FUTURE LAND USE PROCESS FOR OAK RIDGE OPERATIONS



A Report to the U. S. Department of Energy on Recommended Future Uses of The Oak Ridge Reservation, Paducah Gaseous Diffusion Plant, and the Portsmouth Gaseous Diffusion Plant

December 1995

Prepared by the Common Ground Process Team for Lockheed Martin Energy Systems, Inc. for the U.S. Department of Energy under Contract No. DE-AC05-84OR21400

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Department of Energy

Oak Ridge Operations Office P.O. Box 2001 Oak Ridge, Tennessee 37831—

January 1996

Dear Common Ground Process Participant:

Enclosed is a copy of the final Common Ground Process report entitled "A Report to the U.S. Department of Energy on Recommended Future Uses of The Oak Ridge Reservation" and three summary brochures about the Common Ground Process.

This document was sent to DOE Headquarters in December to report on the 18-month process conducted to solicit regional stakeholders' ideas about how the Reservation might be used in coming years and how we integrated those ideas with DOE missions as well as with technical, economic, and conservation considerations.

Giving a voice to the many who have an interest in the potential uses of the Oak Ridge Reservation invited disagreement among individuals and different groups. The process was designed, however, to include as many who chose to participate and to reflect their opinions against the backdrop of new and continuing DOE missions, technical feasibility, and regional economic and environmental requirements.

The final report proposes areas which may be used for specific industrial purposes while maintaining environmentally unique and sensitive sites which, if disturbed, would never be recoverable. In addition to listening to over 350 participants, the Process Team invited the participation of national-level consultants such as The Nature Conservancy and Economic Research Associates to provide perspective on suggested uses.

Those of us who participated in the process believe that this is only the beginning of an on-going process to plan how this Reservation will be used in the immediate and distant future. Many departments at DOE and Lockheed Martin Energy Systems, DOE's prime management and operations contractor, are already looking at the proposals and how they might impact their planning. Primary among those considering the report's proposed future land uses are Environmental Restoration Division management and others responsible for cleaning up waste from years of nuclear research and operations. Other departments and divisions, as well as community organizations and local government bodies, are showing an interest in the planning which will impact how the Reservation is used. Common Ground has stimulated that interest and provided a framework for the planning to continue.

Should you require additional copies of this report, the enclosed brochures, or a complete packet of background information about the Common Ground Process, please call my office at (423) 576-9429.

Let me thank you personally for your participation in the process. Many of you attended more than one workshop or meeting, commented on draft documents, and spoke out on issues of concern. Thank you for your interest, and I encourage you to maintain your support for on-going planning for the Reservation.

Sincerely.

Oary Bodenstein, Manager Common Ground Process Environmental Restoration Division

Enclosures: Final Common Ground Process Report and Summary Brochures

ES/EN/SFP-43/D-1

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PREFACE

This document, Future Land Use Process for Oak Ridge Operations: A Report to the U.S. Department of Energy on Recommended Future Uses of the Oak Ridge Reservation, the Paducah Gaseous Diffusion Plant, and the Portsmouth Gaseous Diffusion Plant (ES/EN/SFP-43), is a summary report of the future use process initiated in 1993 at the request of DOE and concluded in 1995. The report's three major sections describe the future use process carried out for three sites:

- 1. The Oak Ridge Reservation,
- 2. The Paducah Gaseous Diffusion Plant, and
- 3. The Portsmouth Gaseous Diffusion Plant.

The Common Ground Process for the Oak Ridge Reservation includes two attached deliverables:

- an introductory and summary document (a primer) for external stakeholders in three parts—Why and How the Common Ground Process Was Conducted, Issues Addressed During the Process, and Future Land Use Recommendations with Map; and
- support reference information contained in seven ring-binder documents.

Copies of the primer document are available upon request by calling 1-800-382-6938 or 423-576-4006. A limited number of the seven volumes of supporting information on the Oak Ridge Reservation project, called the Common Ground Process, have been printed. These ring-binder volumes (ES/EN/SFP-45) are available for public viewing in DOE reading rooms in Oak Ridge, Tennessee, and Washington, D.C.

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- Volume 1 contains guidance and process overview materials.
- Volume 2 contains local, regional, and demographic information.
- Volume 3A contains DOE missions information.
- Volume 3B contains stakeholder input materials.
- Volume 3C contains economic considerations information.
- Volume 3D contains environmental considerations information.
- Volume 3E contains technical suitability information.

Copies of this summary report are available upon request by calling 1-800-382-6938 or 423-576-4006.

Copies of selected material from the binders can be made at

DOE Information Resource Center	EM-5
105 Broadway	1000 Independence Ave., SW, 1H-087/FORS
Oak Ridge, Tennessee	U.S. Department of Energy
	Washington, D.C. 20585
	(Ph: 202-586-5607)

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INTRODUCTION AND PURPOSE

In December 1993, Thomas P. Grumbly, Assistant Secretary for Environmental Restoration and Waste Management, and Donald W. Pearman, Acting Associate Deputy Secretary for Facilities and Management, both within the U.S. Department of Energy, directed site managers to identify stakeholder-preferred alternatives for the future use of land and buildings at each Department of Energy site (see Fig. 1). This report on the Oak Ridge Reservation Common Ground Process and the Limited Future Land Use studies for the Paducah Gaseous Diffusion Plant and the Portsmouth Gaseous Diffusion Plant is the response of the DOE Oak Ridge Operations Field Office to that mandate.

Because of the Department of Energy's changing missions, the future uses of many existing buildings and land parcels are likely to change. In cases where missions are known, land and facilities will be retained by the Department of Energy. In cases where facilities and land will not be needed, reuse, disposals, or outgrants for other governmental or private-sector uses may be considered.

The future land use project was begun in early 1994 by the Department of Energy's Oak Ridge Operations Office and its contractor, Lockheed Martin Energy Systems, Inc., with the assistance of on-site and outside subcontractors. The goal was to begin an ongoing, iterative process by which stakeholders could articulate their preferences for possible future uses of the land and facilities presently owned and operated by the Department of Energy. The primary objective was to recommend to the Department of Energy by December 1995 a list of future use options that are stakeholder-preferred, technically feasible, and compatible with Department of Energy missions. Considerations of the process included:

- a range of feasible future use options;
- the identification of national needs and goals;
- an evaluation of the opportunities and constraints of alternative uses;
- legal, physical, socioeconomic, technological, and cost considerations; and
- the perspectives of the Department of Energy and all interested parties.

Importance of Future Use Options to the Department of Energy

Future use options are critical to many Department of Energy planning and decision-making processes, especially site development planning and environmental remediation decisions.

The preferred future use options are expected to serve as a basis for many Department planning and decision-making activities, including strategic and mission planning, siting facilities, establishing remediation goals, and transferring or leasing inactive and surplus facilities for other governmental or private-sector use. Stakeholder-preferred options will assist the Department of Energy in defining both complex-wide and site-specific missions. Similarly, known and projected Department of Energy missions will help to identify future use options.

memorandum

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wor: EM-40 (R. Harris, 3-8199)

INDUCT

Transmittal of Final Draft "Forging the Missing Link: A Resource Document for Identifying Future Use Options"

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Following our direction, a Final Draft of a resource document, "Forging the Missing Link: A Resource Document for Identifying Future Use Options," has been prepared to provide immediate guidance to the Heads of Field Elements on future use issues.

This document will help agency officials implement a site-specific process to identify future use options based on the unique characteristics of site and stakeholder needs. The document does not address or answer every issue related to future use options, land use planning, and decisionmaking; instead, it provides a means for us to immediately initiate the process for identifying -- in a participatory formal -- stakeholder-preferred future use options. The document identifies steps to be taken by Headquarters and field elements to resolve those issues affected by or affecting future uses in a coordinated, well-planned fashion:

Even with the extensive input to this draft by various organizations, stakeholders, and others, every issue may not have been identified or resolved. As a result, the document is submitted in draft form for interim use. In its present form, the document will allow timely identification of options with provisions for periodic updates to reflect additional guidance based on emerging issues, supplemental information, and lessons learned. If we wait until all questions and answers are known, then we will never begin to resolve these crucial issues aggressively, and we will never achieve results.

A draft of the supporting appendices (approximately 12) will not be available until February. In the meantime, we expect the Heads of Field Elements to initiate future use processes in accordance with the framework established in this guidance document. To this end, they should:

- Identify and provide the name of a single point-of-contact to the Future Use Project Office established in our Office of Public Accountability (EM-5);
- 2. Establish a Project Team for each site and appoint a Team Leader;
- Review available resources, inventory relevant site information, and public participation history; and
- Arrange a meeting with representatives from the Future Use Project Office to discuss process implementation plans and resource needs.

This future use activity requires your immediate attention and aggressive action. As site-specific efforts evolve, this resource document will be updated to reflect further guidance. The approach we are pursuing on future uses of DOE sites is a "bottom-up" approach, with the active participation of stakeholder groups and the public. We are committed to consider and integrate stakeholder-prefarred future use options into our planning and decisionmaking.

To meet our goal by the end of 1995 at all facilities and sites conducting environmental restoration, it is critical this effort begin no later than mid-January 1994.

Denald W. Pearman Acting Associate Deputy Secretary for Facilities and Management Attachment

Thomas P. Grumbly Assistant Secretary for Environmental Restoration and Waste Management

Fig. 1. Letter from T. P. Grumbly and D. W. Pearman.

Major activities affected by future use decisions include:

- establishing acceptable risk and remediation levels (i.e., addressing "How clean is clean?" by deciding "Clean for what use?");
- planning and siting new facilities necessary for Department of Energy missions, including waste treatment, storage, and disposal facilities;
- preserving land and buildings for current and future Department of Energy missions and other national research needs; and
- identifying opportunities for transfer or outgrant of surplus land and buildings to federal, state, or local government or for private-sector use.

It is anticipated that the Department of Energy will communicate to stakeholders how it intends to use future use options in its planning and decision making. In so doing, the Department of Energy should make it clear that the development of future use options does not preclude the Department from:

- complying with existing laws, regulations, and enforceable agreements;
- remediating or restoring contaminated sites; or
- meeting applicable cleanup standards.

1. THE OAK RIDGE RESERVATION

1.1 COMMON GROUND PROCESS ELEMENTS

1.1.1 Special Conditions and Assumptions

Each Department of Energy site has special conditions that affect the development of future use options. The following factors and assumptions played a major role in the Common Ground Process and the development of recommended options for the Oak Ridge Reservation.

• Continuance of Federal Presence and Land Ownership. The Federal government will continue to own property, carry out national missions, and perform cleanup and waste management on the Oak Ridge Reservation for the next 25 to 100 years.

The Oak Ridge Reservation is home to a national laboratory and two industrial facilities, each with its own missions and needs for the future: The Oak Ridge National Laboratory concentrates on energy research and technology; the K-25 Site is the center of waste management and environmental restoration activities; and the Y-12 Plant is involved in defense programs. The Reservation, which includes the Department of Energy National Environmental Research Park, is a unit of the Southern Appalachian Biosphere Program, part of the international program, Man and the Biosphere. Funding and direction come primarily from Department of Energy Headquarters through the Department of Energy Oak Ridge Operations Office, and since that federal presence will continue, it necessitates flexibility in any future plans for use of Reservation land and facilities.

