



# Determining Land Use and On-site/Off-site Determinations

FEDERAL FACILITIES ACADEMY WEBINAR  
FEDERAL FACILITIES RESTORATION AND REUSE OFFICE  
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1

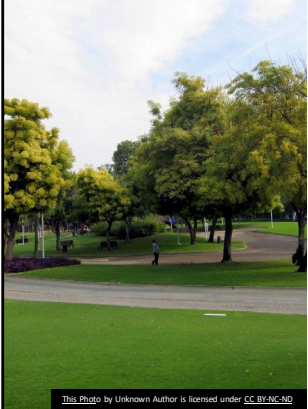



The purpose of this webinar is to discuss how land use is determined and the role anticipated future land use plays under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This webinar will also cover which authorities are used to determine on-site/off-site determinations under CERCLA.



## Course Overview

- Determining Land Use
  - EPA guidance on land use determinations
- Site Reuse
  - Beneficial Reuse
  - Reuse Assessments
- On-site/ Off-Site Determinations
  - Role of permit requirements
  - Offsite Rule (OSR)


2

<p>Recreational</p>  <p><small>This Photo by Unknown Author is licensed under CC BY-NC-ND</small></p>	<p>Agricultural</p>  <p><small>This Photo by Unknown Author is licensed under CC BY-SA-NC</small></p>	<p>Industrial</p>  <p><small>This Photo by Unknown Author is licensed under CC BY-NC</small></p>	<p>Residential</p>  <p><small>This Photo by Unknown Author is licensed under CC BY-SA</small></p>
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Land use assumptions affect the exposure pathways that are evaluated for current risk assessments and future potential threats.

4

“Land use” is the term used to describe the human use of land. It represents the economic and cultural activities (e.g., agricultural, residential, industrial, mining, and recreational uses) that are practiced at a given place. Public and private lands frequently represent very different uses. For example, urban development seldom occurs on publicly owned lands (e.g., parks, wilderness areas), while privately owned lands are infrequently protected for wilderness uses.

	<h2 data-bbox="852 1407 1096 1459">Initial Poll</h2> <p data-bbox="844 1491 1396 1606">When selecting a CERCLA remedy at a federal facility, who determines the reasonably anticipated land use?</p> <ul data-bbox="852 1648 1258 1848" style="list-style-type: none"><li>A. EPA</li><li>B. The lead cleanup agency</li><li>C. The State</li><li>D. The public</li><li>E. All of the above</li></ul>
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5

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.

## Initial Poll

Can the land use determination at a federal facility change?

- A. Yes
- B. No
- C. Never



Example of playground built over a former Superfund Site



Former Nuclear Reactors at the Hanford Site in Washington state.

6

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. The lead federal agency and EPA Region should evaluate the proposed change to see whether it will affect the protectiveness of the remedy and if remedy modifications would be necessary to allow the changed land use. EPA, retains its authority to require further response action where necessary to ensure protectiveness.

## Land Use Determinations

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- ❑ Important part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.
  - Helps develop remedial action objectives.
- ❑ Community Involvement has a critical role.
- ❑ Needs to be documented in the administrative record.

7

This section of the presentation will cover how land use is determined and the role of anticipated future land use under CERCLA. Reasonably anticipated future land use at CERCLA sites is important in determining the appropriate extent of remediation. Land use affects the type and frequency of exposures to any residual contamination remaining on the site and thus affects the nature of the remedy chosen. Several guidance documents exist to help navigate the subject of land use determinations.

## EPA Guidance on Land Use

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- **“Land Use in the CERCLA Remedy Selection Process”** dated May 1995 (Land Use Directive)
- **“Reuse Assessments: A Tool To Implement the Superfund Land Use Directive”** dated June 2001 (Reuse Assessment)
- **“Considering Reasonably Anticipated Future Land Use and Reducing Barriers to Reuse at EPA-lead Superfund Remedial Sites”** dated March 2010 (Reuse Directive)

Three main land use guidance documents exist and will be discussed throughout this presentation. These include the:

- 1995 “Land Use in the CERCLA Remedy Selection Process;” (<https://semspub.epa.gov/work/HQ/174935.pdf>)
- 2001 “Reuse Assessments: A Tool to Implement the Superfund Land Use Directive,” (<https://semspub.epa.gov/work/HQ/175564.pdf>) which reaffirms the 1995 Land Use Directive; and,
- 2010 “Considering Reasonably Anticipated Future Land Use and Reducing Barriers to Reuse at EPA-lead Superfund Remedial Sites.” (<https://semspub.epa.gov/work/HQ/175563.pdf>)

## Land Use Directive, 1995

- ❑ Discussions with local land use planning authorities, local officials, and the public should be conducted as early as possible during the scoping phase of the Remedial Investigation/Feasibility Study (RI/FS).
- ❑ Public meetings and discussions with community members should be conducted and existing information should be used.
  - E.g., zoning laws, population growth patterns, natural resources information, institutional controls currently in place, etc.
- ❑ Consideration of anticipated future land use should be documented in the administrative record for each site.

9

EPA's "**Land Use in the CERCLA Remedy Selection Process**" dated May 1995 (the Land Use Directive) emphasizes early community involvement with a focus on the community's desired future uses of the site, ideally leading to greater community support for a site remedy.

Discussions with local community members should be conducted as early as possible during the scoping phase of the RI/FS to gain an understanding of the reasonably anticipated future land uses at a site. This information should be used in developing the risk assessment, remedial action objectives, and in selecting the appropriate remedy. While time should be taken to gather information for the anticipated future land use, it should not become an extensive independent research project. Rather, existing information should be used to the extent possible, much of which will be available from local land use planning authorities. Once all of this information is gathered, an idea of reasonable future land use assumptions can be developed.

Interactions with the public and all affected parties, including the impacted communities, serve to increase the certainty in the assumptions made regarding future land use at a site and increases the confidence that these assumptions are reasonable. For example, future industrial land use is a reasonable assumption where a site is currently used for industrial purposes, is located in an area where the surroundings are zoned for industrial use, and the comprehensive plan predicts the site will continue to be used for industrial purposes.

