UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Signed June 4, 2001

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER 9355.7-06P

MEMORANDUM

SUBJECT: Reuse Assessments: A Tool To Implement The Superfund Land Use Directive

FROM: Larry Reed, Acting Director ***S/Elaine F. Davies for***
Office of Emergency and Remedial Response

TO: Superfund National Policy Managers
Regions 1 - 10

PURPOSE

This directive presents information for developing future land use assumptions when making remedy selection decisions for Superfund sites under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The purpose of this directive is to:

1. Reaffirm the directive "Land Use in the CERCLA Remedy Selection Process," OSWER Directive No. 9355.7-04, May 1995 (the Superfund Land Use Directive) in Superfund response actions, and highlight its importance in achieving the goals of the Superfund Redevelopment Initiative (SRI);

2. Extend the applicability of the Superfund Land Use Directive to non-time-critical removal actions[1], where appropriate; and

3. Introduce the "Reuse Assessment" as a tool to help implement the Superfund Land Use Directive (see Attachment 1).

BACKGROUND

On July 23, 1999, the Environmental Protection Agency (EPA) announced the Superfund Redevelopment Initiative (SRI) to help communities return Superfund sites to productive use. The SRI launched a coordinated national effort to develop policies, procedures and practices

[1]Applicability of this directive has not been extended to non-time-critical removal actions for Brownfields revolving loan fund pilot projects. Regions and Brownfields Pilot recipients should continue to refer to the relevant Brownfields program guidance.

needed to achieve this goal. The SRI also reemphasizes EPA's current practice of considering future land use assumptions in cleanup decisions and encourages communities to communicate their future land use preferences before the Agency fully implements a cleanup remedy. In implementing the SRI, the Agency is clear in assuring that site reuse, where it can be achieved, occurs without compromising cleanup standards or the protectiveness of response actions.

IMPLEMENTATION [2]

1. Reaffirm the Importance of the Superfund Land Use Directive in Superfund Response Actions.

The Superfund Land Use Directive (see Attachment 2) provides basic information on developing and using future land use assumptions to support Superfund remedial actions. The Superfund Land Use Directive promotes early discussions with stakeholders regarding potential future land use options for sites and promotes the use of that information to develop realistic assumptions regarding future land use. The following topics are addressed in the Directive:

- Why realistic assumptions of future land use are important to the Superfund response process;
- Types of information that can be considered;
- How to use assumptions of future land use in the development, selection and implementation of response actions;
- Public involvement considerations;
- The role of institutional controls when response actions result in restricted future uses; and
- The applicability of future land use considerations to Federal Facility sites undergoing response actions, as well as RCRA Corrective Action sites.

Integrating realistic assumptions of future land use into Superfund response actions is an important step toward facilitating the reuse of sites following cleanup. Therefore, implementation of the Superfund Land Use Directive can be an important factor in achieving the objectives of the SRI wherever cleanup actions can be catalysts for returning Superfund sites to productive use. Regions should review the Superfund Land Use Directive and ensure that reasonable future land use assumptions are incorporated into the development, evaluation and selection of response actions, where appropriate.

[2]Applicability to Federal Facilities and RCRA Corrective Action. Where another federal agency is performing a CERCLA-based remedial action or non-time-critical removal, it should develop assumptions of reasonably anticipated future land use as part of the response process consistent with the Superfund Land Use Directive, where appropriate. Information in this directive may be helpful to Federal Facility site managers conducting this work. In particular, the Reuse Assessment Guide conveys a concise and practical approach to addressing future land use issues. Also, information in this directive may be helpful to RCRA project managers in developing future land use assumptions. However, RCRA stakeholders should also refer to guidance on land use in the May 1, 1996, Notice of Proposed Rulemaking (Vol. 61, No. 85, 40 CFR, pages 19432 to 19464).

2. Extend the Applicability of the Superfund Land Use Directive to Non-Time-Critical Removal Actions.

This directive extends the applicability of the Superfund Land Use Directive to non-time- critical removal actions, where site conditions and the nature of the response action warrant. Assumptions regarding reasonably anticipated future land use can be considered when developing the Engineering Evaluation/Cost Analysis (EE/CA). Future land use assumptions can support site characterization, risk assessment, and the development, evaluation and selection of response actions. The analysis supporting the assumptions of future land use can be scaled back, as appropriate, consistent with the scope of the removal action.

3. Reuse Assessments – A Tool for Developing Reasonably Anticipated Future Land Use Assumptions.

The reuse assessment, as described in Attachment 1, involves collecting and evaluating information to develop assumptions about reasonably anticipated future land use(s) at Superfund sites. It provides a tool to implement the Superfund Land Use Directive and may involve a review of available records, visual inspections of the site and discussions about potential future land uses with local government officials, property owners and community members. Information gathered as part of the reuse assessment can be combined with other information on potential future land use obtained through the CERCLA community involvement process and through dialogue with state officials.

Information obtained from the reuse assessment can be particularly useful during the planning stages of a response action. The resulting assumptions of reasonably anticipated future use can be considered as part of the following:

- The baseline risk assessment when estimating potential future risks;
- The development of remedial/removal action objectives and the development and evaluation of response alternatives; and
- The selection of the appropriate response action required for the protection of human health and the environment.