- Planning Time Periods. A 25-year period was used as the short-term planning horizon to closely emulate standard planning periods used by federal, state, and local agencies. A 100-year horizon was used as a maximum planning period based on the general applicability of laws regarding control of the use of real property. The Common Ground Process Team established these periods after considerable deliberation of many factors, including the long-term activity of radioactive contamination.
- Political and Demographic Context. The Oak Ridge Reservation is located in the City of Oak Ridge, in Anderson and Roane counties, and near many other political jurisdictions (see Fig. 2). It is also in the pathway of population expansion and regional urban growth (see Fig. 3).
- Contamination Context. Contamination from previous industrial activities is mostly concentrated in the areas designated "Primary Industrial Areas" and a few small scattered areas in other locations. Cleanup work is anticipated to continue throughout the

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LEGEND

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Oak Ridge Reservation Eight-County Area

Additional Counties in the 18-County Region







Fig. 3. Population density of the area near the Oak Ridge Reservation.

planning periods of 25 and 100 years, and it will play a role in the determination of future land uses. Cleanup sites, however, were specifically not used in the planning process to determine recommended end land uses, since the purpose of the future use process is to provide preferences that will help to guide cleanup efforts. The Oak Ridge Reservation is on the Superfund National Priorities List for environmental cleanup. Listings and descriptions of Oak Ridge Reservation Areas of Concern for environmental restoration can be found in the Oak Ridge Reservation Site Management Plan for the Environmental Restoration Program.

- Economic Importance. The Oak Ridge Reservation plays a significant role in the economic well-being of the region. In 1993, more than \$890 million in Department of Energy and contractor payrolls contributed to the economy of East Tennessee (see Fig. 4).
- Environmental Importance. Because the Reservation sustains 24 rare plants, 8 rare invertebrates, 33 rare animals, and 11 rare plant communities, it also plays a significant role in the environmental well-being of the region.
- Historical Importance. The Oak Ridge Reservation is also considered to be a highly significant state and national historic site based on its role in the Manhattan Project as well as the presence of archaeological resources and remains of many early settlements within its boundaries.
- Limitations on Stakeholder Input. An official organization representative of various stakeholder perspectives and sanctioned by the Department of Energy through a Federal Advisory Committee Act process was not available to help design or participate in the Common Ground Process. Therefore, a stakeholder outreach process was devised to reach locally affected parties, especially those closest to the Oak Ridge Reservation.
- City of Oak Ridge Land Transfer and Land Use. Since the early 1950s, the City of Oak Ridge and its residents have been the recipients of more than 30,000 acres of land transferred or sold by the federal government. Also, in the past the City of Oak Ridge identified specific parcels of land on the Oak Ridge Reservation that it desired for self-sufficiency purposes, should the federal government determine them available for use by others. The Common Ground Process has documented those parcels in Volume 2 of the backup material. Many recent developments, however, indicate that changes regarding missions and reuse of the lands and buildings on the Oak Ridge Reservation may develop in the near future. The Common Ground Process accommodates potential changes of this sort in recommendations 6, 7, and 8.

In 1959, when the City of Oak Ridge was incorporated, the Oak Ridge Reservation was included within the city limits. The most recent land use plan developed by the City of Oak Ridge for its incorporated area is in Volume 2 of the backup material.

[end]

DOE/CONTRACTOR REGIONAL PAYROLLS FOR ORO IN 1993

Employees working in DOE-sponsored programs live in 38 counties representing a broad economic impact in the East Tennessee region.



Fig. 4. Department of Energy and contractor regional payrolls for 1993.

1.1.2 Project Management and Expertise

1.1.2.1 Project Management

A project team consisting of the Department of Energy, Lockheed Martin Energy Systems, Inc., and subcontract specialists was formed to scope, schedule, and develop cost requirements to perform the work. In response to a letter on June 10, 1994, from Robert C. Sleeman, Environmental Restoration Division Manager at the Department of Energy's Oak Ridge Operations Office, a project management plan was approved in June of 1994 by the Department of Energy's Oak Ridge office.

1.1.2.2 Subject Matter Expertise

Using guidelines from the Department of Energy's future use office in combination with the aggregate experience of the project team, the following elements were determined to be essential to the Common Ground Process. Individuals and organizations with appropriate, nationally recognized expertise and local and regional familiarity were identified and contracted to provide guidance to the process:

1. Department of Energy missions and uses for the land and facilities.

Professional planning staff and others at Lockheed Martin Energy Systems, Inc., and the Department of Energy at the Oak Ridge Reservation.

2. Stakeholder involvement.

The University of Tennessee Energy, Environment, and Resources Center; Community Relations staff from Lockheed Martin Energy Systems, Inc.; Department of Energy staff from the Environmental Restoration Division at Oak Ridge; the L. Darryl Armstrong Group of Oak Ridge; and SSA, Inc., of Oak Ridge.

3. Environmental/ecological considerations.

The Nature Conservancy, the Tennessee State Heritage Organization, the Environmental Sciences Division of the Oak Ridge National Laboratory, other Lockheed Martin Energy Systems, Inc., and Department of Energy staff at the Oak Ridge Reservation.

4. Economic considerations.

Economic Research Associates; the Iowa State University Department of Urban and Regional Planning; the Tennessee Valley Authority; and Barge, Waggoner, Sumner, and Cannon, Inc., staff.

5. Technical suitability of the site for land use options.

Professional planning staff and others at Lockheed Martin Energy Systems, Inc., the Department of Energy at the Oak Ridge Reservation, and Barge, Waggoner, Sumner and Cannon, Inc., staff.

1.1.3 The Common Ground Process Plan and Methodology

The Common Ground Process was designed to produce timely, credible, and supportable recommendations for future land use options for the Oak Ridge Reservation. The process was designed to be open, inclusive, and responsive to site and area issues; to consider Department of Energy missions; to represent diverse stakeholder concerns; and to take into account economic and environmental considerations, societal and cultural issues, and technical information.

The basic framework of this process was designed to fit the conditions of the Oak Ridge Reservation and the surrounding region. The process involved the Department of Energy, Lockheed Martin Energy Systems, Inc., and stakeholder participation; the compiling of a comprehensive baseline of information and data sufficient for making informed decisions; and an inclusive evaluation and integration of resulting future use options by all participants. Figure 5 provides a graphic representation of the process.

How the Future Use Options Were Developed

- Stakeholder views and preferences concerning needs of the region and future uses of the Oak Ridge Reservation were sought from people who live or work in the surrounding region, from those with regulatory or oversight responsibilities concerning the Reservation, from Department of Energy and Lockheed Martin Energy Systems, Inc., management personnel, and from representatives of local governments and unions.¹
- 2. Information was gathered on the following:
 - Department of Energy missions and strategic plans (current and future),
 - environmental and economic impacts of land use changes on the Oak Ridge Reservation,
 - local and regional plans and projections, and
 - technical information about the Oak Ridge Reservation.
- 3. Land use categories were developed from a combination of guidance documents from Department of Energy Headquarters, various laws (such as the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act) that require cleanup of contaminated areas, various land use standards, local land use designations, and stakeholder-identified land uses:
 - industry and research,
 - office and business,
 - institutional,
 - residential,

¹The Community Reuse Organization, chartered in April 1995, was not in existence when the stakeholder involvement process began in the spring of 1994, and thus was not a stakeholder constituent in this first stage of the Common Ground Process.



Fig. 5. Stages of the Common Ground Process.

- recreational,
- forestry and agriculture, and
- conservation.
- 4. For evaluating future land use recommendations, the Common Ground Process planning team developed five sets of criteria consisting of these elements:
 - compatibility with Department of Energy missions,
 - broad stakeholder satisfaction,
 - economic suitability,
 - environmental suitability, and
 - technical suitability.
- 5. Using information on stakeholder preferences, Department of Energy missions, and technical, environmental, and economic considerations, the Common Ground Process planning team then applied the five sets of criteria to evaluate which standard land use categories (for example, industry and research, office and business, residential, recreation, agriculture) would be most appropriate for the Oak Ridge Reservation.

See Fig. 6, Common Ground Process land use compatibility matrix.

1.2 THE COMMON GROUND PROCESS

1.2.1 Department of Energy Missions

Broad national-level Department of Energy missions and goals were used in the Common Ground Process.

Future missions and uses of the Oak Ridge Reservation by the Department of Energy can be found in Department of Energy Headquarters documents and Department of Energy field office documents. Headquarters documents are general in nature and apply to all sites, while field office documents are more specific to sites, programs, and facilities. Detailed information from these sources changes according to national needs and funding.

The Common Ground Process Team inventoried mission documents from Headquarters and field offices and summarized them for use in evaluating future use options. These summaries are in the reference binders which are part of the documentation of this process.

1.2.1.1 The Source

A recent publication, *Fueling a Competitive Economy Strategic Plan*, DOE/S-0108, April 1994, provided the broadest definition of goals for the Department of Energy and addressed the purposes of the agency described as the Department of Energy's five areas of business (see Fig. 7).

COMMON GROUND PROCESS LAND USE COMPATIBILITY MATRIX

VES CONDITIONA NO PROPOSED LA	AL ND USES	COMPATIBILITY CRITERIA	DOE MISSIONS	Promotes Industrial Competitiveness	Promotes Energy Resources	Promotes Science & Technology	Promotes National Security	Promotes Environmental Quality	STAKEHOLDER PREFERENCES	Widespread Support of Participating Stakeholders	Avoids Adversely Affecting Long-term Preferences	Preserves Long-term Flexibility	CONSERVATION SUITABILITY	Significant Ecosystems Elements	Significant Natural Landscapes	ECONOMIC SUITABILITY	Positive Fiscal Impacts	Positive Economic Impacts	TECHNICAL SUITABILITY
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RESIDENTIAL	Low												· ·						Ŭ
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																			Z
RECREATION	Passive			X	Y	X	X	X				R		R	R	-			Ö
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FORESTRY &																			5
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* S/T/D: Storage, Trea	atment, or Disposal																S	FP 95- DAW 4	27 R-5 1/25/95

* S/T/D: Storage, Treatment, or Disposal

** PUD: Planned Unit Development

Fig. 6. Common Ground Process land use compatibility matrix.



Fig. 7. Department of Energy areas of business.

The five business areas, described below, became the criteria used by the Common Ground Process Team to evaluate the compatibility of Department of Energy missions with a set of land use categories.

- Industrial Competitiveness—to promote economic growth in a global economy,
- Energy Resources—to encourage efficiency and advance alternative renewable energy technologies,
- Science and Technology—to use unique resources of the Department of Energy's laboratories and maintain research leadership,
- National Security—to support and maintain safe and secure nuclear weapons stockpile/storage activities and safely dismantle and dispose of excess weapons, and
- Environmental Quality—to promote human safety as well as health and technology for solving environmental problems.

1.2.1.2 Results

Five important findings relating to Department of Energy missions emerged from the Common Ground Process Team evaluation:

- Department of Energy missions will be given priority for future use of the Oak Ridge Reservation as long as there is a Department of Energy presence in Oak Ridge.
- Because it is impossible to know the nature of all future Department of Energy activities, planning should preserve reasonable flexibility to allow the establishment of other Department of Energy activities on the Oak Ridge Reservation. Where the nature of future Department of Energy activities is known, appropriate sites should be reserved for those purposes.
- Among Department of Energy activities included in the future land use plans are environmental restoration and treatment and long-term management of wastes generated on the Oak Ridge Reservation.
- To the extent that usable land on the Oak Ridge Reservation exceeds Department of Energy needs, other activities that create well paying jobs should be given priority.
- The Oak Ridge Reservation is a regionally and nationally significant ecological area. Future land use activities should support this resource so that the unique ecological aspects of the Oak Ridge Reservation are conserved, enhanced, and continue to be used as a resource for health, safety, and environmental technology research.

1.2.2 Stakeholder Participation

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Stakeholder involvement opportunities were offered to people and organizations who would likely be affected by changes at the Oak Ridge Reservation.

A two-phased effort was conducted. In the first phase, stakeholders' views concerning future needs of the region and possible future uses of the Oak Ridge Reservation were gathered. In the second phase, the stakeholders' reactions to preliminary future use recommendations for the Oak Ridge Reservation were considered.