Document is available at <https://semspub.epa.gov/work/HQ/174935.pdf>.

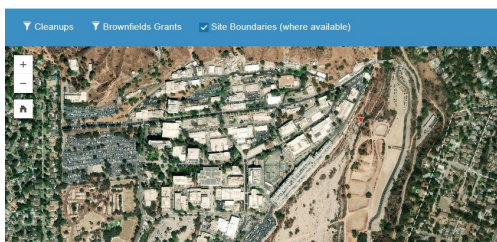
## Land Use Directive, 1995

- ❑ Informed future land use assumptions allow the baseline risk assessment and the feasibility study to be focused on developing practicable and cost-effective remedial alternatives.
- ❑ Available land use types following completion of the remedial action are determined as part of the remedy selection process.

10

Informed future land use assumptions should lead to site activities which are consistent with reasonably anticipated future land use. However, there may be reasons to analyze implications associated with additional land use. During the remedy selection process, the goal of realizing reasonably anticipated future land uses is considered along with other factors. Any combination of unrestricted use, restricted use, or use for long-term waste management may result.

Cleanups In My Community Map



## NASA Jet Propulsion Laboratory (JPL)

- Primary land use in surrounding area - residential and light commercial.
- The baseline risk assessment evaluated hypothetical on-facility resident, commercial worker, and construction worker.
- Although NASA has no intent to use JPL for residential purposes in the foreseeable future, the HHRA included a hypothetical residential use scenario to provide the most conservative and protective results.



11

JPL is a NASA-owned facility where the California Institute of Technology (Caltech) performs R&D projects. JPL comprises about 176 acres of land. Of these 176 acres, about 156 acres are federally owned. The primary land use in the areas surrounding JPL is residential and light commercial. Industrial areas, such as manufacturing, processing, and packaging, are limited. The closest residential properties are those located along the western fence line of JPL. The total number of buildings within 2 miles of JPL is about 2,500, primarily residential and community (e.g., schools, day-care centers, churches). Land use at JPL is not expected to change significantly in the foreseeable future.

The baseline human health risk assessment (HHRA) in the soil operable unit evaluated the potential risks to the hypothetical on-facility resident, the commercial worker, and the construction worker potentially exposed to chemicals in on-facility soil at JPL. Although NASA has no intent to use JPL for residential purposes in the foreseeable future, the HHRA included a hypothetical residential use scenario (i.e., someone living on the JPL property) to provide the most conservative and protective results. More information is available in the 2002 JPL Record of Decision (<https://semspub.epa.gov/work/HQ/188261.pdf>)

## Land Use Directive, 1995

- 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.
- In cases where the future land use is relatively certain, the remedial action objective generally should reflect this land use.
  - Example: At a landfill site, it is highly likely that the future land use will remain unchanged from a long-term waste management area.

12

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.





NPL-BRAC: Former Marine Corps Air Station El Toro, California, Region 9



Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, Region 5

## Site Reuse

13

These examples are taken from the National Federal Facility Excellence in Site Reuse Awards

- EPA's *National Federal Facility Excellence in Site Reuse Awards* highlight redevelopment successes recognize sites for site cleanup and reuse that greatly benefit local communities around the country.
- The restoration of Federal Facility Superfund sites protects public health and serves as a catalyst for economic growth and community revitalization.
- The common denominator of all of our winners (22 and counting) are that it takes a TEAM to achieve positive reuse results – including strong partnerships and a collaborative vision shared by the community, other Federal Agencies, Tribes, states, territories, and local partners.

Information on the National Federal Facility Excellence in Site Reuse Awards and all of the winners can be found on this website: <https://www.epa.gov/fedfac/2024-national-federal-facility-excellence-site-reuse-awards>

**Former Marine Corps Air Station El Toro** was decommissioned as an active base in 1999 under the Base Realignment and Closure Act (BRAC). Before it was decommissioned, the nearly 5,000-acre site supported the Fleet Marine Forces in the Pacific Ocean, serving as the major west coast jet fighter facility. Environmental impacts were the result of chlorinated solvent releases associated with the historical on-Station aircraft and vehicle maintenance activities. Extensive cleanup efforts have facilitated the transformation of approximately 1,300 acres of the Station into the Great Park. The reuse approach demonstrates how successful partnerships between public and private entities and the local community can facilitate the transformation of a military facility with significant environmental issues into a

multi-use area that is an asset to the community while fostering economic growth and community identity. A 2021 EPA economic analysis identified the Station as having 39 on-site businesses, that employed nearly 2,000 people and generated an estimated \$2 billion in annual sales revenue.

In 2001, Orange County voters passed a measure authorizing the Station’s redevelopment as a park/preserve for mixed public and private use which resulted in the development of the Great Park. The Great Park is a recreational destination that includes parks, playgrounds, hiking trails, multi-use sport facilities, an art complex, an amphitheater, a police/firefighter training facility, Children’s Museum, and an indoor ice rink which serves as the training facility for the National Hockey League’s Anaheim Ducks franchise. The Great Park also preserves the local agricultural heritage; and honors the local military history. More developments are planned in the future.

**The Naval Industrial Reserve Ordnance Plant (NIROP)** was an 80-acre Superfund site where industrial activities, including the production of naval guns during World War II, contaminated soil and groundwater. After cleanup, a developer purchased part of the site and surrounding property and redeveloped it into the Northern Stacks Industrial Park. Today, the industrial park is home to multiple businesses, including a brewery. These businesses employ over 1,100 people and generate an estimated \$600 million in annual revenue. The redevelopment showcases the community benefits that can come from reuse of vacant properties, including reducing blight and generating tax revenue.

Additional Federal Facility Superfund site reuses can be found on our Reuse Snapshots page: <https://www.epa.gov/fedfac/redevelopment-federal-facilities#snapshots>

## Economic Analysis and Inventory

In 2023, the economic analysis of 91 Federal Facility Superfund Sites identified more than 2,700 businesses that generated nearly \$29 billion in annual sales, provided more than 600,000 jobs and \$60 billion in estimated annual employment income.

