drilling permit regulations are implemented and being enforced by local authority	The remedy would generally be considered ***protective*** as long as the pump and treat system continues to operate, no exposures are occurring, and effective ICs are maintained until cleanup standards have been achieved.	none

Example 6: Ground water restoration with no ICs in place but no exposures occurring

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Long-term operation of ground water pump-and-treat system • Restoration of ground water to MCLs	• Contaminant levels above MCLs • No known current exposures • Potential for future exposures exists since ICs are not in place and not included in the remedy selected in the ROD	The remedy would generally be considered ***protective in the short-term***; follow-up actions to ensure compliance with effective ICs normally should be taken to ensure that the remedy is protective in the long-term	• Use the remedial investigation/feasibility study (RI/FS) and remedy selection processes (i.e., ROD Amendment) to select ICs as components of the current remedy. • Develop and implement a plan for evaluation and implementation of the ICs designed to restrict the use of ground water. Such ICs normally should include procedures for notification of EPA in the event of a breach.

Example 7: Ground water restoration at operating federal facility with ICs in place and exposures occurring

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Air sparging of ground water • Restoration of ground water to MCLs • LUCs placed in the Base Master Plan prohibiting use of the water and binding all personnel, contractors, and lessees	• Contaminant levels are above MCLs on the base • The Base Master Plan has been modified to include the restrictions on ground water usage and a permit process has been put in place to prevent contractors or base personnel from accessing the water but the local farmer has not been notified and his lease has not been modified to reflect the water prohibition • Some portions of the base are leased as crop land to a local farmer who is using the water for irrigation	The remedy would generally be considered ***not protective***. The lease for the agricultural land should be modified to include restrictions on water usage. Compliance with effective ICs will normally ensure the remedy is protective in the long-term	• Work with the base project manager and environment officer to ensure that restrictions are placed on the leased portions of the base. • Prepare a detailed LUC implementation plan as part of an enforceable document such as a Remedial Design or Remedial Action Plan.

Example 8: Ground water containment at operating federal facility

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Long-term operation of a ground water pump and treat system • Containment of DNAPL plume • LUCs to restrict consumptive or other use of the contaminated ground water and a restriction on drilling of ground water wells.	• The pump and treat system continues to contain the contaminated ground water plume • No known current exposures • The federal facility has incorporated the ground water use restriction into its master land use plan • The ROD and master land use plan do not contain procedures for LUC maintenance and reporting	The remedy would generally be considered ***protective in the short-term***; compliance with effective LUCs, as well as providing for long-term LUC maintenance and reporting commitments in a decision document, and discussing these issues in the RD or RAWP normally should be taken to ensure the remedy is protective in the long-term	• A schedule and deadline for the development and signing of a revised decision document that contains provisions for LUC maintenance and enforcement. • A schedule and deadline for the development and signing of the RD or RA Work Plan.

Example 9: Ground water containment with uncertainties regarding exposure

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Containment of contaminated ground water plume • ICs to restrict drilling of ground water wells and prohibit ingestion of, or other contact with, ground water	• Data is needed to determine if contaminated ground water plume is expanding into (newly-identified) previously uncontaminated areas • Evidence exists of land development in the area where newly-identified contamination is suspected • No known current exposure associated with the previously defined plume area • Potential for exposure since ICs (e.g. drilling permits) have not been implemented in newly contaminated areas	***A protectiveness determination cannot be made until further information is obtained***. A protectiveness determination should be possible once more information regarding land development and the extent of off-site migration of ground water is obtained. Compliance with effective ICs normally should be taken to ensure the remedy is protective in the long-term	• Actions should be taken to characterize the extent of the off-site migration (if any) and options for capturing the plume if it is expanding. • More information should be gathered regarding land development, in coordination with landowners and local governments. • Develop and implement a plan for implementation of the drilling permits that restrict the use of ground water and evaluate the need for any additional ICs, which normally should include procedures for notification of EPA in the event of a breach.

Example 10: Ground water containment for a remedy still under construction

If the decision document(s) call for	And during the FYR process you observe that	The IC-specific determination could be evaluated as	Your IC-specific recommendations may include
• Long-term operation of a ground water pump and treat system • Containment of DNAPL plume • IC(s) to prevent the consumptive or other use of the contaminated ground water • IC(s) to prevent the drilling of ground water wells.	• Construction of a ground water pump and treat system is underway • All exposure pathways have been interrupted in the interim • IC(s) (e.g. consumptive use and well drilling prohibitions) have not yet been implemented.	The remedy would generally be considered ***will be protective*** because it is still under construction but is anticipated to be protective once it is completed. Compliance with effective ICs normally should be taken to ensure long term protectiveness	• Develop and implement a plan for implementation of the drilling permits and consumptive use restrictions that prohibit the use of ground water and evaluate the need for any additional ICs which normally should include procedures for notification of EPA in the event of a breach.