For the Common Ground Process, "stakeholder" was broadly defined to include (1) people working with the Department of Energy Operations Office and its contractor, Lockheed Martin Energy Systems, Inc., at the Oak Ridge Reservation; (2) people living and working in the surrounding 18-county region; and (3) people with regulatory or oversight responsibilities concerning the Reservation. The first group was called "internal stakeholders," the second and third groups together "external stakeholders."

The internal stakeholder involvement effort was the responsibility of the Department of Energy and Lockheed Martin Energy Systems, Inc., members of the Common Ground Process Team. The University of Tennessee team assisted by analyzing results of internal stakeholder involvement.

The external stakeholder involvement effort was developed by the "Pro-Dialogue" program—a stakeholder involvement program at the University of Tennessee's Energy, Environment, and Resources Center—under the direction of the Department of Energy and Lockheed Martin Energy Systems, Inc., members of the Common Ground Process Team. The University of Tennessee team was largely responsible for structuring the external involvement effort and analyzing its results. Implementation was done jointly by the University of Tennessee team and other members of the Common Ground Process Team.

1.2.2.1 The Process

Phase 1. During this "visioning" phase, information was presented about the Common Ground Process through presentations to local, state, and regional organizations; newspaper advertisements and articles; and media appearances. External stakeholder involvement was sought in the fall of 1994 through approximately 100 interviews with opinion leaders in the region, 10 discovery groups, a meeting with regional planners, and five public workshops.

While some Department of Energy and Lockheed Martin Energy Systems, Inc., employees participated as private citizens during the fall, in the spring of 1995 the views of 90 senior Department of Energy and Lockheed Martin Energy Systems, Inc., personnel were solicited via questionnaires. Of those, 47 responded. In addition, representatives of local governments and unions from surrounding communities were asked to give institutional perspectives regarding future uses of the Oak Ridge Reservation. (Some officials also had been asked to participate individually in the fall of 1994 phase.) Of the seven governmental entities sent questionnaires, two responded: Knox County and Roane County.

Phase 2. In April 1995, preliminary future use recommendations were developed, taking into account stakeholder preferences expressed during the first phase and factors such as Department of Energy missions, technical suitability, and economic and environmental considerations. Reactions to the recommendations were sought to determine the range of acceptability.

Following the direction of Department of Energy senior management, two sets of stakeholder involvement activities were conducted during June 1995. First, the stakeholders who had previously participated in the external involvement effort and those who had asked to be included on the Common Ground Process mailing list were sent a questionnaire asking their reactions to the preliminary future use recommendations. Second, five public forums were held in the region to provide information, generate discussion about the recommendations, and allow those attending to complete that same questionnaire. In all, 104 questionnaires were completed and returned. Figure 8 shows a breakdown of Common Ground Process stakeholder involvement. The results of the two phases of stakeholder involvement were summarized in the following documents prepared by the University of Tennessee's Energy, Environment, and Resources Center: The "Visioning" Phase of the Common Ground Process: A Synthesis of External Stakeholder Views, The "Visioning" Phase of the Common Ground Process: Internal and Institutional Views, and The "Preliminary Recommendations" Phase of the Common Ground Process: A Synthesis of External Stakeholder Views.

1.2.2.2 Results

The results of the first phase of stakeholder involvement were used in the development of preliminary future use recommendations. The results of the second phase were used to assess the acceptability of the preliminary recommendations (see Section 3.4). In the final phase (September 1995), stakeholders had the opportunity to comment on the draft recommendations report through a public meeting and comment period before the report was finalized and sent to Department of Energy Headquarters in December of 1995.

The findings concerning stakeholder views reflect only the views of participants in the Common Ground Process and should not be treated as generalizable to the region's population. Nevertheless, the findings are valuable in that they give the views of the people who took the opportunity to participate in interviews, discovery groups, and widely publicized workshops, forums, and public meetings. Those people, while demographically not altogether typical of the region's population, represent a diverse array of interests and perspectives.

Most external and internal participants in the Common Ground Process support Department of Energy missions and, prospectively, other federal or state government missions as a major Oak Ridge Reservation land use. Preservation of the Reservation's natural environment, especially its special natural habitats, is widely supported, as is selective industrial development, especially industry complementary to Department of Energy missions. Lowimpact recreational uses such as hiking and biking trails are also widely supported, although somewhat more enthusiastically by external participants than by internal participants.

Except for strong preferences expressed by the administrative staff and other elements of the City of Oak Ridge, only limited support was evidenced for residential uses. Limited support was expressed for forestry research, rather than for general agriculture uses. Similarly, the use of Oak Ridge Reservation land for a major regional transportation corridor appeared to have little support, especially by internal participants in the Common Ground Process. Use of the Reservation for major commercial development (e.g., malls) had virtually no support.

359 STAKEHOLDERS WERE INVOLVED

- 59% participated in Phase I only
- 15% in Phase II only
- 26% participated in both Phases I and II.



Fig. 8. Common Ground Process stakeholder involvement.



Locations of Important Conservation Sites on the Oak Ridge Reservation

Fig. 9. Oak Ridge Reservation preliminary conservation sites.

1.2.3 Environmental/Conservation Considerations

The regional and national ecological significance of the Oak Ridge Reservation was considered an important determinant for future uses of the Reservation.

The Department of Energy's Oak Ridge Reservation provides an excellent opportunity for study and conservation of plants and wildlife. Large portions of Reservation land have been relatively undisturbed since its purchase in 1942 except for the developed areas, land used for Department of Energy missions, and limited timber harvest areas. The Oak Ridge Reservation is biologically diverse, with native vegetation, undeveloped natural habitat, and naturally occurring plant and animal communities that are disappearing from the surrounding area because of agricultural uses and encroaching development. An excellent opportunity exists at the Oak Ridge Reservation to inventory these plants and animals and then to conserve them. Use of the National Environmental Research Park for ecological research should continue.

1.2.3.1 Process

To obtain an objective appraisal of the importance of the Oak Ridge Reservation, The Nature Conservancy—a nationally recognized organization specializing in identifying rare species and ecologically important natural areas worthy of preservation, conservation, and protection—was retained. The Conservancy analyzed existing survey data and conducted an overview of biological significance for the Reservation. See Fig. 9 for a map of preliminary conservation sites.

The Nature Conservancy's report, Oak Ridge Reservation, Biodiversity and the Common Ground Process, relied largely on documentation by the Oak Ridge National Laboratory's Environmental Sciences Division staff. The results of this literature and documentation survey identified sites of conservation importance and addressed the following questions:

- 1. What is the regional ecological value of the Oak Ridge Reservation?
- 2. What makes it valuable?
- 3. Where on the Oak Ridge Reservation are the most ecologically sensitive areas?
- 4. Can the ecologically sensitive areas be sustained alongside future development, and if so, under what conditions?

1.2.3.2 Results

From the analysis of regional and Oak Ridge Reservation data collected, which showed conclusively that the Reservation plays a significant role as a large conservation area in the populated and developing valley region of Central East Tennessee, The Nature Conservancy proposed a series of conservation and preservation areas. Maps prepared of the Oak Ridge Reservation showing sensitive ecological areas and natural elements, such as springs and seeps, that identified the proposed preliminary conservation sites on the Oak Ridge Reservation were then used to determine the most important areas on the Reservation to conserve for environmental and ecological purposes.

Those maps were used in the development of the preliminary recommendations map for the Common Ground Process. The conclusion reached from the data analysis, when combined with supporting environmental values and stakeholders' recommendations, suggests a conservation development scenario for the future use of portions of the Oak Ridge Reservation.

1.2.4 Economic Considerations

The potential for use of the Oak Ridge Reservation to result in creating and sustaining jobs for the region was an important consideration for the future of the Reservation.

The primary purposes of this part of the Common Ground Process were to determine the most economically feasible land uses for the Oak Ridge Reservation and to assess the historic and projected role that future land uses could play in the regional economy.

Perhaps the most complex question underlying the Common Ground Process is: How can we maintain the economic benefits to the region that have been provided by activities at the Oak Ridge Reservation? Many factors influence the answer to the question, including the presence of a federal agency; regional and local economic trends; suitability of the land to support types of development; local and regional demand for land; redevelopment opportunities; legal, administrative and regulatory restrictions; financing of economic activities; and environmental considerations.

Materials developed in support of findings on economics include these reports: Demographic Profile and Population Projections of Selected Counties in East Tennessee by Iowa State University and Fair Share Analysis of Future Industrial and Office Development at the Oak Ridge Reservation by Economic Research Associates.

1.2.4.1 Process

Demographic and economic trends for the eight-county area surrounding the Oak Ridge Reservation were analyzed by consultants who addressed the following questions:

1. Will projected population expansion in Anderson, Roane, and other nearby counties affect the regional demand for Reservation land?

Past and Projected Population Growth for the 8-County Area



Fig. 10. Population growth in the eight-county region.

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- 2. Does the Oak Ridge Reservation contain a significant percentage of the total amount of land available for future development within the eight-county area?
- 3. Is there a short-term and potential long-term market for land identified as suitable for development on the Oak Ridge Reservation?
- 4. Is the Oak Ridge Reservation well-suited for development purposes?
- 5. What are the most likely development prospects for the Oak Ridge Reservation?

Each consultant contributed specific expertise and research skills to the projected 25- to 100-year planning periods for the eight counties surrounding the Oak Ridge Reservation. In a sequential analysis, population was considered first. The resulting projections (see Fig. 10) became the basis for determining the amount of land necessary to satisfy future population density. Those assumptions were then compared with land supply and adjusted to form the basis for projections of incremental land demand over the 100-year planning period. The consultant team's efforts provided a profile of the influence of available Reservation land resources on the general flow of population expansion, land consumption, and formation of future economic activities.

Results from the data and analysis were used to help shape the preliminary Common Ground Process future land use recommendations.

1.2.4.2 Results

- 1. The population of Knox County is projected to double in the next 100 years; Anderson, Roane, and other nearby counties are projected to have more moderate increases. There will be an increase in population density per square mile in the county as available vacant land is developed. The other seven counties surrounding the Oak Ridge Reservation will remain semi-rural in population densities.
- 2. The Oak Ridge Reservation lies in the pathway of urban expansion from Knox County, but represents a small percentage of the total land inventory suitable for urbanization in the eight-county area. The Reservation, however, does contain large tracts of land suitable for industrial development, which could be very attractive in the regional and national marketplace. The Reservation also contains a number of smaller land parcels suitable for commercial or light industrial uses that can satisfy the near-term land demand of the City of Oak Ridge and Anderson and Roane counties.
- 3. According to local industrial development and recruitment experts, the Oak Ridge Reservation is the single most marketable location with the best conditions for future high-wage jobs in the central east Tennessee region.

- 4. Short-term (25 years) land development opportunities currently exist on the Oak Ridge Reservation mainly on parcels adjacent to Tennessee State Highways 58 and 95 in the vicinity of the K-25 Site. Much of the remaining Oak Ridge Reservation land is not highly desirable in the short term for industrial development because of existing infrastructure problems and the presence of contamination, and because it is needed for current and projected Department of Energy missions.
- 5. Large-scale economic development and opportunities for the Oak Ridge Reservation are limited without a major effort to reclaim current industrial sites on and around the K-25 Site. These sites, if reclaimed, would have to be market-competitive based on land value, would have to address liability issues, and would have to reuse existing facilities.

1.2.5 Technical Suitability

The technical suitability of the land was analyzed to help determine probable locations for various land uses.

After preferred land use types had been preliminarily determined, taking into account Department of Energy missions, stakeholder preferences, and economic and environmental considerations, the Oak Ridge Reservation was analyzed to determine its suitability for supporting and sustaining those uses and where they could best be located. In essence, a "best-fit" analysis was undertaken to determine where the recommended land uses could best be accommodated. Criteria for technical suitability were based on engineering and environmental considerations of slopes, soils, geology, hydrology, existing vegetation, and sensitive ecological areas; infrastructure considerations of existing roads, utilities, and buildings; historical and cultural features; and ongoing and planned activities. The criteria were researched and compiled from national, regional, and local sources. The compatibility criteria are charted in Fig. 11, and an example page of suitability criteria is shown in Fig. 12.