Number of Sites Supporting Each Reuse and Spotlight Category (2021-2023 sites)			
Reuse Category	Number of Sites	Spotlight	Number of Sites
Public Service	74	Cultural / Historical	27
Residential	62	Environmental Education	8
Commercial	97	Alternative Energy	39
Federal - Other	55	Core Infrastructure	10
Federal - Military	80		
Agricultural	18		
Recreational	90		
Ecological	97		
Industrial	60		

Federal facility Superfund sites are being cleaned up across the country, helping communities reclaim and reuse thousands of acres of formerly contaminated land. Many sites now host parks, businesses, renewable energy facilities, wildlife habitat, neighborhoods and farms. EPA FFRRO tracks these figures from year to year, to give a general overview of the national beneficial effects associated with federal facility Superfund redevelopment. Many reuse outcomes can play a role in economically revitalizing a community. EPA measures the economic beneficial effects of reuse at federal facility Superfund sites by collecting the following types of information:

- Number of businesses located on site.
- Number of people employed at site businesses.
- Annual employment income from on-site jobs.
- Annual sales revenue generated by businesses on site.

In 2023, the economic analysis of 91 Federal Facility Superfund Sites identified more than 2,700 businesses that generated nearly \$29 billion in annual sales, provided more than 600,000 jobs and \$60 billion in estimated annual employment income. From 2021-2023, the FFRRO Superfund Reuse Inventory effort tracked 6,287 reuse instances across 108 Federal Facility Superfund sites. Of these sites, all of them were in reuse or continued use. For example, there are 39 sites with Alternative Energy Reuses, 90 with a recreational reuse. More information on redevelopment, including economic, inventory and site snapshots are available at Federal Facilities is available at <https://www.epa.gov/fedfac/redevelopment-federal-facilities>.

### Pantex Plant (USDOE)

- Pantex Renewable Energy Project (PREP) is a
  - 1,500-acre wind farm
  - Five 2.3-megawatt turbines that generate about 11.5 megawatts of power
  - 47 million kilowatt-hours of electricity per year
  - Enough power for 3,500 homes
- Nation's largest federally-owned wind farm
- [Video](#) (2:46 mins)



Many Federal Facility Superfund sites host alternative energy reuses. In fact, out of The Pantex Plant (USDOE) Superfund site occupies about 16,000 acres in Carson County, Texas. The U.S. Department of Energy (DOE) owns about 10,000 of these acres. Texas Tech University owns the other 6,000 acres. From 1942 to 1945, the plant was an Army Ordnance

Corps facility. DOE and the National Nuclear Security Administration (NNSA) began nuclear operations at the plant in 1951. Plant operations contaminated soil and groundwater with hazardous chemicals. In the late 1980s, DOE's Office of Environmental Management started the Environmental Restoration Project at the Pantex Plant. EPA added the site to the National Priorities List (NPL) in 1994. Cleanup included groundwater pumping and treatment, in-place bioremediation of soil, and removal of highly contaminated soil from the site. Remedy construction finished in 2009. Long-term monitoring will ensure continued improvement of site conditions and the remedy's effectiveness. The site sits atop the Ogallala Aquifer, the primary source of drinking and irrigation water in the region. The long-term groundwater monitoring program includes contingency planning for future response actions for the Ogallala Aquifer if contaminants in perched groundwater affect the aquifer. Several areas on site remain in use. Current operations include the development, testing and fabrication of high explosive components, and nuclear weapons assembly and disassembly. They also include interim storage of plutonium and weapon components, component surveillance, and staging and support for other plant functions. A Fire Training Area is still in partial use for Pantex Fire Department training exercises.

In 2014, NNSA completed construction of a wind farm on site. The Pantex Renewable Energy Project (PREP) is a 1,500-acre wind farm consisting of five 2.3-megawatt turbines that generate about 11.5 megawatts of power, or about 47 million kilowatt-hours of electricity per year. The facility reduces the Pantex Plant's fossil fuel needs by up to 60%. EPA presented the Pantex Plant with its Region 6 Greenovations Award for innovative reuse. The PREP is the nation's largest federally owned wind farm. Site uses also include several agricultural tracts where crops such as wheat, sorghum, soybeans and corn are grown. DOE fact sheet on Pantex [https://pantex.energy.gov/sites/default/files/Wind\\_Farm\\_factsheet\\_SM\\_2021.pdf](https://pantex.energy.gov/sites/default/files/Wind_Farm_factsheet_SM_2021.pdf) Video: <https://pantex.energy.gov/mission/technology-development-and-transfer/wind-farm>

## Reuse Assessment, 2001

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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, and the level of redevelopment activity that is already underway.

Reuse assessments should have greatest applicability to sites with waste materials on the surface and/or contaminated soil.

Generally, groundwater use is determined independently from land use. The need to protect groundwater quality may drive the soil cleanup levels.

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.

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, the lead agency 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.

Reuse assessments should have greatest applicability to sites with waste materials on the surface and/or contaminated soil. Future groundwater use was not extensively considered in the Superfund Land Use Directive. There are separate expectations established in the National Contingency Plan (NCP), Section 300.430 (a)(1)(iii)(F) that state, "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."

Generally, groundwater use is determined independently from land use through Comprehensive State Ground Water Protection Programs, state groundwater 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 groundwater uses when developing future land use assumptions since the need to protect groundwater quality may drive the soil cleanup levels.

For example, portions of surface or sub-surface contamination that present a threat to groundwater may require a greater degree of cleanup over a larger area than might be needed for soil cleanup alone. Alternatively, an area of clean land may be needed to install a groundwater pump and treatment system to contain or restore underlying contaminated groundwater. Each of these situations could affect future land use options for the site.

## Reuse Assessment, 2001

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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.

Future land use assumptions can support site characterization, risk assessment, and the development, evaluation and selection of response actions.

17

The Superfund Land Use Directive 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 the community and other interested parties regarding potential future land use options for sites and promotes the use of that information to develop realistic assumptions regarding future land use. Integrating realistic assumptions of future land use into Superfund response actions is an important step toward facilitating the reuse of sites following cleanup.

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.