Similarly, a reuse assessment can be useful for developing future land use assumptions as part of the EE/CA and action memorandum supporting a non-time-critical removal action.

ADDITIONAL INFORMATION

Copies of this document are available on the Superfund web site, at http://www.epa.gov/superfund/pubs.htm. Copies of this document may also be obtained from the OERR Document Center (703) 603-9232. General questions about this topic should be referred to the Hotline at 1-800-424-9346. The subject matter specialist for this document is Paul Nadeau of OERR.

Notice: This document is intended to provide guidance and information for EPA staff, states, tribes, Potentially Responsible Parties (PRPs) and contractors conducting site cleanups under CERCLA, as well as for local governments and other stakeholders involved with Superfund sites and the CERCLA response

process. The approach in this guidance is meant to be considered at current and future sites undergoing an RI/FS or EE/CA, to the extent possible. Any decisions regarding a particular remedy selection decision will be made based on the statute and regulations, and EPA decision makers retain the discretion to adopt approaches that differ from this guidance, where appropriate, on a case by case basis. Consistent with the Superfund Land Use Directive, this guidance is not intended to suggest that previous remedy selection decisions should be reopened. EPA may change this guidance in the future.

Attachment 1 – Reuse Assessment Guide
Attachment 2 – Land Use in the CERCLA Remedy Selection Process

cc: Jeff Josephson, Superfund Lead Region Coordinator, USEPA Region 2
NARPM Co-Chairs
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Attachment 1:

REUSE ASSESSMENT GUIDE

Introduction

The reuse assessment involves collecting and evaluating information to develop assumptions about reasonably anticipated future land use(s) at Superfund sites. It provides a tool to implement the Superfund Land Use Directive, and may involve a review of available records, visual inspections of the site and discussions about reasonably anticipated future uses with local government officials, property owners and community members.

Information obtained from the reuse assessment can be particularly useful during the planning stages of a response action. The resulting assumptions of reasonably anticipated future use can be considered as part of the following:

- The baseline risk assessment when estimating potential future risks;
- The development of remedial/removal action objectives and the development and evaluation of response alternatives; and
- The selection of the appropriate response action required for the protection of human health and the environment.

Similarly, a reuse assessment can be useful for developing future land use assumptions as part of the EE/CA and action memorandum supporting a non-time-critical removal action.

A reuse assessment assists in developing assumptions regarding the *types* or *broad categories* of reuse that might reasonably occur at a Superfund site. Examples of land use assumptions that appear likely based on the conclusions of a reuse assessment include, but are not limited to, residential, commercial/industrial, recreational and ecological. More specific end uses (e.g., office complex, shopping center, or soccer facility) can be considered during the response process when detailed planning information is readily available.

Getting Started

The scope and level of detail of the reuse assessment should be site-specific and tailored to the complexity of the site, the extent of the contamination, the level of redevelopment activity that has already occurred at the site and the density of development in the vicinity of the site. Reuse assessments and the development of future land use assumptions should rely on readily available information, to the extent possible. Determining the applicability and scope of a reuse assessment will be dependent on site specific circumstances and/or the overall approach anticipated for addressing the site. For example:

- Sites where the owner desires to maintain the current use, or area-wide ground water contamination sites in highly developed urban areas, may only require a limited assessment;
- Sites where future land use decisions have already been determined and documented may simply require a review to confirm the information;

- Large sites, or sites with several operable units and potentially different future use scenarios, may benefit from multiple reuse assessments, or an iterative approach to developing future land use assumptions.

While a reuse assessment may not be necessary at every site, EPA should collect and summarize available information about potential future uses for NPL sites and non-time-critical removal actions, as appropriate, to form the basis for the assumptions regarding reasonably anticipated future land use.

The Superfund Land Use Directive states that in cases where the future land use is relatively certain, the remedial action objective(s) generally should reflect this land use. In this case, alternative future land use scenarios generally are not required unless it is impracticable to provide a protective remedy that allows for the desired use. The Superfund Land Use Directive also states that in cases where the reasonably anticipated land use is uncertain, or where multiple uses are being considered, a range of potential future land use options should be considered when developing remedial action objectives. For example, information gathered for the reuse assessment suggests the site could be used either for recreational purposes or for commercial/light industrial activity. In that case, when identifying multiple potential reuse scenarios, the reuse assessment should consider input from stakeholders on which scenario they believe is most likely. In other cases, alternative future land use scenarios can be reflected by developing a range of remedial alternatives for detailed evaluation that could achieve different land use potentials.

Reuse assessments should have greatest applicability to sites with waste materials on the surface and/or contaminated soil. Future ground water use was not extensively considered in the Superfund Land Use Directive. There are separate expectations established in the NCP, Section 300.430 (a) (1) (iii) (F) that "EPA expects to return usable ground waters to their beneficial uses, wherever practicable, within a time frame that is reasonable given the particular circumstances of the site." Generally, ground water use is determined independently from land use, through Comprehensive State Ground Water Protection Programs, state ground water classifications and EPA's "Guidelines for Ground Water Classification Under the EPA Ground Water Protection Strategy," Final Draft [1984]. However, it is important to consider the current and future ground water uses when developing future land use assumptions, since the need to protect ground water quality may drive the soil cleanup levels. For example, portions of surface or sub-surface contamination that present a threat to ground water may require a greater degree of cleanup over a larger area than might be needed for soil clean up alone. Alternatively, an area of clean land may be needed to install a ground water pump and treat system to contain or restore underlying contaminated ground water. Each of these situations could affect future land use options for the site.