APPENDIX 1: GLOSSARY OF TERMS

Administrative Order on Consent (AOC) - a legally enforceable document signed by EPA and an individual, business, or other entity through which the party agrees to pay for the correction of violations, take the necessary corrective or cleanup actions, or refrain from an activity. An AOC, which may be subject to a comment period, describes the actions to be taken, is civil rather than criminal in nature, and can be enforced in court.

Advisories - Warnings, usually issued by public health agencies, either at the federal, state, or local level, that provide notice to potential users of land, surface water, or ground water that there is some existing or impending risk associated with the use of these resources.

Chain of Title - A history of conveyances, judgments, and encumbrances affecting title to real estate from the time that the original patent was granted, or as far back as records are available.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) - Legislation enacted in 1980 to identify, investigate, and clean up the nation's most contaminated hazardous waste sites and respond to emergency situations involving hazardous substances, pollutants or contaminants.

Consent Decree (CD) - A legal document, approved by a judge, that formalizes a settlement reached between EPA and responsible parties through which responsible parties will conduct all or part of a cleanup action at a Superfund site, cease or correct actions or processes that are polluting the environment, or otherwise comply with an EPA-initiated enforcement action. The consent decree describes the actions responsible parties will take and is subject to a public comment period.

Covenant - A promise by one landowner to another generally made in connection with a conveyance of property (e.g., warranty of title) that may or may not run with the land. Covenants may also include a promise by the grantee of a possessory interest in property to use or refrain from using the property in a certain manner. Covenants are similar to easements but have been traditionally subject to somewhat different formal requirements.

Deed - A written instrument that transfers legal title to real property or an interest therein from one party to another. Generally, it contains the names of the grantor and grantee, a description of the property, and the estate being conveyed. It is signed by the grantor, usually acknowledged before a notary public, and should be recorded.

Deed Notice - Commonly refers to a non-enforceable, purely informational provision in a deed that alerts anyone performing a title search to important information about a particular property but may also be used, somewhat confusingly, to refer to other purely informational documents that are recorded in local land records.

Deed Restriction - Not a traditional real property law term, but rather is used in the NCP as a shorthand way to refer to various types of proprietary controls.

Dense Non-Aqueous Phase Liquid (DNAPL) - A liquid that is denser than water and does not dissolve or mix easily in water. In the presence of water it forms a separate phase. Many chlorinated solvents, such as trichloroethylene, are DNAPLs.

Easement - A right that allows the grantee to use the property of another or restrict its use according to the terms of the easement. An "affirmative" easement allows the grantee to enter upon or use another's property for a particular purpose (e.g., ingress/egress). A "negative" easement imposes limits on how the owner of the servient estate can use the property.

Encumbrance - A claim against a property by another party. Encumbrance usually impacts the transferability of the property.

Enforcement and Permit Tools with IC Components - Tools, such as administrative orders or consent decrees, available to EPA under CERCLA and RCRA that can be used to restrict the use of land. Enforcement authority can be used to either (1) prohibit a party from using land in certain ways or from carrying out certain activities at a specified property, or (2) require a settling party to put in place some other form of control, such as a proprietary control.

Explanation of Significant Differences (ESD) - A CERCLA decision document prepared when there has been a significant change in cost, performance, or cost of a remedy selected in a Record of Decision (ROD). The significant change to the remedy may be as a result of new information.

Federal Facility Agreement (FFA) - The FFA is an agreement between a federal agency (e.g. Dept. of Defense) and the U.S. Environmental Protection Agency (EPA), guiding the Superfund cleanup of a Site owned by that federal agency.

Five-Year Review (FYR) - An evaluation that may be required by §121(c) of CERCLA and consistent with the NCP (40 CFR §300.430(f)(4)(ii)). Regions should conduct a review at Superfund sites where the remedy does not allow for unlimited use and unrestricted exposure. FYRs are designed to determine whether the remedy at a site remains protective of human health and the environment. Where remedial actions are still under construction, FYRs can help confirm that immediate threats have been addressed and that the remedy is expected to be protective when all remedial actions are completed.

Governmental Controls - Controls using the regulatory authority of a government entity to impose restrictions on citizens or sites under its jurisdiction. Generally, EPA must turn to state, local, or tribal governments to enforce existing controls of this type and to establish new controls. Typical examples of governmental controls include zoning, the issuance of building permits, and state and local ground water use restrictions.