2001 "Reuse Assessments: A Tool to Implement the Superfund Land Use Directive," (<https://semspub.epa.gov/work/HQ/175564.pdf>)



At the Fernald Preserve (formerly Feed Materials Production Center), a former U.S. Department of Energy uranium processing facility in rural southwest Ohio, remedial actions have addressed contamination at the site, and long-term ground water cleanup is under way. The remedial process at the site engaged community members and federal and state agencies in a process that integrated remedial planning and future land use considerations. These collaborative efforts led to the selection and implementation of remedies for five operable units and integration of remedial actions with environmental restoration projects across the site. The innovative and cost-effective cleanup transformed a contaminated site into a publicly accessible ecological preserve where wetlands, prairie and forest ecosystems provide valuable wildlife habitat and educational exhibits that help tell the story of the site’s history, cleanup and ongoing restoration.

Current land uses include more than 900 acres of restored habitat for ecological uses and limited public access and a 120-acre On-Site Disposal Facility that contains low-level radioactive waste material excavated during remedial work and 29 acres of infrastructure. A Visitors Center, which achieved the U.S. Green Building Council’s certification for Leadership in Energy and Environmental Design (LEED), fosters education about former site operations, contamination, remediation and restoration, and long-term surveillance and maintenance. Today, ecological restoration projects are underway throughout the Fernald Preserve’s five ecosystems, which include upland and riparian forestlands, tallgrass prairie, savannah, wetlands and open water.

Fernald was also a 2019 National Federal Facility Excellence in Site Reuse Award recipient. More information available in EPA’s *Success Story: Fernald Preserve (June 2010)*.  
[https://archive.epa.gov/region5/superfund/redevelop/web/pdf/fernal\\_d\\_preserve.pdf](https://archive.epa.gov/region5/superfund/redevelop/web/pdf/fernal_d_preserve.pdf)

## Reuse Directive, 2010 – Changes in Future Land Use

- ❑ Future land use assumptions or designations may change at any stage of the CERCLA response process.
- ❑ Changes before ROD signature may require additional documents and/or revisions to standing key documents
  - Baseline risk assessment
  - Remedial Investigation/Feasibility Study
  - Proposed plan

19

EPA’s Reuse Directive (2010) considers reuse throughout the cleanup process. It takes into consideration events such as when changes occur after the Record of Decision (ROD), when institutional control (IC) language is updated, and what to consider when a change in remedy is pursued. When occurring prior to ROD signature, and the lead federal agency and EPA region determine there is a change in the reasonably anticipated future land use assumption that should be integrated into remedy selection, the agencies should refer to the 1995 Land Use Directive and may need to supplement or revise other key documents (e.g., baseline risk assessment, RI/FS, proposed plan) consistent with the National Contingency Plan (NCP).

2010 “Considering Reasonably Anticipated Future Land Use and Reducing Barriers to Reuse at EPA-lead Superfund Remedial Sites.” (<https://semspub.epa.gov/work/HQ/175563.pdf>)



## Apply Your Understanding



Laboratory X is located on a military base and is currently under federal ownership. The area is part of a NPL Superfund Site and is primarily used for laboratories, office space, and parking lots. The military base plans to transfer ownership of the lab and its associated buildings to city ownership in the future.

**What is the anticipated future land use for this site?**

- A. Residential
- B. Agricultural
- C. Industrial
- D. Recreational

20

Given the scenario provided, what is the anticipated future land use for this site?

- A. Residential
- B. Agricultural
- C. Industrial
- D. Recreational

## Post-ROD Changes in Land Use

- After the ROD signature, an evaluation should be done to see if the protectiveness of the remedy would be impacted.
  - Will the remedy still be protective with this land use change?
  - Would this change in land use require a change to the remedy?
- ROD requirements do not change based on land use changes
  - Modifications to RODs should be made as required
- Land use changes should also be considered during the five-year review
  - Determining status of remedy protectiveness is key

21

When occurring after a ROD signature, the lead federal agency and EPA Region should evaluate the proposed change to see whether it will affect the protectiveness of the remedy and if remedy modifications would be necessary to allow the changed land use. When supporting the reasonably anticipated future land use, additional costs associated with changing the remedial action designs should be considered as CERCLA response costs.

## Apply Your Understanding



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Land along a river is part of a federal facility NPL Superfund Site and is currently under federal ownership. The area was primarily used for chemical processing activities and is being cleaned up under CERCLA. The city is interested in developing the land for hiking trails.

**What is the anticipated future land use for this site?**

- A. Residential
- B. Agricultural
- C. Industrial
- D. Recreational

22

Given the scenario provided, what is the anticipated future land use for this site?

- A. Residential
- B. Agricultural
- C. Industrial
- D. Recreational

## Reuse Directive, 2010

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- Productive reuse of a site can provide many benefits to a community and support the effectiveness of a remedial action.
  - For example, reusing a site productively can avoid inappropriate activities, such as illegal dumping or off-road vehicle use, and extend the remedy's protectiveness.
- Wide-spread support of the property's reuse activities may also result in increased interest in maintaining the effectiveness of the remedy.
- Reuse can benefit communities through quality-of-life improvements and/or financially.

<https://semspub.epa.gov/work/11/175563.pdf>

23

Appropriate reuse of a site can support the long-term effectiveness of a remedial action by reducing the possibility that other, potentially non-protective land uses might occur. Reuse can also benefit communities by maintaining or increasing property values for land on and near a site, as well as improving quality of life through amenities, such as parks or open spaces, and providing significant local economic benefits.

The 2010 Reuse Directive was introduced because many sites are past remedy selection. Additionally, regions had specific questions about supporting reuse throughout cleanup. Regions wanted to know what to do if a reasonably anticipated future land use (RAFLU) changed after the ROD, which was not addressed in the 1995 Land Use Directive.

## Reuse Directive, 2010 – Institutional Controls

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- ❑ Future land use should be considered when considering institutional controls (ICs)
- ❑ Local governments can play a vital role in identifying ICs available in their jurisdiction.
- ❑ ICs are an important consideration for federal facilities when land will be transferred outside of federal ownership

<https://semspub.epa.gov/work/11/175563.pdf>

24

As components of remedial actions, institutional controls (ICs) are used to achieve the precise substantive restrictions articulated in the decision documents that are needed at a site to achieve cleanup objectives. Appropriate consideration of the use of ICs should be given to providing adequate involvement to potentially affected landowners, renters, businesses, the general public, etc. (including providing appropriate notice and opportunities for comment), the impacts of ICs on land uses, and maintaining a solid administrative record.