In general, a reuse assessment can be conducted by the entity conducting the RI/FS or EE/CA. As with other activities performed under the RI/FS or EE/CA, EPA can determine the appropriate level of oversight when PRPs perform this work. EPA is responsible for ensuring that reasonable assumptions regarding future land use are considered in the selection of a response action. This determination should be coordinated with the state.

Outline for a Reuse Assessment

The reuse assessment should provide sufficient information to develop realistic assumptions of the

reasonably anticipated future use(s) for a site. Items that should be considered are listed in Table 1, which further describes and builds upon the items identified in the Superfund Land Use Directive. The entity conducting the reuse assessment may use this outline as a guide for carrying out the assessment. Each reuse assessment will be different, but this outline offers a structure that should ensure a thorough evaluation can be performed. As noted, the scope and level of effort needed to complete a reuse assessment will be dependent on conditions at the site and should be tailored accordingly. Information supporting a reuse assessment should be obtained from existing and readily available sources to the extent possible.

Table 1 : Outline for a Reuse Assessment

Stakeholders

- Identify stakeholders and their connection to the site, e.g., site owner, current user, developer, PRP, state and local or tribal government, community member, Community Advisory Group, (CAG), etc.
- Determine which stakeholders are responsible for local land use determinations
- Document the stakeholders who participate in the Reuse Assessment

Site Description

- Physical features: size, shape, topography, special features
- Existing buildings and other site improvements
- Site location in relation to residential, commercial, industrial, agricultural and recreational areas
- Current and past uses
- Neighboring activities and land uses
- Relevant public infrastructure: roads, utilities, transit, parks, etc.

Environmental Considerations

- Contaminants and their location(s), technology constraints, to the extent this information is known
- Potential restrictions resulting from the environmental contamination
- Areas that are "clean" (i.e., where risks are acceptable, consistent with their planned use) and potentially available for immediate reuse
- Ground water use classification/determination
- Other site characteristics (e.g., wetlands, surface waters, upland habitat, forested habitat, flood plains)

Site Ownership

- Person or entity that holds title to the site; who controls access to the site
- Any property liens, bankruptcy considerations
- Site owner(s) preferences and plans
- Any plans for the sale of the property

Land Use Considerations and Environmental Regulations

- Zoning
- Existing area master plans
- Federal, state or tribe and local environmental regulations (e.g., wetlands, flood plain, etc.) impacting reuse
- Institutional controls (e.g., easements, covenants) already in place
- Historical and cultural resources

Community Input

- Future reuses that community members would support
- Future reuses that community members would oppose
- Cultural factors that may create barriers or assets to any type of future reuse (historic buildings, Native American sacred lands)
- Environmental justice issues

Public Initiatives

- Infrastructure plans that may influence the site uses
- Potential municipal/public uses, including park and recreational facility, transit facility, public building
- Publicly initiated private sector redevelopment project (e.g., government-organized industrial park)
- Funds available/committed for the redevelopment of the site

Table 1 : Outline for a Reuse Assessment
Most Likely Future Uses • Summarize the information as the basis for concluding the most likely future use or uses

Collecting the Information

Land use, including the potential reuse of contaminated sites after cleanup, is generally determined by local government officials and private stakeholders. When formulating assumptions about future land use, it will be important to consult with them. There are key questions one should try to answer to arrive at the assumptions about future land use that are needed to support a reuse assessment. The list below draws on the discussion in the Superfund Land Use Directive about the types and sources of information that should be considered. It is not intended to be comprehensive, but includes questions that may be appropriate in a large number of cases. The questions that are relevant at a specific site will be determined by conditions at that site and by the scope of the effort needed to properly assess the anticipated future use of land.

It may be possible to answer some of these questions fairly readily by gathering existing information from available documents, by interviewing stakeholders, or by visiting the site. Some questions may be answered by information already obtained in the course of the PRP search, or in developing a community involvement plan. If it is difficult to get information from the site owner through interviews, consider getting the basic information from a title report and a market price appraisal. These can be obtained from a local title and real estate company. Where sites are part of tribal lands, there are many possible scenarios for site ownership and for making decisions about future use. It is most appropriate to consult with tribal government officials for information about how to work with tribes on site ownership as well as on other issues relevant to tribes. Appendix A offers a fairly comprehensive list of sources that may have information that will be useful when forming assumptions about potential reuse.

Consider the following questions:

What is the History of the Site? *(Review existing documents*)

- What were the past use(s) of the site?
- What does title and lien information show about past ownership?
- Are there historical sites, cultural factors, Native American religious sites to consider?

What Are the Current Uses and Indications of Change? (*Site visit or interview with site owner, or local government or tribal officials)*

- What are the current uses at the site?
- What are the uses in neighboring areas?
- What does census information show about the local area?
- What is the character of the neighborhood (e.g., residential, mixed use, in transition from

one type of use to another)?
- What are the trends in land use in the surrounding area (e.g., decreasing residential population, increasing commercial/industrial use, enterprise zone designation)?
- Are there any local Brownfields assessment and redevelopment activities?