The process for determining best-fit scenarios involved the application of suitability criteria to maps of the Oak Ridge Reservation. Since the Reservation is a large tract of land influenced by a variety of natural and other factors whose interrelationships cause complicated and sometimes difficult-to-understand constraints, the maps were used to transform the subject matter into visually understandable data. The maps were shared with stakeholders and used as a source of information for the Common Ground Process planning team in determining future land use recommendations.

The resulting document, Oak Ridge Reservation Future Land Use Technical Suitability Criteria, describes the process by which the Department of Energy and the Common Ground Process Team identified areas for future uses.

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Fig. 11. Technical suitability criteria.

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TECHNICAL SUITABILITY

SCALING FACTORS SCORES	EXPLANATION	SOURCE
Slope 1 From 0% to 5% 1 From 5.1% to 15% 2 Above 15% •	Development should be limited to slopes of less than 5%. Slopes between 5% and 15%, while potentially developable, are typically more costly to utilize for Light Industrial use. Slopes greater than 15% are usually not cost-effective to develop, can result in serious vegetative destruction and soil erosion, and should be avoided.	A, C
Floodplains Above 500-year 1 Between 100-year and 500-year 2 Within 100-year +	Light Industrial development should be located above the 500-year floodplain. Development between 100-year and 500-year floodplains is permissible with restrictions on the types of site-specific activities. These activities must not impede floodwater flow or raise level of floodwaters during flood events. Development within the 100- year floodplain should be avoided.	A, B, C
Minimum setbacks from wetlands, streams, critical habitats, cultural features, etc.Greater than 200 feet1From 100 feet to 200 feet2Within 100 feet•	Light Industrial activities generally should be conducted no closer than 200 feet to wetlands, sensitive habitats, streams, cultural features, etc. Depending on the type of Light Industrial activity, developing closer to these entities can pose potential harm because of increased runoff of industrial wastes, destruction of flora and fauna habitat, and reduced aesthetic value. Maintaining these distances provides a buffer from development and can increase the value of the property.	A, B, C
Existing vegetationGrassed or previously disturbed areas1Mixed vegetation2Forested4	Light Industrial development, while usually smaller than heavy industrial areas, typically requires a site totally cleared of vegetation. The intrinsic value of existing vegetation that is lost because of this type of development is usually less if the development is in areas that are covered in grasses or shrubs and that have been previously disturbed. Because of the destructive nature of industrial development and activities, this land use should not be located in areas of hardwood forests and other sensitive flora habitats.	C
Geology - Principal rock groupsNon carbonate groups1Chickamauga group2Knox group*	Knox and Chickamsugs groups are subject to considerable karst (solution conduit) development such that there is high risk involved in siting industrial facilities or complexes on them. The Knox group can be very soluble, and karst features and sinkholes are common. Sinkholes do exist in the Chickamsuga group, but they are not as large or numerous as in the Knox group. Facility siting and design should reflect the presence of these features.	А, В
Conservation elements Areas outside landscape complexes and BSRs 1 Landscape complexes 2 BSR 2, 3, and 4	Site Biodiversity Significance Rankings (BSRs) represent clusters of rare/endangered species, significant communities, and other important landscape features and are considered conservation sites of primary importance. Development within BSRs could prove destructive to the species, community, or feature and should be avoided. Landscape complexes sustain habitat protection, preserve ecological processes, and conserve natural support systems. Minimal development is permitted on a site-by-site basis, using site-specific design and construction methodologies with minimal changes to the immediate natural environment.	A, B, C
Access to major transportation, utilities, and existing plant sites. Within ½ mile 1 From ½ mile to 1 mile 4 Greater than 1 mile •	Major transportation systems, including road and rail, and most major utilities are required for Light Industrial activities, and connecting to these systems is a major expense. Light Industrial land use should be as close as possible to transportation and utility systems. Locating close to the three existing plant sites is also desirable because of the potential availability of those systems at these sites. Locating farther away from these systems can greatly increase development costs.	В, С

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Suitability Scoring: 1 = High, 2 = Medium, 4 = Low, * = Factors that showed high intrinsic value, high costs to mitigate, or other considerations deemed not suitable for this land use. Biodiversity Significance Rankings (BSR): BSR 2 = very high significance, BSR 3 = high significance, BSR 4 = moderate significance. Sources: A = Local zoning ordinances, comprehensive plans, ORR technical documents, etc.; B = Regional county comprehensive plans; C = National planning organizations (American Planning Association, Urban Land Institute, The Nature Conservancy, etc.).

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Fig. 12. Sample page, criteria for industrial land use suitability.

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Results

- 1. Land is available on the Oak Ridge Reservation that is technically suitable for each selected land use.
- 2. The amount of land available for each use is directly related to the limits established by the criteria for technical suitability.
- 3. More than half of the Oak Ridge Reservation is considered to present only moderate constraints to construction.
- 4. Most of the land suitable for construction is close to the existing plant sites.
- 5. Much of the land not close to the plant sites has substantial value for use as natural resource conservation areas and buffer zones.

1.3 THE RECOMMENDATIONS

1.3.1 Concept/Vision

In the coming decades, the Oak Ridge Reservation should be treated as a single parcel of land, and it should serve national interests and the East Tennessee region as a center of high-wage, technology, and science-based research and industrial development. The most advanced planning and construction methods should be applied in all future uses of the Reservation, to serve the nation and the world as a model of energy efficiency, environmental compatibility, and sustainability.

Figure 13 shows the mix and general location of land uses that are recommended. The map describes uses within the short term (0 to 25 years) and the long term (26 to 100 years). These include Department of Energy uses as well as compatible uses by other public or private entities.

1.3.2 General Recommendations

- 1. Generally, the Oak Ridge Reservation should be held, managed, and used as a single property. If land is released, it should be done so only as part of a comprehensive, long-term strategy that would achieve national missions as well as regional economic and environmental goals.
- 2. Future uses, wherever possible, should build on past and current technologies, labor skills, technical and scientific expertise, and physical facilities available at the Oak Ridge Reservation and in the region to strengthen economic, environmental, and recreational opportunities that promote the region's well-being.


Future Land Use Process for the Oak Ridge Reservation

Employee Health Care

· Waste Storage/Treatment/

COMMON GROUND FUTURE LAND USE RECOMMENDATIONS MAP



City of Oak Ridge

DOE Oak Ridge Reservation Boundary (Note: Boundary follows shaded areas of Reservation)

 ~ 0

- 100 years) strategic plans should be developed. Implementation should begin as soon as possible.
- rimany Potential Industrial Area Unit

Short-term (0-to-25 years) and long-term (26-to-

- Industrial Institutional Employee Recreational Research
- Office and Business

Time Frame

S_PPeed St.

MAP LEGEND

Industrial

Research

Time Frame

Primary Industrial Area Uses

Office and Business Disposal

Primary focus is on the short-term (0-to-25 years) to attract new industrial prospects before the skilled labor force decreases and transportation and utility systems decline.

Secondary Potential Industrial Area Uses

- Medium-to-light Industrial Recreational institutional
- Research Office and Business

Time Frame

Focus on short-term (0-to-25 years) plans to be developed on an as-needed basis to respond to major Oak Ridge Reservation initiatives and market opportunities.

Conservation Area Uses

Passive

Recreational

- Environmental Protection
- Research Sites · Forestry and Agricultural
- Research
- Time Frame
- Short-term (0-to-25 years)
- Long-term (26-to-100 years)

Conservation Transition Area Uses

All green striped overlays represent shared transition areas with one of the areas listed above:

Conservation/ Primary Industrial

Conservation/ Primary Potential Industrial

Conservation/

- Secondary Potential Indust. Light Industrial and Research
- Office and Business
- Institutional
- Passive Recreational
- · Forestry and Agricultural Research Conservation
- Environmental Protection
- Time Frame
- Short-term (0-to-25 years)
- Long-term (26-to-100 years)

Fig. 13. Common Ground future land use recommendations map.

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Oak Ridge City Boundary _____

- 3. For cleanup purposes, all of the Reservation should be designated as a "Specialized Mixed Industrial and Conservation Use" area. This designation is a category that focuses on current and projected industrial and research uses but includes related and compatible uses as well. Specific cleanup strategies would be congruent with future use plans for the specific areas to be cleaned up.
- 4. Short-term (0 to 25 years) land uses should accommodate:
 - scientific and technological research;
 - specialized mixed industrial and conservation uses (including waste management and cleanup activities) that are compatible with and contribute to ongoing and anticipated future Department of Energy missions;
 - office and business uses that support other activities on the Oak Ridge Reservation;
 - institutional uses (primarily educational) that are related to other Reservation activities;
 - recreational uses that are generally passive in nature (for example, trails, wildlife observation, and general open space uses) and located in specified areas that do not interfere with ongoing activities;
 - specialized forestry and agricultural research uses that are compatible with other uses of the Oak Ridge Reservation; and
 - conservation uses, including environmental, ecological, and ecosystem research and the protection of special habitats.
- 5. Long-term (26 to 100 years) land uses should build on the activities that take place during the short-term period and should strive to respond to evolving national missions, market conditions, and regional needs.
- 6. The Department of Energy should begin immediately to develop a top-level, integrated, and comprehensive strategy for the use of Oak Ridge Reservation land and facilities and include implementation plans for facility reuse and future development. Strong consideration should be given to co-development of Reservation property with the private sector through partnerships, financial incentives, and mutually acceptable property use agreements.
- 7. The strategic planning effort should include the short term (0 to 25 years) and the long term (26 to 100 years). It should address the Oak Ridge Reservation as a whole and should be continually updated.

8. The strategic and comprehensive planning effort should be conducted in consultation with the State of Tennessee, the City of Oak Ridge, Anderson and Roane counties, and other nearby counties most affected by activities on the Oak Ridge Reservation, as well as private citizens and affected federal agencies. A primary goal should be to maximize the benefits of the Oak Ridge Reservation to the region's population. The strategic planning effort should identify and accommodate Department of Energy uses for the land, while at the same time seeking to accommodate the needs and preferences of other stakeholders.

1.3.3 Oak Ridge Reservation Recommended Future Land Use Plan

Technical planning information about the Oak Ridge Reservation was used to determine where land uses might best occur on the Reservation. Refer to the map of the Reservation, Fig. 13.

1.4 KEY ACCOMPLISHMENTS, LESSONS LEARNED, AND ISSUES FOR FURTHER CONSIDERATION

1.4.1 Key Accomplishments of the Common Ground Process

- The Oak Ridge Reservation was treated holistically, not as three separate facilities. Current and potential functions of the Oak Ridge Reservation within the region as a whole were also considered.
- The Common Ground Process was not focused solely on short-term considerations; it was recognized that planning for future uses must be a dynamic process, with review and revision in the years ahead.
- The Common Ground Process Team reached out not only to include, but to go beyond, the inner ring of stakeholders. It sought to involve people from various parts of the region while recognizing that those most immediately affected should have the greatest opportunity for input.
- Input was sought both from Oak Ridge Reservation managers and from others not connected with the Reservation. The process did not tilt heavily in one direction or the other.
- The simplistic view that stakeholder perspectives fall into two irreconcilable camps, environmental protection versus economic development, was not adopted. Instead, it was recognized that environmental and economic goals can be compatible, and that a number of other concerns need attention as well (e.g., improving education in the region).
- The complex subject of land use planning was made comprehensible by providing information that was concise and easily understood but backed up by detailed studies.