ICs should be carefully evaluated, selected, and tailored to meet the cleanup objectives. It is important that site managers involve the appropriate local government agencies in discussions on the types of controls that are being considered as early in the remedial process as possible. Local government officials can offer valuable information on the land use controls available in their jurisdiction and may offer creative solutions that protect human health and the environment while also protecting other local interests. Discussions with the local government and community give the Regions the opportunity to identify whether a particular group may be affected as a result of a proposed IC or determine if the community has special needs in regard to an IC. In addition, discussions with individuals living on or near a site may reveal information regarding the potential efficacy of an IC. It may also be possible to provide technical assistance to the community so they can obtain a technical expert to assist them in evaluating ICs and the overall remedy.

## Base Closure Considerations

- Land use assumptions at sites undergoing base closure may be different than at sites where a Federal Agency will be maintaining control of the facility.
- Base Closure Scenarios
  - Base Closure where land remains in DOD ownership with no plans for transfer.
  - Base Closure where there are established plans to transfer the land considers zoning.
  - Base Closure where land will be transferred back to another federal agency.

25

Land use assumptions at sites 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.

- Base Closure where land remains in DOD ownership with no current plans for civilian transfer (DOD land use governs for determining “reasonably anticipated future land use”)
- Base Closure where there are established plans for civilian transfer (local zoning governs for determining “reasonably anticipated future land use”)
- Base Closure where the land will be transferred back to another federal agency (federal agency land use plans governs for determining “reasonably anticipated future land use”)

September 30, 2016, marked the end of thirty years of EPA’s involvement at BRAC facilities that are not on the National Priorities List (NPL). The *BRAC and EPA’s Federal Facility Cleanup Program: Three Decades of Excellence, Innovation and Reuse* report takes a closer look at EPA’s work in support of DoD and its BRAC environmental restoration and reuse efforts over the past three decades. At more than 100 BRAC sites nationwide, EPA has provided resources to accelerate environmental restoration activities, maintain remedies that protect human health and the environment, support public involvement, and facilitate property transfer.

<https://www.epa.gov/fedfac/brac-and-epas-federal-facility-cleanup-program-three-decades-excellence-innovation-and-reuse>

## BRAC Success at Myrtle Beach

Former 3,936-acre Myrtle Beach AFB now hosts

- Myrtle Beach International Airport
- Over 1,200 new homes
- Parks; walking paths and sporting facilities
- Golf course
- A college
- Technology and aerospace business park
- Commercial

26



From 1954 until closure in the 90s, the base served as a training base and deployed fighter squadrons worldwide. Throughout its history pilots at MBAFB flew various aircraft, including A-10 Thunderbolts, over the region. When the Air Force expected to phase out the A-10, Myrtle Beach AFB was selected for closure. Under the Base Realignment and Closure (BRAC) Commission, the former Myrtle Beach Air Force Base (MBAFB) closed in 1993.

Today, the transformation of the former 3,936-acre Myrtle Beach AFB into a thriving new community sets a new standard for successful remediation and redevelopment. The former Air Force Base is now home to Myrtle Beach International Airport; over 1,200 new homes; a dozen parks; walking paths and sporting facilities; a golf course; a college; a new technology and aerospace business park; and a centerpiece commercial district called The Market Common, with upscale shops, and restaurants. Since closure, redevelopment at the former base has brought more jobs, greater economic value, and more community amenities than when the base was open. The former Myrtle Beach AFB in South Carolina has become a model for environmental cleanup and redevelopment.

# On-site / Off-site Determinations

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27

Group Poll: What  
challenges have you dealt  
with in on-site/off-site  
determinations?

28

Has anyone has dealt with challenges in on-site/off-site determinations?

## Off-site Determinations

- ❑ What is the Off-Site Rule (OSR)?
  - Applies to any CERCLA response action involving the off-site transfer of any hazardous substance pollutant or contaminant (CERCLA wastes)
  - CERCLA wastes may only be placed in a facility operating in compliance with the Resource Conservation and Recovery Act (RCRA) or other applicable Federal or State requirements
- ❑ OSR Purpose – ensure CERCLA wastes **do not** contribute to present or future environmental problems

29

Section 121(d)(3) of CERCLA requires that CERCLA wastes may only be placed in a facility operating in compliance with the Resource Conservation and Recovery Act (RCRA) or other applicable Federal or State requirements. The section further prohibits the transfer of CERCLA wastes to a land disposal facility that is releasing contaminants into the environment and requires that any releases from other waste management units must be controlled.

This section of the statute is interpreted in the Off-Site Rule (OSR) published in the National Contingency Plan (NCP) at 400 CFR 300.440. The purpose of the OSR is to avoid having CERCLA wastes from response actions authorized or funded under CERCLA contribute to present or future environmental problems by directing these wastes to management units determined to be environmentally sound (preamble to final OSR, 58 FR 49200, 49201, Sept. 22, 1993).

The OSR establishes the criteria and procedures for determining whether facilities are acceptable for the receipt of CERCLA wastes from response actions authorized or funded under CERCLA. The OSR establishes compliance criteria and release criteria, and establishes a process for determining whether facilities are acceptable based on those criteria. The OSR also establishes procedures for notification of unacceptability, reconsideration of unacceptability determinations, and re-evaluation of unacceptability determinations. Lab samples and treatability samples are generally exempt from this rule. An Off-Site Rule Fact Sheet is available at <https://www.epa.gov/superfund/site-rule>.