What Plans Do the Owner and Purchaser Have for Future Use of the Site? *(Interview with current owner)*

- What are the owner's plans for the site following cleanup? Will the use remain the same? Will the site be sold? To whom?
- Is there a prospective purchaser for the property?
- If there are no current plans, what does the current owner consider to be the likely use? What is the basis for this conclusion?

What Factors Favor or Limit Future Use? *(Documents, maps, zoning regulations, land records and interviews with local government officials in departments such as Planning, Public Works, Environment and Economic Development; or tribal government officials, where appropriate, who have jurisdiction or influence over land use)*

- What zoning laws and ordinances apply? What is current zoning for the site? Is the zoning expected to change in the near future? Why?
- What are the applicable local area land use plans, master plans, etc.? How do they affect the site?
- What local restrictions on property use apply? Are there any existing institutional controls?
- What are the property boundaries?
- Are there any obvious advantages, obstacles or other factors that may affect reuse of the site, such as size of the parcel, waterfront access, steep slopes or irregular terrain, heavy traffic on the access street, difficult access to the site, abandoned buildings, etc.?
- If the site is adjacent to surface water, are there any resource protection programs or other restrictions (e.g., fish advisories) in place or planned that could impact reuse?
- Are there ground water use determinations, wellhead protection areas, recharge areas and other areas identified in the state's Comprehensive Ground Water Protection Program?
- Are there flood plains, wetlands, or endangered or threatened species to be taken into account?
- What other land or ground water use regulations or controls affect the reuse potential?
- Are there any infrastructure improvement plans that might affect reuse?

Which Key Individuals and Groups Will Determine Reuse and What Are Their Views? *(Interviews with local government officials, or tribal government officials where appropriate, who have jurisdiction or influence over land use)*

- Who are the key individuals that will be involved in determining reuse of the property?
- What are the local officials' assessment of what is likely to happen at the site?
- Have any ideas for reuse been discussed for this site? What are they?

- How certain and detailed are the ideas for reuse? Can documents be obtained that describe them?
- Have they been submitted to the planning agency for approval? With what result?
- Who will be the lead person or Agency for implementing the plans for reuse?
- What other individuals have important information regarding the reuse of the site?
- If there are no current plans for the site, who will determine future site reuse and how will it be accomplished?

How Is the Community Involved in Reuse Planning for the Site? *(Interview community groups and leaders, including TAG grantees and CAG leadership, if such groups exist)*

- How is the community involved in local land use planning?
- What are the community's expectations for reuse of the site?
- What would community members like to see?
- What would community members oppose?
- If there are reuse ideas or plans being discussed, what do community members think about these plans?

Environmental Conditions

EPA should integrate site-specific information on environmental conditions, to the extent available at the time the reuse assessment is being done, with the results of the site visit, interviews, and document review to ensure realistic future land use assumptions are developed. If an entity other than the RPM/OSC is conducting the Reuse Assessment, EPA should decide at the outset how site-specific information on environmental conditions will be incorporated into the analysis. Consider the following:

- What is currently known about the nature and extent of the contamination that could impact future land use (e.g., major contaminants, location, depths, volumes, etc.)?
- Are there any uses or activities on the site that may be precluded due to the contamination, cleanup process or residual contamination?
- Are there portions of the site that are not contaminated and not likely to be needed during the cleanup phase that could be made available for reuse on an expedited basis?
- Are there any institutional controls that currently exist or are likely to exist in the future? If institutional controls exist, what are they? Have they been effective?

Community Involvement

As noted above, and as reflected in the Superfund Land Use Directive, the reuse assessment process should include soliciting community input on future land use considerations for sites. Community input can be particularly useful for sites where the future land use is uncertain and should be directed toward understanding the types or categories of future land use that the community believes would be appropriate for the site, and categories of land use that the community believes inappropriate. This information can be used as an indicator of the potential reliability and reasonableness of the future land use assumptions and their potential relevance for consideration in the remedy selection process.

In addition, assumptions regarding reasonably anticipated future land use and their impact on the

baseline risk assessment, response action objectives and the proposed response action, should be integrated into the CERCLA community involvement process. Future land use assumptions should be included in fact sheets, public meetings and other communication tools, as appropriate, over the course of the response action.

State and Tribal Roles

States and tribes have substantial and meaningful involvement in Superfund cleanups. Therefore, it is important to involve state officials and tribal leaders in the reuse assessment and in the development of future land use assumptions. This is especially true at Fund-financed sites where states have a cost share obligation for the response. State officials can provide useful information regarding economic development incentive programs or other state-lead activities that could impact the potential future land use for the site. Tribes can also supply useful information in many areas relevant to reuse assessment. If there are differences on land use questions that involve tribes, work with tribal leaders to resolve the issues.

Documenting the Reuse Assessment

After site visits, interviews, community meetings and document reviews, EPA or the entity conducting the reuse assessment should have basic information regarding the potential future land use for the site. The information collected should be documented in a report, or as a section of the RI/FS or EE/CA, identifying and supporting the potential future land use(s). This documentation should be used by the entity conducting the RI/FS or EE/CA and EPA for developing the reasonably anticipated future land use assumptions for the site.