1.4.3 Issues for Further Consideration

The preliminary recommendations released in June 1995 were supported by a sizable majority of stakeholders. For this reason only minor modifications have been made in those recommendations. Nevertheless, concerns articulated by various stakeholders need to be kept in mind as the future use recommendations are implemented and revisited in the years ahead.

For a full text of comments made during external stakeholder involvement in the preliminary recommendations phase, see the Technical Appendix to *The "Preliminary Recommendations" Phase of the Common Ground Process: A Synthesis of External Stakeholder Views.* Some key concerns voiced by a number of stakeholders are summarized as follows:

- Orient development to already developed areas—in particular, emphasize using previously developed land for future development and preserve over the long term the Oak Ridge Reservation's unique natural resources; use "Conservation Transition Areas" judiciously; keep office and business uses on a limited scale, confined to areas of the Reservation that are already developed.
- Cleanup standards and privatization should be modified to allow for specific future uses as they evolve, despite designation of the whole Oak Ridge Reservation as a "Specialized Mixed Industrial and Conservation Use area."
- Use caution in waste management activities for all future uses at the Oak Ridge Reservation, protect local health and safety, and limit waste importation and waste incineration.
- Permit consumptive recreational activities such as deer hunting; consider using the riverfront for passive recreational activities; locate trails with attention to health and safety and use compatibility (some people argued for extensive trail systems).
- Analyze the Oak Ridge Reservation for land areas that could be determined to the satisfaction of the Department of Energy, the State of Tennessee, and the Environmental Protection Agency to be clean and available for other uses.

Release of Oak Ridge Reservation land was an especially controversial issue among stakeholders. In their comments a number of stakeholders argued against releasing any more Oak Ridge Reservation land. In contrast, some argued that land not needed for federal purposes should be released, especially if certain conditions were met. Those conditions varied from stakeholder to stakeholder, however. Conditions mentioned included, for example,

- only if the greatest weight was given to local economic goals and the City of Oak Ridge,
- only if the greatest weight was not given to local economic goals and the City of Oak Ridge,

- The Common Ground Process Team sought to involve stakeholders at key points in the process leading up to the future use recommendations, and it made transparent how those recommendations were developed.
- Within externally imposed constraints, Common Ground Process meetings were held and feedback was provided in a timely fashion, according to schedule.
- Participant feedback was obtained from a series of evaluations conducted by an independent evaluation team. This information enabled the Process Team to make changes as needed during the process.

1.4.2 Lessons Learned from the Common Ground Process

- Multiple, proactive forms of stakeholder involvement are the most successful in engaging a large number of people with different perspectives in the Common Ground Process. "If you build it, they will come" does not work well for stakeholder involvement; it is important to reach out.
- A Participant's Kit about the Oak Ridge Reservation was to be available at the beginning of the first phase of stakeholder involvement, but because of delays, it was not ready until late in that phase. During that time, several people complained about not having enough information. In contrast, the information sessions at the June 1995 forums were generally seen as important contributions.
- Recommendations about future uses cannot be divorced from either cleanup or local jurisdictional issues. A number of people spoke about the need for more information on contamination, and several asserted that the City of Oak Ridge, within which the Oak Ridge Reservation lies, should be the main determinant of future uses of Reservation land. Tension occurred among those with conceptions of the Oak Ridge Reservation as a federal entity, as a regional resource, and as property within a local jurisdiction.
- Spreading the word about the Common Ground Process at the beginning of the first phase without immediately giving people an opportunity to voice their opinions led to some frustration. In retrospect, it would have been better to have been able to provide them with a Participant's Kit and a questionnaire. Federal limitations on the use of survey instruments may bear reexamination.
- A number of people expressed enthusiasm for the Common Ground Process and appreciation at being consulted, but voiced skepticism about whether the process would make a difference—that is, affect the Department of Energy's subsequent decisions. Although it is not possible to "stop the world" during an interactive process—especially an extended one like the Common Ground Process—credibility is diminished if important decisions (such as the Department's tentative decision in June 1995 to lease 1000 acres of Oak Ridge Reservation land to the East Tennessee Economic Council) are made before the process is substantively completed.

- only with public input,
- only with a comprehensive site-wide environmental impact statement, and
- only if lands slated for environmental conservation were not compromised.

Another controversial issue among stakeholders was the extent to which national versus local or regional interests should drive future use decisions for the Oak Ridge Reservation. Some stakeholders argued that the Reservation should be treated as a national resource and its integrity maintained, rather than have local or regional interests as the primary drivers of how it is used. Several other stakeholders commented that the Department of Energy's prospective missions should **not** be the main determinant of how Reservation land is used in the future, especially since the Department of Energy's future is uncertain and its missions may be downsized. There was disagreement about the extent to which local, as opposed to regional, interests should be the dominant determinant.

1.4.4 Summary

Stakeholder involvement in future use recommendations for the Oak Ridge Reservation should continue during the coming years as the strategic and comprehensive planning process of developing and refining recommendations is revisited. The newly formed Site Specific Advisory Board and the Community Reuse Organization should play a central role in this regard, working with the Department of Energy, the City of Oak Ridge, and Roane and Anderson counties. These organizations are encouraged to consider in their deliberations the needs and recommendations of the Oak Ridge Reservation's broad stakeholder population.

GLOSSARY

Active recreational uses	examples are baseball and soccer fields, basketball and tennis courts
BSR	Biodiversity Significance Rank; ranks are from a high of 1, for outstanding significance, to a low of 5, for general biodiversity interest
Conservation uses	areas of the ORR that would be essentially left undisturbed so that plants and animals in the area would not be affected by business or industrial activities
Environmental risk management	planned actions that include consideration of how cleanup or use of some materials or technologies might affect human health, the air, soil, or water
Institutional uses	examples include educational programs and facilities where people can learn more about the environment, energy research, cleanup efforts, etc.
K-25 Site	formerly a gaseous diffusion plant, now used as the Center for Environmental Technology and Center for Waste Management and offices for the Energy Systems Environmental Restoration and Waste Management program
Landscape complex	an area encompassing several BSR sites
Long term	defined in this report as 26 to 100 years
Oak Ridge National Laboratory	Tennessee's largest energy and research institution, focusing on basic and applied research and development to advance energy resources, environmental quality, and scientific knowledge
Outgrant	transfer of property use by an authorized process, such as by permit, license, or lease
Passive recreational uses	outdoor activities that don't require much, if any, change in the landscape, such as hiking, mountain biking, and bird-watching
Region	defined for purposes of the Common Ground Process as the 18 counties including and surrounding Anderson and Roane that are within a 40-mile radius of the Oak Ridge Reservation
Short term	defined in this study as now to 25 years
Specialized industrial use	a land use designation that blends future industrial development with conservation activities that are complementary and compatible with current and projected federal uses of the Oak Ridge Reservation
Specialized forestry and agricultural research	research on the Oak Ridge Reservation that would study ways of using trees and forest products and farming and agricultural practices for the future

Stakeholder	for the Common Ground Process, defined to include (1) people working within DOE Oak Ridge Operations or Energy Systems at the Oak Ridge Reservation, (2) people living and working in the surrounding region, and (3) people with regulatory and oversight responsibilities concerning the Reservation; the first group is referred to as "internal stakeholders" and the second and third groups are "external stakeholders"
Strategic plans	plans that include consideration of critical decisions that must be made in an organization to ensure success of all parts of the organization
Technical suitability	considerations that professionals give to decide whether the Oak Ridge Reservation can support or maintain certain activities, given the resources and makeup of the land
Y-12 Plant	facility for manufacture of nuclear weapon components, dismantlement of nuclear weapon components, and storage of special nuclear materials

2. THE PADUCAH GASEOUS DIFFUSION PLANT

2.1 INTRODUCTION

In December 1993, Thomas P. Grumbly, Assistant Secretary for Environmental Restoration and Waste Management, and Donald W. Pearman, Acting Associate Deputy Secretary for Facilities and Management, both within the U.S. Department of Energy (DOE), directed site managers to identify stakeholder-preferred alternatives for use of land and buildings at each DOE site.

With regard to such determinations, DOE is committed to involving public stakeholders in decisions affecting DOE sites across the country as long-term missions change at these facilities resulting from the end of the Cold War era. Because of these changing missions and the emphasis on environmental restoration (ER) activities, the future uses of certain existing land and buildings are likely to differ from current uses. Many DOE sites are undergoing closure, and discussions are being held with surrounding communities on options for continued economic development and pursuit of alternative missions that reflect the desires of the public.

The Paducah Gaseous Diffusion Plant (PGDP) can perform only a limited study of future uses at this time since the uranium enrichment production facilities remain operational under a 1993 lease agreement between DOE and the U.S. Enrichment Corporation (USEC), a government corporation formed as a result of the Energy Policy Act of 1992.¹ In correspondence dated June 2, 1995, the Assistant Secretary agreed that due to the lease arrangement with USEC, the Future Land Use Study for PGDP and Portsmouth could be downscoped from a comprehensive evaluation to a limited use study.²

Accordingly, DOE has begun to consult with interested and affected parties in identifying a range of future use options for PGDP for input to DOE Headquarters by the end of the calendar year 1995. These initial discussions will be supplemented with regular dialogues with representatives from various segments of the communities, as well as other interested stakeholders.

Major activities that will be affected by future use decisions include:

- establishing acceptable risk and required remediation levels (i.e., addressing "How Clean is Clean?" by deciding "Clean for What Use?";
- planning and siting new facilities necessary for DOE missions, including waste treatment, storage, and disposal facilities;
- preserving land and buildings for current and future DOE missions and other national research needs; and
- identifying opportunities for transfer or lease of surplus land and buildings to other federal, tribal, state, local government or private sector use in developing a stable alternative private sector employment base for the regional work force and a stable nonfederal tax base for the local community.

There is a real possibility that post-operational future land use at the Paducah facility could be limited to a severely reduced, long-term federal presence intent on limiting access and enforcing institutional controls.

2.2 SITE DESCRIPTION

PGDP is an active uranium enrichment facility located in McCracken County in western Kentucky. PGDP is the largest employer in the region, currently employing more than two thousand people including all agencies and contractors at the site. The plant has had a significant impact on the economic development of the region. Resources are infused into the region through a large employment base, corresponding sales by local retailers, and contributions made by employees to local charities. The plant's continued operation is predominantly supported by the surrounding community.

PGDP is located about three miles south of the Ohio River, near the Kentucky-Illinois border, and about 15 miles west of the city of Paducah which has a population of approximately 37,000 (Fig. 14). The population of McCracken County, including Paducah, is about 63,000. The region surrounding McCracken County is comprised of 13 counties in Kentucky and Illinois with a combined population of approximately 230,000. The area in close vicinity of PGDP is predominantly rural and is bordered by the West Kentucky Wildlife Management Area (WKWMA), which is used by a considerable number of hunters and fishermen each year. The remaining area is lightly populated, with sparsely-located residences and farms. The small communities of Grahamville and Heath are located approximately two miles east of the plant.

The region is characterized as an area of fairly level topography with gently rolling hills and knobs. The area contains numerous streams, rivers, and lakes with elevations typically ranging from more than 700 to less than 300 feet above sea level. PGDP is located within the drainage areas of Big Bayou and Little Bayou Creeks, which meet about three miles north of the site and discharge into the Ohio River. Big Bayou Creek, which flows along the western boundary of the plant, is a perennial stream whose drainage extends from approximately two and one-half miles south of the site to the Ohio River. Little Bayou Creek, which originates in the WKWMA, flows north toward the Ohio River along a course that includes parts of the eastern boundary of the plant. During dry weather, much of the flow in both creeks is due to controlled effluent releases from PGDP. These effluents constitute about 85 percent of the normal flow in Big Bayou Creek and 100 percent in Little Bayou Creek.