Grantee/Grantor - The entity to/from which ownership of a property interest (e.g., an easement) is transferred.

Institutional Control Implementation and Assurance Plan (ICIAP) - An ICIAP is a tool to help systematically establish and document the activities necessary to implement and ensure the long-term stewardship of institutional controls (ICs). It also specifies the persons and organizations that will be responsible for conducting these activities. A detailed ICIAP can help ensure that ICs are properly implemented; operate effectively during their entire lifespan; and serve as a single source of concise, site-specific IC information.

Informational Devices - IC instruments that provide information or notification that residual contamination could remain on site. Common examples include state registries of contaminated properties, notices in deeds, and advisories.

Institutional Controls (ICs) - ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a response action. They are typically used in conjunction with, or as a supplement to, other measures, such as waste treatment or containment. There are generally four categories of ICs: governmental controls; proprietary controls; enforcement and permit tools with IC components; and informational devices.

Land Use Control (LUC) - Any restriction or control, including institutional controls and engineering controls, arising from the need to protect human health and the environment, such as the restriction of access or limitation of activities at a site that has residual contamination.

Layering - The use of different types of institutional controls at the same time to enhance the protectiveness of the remedy.

Long-term Stewardship (LTS) – Long-term stewardship procedures generally include the establishment and maintenance of physical and legal controls, implementation entities, authorities, accountability mechanisms, information and data management systems, and resources that are necessary to ensure that these sites remain protective of human health and the environment. An example of LTS procedures for ICs is an ICIAP, defined herein.

Potentially Responsible Parties (PRPs) – These are individuals, companies, or any other parties that are potentially liable for payment of Superfund cleanup costs. Companies that generate hazardous substances disposed of at a Superfund site, current and former owners and operators of the site, and transporters who selected the site for disposal of hazardous substances may be responsible for part or all of the cleanup costs.

Maximum Concentration Limit (MCL) - The U.S. Environmental Protection Agency (EPA) has established National Primary Drinking Water Regulations that set mandatory water quality standards for drinking water contaminants. These enforceable standards are called "maximum contaminant levels" or "MCLs", which are established to protect the public against consumption of drinking water contaminants that present a risk to human health. An MCL is the maximum allowable amount of a contaminant in drinking water which is delivered to the consumer.

National Contingency Plan (NCP) - The National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan or NCP, is the federal government's blueprint for responding to both oil spills and hazardous substance releases.

One-Call System – States have established one-call systems since the 1960s to help excavators identify the location of buried utility lines. The States have recognized the need for these systems to prevent damage to underground facilities and to protect the public and environment from uncontrolled excavation. The one-call infrastructure can also work to notify these same excavators of underground ICs.

Operations and Maintenance (O&M) – The NCP, 40 CFR§300.435(f)(1), defines O&M as the measures "initiated after the remedy has achieved the remedial action objectives and remediation goals in the ROD (Record of Decision), and is determined to be operational and functional, except for ground-or surface-water restoration actions covered under 40 CFR§300.435(f)(4)." O&M measures are designed to maintain the remedy at a site to ensure that the remedy remains protective of human health and the environment.

Proprietary Controls - Use of real property law to prohibit certain activities that may interfere with the engineering remedy applied at a site, or to restrict activities or future uses of a resource that may result in unacceptable risk to human health or the environment. The most common examples of proprietary controls are easements and covenants.

Record of Decision (ROD) - A document that selects the remedial action at a CERCLA site. It is a legal document that is an important part of the remedy selection process carried out in accordance with CERCLA. It includes, but it not limited to the following: a basis for the action, the selected remedy, a discussion of the supporting rationale, and response to stakeholder comments.

Record of Decision Amendment - A CERCLA decision document prepared when there has been a fundamental change to the remedy selected in a Record of Decision (ROD). The fundamental change to the remedy may be as a result of new information.

Remedial Action Objectives (RAOs) - Specific goals for protecting human health and the environment. RAOs are developed by evaluating ARARs that are protective of human health and the environment and the results of the remedial investigations, including the human and ecological risk assessments.

"Run With the Land" - A term indicating that a proprietary control will bind subsequent owners of the affected parcel as opposed to one that is personal and binds only the original parties.