Results of the reuse assessment should be described in the decision document for the response action (Action Memorandum or Record of Decision). The decision document should discuss the reasonably anticipated future land use(s) and the basis for these assumptions. The decision document should discuss how the future land use assumptions were addressed in the baseline risk assessment and feasibility study or the streamlined risk evaluation and EE/CA activities for non-time-critical removals. The decision document also should describe the types of uses that can be supported at the site following completion of the response action. The basis for selection of the response action should be consistent with CERCLA and the NCP.

When the reuse assessment and the selected remedy result in categories of allowable future land use (e.g. commercial, industrial, recreational), but not unrestricted use, appropriate institutional controls should be identified in the decision document. Institutional controls should be used, where appropriate, to prevent exposure to contamination remaining on-site and to provide access to, or protect, components of the remedy. Use of institutional controls should be coordinated with state and local government officials and the community to ensure they can be implemented and maintained as planned. (See: "Institutional Controls: a Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups," OSWER 9355.0-74FS-P, EPA 540-F-00-005, September 2000.)

Attachments:

1. Appendix A - Sources of Useful Information
2. Appendix B - Glossary of Terms, Acronyms and Abbreviations

Appendix A
Sources of Useful Information

Site-Related Sources
Current owner and user(s)
Future owner and user(s)
Agent/broker on behalf of current owner
Lenders/banks who will finance reuse development
Environmental consultant

Local Government
Mayor or County Executive
City Manager or County Administrator
City or County Council
Planning Department/Commission
Department of Economic Development, or local economic development corporation
Department of Environment
Department of Public Works
Brownfields Program
Department of Housing and Community Development

State/Tribal Government
State or tribal project manager
Department of Economic Development
Department of the Environment
Department of Planning
Department of Housing and Community Development
Department of Water and Utilities
Department of Parks and Recreation

Community
Local community development corporations
Local environmental organizations
Influential community members
National and regional tribal environmental organizations
CAGs
TAG groups

Private Sector
Real estate brokers and appraisers
Site selection/search firms
Banks/lenders
Attorneys - real estate, environmental, land use
Chambers of Commerce

Environmental Protection Agency
Remedial Project Manager
On-Scene Coordinator
Community Involvement Coordinator
EPA web site (http://www.epa.gov/)
EPA Office of Solid Waste and Emergency Response (http://www.epa.gov/swerrims/)
EPA Superfund Redevelopment Initiative (http://www.epa.gov/superfund/programs/recycle/index.htm)
EPA Federal Facilities Restoration & Reuse Office (http://www.epa.gov/swerffrr/)

Appendix B

Glossary of Terms, Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements in the Superfund Response Process
CAG	Community Advisory Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
NCP	National Contingency Plan
NPL	National Priorities List
OERR	Office of Emergency and Remedial Response
OSC	On-Scene Coordinator
OSWER	EPA Office of Solid Waste and Emergency Response
PRP	Potentially Responsible Parties
ROD	Record of Decision
RI/FS	Remedial Investigation/Feasibility Study
TAG	Technical Assistance Grant
CRO	Community Reuse Organization
SSAB	Site Specific Advisory Board

Attachment 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

May 25, 1995

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER Directive No. 9355.7-04

MEMORANDUM

SUBJECT: Land Use in the CERCLA Remedy Selection Process

FROM: Elliott P. Laws s/
Assistant Administrator

TO: Director, Waste Management Division
Regions I, IV, V, VII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, VIII; IX
Director, Hazardous Waste Division,
Region X
Director, Environmental Services Division
Regions I, VI, VII

Purpose:

This directive presents additional information for considering land use in making remedy selection decisions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at National Priorities List (NPL) sites. The U.S. Environmental Protection Agency (EPA) believes that early community involvement, with a particular focus on the community's desired future uses of property associated with the CERCLA site, should result in a more democratic decision-making process; greater community support for remedies selected as a result of this process; and more expedited, cost-effective cleanups.

The major points of this directive are:

- Discussions with local land use planning authorities, appropriate officials, and the public, as appropriate, should be conducted as early as possible in the scoping phase of the Remedial Investigation/Feasibility Study

(RI/FS). This will assist EPA in understanding the reasonably anticipated future uses of the land on which the Superfund site is located;

- If the site is located in a community that is likely to have environmental justice concerns, extra efforts should be made to reach out to and consult with segments of the community that are not necessarily reached by conventional communication vehicles or through local officials and planning commissions;

- Remedial action objectives developed during the RI/FS should reflect the reasonably anticipated future land use or uses;

- Future land use assumptions allow the baseline risk assessment and the feasibility study to be focused on developing practicable and cost effective remedial alternatives. These alternatives should lead to site activities which are consistent with the reasonably anticipated future land use. However, there may be reasons to analyze implications associated with additional land uses;

- Land uses that will be available following completion of remedial action are determined as part of the remedy selection process. During this process, the goal of realizing reasonably anticipated future land uses is considered along with other factors. Any combination of unrestricted uses, restricted uses, or use for long-term waste management may result.

Discussions with local land use authorities and other locally affected parties to make assumptions about future land use are also appropriate in the RCRA context. EPA recognizes that RCRA facilities typically ‘are industrial properties that are actively managed, rather than the abandoned sites that are often addressed under CERCLA. Therefore, consideration of non-residential uses is especially likely to be appropriate for RCRA facility cleanups. Decisions regarding future land use that are made as part of RCRA corrective actions raise particular issues for RCRA (e.g., timing, property transfers, and the viability of long-term permit or other controls) in ensuring protection of human health and the environment. EPA intends to address the issue of future land use as it relates specifically to RCRA facility cleanups in subsequent guidance and/or rulemakings.