2.3 CURRENT LAND USE

PGDP is an active uranium enrichment facility that began production in 1952. The enrichment process was originally operated by DOE and its previous agencies, the Atomic Energy Commission and the Energy Research and Development Administration. However, on October 24, 1992, the President signed the Energy Policy Act of 1992, Pub. L. 102-486 (the Act) which amended the Atomic Energy Act of 1954, § 2011-2296 (1992, as amended). The Act established a new government corporation, USEC, whose charter is to provide



Fig. 14. PGDP site map.

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uranium enrichment services on a profitable and competitive basis.³ Pursuant to the Act, DOE and USEC entered into a lease agreement that leases the production facilities to USEC for uranium enrichment, while DOE retains responsibility for environmental restoration and waste management activities associated with conditions existing before July 1, 1993. The Act also reserved to DOE responsibility for decontamination and decommissioning of the leased portion of the plant after cessation of the uranium enrichment process.

Extensive facilities are required for USEC to operate and maintain the enrichment process. These include uranium processing facilities, a steam plant, electrical switchyards, cooling towers, cleaning and decontamination facilities, water and wastewater treatment plants, maintenance and laboratory facilities, and other various support operations. Several inactive facilities located on the plant site are being transitioned into DOE's D&D Program.

PGDP is located on a 3423-acre parcel of land owned by DOE. The primary operations associated with the enrichment process are located on the 748 acres within the plant security fence. Of the remaining DOE acreage outside the fence, 2080 acres are leased to the Kentucky Department of Fish and Wildlife as part of the West Kentucky Wildlife Management Area,⁴ and the rest is buffer zone.

North of the PGDP Site, the Tennessee Valley Authority operates a power plant that provides electricity for commercial use. The remaining area is lightly populated, with sparsely-located residences and farms. The current land use at the site which is depicted in Fig. 15 has been designated as mixed industrial/ recreational use.

2.4 INTERNAL STAKEHOLDER PREFERRED OPTIONS

A facilitated workshop was conducted April 28, 1995, in Oak Ridge, Tennessee, with approximately 22 internal stakeholders. Participants included representatives of DOE and contractors from the Portsmouth, Paducah, and Oak Ridge facilities. The workshop was held to identify general types of alternative missions deemed by the group as "most likely" for further development or consideration should the Department receive notification the USEC intends to terminate its lease agreement at one or both of the gaseous diffusion plants in Portsmouth and Paducah, Kentucky. The workshop was part of the GDP Turnover Contingency Planning Alternative Missions Plan submitted to DOE in October 1995.⁵ DOE initiated the contingency planning project to achieve a state of readiness should USEC provide notification of lease termination for either facility. Once notification is received, DOE would at that time involve external stakeholders and the affected communities in identifying and selecting alternative uses for the site facilities.

Workshop participants considered alternative missions that would take advantage of or accommodate site characteristics such as power supply and infrastructure, ample land space, transportation means and routes, and the plant's isolated location.

In addition, the workshop participants selected three evaluation criteria to expedite initial evaluation of the feasibility of 48 ideas compiled as possible alternative missions. These criteria were:



Fig. 15. Industrial/recreational land use.

- feasibility for DOE,
- regulatory compliance, and
- political considerations.

A smaller core team of eight key internal stakeholders consolidated the 48 possible alternative missions from the results of the workshop brainstorming session into six categories of likely alternative missions:

- Training and Education Center;
- Low-level Radioactive Material Treatment/Storage/Disposal Facility;
- Heavy Industry Complex;
- Industrial Park;
- Resource Recovery Center; and
- Facility to meet federal needs, including DOE's.

2.5 EXTERNAL STAKEHOLDER PREFERRED OPTIONS

DOE began preliminary discussions with stakeholders on Future Land Use at Paducah on June 30, 1994. A public workshop was conducted, and one of the break-out tables featured Future Land Use as a topic. Subsequently, Future Land Use was presented and discussed at public workshops on, December 1, 1994, January 26, 1995, and September 26, 1995. In addition, the subject has been discussed at various meetings with the PGDP Neighborhood Council, the PGDP Environmental Advisory Committee, with city and county officials, and economic development interests.

The Neighborhood Council, administered by Lockheed Martin Utility Services, Inc. (LMUS), is an eight-member body comprised of individuals who live near the plant. The Environmental Advisory Committee, which has five active members comprised of scientists, businessmen and plant neighbors, is administered by LMES and has been an active committee since 1986. In general, these organizations, including city and county officials, support a continued industrial/commercial presence at the site that would preserve existing jobs and continue to contribute to the regional economy.

The Environmental Advisory Committee suggested some specific uses of the property that involved turning the facility into a national research center to test new technologies for groundwater remediation. The committee has suggested that resources from regional and state universities and colleges be used to accomplish this goal. The committee has suggested pulling together academic, economic, environmental, and scientific interests to discuss such a proposal. Because of the nature of the contamination at PGDP and its extent off-site, the committee considers the plant an ideal site for such research.

Another major stakeholder in the region besides DOE and USEC is the Kentucky Department of Fish and Wildlife (KDFW). Most DOE property outside the 748-acre fenced security area is leased to KDFW as part of a wildlife management area adjacent to property owned by KDFW. KDFW has indicated that it supports the current land use arrangement at the site; however, if DOE ever decides to sell the property that KDFW currently leases, they would like the first opportunity to acquire the property before it is offered to another entity.

Of the residents living within a three-mile radius of the plant that choose to express views on this subject, the majority had a preference to retain the jobs and economic benefits associated with the current land use practices. However, they have expressed a desire to ensure that site contamination is adequately contained within the DOE property, thus preventing any off-site migration that may result in devaluation of their properties.

Certain environmental activist groups have suggested that the area inside the plant fence be remediated enough to prevent further migration of contaminants off-site, but stopped short of recommending cleanup to green field standards, because of the exorbitant costs involved and the lack of technologies to accomplish such a standard. However, these groups suggest an "iron fence" approach to the 748-acre fenced area, restricting access and continuing surveillance and maintenance. These groups have suggested that DOE offer to buy out any property owners in the vicinity of the plant whose property is contaminated or could potentially be contaminated.

PGDP is in the process of establishing a Site-Specific Advisory Board (SSAB) to review issues and provide input into the decision-making process on DOE environmental matters at PGDP. Once the SSAB is established, land use will be one of the first items discussed with the Board.

Also, DOE has encouraged the establishment of Community Reuse Organizations (CROs) to get a community to speak "with one voice" regarding the future uses of DOE sites. The CRO, through strategic planning, determines actions that a community will take to offset local consequences of DOE downsizing at its facilities. The CRO would work cooperatively with the public and private sectors in developing a comprehensive plan for the reuse of the Paducah Site. CRO's include broad-based representation of public and private sector organizations and individuals capable of forming a community consensus and marshaling the local support and prospective clients necessary to successfully bring alternative missions to the site. While a CRO does not exist at PGDP, the GDP Turnover Contingency Plan Alternative Missions document recommends that one be established at PGDP.

2.6 SITE CONTAMINATION

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During past operations of PGDP, hazardous substances generated as byproducts from the enrichment process were released into the environment. These releases are typically associated with burial grounds, spill sites, landfarms, surface impoundments, and USTs. Subsequent investigations at PGDP revealed that these environmental releases have migrated to the soils, groundwater, and surface waters, thus resulting in off-site contamination. These areas now require investigation and remediation under RCRA and CERCLA. The primary contaminants of concern at PGDP include radionuclides, organic solvents, and PCBs. The extent to which DOE can remediate these contaminants will have a large influence on future use of DOE property at PGDP. Some burial grounds at the site contain radionuclides that have the potential to be unstable if disturbed, due to the pyrophoric nature of the material. In such cases, leaving the material in place with a protective cap and monitoring system may be the only economically-feasible and safe remedial option available. With regard to such situations and other on-site landfills, it is very unlikely that the future land use of these areas will change, given the nature of the material buried, the volume of wastes, and the fact that EPA's presumptive remedy for landfills is containment rather than removal.⁶ The landfill remediation strategy accompanies a presumptive future land use. Residential development of land-based disposal units is prevented through a post-closure period of 30 years and into perpetuity by deed restrictions.

Other types of contamination at PGDP that will have a direct affect on future use decisions involve certain organic solvents (i.e., TCE). In some cases, TCE, which is a DNAPL (dense nonaqueous-phase liquid), has migrated downward to the groundwater and formed high concentration pools, thereby serving as long-term sources of groundwater contamination. Existing EPA guidance acknowledges that no remedial technologies currently exist that can clean up DNAPLs to drinking water standards, making it technically impracticable to remediate such areas for unrestricted use.⁷

In cases where contamination will remain in place due to the complex nature of the wastes or due to remedial limitations, the remedy selection process must consider what level of restrictions is appropriate for future use of the site. For example, contaminants left in place and covered with a protective cap may be deemed adequate for industrial use but not for residential use. In such cases, institutional controls (e.g., deed restrictions) should be used to ensure that industrial use of the land is restricted to prevent any potential risks from residential exposure. See the Paducah Gaseous Diffusion Plant Site Management Plan for further discussion.

2.7 FUTURE LAND USE RECOMMENDATIONS

The primary objective of this limited study was to provide a recommendation for future use of the DOE property currently occupied by the operations associated with PGDP. As part of the evaluation process, numerous options were originally identified and subsequently narrowed down to four primary land use scenarios depicted in Fig. 16. In making a final recommendation, the following factors were considered:

- 1. stakeholder input,
- 2. existing laws and lease commitments, and
- 3. the nature of the environmental contamination present at the site.

Based on a limited sampling of stakeholder preferences, the majority favored maintaining the property for its current industrial/recreational use (Option 1). No stakeholders recommended

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converting the property to residential use or the other remaining options as depicted by Fig. 16.

Other factors that must be considered include future use restrictions imposed by existing laws and current lease agreements. On October 24, 1992, the President signed the Energy Policy Act of 1992, Pub. L. 102-486 (the Act) which amended the Atomic Energy Act of 1954, § 2011-2296 (1992, as amended). The Act established a new government corporation, USEC, whose charter is to provide uranium enrichment services on a profitable and competitive basis. The original term of the lease is for a period of six years from the transition date of July 1, 1993, with exclusive options for USEC to lease such facilities and related properties for additional periods.³

Lease agreements are also in place with KDFW to use certain DOE properties for the West Kentucky Wildlife Management Area (WKWMA).⁴ The subject property is highlighted by red shading in Option 1. KDFW has indicated a desire to obtain the DOE property it leases should DOE ever decide to sell the property. However, the current lease agreement with USEC gives the Corporation the first right to obtain any real property associated with the GDP which is not part of the existing lease agreement.

Site contamination is another important factor that must be considered in such a determination. Based on the complex nature of wastes (e.g., radionuclides, DNAPLs) present at PGDP, the future use of the site may never be appropriate for certain uses such as residential. In such cases, institutional controls (e.g., deed restrictions) may be used to place restrictions on the property to prevent certain future uses.

After consideration of all the above factors, the DOE Site Office at Paducah considers the current land use of mixed industrial/recreational (Option 1) as the most likely future use scenario for the site. A preliminary list of alternative missions that may be viable options for future consideration are detailed in the GDP Turnover Contingency Alternative Missions Plan. The subject document also suggests various strategies that could be implemented to evaluate the alternative missions in detail and pursue others that may be applicable to site reuse. Should additional information become available suggesting that an alternative land use may be more appropriate, the land use assumptions generated from this limited study will be revised accordingly.



Fig. 16. Land use options.

REFERENCES

1. Lease Agreement Between the United States Department of Energy and the United States Enrichment Corporation, July 1, 1993.

2. Memorandum, Thomas P. Grumbly, Assistant Secretary for Environmental Management, U.S. Department of Energy, <u>Sites Which Must Identify Future Use Options by December</u> 1995, June 2, 1995.