Superfund - See CERCLA

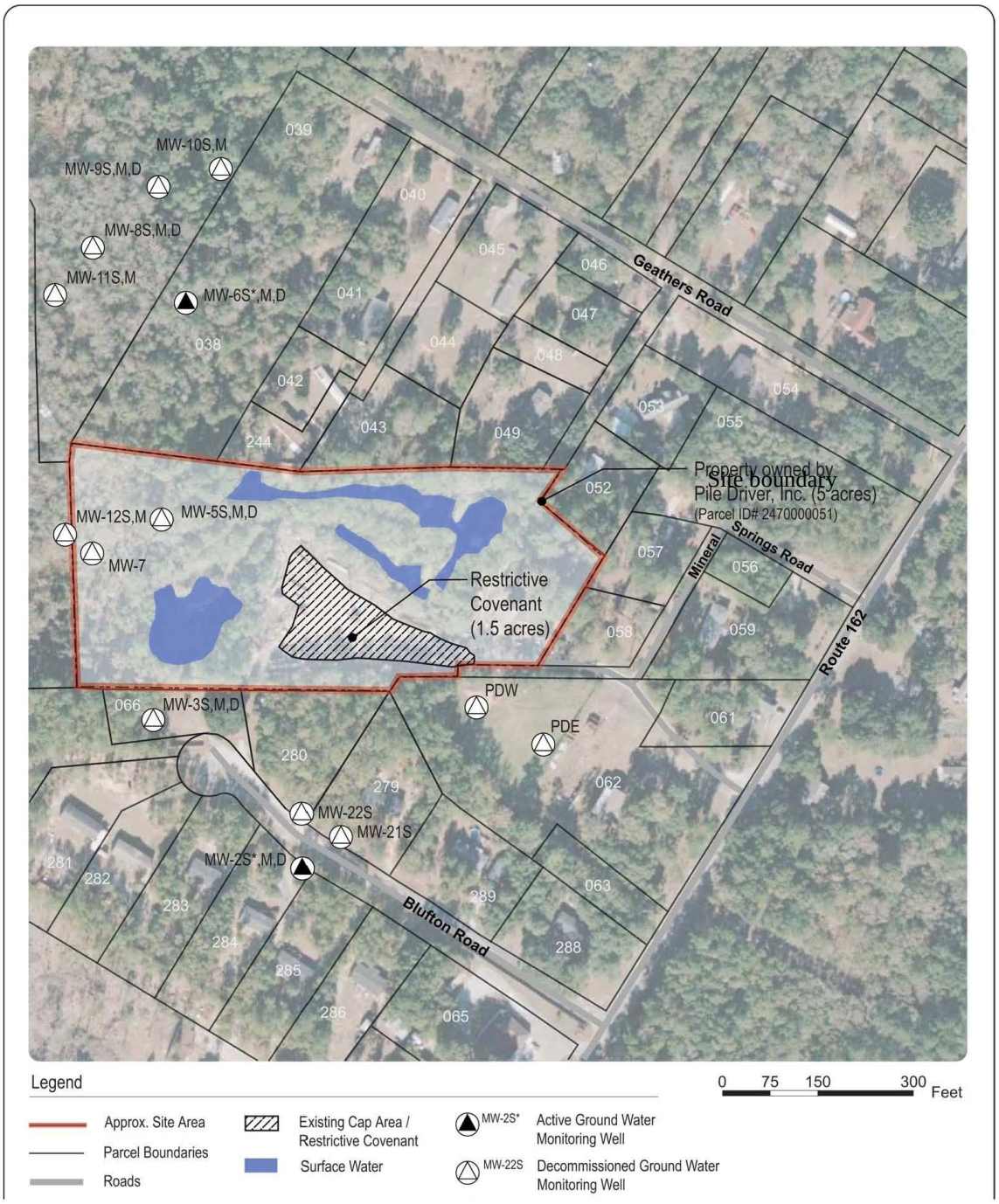
Uniform Environmental Covenants Act (UECA) – A model state legislation that addresses the use of proprietary controls as ICs (e.g., environmental covenants) and can be used to reduce the legal and management complications and common law impediments associated with ICs. UECA was developed by the National Conference of Commissioners on Uniform State Laws. http://www.environmentalcovenants.org/ueca

Unilateral Administrative Order (UAO) - A legal document signed by EPA directing any person to take corrective action or refrain from an activity. It describes the violations and actions to be taken, and can be enforced in court.

Unlimited Use/Unrestricted Exposure (UU/UE) – As discussed in EPA guidance documents, UU/UE generally refers to a situation when there are no exposure or use limitations required for the remedy at a site to be protective.

Zoning - A widely used type of land use control that is based upon the police power. Zoning ordinances typically consist of a map indicating the various land use zones (or districts) in the jurisdiction, and text that sets forth regulations for the development of land by zone.

APPENDIX 2: SAMPLE IC OVERLAY MAP



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map does not purport to be a survey. The map is for informational purposes only regarding EPA's response actions at the Site, and is not intended for any other purpose.