This guidance is also relevant for Federal Facility sites. Land use assumptions at sites that are undergoing base closure may be different than at sites where a Federal agency will be maintaining control of the facility. Most land management agency sites will remain in Federal ownership after remedial actions. In these cases, Forest Land Management Plans and other resource management guidelines may help

develop reasonable assumptions about future uses of the land. At all such sites, however, this document can focus the land use consideration toward appropriate options.[2]

Background:

Reasonably anticipated future use of the land at NPL sites is an important consideration in determining the appropriate extent of remediation. Future use of the land will affect the types of exposures and the frequency of exposures that may occur to any residual contamination remaining on the site, which in turn affects the nature of the remedy chosen. On the other hand, the alternatives selected through the National Oil and Hazardous Substance Contingency Plan (NCP) [55 Fed. Reg.8666, March 8, 1990] process for CERCLA remedy selection determine the extent to which hazardous constituents remain at the site, and therefore affect subsequent available land and ground water uses.

The NCP preamble specifically discusses land use assumptions regarding the baseline risk assessment. The baseline risk assessment provides the basis for taking a remedial action at a Superfund site and supports the development of remedial action objectives. Land use assumptions affect the exposure pathways that are evaluated in the baseline risk assessment. Current land use is critical in determining whether there is a current risk associated with a Superfund site, and future land use is important in estimating potential future threats. The results of the risk assessment aid in determining the degree of remediation necessary to ensure long-term protection at NPL sites.

EPA has been criticized for too often assuming that future use will be residential. In many cases, residential use is the least restricted land use and where human activities are associated with the greatest potential for exposures. This directive is intended to facilitate future remedial decisions at NPL sites by outlining a public process and sources of information which should be considered in developing reasonable assumptions regarding future land use.

This directive expands on discussions provided in the preamble to the National Oil and Hazardous Substance Contingency Plan (NCP); "Risk Assessment Guidance for Superfund Vol. I, Human Health Evaluation Manual" (Part A) (EPA/540/l-89/002, Dec. 1989); "Guidance for conducting Remedial Investigations and Feasibility Studies Under CERCLA" (OSWER Directive 9355.3-01, Oct. 1988); and "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions"

[2] Federal agency responsibility under CERCLA 120 (h) (3), which relates to additional clean up which may be required to allow for unrestricted use of the property is not addressed in this guidance.

(OSWER Directive 9355.0-30, April 22, 1991).

This Land Use directive may have the most relevance in situations where surface soil is the primary exposure pathway. Generally, where soil contamination is impacting ground water, protection of the ground water may drive soil cleanup levels. Consideration of future ground water use for CERCLA sites is not addressed in this document. There are separate expectations established for ground water in the NCP rule section 300.430 (a)(1)(iii)(F) that "EPA expects to return usable ground waters to their beneficial uses, wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site".

Objective

This directive has two primary objectives. First, this directive promotes early discussions with local land use planning authorities, local officials, and the public regarding reasonably anticipated future uses of the property on which an NPL, site is located. Second, this directive promotes the use of that information to formulate realistic assumptions regarding future land use and clarifies how these assumptions fit in and influence the baseline risk assessment, the development of alternatives, and the CERCLA remedy selection process.

Implementation

The approach in this guidance is meant to be considered at current and future sites in the RI/FS pipeline, to the extent possible. This directive is not intended to suggest that previous remedy selection decisions should be re-opened.

Developing Assumptions About Future Land Use

In order to ensure use of realistic assumptions regarding future land uses at a site, EPA should discuss reasonable anticipated future uses of the site with local land use planning authorities, local officials. and the public, as appropriate, as early as possible during the scoping phase of the RI/FS. EPA should gain an understanding of the reasonably anticipated future land uses at a particular Superfund site to perform the risk assessment and select the appropriate remedy.

A visual inspection of the site and its surrounding area is a good starting point in developing assumptions regarding future land use. Discussions with the local land use authorities and appropriate officials should follow. Discussions with the public can be accomplished through a public meeting and/or other means. By developing realistic assumptions based on information gathered from these sources early in the RI/FS process, EPA may develop remedial alternatives that are consistent with the anticipated future use.

The development of assumptions regarding the reasonably anticipated future land use should not become an extensive, independent research project. Site managers should use existing information to the extent possible, much of which will be available from local land use planning authorities. Sources and types of information that may aid EPA in determining the reasonably anticipated future land use include, but are not limited to:

- Current land use
- Zoning laws
- Zoning maps
- Comprehensive community master plans
- Population growth patterns and projections (e.g.,Bureau of Census projections)
- Accessibility of site to existing infrastructure (e.g.,transportation and public utilities)
- Institutional controls currently in place
- Site location in relation to urban, residential, commercial, industrial, agricultural and recreational areas
- Federal/State land use designation (Federal/State control over designated lands range from established uses for the general public, such as national parks or State recreational areas, to governmental facilities providing extensive site access restrictions, such as Department of Defense facilities)
- Historical or recent development patterns
- Cultural factors (e.g., historical sites Native American religious sites)
- Natural resources information
- Potential vulnerability of ground water to contaminants that might migrate from soil
- Environmental justice issues
- Location of on-site or nearby wetlands
- Proximity of site to a flood plain
- Proximity of site to critical habitats of endangered or threatened species
- Geographic and geologic information
- Location of Wellhead Protection areas, recharge areas, and other areas identified in a State's Comprehensive Ground-water Protection Program

These types of information should be considered when developing the assumptions about future land use. Interaction with the public, which includes all stakeholders affected by the site, should serve to increase the certainty in the assumptions made regarding future land use at an NPL site and increase the confidence expectations about anticipated future land use are, in fact, reasonable.