3. Energy Policy Act of 1992.

4. License for Non-Federal Use of Property, An Agreement Between the Department of Energy and the Kentucky Department of Fish and Wildlife Resources.

5.<u>GDP Turnover Contingency Planning Alternative Missions Plan</u>, Lockheed Martin Energy Systems, Inc., EFS-95-008, October 1995.

6.EPA Memorandum on Land Use in the Remedy Selection Process, May 25, 1995, OSWER Directive No. 9355.7-04.

7.EPA Memorandum from Elliott P. Laws, July 31, 1995, discussing the application of Technical Impracticability Wavier to DNAPL Sites.

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3. THE PORTSMOUTH GASEOUS DIFFUSION PLANT

3.1 INTRODUCTION AND PURPOSE

The U.S. Department of Energy (DOE) is committed to involving public stakeholders in decisions affecting DOE sites across the country as long-term missions change at these facilities resulting from the end of the Cold War era. Because of these changing missions and the emphasis on environmental restoration activities, the future uses of certain existing land and buildings are likely to differ from current uses. Many of the DOE sites are undergoing cleanup actions and shutdown of facilities and discussions are being held with surrounding communities on options for continued economic development and pursuit of alternative missions that reflect the desires of the public.

The uranium enrichment production facility at the Portsmouth Gaseous Diffusion Plant remains operational under a 1993 lease agreement¹ signed by DOE and the U.S. Enrichment Corporation, a government corporation formed as a result of the Energy Policy Act of 1992. DOE retained responsibility for environmental restoration and waste management activities at the site. The current missions of the plant will continue as long as the plant remains operational. Therefore, due to this lease agreement, future use options are somewhat "limited" at the Portsmouth plant. However, DOE has recognized the necessity to initiate strategic future use planning should the leased facilities be transferred back to DOE or other areas of the government reservation be identified as available for alternative missions.

Toward this end, DOE has begun to consult with interested and affected parties in identifying a range of future use options for the Portsmouth Gaseous Diffusion Plant for input to DOE Headquarters by the end of the calendar year 1995.² These initial discussions will be supplemented with regular dialogue with representatives from various segments of the communities, as well as the recently established Community Reuse Organization (CRO) for the Portsmouth facility. CROs are being formed at several DOE sites across the country to work in coordination with DOE on decisions regarding downsizing of facilities that may adversely impact the economies of nearby communities. The CRO, comprised of broad-based representation of public and private sector organizations and individuals, will work cooperatively with DOE in developing a comprehensive plan for the reuse of the DOE site. Because of the decline of nongovernmental industries over the years and the limited number of new industries in the Portsmouth area, maintaining existing operations and attracting any new missions to the DOE reservation, either government or private, are important to local stakeholders.

The term "stakeholders" means those parties who are interested in DOE decisions. These parties could include interested and affected individuals, external organizations, state and local governments, Indian tribes, other federal agencies, as well as internal DOE and contractor representatives.

Major activities that will be affected by future use decisions include:

- establishing acceptable risk and remediation levels (i.e., addressing "How Clean is Clean?" by deciding "Clean for What Use?";
- planning and siting new facilities necessary for DOE missions, including waste treatment, storage and disposal facilities;
- preserving land and buildings for current and future DOE missions and other national research needs; and
- identifying opportunities for transfer or lease of surplus land and buildings to other federal, tribal, state, local government or private sector use in developing a stable alternate private sector employment base for the regional work force and a stable non-federal tax base for the local community.

DOE has begun to implement a planning process to study potential uses of the facility. Workshops have been conducted with internal and external stakeholders to obtain their initial preferences for future uses of the facility. Information obtained from future use planning sessions with stakeholders will be updated on a periodic basis and incorporated with land uses identified by the Community Reuse Organization and other technically feasible suggestions provided by the public. Stakeholder involvement in the planning process will enhance DOE's ability to make effective decisions regarding short-term and long-term missions.

3.2 SITE DESCRIPTION

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3.2.1 Regional and Site Information

The Portsmouth Gaseous Diffusion Plant is located in rural Pike County in south-central Ohio. (See Fig. 17). The three surrounding counties (Ross, Jackson, and Scioto) are also predominantly rural, with the largest city in each county containing less than 35 percent of that county's population. Land uses in the four-county region are consistent with the rural nature of the area.

The site is approximately 75 miles south of Columbus, 22 miles north of Portsmouth and two miles east of the Scioto River. Based on the most recent 1990 census figures, the nearest population area is the village of Piketon (population 1,900), which is located about four miles north of the plant. The population of Pike County is estimated at 25,459. Total population within a 10-mile and 50-mile radius of the plant is approximately 30,000 and 600,000 respectively.

The plant site is located in an ancient river valley, approximately 120 ft above the Scioto River Valley and is surrounded by relatively low, gently rolling hills. In the four-county region surrounding the DOE facility, about 54 percent of the land is forest and 41 percent is used for agriculture. Only about 1.5 percent of the land is residential with the remaining 3.5 percent being either commercial or industrial. The Portsmouth Gaseous Diffusion Plant is the largest employer in the region, currently employing approximately 3,000 people including all agencies and contractors at the site. The plant has had a significant impact on the economic development of the region. Resources are infused into the region through a large employment base, corresponding sales by local retailers, and contributions made by employees to local charities. The plant's continued operation is predominantly supported by the surrounding community.

The Portsmouth facility was constructed between 1952 and 1956 on about 4,000 acres of land formerly used for agricultural purposes. The plant was built to enrich uranium from a natural state of less than 1 percent Uranium 235 to increased concentrations varying from 2-5 percent enrichment for use as fuel for nuclear power generation. Until 1991, the plant also had the capability of achieving a higher percentage of enrichment for use in U.S. Navy nuclear submarine reactors. Highly enriched uranium operations have since been shut down and current operations are limited to enriching uranium for commercial nuclear power customers.

Additional construction occurred between 1979 and 1985 for a new gas centrifuge uranium enrichment plant (GCEP) on-site, intended to provide eight process buildings and a total of more than 35 permanent buildings upon completion. However, construction of this facility was halted in the summer of 1985 because of a decrease in demand for enriched uranium and a decision that laser technology held greater promise for more efficiently and economically supplying future demands for enriched uranium. The GCEP facilities are now being utilized either by the U.S. Enrichment Corporation, DOE missions, or under lease agreements with the Ohio Army National Guard and Defense Logistics Agency.

3.2.2 Site Conditions and Contamination Areas

The cleaning and changeout of process equipment at the Portsmouth plant generated spent solvents and other contaminants that were disposed of in on-site landfills and surface impoundments. The contaminants include chlorinated solvents, such as trichloroethylene, chlorinated solvents mixed with radionuclides in low concentrations, metals, and polychlorinated biphenyls (PCBs). Additional sources of contamination are uranium deposits in process equipment and radionuclides in buildings, cooling towers, burial grounds, and wastewater ponds. Trichloroethylene is the main contaminant of concern in the groundwater systems at the Portsmouth site. To date, no groundwater contamination has migrated off site.

To facilitate remediation and the restoration process, the site was divided into four quadrants based in large part on groundwater flow. Quadrants with the greater potential risk from groundwater contamination were designated as higher priority and were investigated first.

All quadrants have been characterized with sampling from more than 550 groundwater monitoring wells and over 400 soil borings. A second, confirmatory phase of the investigation was completed at the plant in 1994. Other investigations have also been completed in conjunction with the corrective action process conducted under the Resource Conservation and Recovery Act. An extensive air quality investigation was conducted where a total of 15 ambient air samplers and 7 radionuclide samplers were installed at locations both on- and off-site to collect data on air quality. A baseline ecological risk assessment was conducted to study the creeks, aquatic life, surface waters and sediment toxicity, plants, animals, endangered species, and wetlands at and near the plant. A study to determine background levels of naturally occurring radionuclides and metals was conducted in 1994 to better assess environmental conditions surrounding the plant. Samples were taken from 20 different locations, pre-approved by the regulatory agencies, to provide information on radionuclides and metals to help determine background levels for use in establishing cleanup levels at the plant.

Sampling performed as part of the environmental restoration efforts has determined that soil and groundwater underlying some areas of the plant have been contaminated with various solvents, such as trichloroethylene, that were commonly used for degreasing equipment. To a lesser degree, uranium, technetium and metals have also been detected in soils and groundwater. There are two aquifers, one shallow and one deep, beneath the plant that store and supply groundwater. To date, investigative studies indicate that groundwater contamination is limited to the shallow aquifer, which is not of sufficient volume to be used for drinking water. Five areas of groundwater contamination, or plumes, have been identified at the plant. Off-site sampling has shown residual minor levels of radiological contamination in some stream sediments, but not at concentrations that pose a health risk to the public. Risk assessors have determined that remediation of these low levels of contaminants would cause more impact to the ecosystems in the streams than leaving the soils undisturbed. No contamination has been detected in any off-site residential well sampling by the plant. The air study showed no unacceptable risks to humans or the environment.

3.3. CURRENT LAND USE

Today, the Portsmouth Gaseous Diffusion Plant reservation consists of 3,714 acres. The remainder of the original 4,000 acres was conveyed back to the original owners in 1964 and 1965. A central developed 1,200-acre area is surrounded by a perimeter road. The central area surrounded by the perimeter fence is referred to as the core area for the plant. The majority of the core area is leased by DOE to the U.S. Enrichment Corporation (USEC) through 1999 with USEC retaining the first right of renewal or refusal. Under the terms of the lease, USEC must provide a two-year notification if it chooses to terminate the lease with DOE. The reservation land outside the perimeter road is used for a variety of purposes, including a water treatment plant, lagoons for the process wastewater treatment plant, sanitary and inert landfills, and open and forested buffer areas.

There are 320 facilities at the site. Many of the buildings are 40 years old but the newer GCEP buildings are less than 15 years old. Primary entrances to the plant are located north and west of the core site. The northwest quadrant is devoted primarily to waste storage and disposal. Most of the improvements are located in the 1,200-acre fenced core area. This area is largely devoid of trees and grass, having been paved or left bare. Within this area are the three process buildings, each about 882 ft by 1,781 ft and 70 ft tall. Other structures of note at the facility are the training building, laboratory, emergency operations center and fire station, hospital, maintenance and stores building, and the DOE's waste storage facility.



Fig. 17. Four counties surrounding PORTS.

Most major production, maintenance, administrative and technical support, and warehousing facilities are operated and maintained by USEC under the lease agreement for their gaseous diffusion operations. These facilities are highlighted in Fig. 18. DOE continues to have a significant presence at the Portsmouth facility in conducting extensive environmental restoration activities and initial decontamination and decommissioning (D&D) of surplus facilities. DOE is also responsible for treating and disposing wastes resulting from process operations prior to July 1, 1993 and for those wastes generated as a result of cleanup actions.

DOE continues to administer the power contract with the Ohio Valley Electric Corporation that supplies electric service to the Portsmouth facility. USEC pays DOE for power purchased, who in turn pays the power supplier under an existing contract. One of the restrictions of the current power service contract is that the electrical power be purchased for government use only.

In addition to the agreement with USEC, DOE has also signed agreements to lease portions of the facility to both the Ohio Army National Guard and Defense Logistics Agency. (See Fig. 19). The Ohio Army National Guard occupies building X-751, a mobile equipment garage built as part of the GCEP facilities, and also leases 40 percent of building X-3346 (former GCEP feed and withdrawal building), an outside area south of GCEP process buildings X-3001 and X-3002 and an area south of the XT-801 south office building. Approximately 100 people are employed at the site by the Ohio National Guard activities. The Defense Logistics Agency (DLA) now occupies a portion of the X-3002 GCEP process building for storage of equipment. No permanent employees are involved in DLA activities at the site. No expansion of the DLA operation involving land or facilities uses are expected.