## Off-site Determinations

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- ❑ What actions are affected?
  - Any remedial or removal action involving the off-site transfer of any hazardous substance, pollutant or contaminant (CERCLA wastes) that is conducted by **EPA, States, private parties, or other Federal agencies** and/or if the action is Superfund-financed
- ❑ Who is affected?
  - Anyone who, through a CERCLA authorized or CERCLA-funded removal or remedial action, wants to transfer CERCLA wastes from the cleanup site to any U.S. off-site facility (e.g., treatment, storage disposal facilities)

30

The OSR applies to any remedial or removal action involving the off-site transfer of any hazardous substance, or pollutant or contaminant (CERCLA wastes) that is conducted by EPA, States, private parties, or other Federal agencies, if the action is Fund-financed or is taken pursuant to any CERCLA legal authority. Included are cleanups at Federal facilities under section 120 of CERCLA, and cleanups under section 311 of the Clean Water Act (CWA), except for cleanup of certain petroleum materials that are exempt under CERCLA. Applicability extends to those actions taken jointly under CERCLA and another authority. The OSR applies only to those actions being taken under a CERCLA authority or using CERCLA funds (e.g., actions taken under a CERCLA order or agreement or funded by CERCLA). Thus, if no CERCLA funds or authorities are involved, or if the waste is not a CERCLA waste, the OSR does not apply. Please note that wastes treated on-site are still subject to the rule when transferred off- site.



Permitted Facilities Located On-Site Hanford Example

- Liquid Waste Processing Facilities (LWPF) store, treat and dispose of large volumes of liquid waste at Hanford
  - Liquid Effluent Retention Facility (LERF)
  - Effluent Treatment Facility (ETF)
- RCRA-Permitted facility used to treat wastewater
- Geographically on Hanford 200 Area NPL site, but considered “off-site” for remedial actions

The Effluent Treatment Facility (ETF) receives liquids from the Liquid Effluent Retention Facility (LERF) which is permitted by the State of Washington and has three liquid storage basins designed to hold about 23,000,000 gallons of material. Located in Hanford’s 200 East Area, these facilities handle liquid wastes from groundwater remediation and condensate. LERF stores liquid wastes, and ETF treats them. LERF accepts and stores waste waters from a number of Hanford sources. A number of treatment processes at ETF remove radioactive and hazardous contaminants from wastewater. Once the wastewater has been treated through ETF, it is stored until tests confirm that various radioactive and hazardous contaminants have been removed or lowered to levels that make it acceptable for discharge to a state-approved disposal site in Hanford’s 200 Area.

ETF is a state-permitted facility under the Hanford Site-Wide RCRA Permit. Washington State has an authorized RCRA program. It treats up to 28,000,000 gallons of wastewater each year. Liquid waste from the LERF is processed through the ETF main treatment train, which includes treatment systems designed to remove or destroy dangerous organic and radioactive constituents from the waste. The treated waste is then sent to verification tanks where it is sampled, analyzed and verified to meet release criteria. Once verified, the waste is discharged under a state waste discharge permit and approved petition to the State-approved Land Disposal Site. The treated waste is then discharged as nonhazardous waste. Secondary waste from these treatment processes is concentrated and dried into a powder in the ETF secondary treatment train. The resulting powdered waste is packaged in 55-gallon drums for disposal at Hanford’s Environmental Restoration Disposal Facility.

More info at <https://www.hanford.gov/page.cfm/LWPF>

## Springhill Landfill

- Receives waste from Tyndall Air Force Base and other CERCLA response actions
- Approximately 68 miles away from Tyndall AFB



- Determinations expire and need to be reissued
- Each EPA Region has an OSR Coordinator



32

Tyndall Air Force Base site, FR038 – Beacon Beach Skeet Range is a 74-acre site, historically used as a trap and skeet range to train soldiers from 1943 to pre-1964. The primary chemical constituents associated with FR038 are lead from lead shot pellets and polycyclic aromatic hydrocarbons from the binding agent in the clay targets. The remedial action at the site includes excavation and off-site disposal of non-hazardous soil. The Springhill Regional Landfill, Campbellton, Florida is acceptable to receive waste regulated by the CERCLA Off-Site Rule.

Continued acceptability of waste disposal must be checked regularly, sometimes as often as every 60 days, during the duration of remediation requiring waste disposal at the facility.

## Permit Requirements

- ❑ Permits are required for CERCLA work conducted off-site but not on-site.
- ❑ The National Contingency Plan (NCP) (40 CFR 300.400) CERCLA §121(e)(1) states:
  - (1) No federal, state, or local permits are required for **on-site** response actions conducted pursuant to CERCLA Sections 104, 106, 120, 121, or 122. The term on-site means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.
  - (2) Permits, if required, shall be obtained for all response activities conducted **off-site**.

33

Permits are required for CERCLA work conducted off-site but not on-site. Note that the “Site” is defined in the Record of Decision (ROD). While responsible parties/federal facilities are not required to obtain a permit for on-site activities, they must meet the substantive requirements of the various statutes that apply.



Weldon Spring Chemical Plant During Operations



Stairway to an observation platform on 75-foot-tall permanent disposal cell

Former Weldon Spring Ordnance Works - Missouri

34

The Weldon Spring Former Army Ordnance Works site (WSOW) is in St. Charles County, Missouri, approximately 30 miles west of St. Louis. The site encompasses approximately 17,232 acres, including mixed areas of ownership (state and federally owned land parcels). The Army acquired the property in 1940 and began production of trinitrotoluene (TNT) and dinitrotoluene (DNT) in 1941 to support World War II efforts. The Army constructed 18 identical TNT and two DNT manufacturing plants beginning in May 1941 in the area now known as the Weldon Springs Training Area (WSTA). Following deactivation of the production facility in 1945, the majority of the property was transferred to the state of Missouri and local entities. Historical Army operations resulted in the release of hazardous substances to soil and groundwater at the site. The primary contaminants of concern (COC) are nitroaromatics. The site was listed on the National Priority List on February 21, 1990, and a Federal Facility Agreement (FFA) became effective on August 8, 1991. The WSOW site surrounds and is adjacent to the Weldon Spring Quarry/Plant/Pits site. The Weldon Spring Quarry/Plant/Pits site is a separate NPL site listed on March 13, 1989. The Department of Energy (DOE) is the lead agency for the Weldon Spring Quarry/Plant/Pits site.