For example, future industrial land use is likely to be a

reasonable assumption where a site is currently used for industrial purposes, is located in an area where the surroundings zoned for industrial use, and the comprehensive plan predicts the site will continue to be used for industrial purposes.

Community Involvement

NPL sites are located in diverse areas of the country, with great variability in land use planning practices. For some NPL sites, the future land use of a site may have been carefully considered through local, public, participatory, planning processes, such as zoning hearings, master plan approvals or other vehicles. When this is the case, local residents around the Superfund site are likely to demonstrate substantial agreement with the local land use planning authority on the future use of the property. Where there is substantial agreement among local residents and land use planning agencies, owners and developers, EPA can rely with a great deal of certainty on the future land use already anticipated for the site. For other NPL sites, however, the absence or nature of a local planning process may yield considerably less certainty about what assumptions regarding future use are reasonable. In some instances the local residents near the Superfund site may feel disenfranchised from the local land use planning and development process. This may be an especially important issue where there are concerns regarding environmental justice in the neighborhood around the NPL site. Consistent with the principle of fairness, EPA should make an extra effort to reach out to the local community to establish appropriate future land use assumptions at such sites.

Land Use Assumptions in the Baseline Risk Assessment

Future land use assumptions allow the baseline risk assessment and the feasibility study to focus on the development of practicable and cost-effective remedial alternatives, leading to site activities which are consistent with the reasonably anticipated future land use.

The baseline risk assessment generally needs only to consider the reasonably anticipated future land use; however, it may be valuable to evaluate risks associated with other land uses. The NCP preamble (55 Fed. Reg. 8710) states that in the baseline risk assessment, more than one future land use assumption may be considered when decision makers wish to understand the implications of unexpected exposures. Especially where there is some uncertainty regarding the anticipated future land use, it may be useful to compare the potential risks associated with several land use scenarios to estimate the impact on human health and the environment should the land use unexpectedly change. The magnitude of such potential impacts may be an important consideration in determining whether and how institutional controls should be used to restrict future uses. If the baseline risk assessment, evaluates a future use under which exposure is limited, it will not serve the traditional role, evaluating a "no action" scenario. A remedy, i.e.,

institutional controls to limit future exposure, will be required to protect human health and the environment. In addition to analyzing human health exposure scenarios associated with certain land uses, ecological exposures may also need to be considered.

Developing Remedial Action Objectives

Remedial action objectives provide the foundation upon which remedial cleanup alternatives are developed. In general, remedial action objectives should be developed in order to develop alternatives that would achieve cleanup levels associated with the reasonably anticipated future land use over as much of the site as possible. EPA recognizes, however, that achieving either the reasonably anticipated land use, or the land use preferred by the community, may not be practicable across the entire site, or in some cases, at all. For example, as RI/FS data become available, they may indicate that the remedial alternatives under consideration for achieving a level of cleanup consistent with the reasonably anticipated future land use are not cost-effective nor practicable. If this is the case, the remedial action objective may be revised which may result in different, more reasonable land use(s).

EPA's remedy selection expectations described in section 300.430(a) (1)(iii) of the NCP should also be considered when developing remedial action objectives. Where practicable, EPA expects to treat principal threats, to use engineering controls such as containment for low-level threats, to use institutional controls to supplement engineering controls, to consider the use of innovative technology, and to return usable ground waters to beneficial uses to protect human health and the environment. (Some types of applicable or relevant and appropriate requirements (ARARs) define protective cleanup levels which may, in turn, influence post-remediation land use potential.)

In cases where the future land use is relatively certain, the remedial action objective generally, should reflect this land use. Generally, it need not include alternative land use scenarios unless, as discussed above, it is impracticable. to provide a protective remedy that allows for that use. A landfill site is an example where it is highly likely that the future land use will remain unchanged (i.e., long-term waste management area), given the NCP'S expectation that treatment of high volumes of waste generally will be impracticable and the fact that EPA's presumptive remedy for landfills is containment. In such a case, a remedial action objective could be established with a very high degree of certainty to reflect the reasonably anticipated future land use.

In cases where the reasonably anticipated future land use is highly uncertain, a range of the reasonably likely future land uses should be considered in developing remedial action objectives. These likely future land uses can be reflected by developing a range

of remedial alternatives that will achieve different land use potentials. The remedy selection process will determine which alternative is most appropriate for the site and, consequently, the land use(s) available following remediation.