3.4. FUTURE LAND USE OPTIONS

Plans for the future development of the Portsmouth facility are based on assumptions about the future and the recognition of uncertainties affecting the future planning at the site. These assumptions involve factors over which plant management may have little or no control.

The level and types of activities on the site and the constraints on those activities generally are not determined locally. They form, however, the externally imposed environment within which site planning must take place.

Four major assumptions will guide the future use planning process:

- 1. USEC will continue production of enriched uranium through its lease with DOE and other current lease agreements with outside agencies will continue;
- 2. World market prices for uranium enrichment services will impact future site missions of USEC and DOE;
- 3. Environmental restoration and waste management activities are driven by regulations. Increasingly stringent environmental safety and health protection standards will influence the site and its facility requirements over both the short and long term; and

4. The Portsmouth plant is a viable candidate for a new mission if DOE and USEC determine it to be feasible.

Gaseous diffusion enrichment by USEC will continue at the Portsmouth plant at least through 1999 based on the current lease arrangement. Cessation of gaseous diffusion enrichment operations will be followed by the D&D of the site and its facilities. Certain DOE retained land and facilities serve as viable candidate sites for implementation of a new mission. The Ohio National Guard and DLA are examples of initiatives or operations unrelated to DOE or USEC that are presently making use of DOE surplus facilities and land.

To evaluate other potential future land uses at the plant, DOE has conducted both internal and external stakeholder informational sessions. Internal stakeholders are defined as those individuals who work for DOE, or are employees of contractors involved in the various programs at the Portsmouth Gaseous Diffusion Plant. External stakeholders include people who live and work in the surrounding region, those with regulatory or oversight responsibilities for the plant, and other interested individuals.

While decisions regarding short-term options at the Portsmouth site may be limited with the current lease agreements, these discussions are generating a list of preferred land use alternatives through broad stakeholder participation for DOE consideration. Provided below is a summary of those initial future use planning sessions and lists of stakeholder-preferred options.

3.4.1 Internal Stakeholder Preferred Options

A facilitated workshop was conducted on April 28, 1995 in Oak Ridge, Tennessee with approximately 22 internal stakeholders. Participants included representatives of DOE and contractors from the Portsmouth, Paducah and Oak Ridge DOE facilities. The workshop was held to identify general types of alternative missions deemed by the group as "most likely" for further development or consideration should the Department receive notification that USEC intends to terminate its lease agreement at one or both of the gaseous diffusion plants in Portsmouth and Paducah, Kentucky. The workshop was a part of the GDP Turnover Contingency Planning Alternative Missions Plan³ submitted to DOE in October 1995. DOE initiated the contingency planning project to achieve a state of readiness should USEC provide notification of lease termination for either facility. Once notification is received, DOE would at that time involve external stakeholders and the affected communities in identifying and selecting alternative uses for the site facilities.

During the development process for potential uses, the workshop participants considered alternative missions that would take advantage of or accommodate site characteristics such as power supply and infrastructure, ample land space, transportation means and routes, and the plant's isolated location.

In addition, the workshop participants selected three evaluation criteria to expedite initial evaluation of the feasibility of the 48 ideas compiled as possible alternative missions. These criteria were:

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Fig. 18. PORTS building lease status.



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- feasibility for DOE,
- regulatory compliance, and
- political considerations.

A smaller, core team of eight key internal stakeholders consolidated the 48 possible alternative missions from the results of the workshop brainstorming session into six categories of likely alternative missions:

- Training & Education Center
- Low-level Radioactive Material Treatment/Storage/Disposal Facility
- Heavy Industry Complex
- Industrial Park
- Resource Recovery Center
- Facility to Meet Federal Needs (including DOE's)

3.4.2 External Stakeholder Preferred Options

DOE began preliminary discussions with stakeholders on future use planning during its semiannual public update in November 1994 and provided a break-out discussion table for attendees to meet with program officials. Additional discussions and tours of the facilities have taken place with various interested local and state officials and economic development interests.

On September 7, 1995, the U.S. Department of Energy held a workshop with selected stakeholders to discuss future use planning for the Portsmouth Gaseous Diffusion Plant. A total of 38 stakeholders attended the meeting. These stakeholders represented labor groups, natural resource organizations, environmental groups, state and federal regulators, community development organizations, elected officials, academia, local media, and the Ohio Governor's Office of Appalachia. A summary of the workshop results was mailed to each participant to ensure that stakeholder suggestions were accurately captured and to provide an opportunity for any additions or elaboration by the participants⁴. No additional comments were received.

During the workshop, some assumptions were made regarding future use planning for the site. The uranium enrichment operations will continue for the foreseeable future. Existing land use agreements with USEC, the Ohio National Guard and the Defense Logistics Agency will continue; however, these agreements may change at a later date.

Workshop participants were asked to consider what they believed were the primary needs for the southern Ohio region and then list their ideas of how the Portsmouth facility could be a resource to the area in achieving these needs.

The following is a list of regional needs as compiled from the workshop discussions:

- Maintain high industrial base with large number of jobs
- Large industrial site and distribution center; Pike County needs speculative buildings
- Growth and development is needed in the area; need to promote jobs, economic security, and preserve heritage and culture; people are important
- Need long-term planning process for region
- Need to take into consideration who lives and works here to have a shared vision
- Diversification for local economic base
- Keep quality of environment
- Decisions are based on community values
- Make the community as attractive as possible for what this community wants
- Keep the facility's infrastructure
- Upgrade region's highways
- Need better health care and education
- Need better water and sewer systems
- Need economic development
- Education is an important part of the process; need education for high-skilled jobs and management
- DOE and contractors development diversity

A number of potential uses for the Portsmouth facility were identified during the brainstorming session. These included:

- Science/research park
- Conversion to a chemical treatment facility
- Outsourcing with available workbase <u>now</u>
- Wayne National Forest acquire some land for forest land and other recreational use
- Electric generating station
- Within the perimeter road low impact industrial park; outside perimeter road recreational
- Develop a national laboratory on-site; energy research and development and industrial diseases research
- Commercial waste treatment facility
- Develop an environmental research facility
- Commercial business
- Industrial production park private
- Advance Vapor Laser Isotope Separation (AVLIS) facility
- Hi-tech incubator
- Training facility for specialized training or retraining
- Technology transfer facility
- Portion of the site set aside to study impact of wildlife through several generations
- Organic farm
- Restricted use

The consensus of the workshop participants was to continue utilizing the Portsmouth plant in an industrial land use within the perimeter road and explore mixed land uses for areas outside the perimeter area such as a combination of commercial/industrial and recreational uses. Concerns were expressed by some stakeholders that contamination at the site be contained and remediated to ensure that any on-site workers are adequately protected. The primary emphasis was a preference to retain the jobs and economic benefits associated with the current land use practices.

3.5. COMMUNITY REUSE ORGANIZATION (CRO)

DOE has encouraged the establishment of Community Reuse Organizations (CROs) to get a community to speak "with one voice". A CRO can help a DOE site community with strategic planning. The CRO determines actions a community will take to offset local consequences of DOE downsizing at its facilities. CROs include broad-based representation of public and private sector organizations and individuals capable of forming a community consensus and marshaling the local support and prospective clients necessary to successfully bring alternative missions to the site.

A CRO has been formed at the Portsmouth site as a standing committee of the Ohio Valley Regional Development Commission. A chairman has been selected by the CRO steering group and the DOE's Portsmouth Site Office officially recognized this committee as a CRO⁵ on August 1, 1995. A kick-off meeting for the establishment of the CRO was held on October 11, 1995. According to the CRO organizers, a public participation plan and an application for an initial 18-month planning grant has been submitted for approval by DOE's Office of Worker and Community Transition.

The CRO's goal is to provide for an orderly transition of DOE's land, equipment, facilities and personnel to other alternative and useful purposes for the well being of the employees and communities. The CRO has been established to work cooperatively with the public and private sectors to develop a comprehensive plan for identifying, negotiating for, and developing available DOE land and facilities, including the use of on-site infrastructure, for economic development alternatives. The CRO intends to initiate a strategic planning process for the communities in the surrounding counties of Jackson, Ross, Pike and Scioto and work in coordination with DOE's future use studies for the DOE reservation. Regular meetings are being scheduled by the CRO to encourage participation from interested stakeholders and community leaders.

As part of the CRO's scope of work, the committee plans to explore the feasibility of establishing three potential uses for the Portsmouth facility:

- A research and/or science park at the DOE facility or in the Pike County area;
- A high-tech incubator supporting the creation of new businesses; and

• A training facility for retraining displaced workers affected by downsizing activities at the Portsmouth Gaseous Diffusion Plant. A specialized training area in entrepreneurship and small business development would be explored.

3.6. INITIAL FUTURE LAND USE RECOMMENDATIONS

The primary objective of this limited future use study was to identify initial future land use recommendations for the Portsmouth Gaseous Diffusion Plant that are reflective of the community's desires.

The Portsmouth facility will be conducting future use planning sessions to look at long-term planning with community input and to help in making remediation decisions based on projected land use. DOE must look more closely at how to use money wisely and most efficiently while considering any potential future land uses of the site.

To date, stakeholder preferred options are for continued use of the Portsmouth facility in an industrial and/or commercial land use setting. In addition, a mixed land use scenario with industrial/commercial uses within the perimeter road and commercial/recreational use outside the perimeter road should be explored based on stakeholder input. No stakeholders have suggested future residential land use development for the Portsmouth facility. These initial recommendations are generally depicted in Fig. 20.

A major consideration in any future use planning for the Portsmouth Gaseous Diffusion Plant is the current future use restrictions imposed by existing environmental laws and the current lease agreements between DOE and the U.S. Enrichment Corporation, the Ohio Army National Guard and the Defense Logistics Agency. Based on the language in the lease agreement between DOE and U.S. Enrichment Corporation, the Corporation has the first right to obtain any real property associated with the gaseous diffusion plant which is not part of the existing lease agreement.

Site contamination is another important factor that must be considered in future use determinations. Based on the complex nature of the wastes (hazardous, radiological and mixed) at the Portsmouth Gaseous Diffusion Plant, the future of some areas of the site may never be appropriate for certain uses such as residential. In such cases, institutional controls, (e.g., deed restrictions) may be used to place restrictions on the property to prevent certain future uses. Decisions regarding post-operational future land use at the Portsmouth facility will require consideration of any environmental contamination, budget requirements, and other factors such that the "most likely" options being suggested at this point may, in actuality, become unrealistic.

DOE will be engaging in a continuing dialogue with the CRO and interested stakeholders to update the current preferred stakeholder future use options as time passes and further information is available. Through this process, DOE will work in partnership with the affected communities to determine appropriate land uses and alternative missions for the economic development of the region and to develop cleanup levels, protective of human health and the environment, that are consistent with projected land uses.





REFERENCES

- 1. Lease Agreement Between the United States Department of Energy and the United States Enrichment Corporation, July 1, 1993.
- 2. Memorandum, Thomas P. Grumbly, Assistant Secretary for Environmental Management, U.S. Department of Energy, Sites Which Must Identify Future Use Options by December 1995, June 2, 1995.
- 3. GDP Turnover Contingency Planning Alternative Missions Plan, Lockheed Martin Energy Systems, Inc., EFS-95-008, October 1995.
- 4. Letter from Eugene W. Gillespie, Site Manager, U.S. Department of Energy, Portsmouth Site Office, to Stakeholders, EF-21-7128, Information from the September 7, 1995 BEMR/Future Use Planning Stakeholder Workshop, September 29, 1995.
- 5. Letter from Eugene W. Gillespie, Site Manager, U.S. Department of Energy, Portsmouth Site Office, to Randy Runyon, Chairperson, Community Reuse Organization, EF-21-6990, August 1, 1995.