## Former Weldon Spring Ordnance Works

- ❑ In 1994, Missouri invoked dispute regarding the state's authority to require permits for the incinerator, contaminated wastewater treatment, and storm water runoff activities described in a ROD
- ❑ Army asserted that permits are not required for on-site CERCLA activities
- ❑ Missouri also argued that EPA's view of on-site was overbroad since the response actions will inevitably result in extended off-site discharge beyond the on-site area, and thus require state permits

35

On August 9, 1994, Missouri invoked the FFA's dispute resolution procedures regarding the state's authority to require permits for the incinerator, contaminated wastewater treatment, and storm water runoff activities that are described in the draft Final Record of Decision (ROD). On September 7, 1994, the Dispute Resolution committee elevated the matter to the Senior Executive Committee (SEC). Unable to unanimously resolve the dispute, it was elevated to the Regional Administrator. As provided in the dispute resolution procedures of the FFA, Missouri elected to elevate the Region's decision for resolution.

In this case, it is undisputed that the response actions at issue will be constructed entirely within the geographical area considered the NPL site. Missouri's position is that because

off-site releases and discharges will occur, the state may seek to require the Army to obtain permits. Throughout this dispute, the Army has asserted that permits are not required for the subject activities. Furthermore, the Army has stated that it is unwilling to jeopardize its ability to carry out its CERCLA responsibilities by agreeing to apply for a state permit that CERCLA does not require.

Missouri contends that what constitutes "on-site " in EPA's view is overbroad and that the response actions under the selected remedy will inevitably result in extended off- site discharges beyond the "on-site" area, and thus require state permits.

## Former Weldon Spring Ordnance Works

- ❑ Nothing in the statutory language requires that substances discharged or released from response actions on-site must remain entirely on-site to qualify for permit exemption
- ❑ EPA Administrator Carol Browner's decision stated that EPA interprets CERCLA section 121(e)(1) and the corresponding provisions of the NCP as exempting response actions conducted entirely on-site **even if the actions involve discharges or emissions that result in some subsequent migration of contaminants beyond the site boundaries.**

36

EPA has long viewed response actions that may have discharges or releases which subsequently migrate beyond site boundaries as qualifying for the CERCLA 121(e) (1) exemption. EPA interprets CERCLA section 121(e)(1) and the corresponding provision of the NCP (300.400(e)(1)) as exempting response actions conducted entirely on-site even if the actions involve discharges or emissions that result in some subsequent migration of contaminants beyond the site boundaries. Furthermore, since some off-site migration is likely to occur in virtually all cases where there is an on-site discharge or emission, adopting the state's interpretation would greatly narrow the kinds of permits to which the exemption applies.

## On-Site Determinations

- ❑ On-site work does not require permits, but lead federal agencies need to meet the requirements of various statutes that apply.
- ❑ Example: Resource Conservation and Recovery Act (RCRA) requirements
  - RCRA - covers the generation, transportation treatment, storage, and disposal of hazardous waste
  - Must follow RCRA requirements when handling hazardous waste on-site
  - Example: on-site disposal cell

37

As previously mentioned, while responsible parties/federal facilities are not required to obtain a permit, they must meet the requirements and the permits and various statutes that apply. This applies to on-site work. The Resource Conservation and Recovery Act (RCRA) is a good example of this. RCRA must be adhered to when handling hazardous waste on-site.

For example, small quantity generators (SQG) can only keep their waste on-site for 180 days or 270 days if their treatment, storage, and disposal facility is more than 270 miles away. Large quantity generators (LQG) of waste can only store waste for 90 days without obtaining a permit as a storage facility. More information at <https://www.epa.gov/hw/guidance-remediation-waste-management-resource-conservation-and-recovery-act-rcra-corrective>.

RCRA corrective management units (CAMUs) are used to deal with on-site hazardous waste. They facilitate treatment, storage, and disposal of hazardous wastes managed for implementing cleanup and remove the disincentives to cleanup that RCRA can impose on these wastes. CAMUs can only be used to manage CAMU-eligible wastes for implementing corrective action or cleanup at the site. They can only be located within the lower contiguous property under the control of the owner or operator where wastes to be managed in the CAMU originated. Please see the 1993 CAMU rule and the 2002 Amended CAMU rule for additional information.

<https://www.epa.gov/hwpermitting/federal-register-notice-final-rule-corrective-action-management-units-and-temporary>

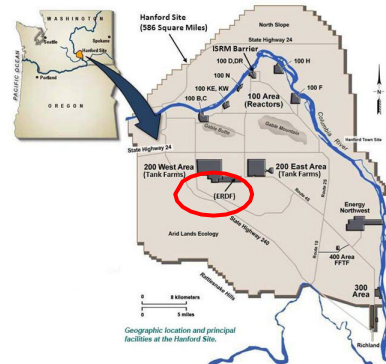
<https://www.epa.gov/hw/background-2002-amendments-corrective-action-management-unit-camu-rule>

## Hanford Environmental Restoration Disposal Facility

- Established under a Record of Decision
- Hanford RODs state that ERDF is on-site for the purpose of that remedial action
- ERDF meets the substantive requirements of RCRA, but is not a RCRA-permitted landfill



*Since operations began in 1996, more than 19 million tons of waste have been disposed of at the ERDF.*



Hanford's Environmental Restoration Disposal Facility is in the 200 area of the Hanford Site and is a massive landfill regulated by the U.S. Environmental Protection Agency under CERCLA. Built in 1996, ERDF accepts low-level radioactive, hazardous, and mixed wastes that are generated during the CERCLA cleanup remediation activities at Hanford. It does not accept any non-Hanford or non-CERCLA waste. To date, nearly 19 million tons of waste have been disposed of at ERDF.

The facility is designed to keep the environment safe by isolating waste and leachate (rain and dust-suppression water in contact with the waste) from the environment. A double liner/leachate collection system collects and removes leachate from the trench. Leachate is collected and sent to a large water treatment facility in Hanford's 200 West Area, where contaminants are removed.





The ERDF is a large, engineered landfill located in the center of the Hanford Site. The facility is used for the disposal of low-level radioactive, chemical and mixed wastes generated from demolition, remediation and other cleanup activities across the Site. The facility began operating in 1996 and is regulated by the U.S. Environmental Protection Agency under the CERCLA. The ERDF contains double-lined disposal cells with a drainage system that collects potentially contaminated water from rain and dust-suppression activities, which has come in contact with the waste. The facility covers an area of approximately 107 acres and its size provides tremendous flexibility in disposing of different waste forms, ranging from soils to large pieces of contaminated equipment.