As discussed in "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" (OSWER Directive 9355.0-30, April 22, 1991), EPA has established risk range for carcinogens within which EPA strives to manage site risks. EPA recognizes that a specific cleanup level within the acceptable risk range may be associated with more than one land use (e.g., an industrial cleanup to 10^{-6} may also allow for residential use at a 10^{-4} risk level.) It is not EPA's intent that the risk range be partitioned into risk standards based solely on categories of land use (e.g., with residential cleanups at the 10^{-6} level and industrial cleanups at the 10^{-4} risk level.) Rather, the risk range provides the necessary flexibility to address the technical and cost limitations, and the performance and risk uncertainties inherent in all waste remediation efforts.

Land Use Considerations in Remedy Selection

As a result of the comparative analysis of alternatives with respect to EPA's nine evaluation criteria, EPA selects a site-specific remedy. The remedy determines the cleanup levels, the volume of contaminated material to be treated, and the volume of contaminated material to be contained. Consequently, the remedy selection decision determines the size of the area that can be returned to productive use and the particular types of uses that will be possible following remediation.

The volume and concentration of contaminants left on-site, and thus the degree of residual risk at a site, will affect future land use. For example, a remedial alternative may include leaving in place contaminants in soil at concentrations protective for industrial exposures, but not protective for residential exposures. In this case, institutional controls should be used to ensure that industrial use of the land is maintained and to prevent risks from residential exposures. Conversely, a remedial alternative may result in no waste left in place and allow for unrestricted use (e.g., residential use).

Results of the Remedy Selection Process

Several potential land use situations could result from EPA's remedy selection decision. They are:

- The remedy achieves cleanup levels that allow the entire site to be available for the reasonably anticipated future land use in the baseline risk assessment (or, where future land use is uncertain, all uses that could reasonably be

anticipated).

- The remedy achieves cleanup levels that allow most, but not all, of the site to be available for the reasonably anticipated future land use. For example, in order to be cost effective and practicable, the remedy may require creation of a long-term waste management area for containment of treatment residuals or low-level waste on a small portion of the site. The cleanup levels in this portion of the site might allow for a more restricted land use.

- The remedy achieves cleanup levels that require a more restricted land use than the reasonably anticipated future land use for the entire site. This situation occurs when no remedial alternative that is cost-effective or practicable will achieve the cleanup levels consistent with the reasonably anticipated future land use. The site may still be used for productive purposes, but the use would be more restricted than the reasonably anticipated future land use. Furthermore, the more restricted use could be a long-term waste management area over all or a portion of the site.

Institutional Controls

If any remedial alternative developed during the FS will require a restricted land use in order to be protective, it is essential that the alternative include components that will ensure that it remain protective. In particular, institutional controls will generally have to be included in the alternative to prevent an unanticipated change in land use that could result in unacceptable exposures to residual contamination, or, at a minimum, alert future users to the residual risks and monitor for any changes in use. In such cases, institutional controls will play a key role in ensuring long-term protectiveness and should be evaluated and implemented with the same degree of care as is given to other elements of the remedy. In developing remedial alternatives that include institutional controls, EPA should determine: the type of institutional control to be used, the existence of the authority to implement the institutional control, and the appropriate entity's resolve and ability to implement the institutional control. An alternative may anticipate two or more options for establishing institutional controls, but should fully evaluate all such options. A variety of institutional controls may be used such as deed restrictions and deed notices, and adoption of land use controls by a local government. These controls either prohibit certain kinds of site uses or, at a minimum, notify potential owners or land users of the presence of hazardous substances remaining on site at levels that are not protective for all uses. Where exposure must be limited to assure protectiveness, a deed notice alone generally will not provide a sufficiently protective remedy. While the ROD need not always specify the precise type of control to be

imposed, sufficient analysis should be shown in the FS and ROD to support a conclusion that effective implementation of institutional controls can reasonably be expected.

Suppose, for example, that a selected remedy will be protective for industrial land use and low levels of hazardous substances will remain on site. An industry may still be able to operate its business with the selected remedy in place. Institutional controls, however, generally will need to be established to ensure the land is not used for other, less restricted purposes, such as residential use, or to alert potential buyers of any remaining contamination.

Future Changes in Land Use

Where waste is left on-site at levels that would require limited use and restricted exposure, EPA will conduct reviews at least every five years to monitor the site for any changes. Such reviews should analyze the implementation and effectiveness of institutional controls with the same degree of care as other parts of the remedy. Should land use change, it will be necessary to evaluate the implications of that change for the selected remedy, and whether the remedy remains protective. EPA's role in any subsequent additional cleanup will be determined on a site-specific basis. If landowners or others decide at a future date to change the land use in such a way that makes further cleanup necessary to ensure protectiveness, CERCLA does not prevent them from conducting such a cleanup as long as protectiveness of the remedy is not compromised. (EPA may invoke CERCLA section 122(e) (6), if necessary, to prevent actions that are inconsistent with the original remedy.) In general, EPA would not expect to become involved actively in the conduct or oversight of such cleanups. EPA, however, retains its authority to take further response action where necessary to ensure protectiveness.

Further Information

If you have any questions concerning this directive, please call Sherri Clark at 703-603-9043.

NOTICE: The policies set out in this memorandum are intended solely as guidance. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this memorandum, or to act at variance with the guidance, based on an analysis of specific site circumstances. Remedy selection decisions are made and justified on a case-specific basis. The Agency also reserves the right to change this guidance at any time without public notice.