ERDF is composed of eight original disposal cells and two super cells that are twice as large as the original cells. Each super cell is designed to hold approximately 3.6 million tons of material. The original cells were constructed in pairs, with each cell measuring approximately 500 feet wide, 500 feet long and 70 feet deep.

Information taken from USDOE ERDF fact sheet

[https://www.hanford.gov/files.cfm/ERDF\\_Fact\\_Sheet\\_Jan2024.pdf](https://www.hanford.gov/files.cfm/ERDF_Fact_Sheet_Jan2024.pdf)

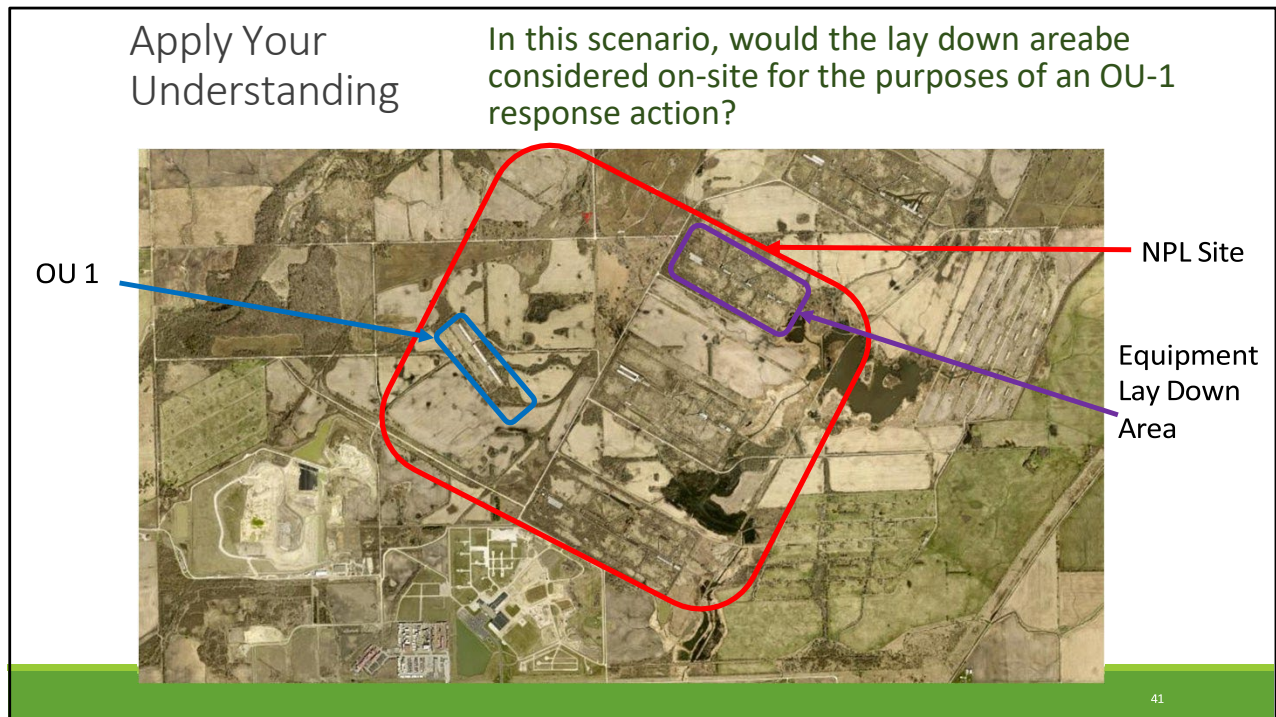
## On-site Determinations

- ❑ On-site is defined in 40 CFR 300.400(e) as, “The areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.”
- ❑ Used to determine that waste from a specific site/operable unit **can** be moved across an area outside of the OU boundary to another location technically within the larger site.

40

The definition for “On-site” per 40 CFR 300.400(e) was designed to create additional space for treatment systems that require considerable area for construction and staging areas. Areas not covered by this definition are said to be “off-site.” Further, this on-site definition allows waste from a specific site/operable unit (OU) to be moved across an area outside of the OU boundary to another location technically within the larger site. For example, contaminated debris/soil may be sent to a waste disposal facility or treatment facility located at another area of the site.

This can lead to confusion at large sites, so it is important to clarify when establishing on-site determinations.



In this example, the OU and equipment lay down area are in close proximity to each other, and both are located on the same NPL site. Group A is arguing that since trucks would have to travel on main roads of the site, the lay down area should be considered off-site. Group B states that since this is the same NPL site, it should be considered as on-site for the purposes of an OU-1 response action? Should the lay down area be considered on-site for the purposes of an OU-1 response action?

- A. Yes
- B. No
- C. Sometimes

Things to be considered:

- Have similar response actions on site used a laydown area in this manner that was located away from the OU?
- Is there concern contamination could spread to other parts of the NPL site due to the traveling between the lay down area and the OU?
- What are the reasons for having the lay down area be in that location? Does it improve efficiencies?

## Summary

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- ❑ Land Use determinations are a critical part of remedy selection under CERCLA
- ❑ Identify anticipated future land use as early as possible
- ❑ Consider reuse in remedy selection
- ❑ The Off-Site Rule (OSR) ensures that CERCLA wastes **do not** contribute to present or future environmental problems.
- ❑ CERCLA does not require permits for on-site activities

42

## Contact Information

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### Emerald Laija

- Federal Facilities Restoration and Reuse Office, EPA HQ
- [Laija.emerald@epa.gov](mailto:Laija.emerald@epa.gov)

### Jyl Lapachin

- Federal Facilities Restoration and Reuse Office, EPA HQ
- [Lapachin.jyl@epa.gov](mailto:Lapachin.jyl@epa.gov)

### Geoff Schramm

- Hanford Project Office
- EPA Region 10
- [schramm.geoff@epa.gov](mailto:schramm.geoff@epa.gov)

44