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U.S. DEPARTMENT OF ENERGY

URANIUM MILL TAILINGS REMEDIAL ACTION (UMTRA) PROJECT

(MSA-143)

PROJECT PLAN

PREPARED BY

UMTRA PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

REVISED SEPTEMBER 1989

REVISION NO. 3

UMTRA PROJECT PLAN CHANGE LOG
AS OF SEPTEMBER 6, 1989

Previous Approved Plan (March 1988) Page/Line No.	Change	Explanation
1/39	Extended authorized end date approved as of November 1988	Congressional enactment.
1/40	DOE GJPO designated to perform long-term surveillance and maintenance.	DOE memo of November 1988.
1/43	Title to sites changed from Federal government to DOE.	DOE has been designated as the agency to perform long-term surveillance and maintenance.
2/27	DOE GJPO designated to perform long-term surveillance and maintenance.	DOE memo of November 1988.
4/4	Final date for revised EPA groundwater standards changed from spring to fall 1989.	OMB approval of standards expected during fall 1989.
5/13	Extended authorized end date approved as of November 1988.	Congressional enactment.
5/27	Total estimated cost (TEC) increased from $992.5M to $1,139.1M.	Updated estimate during 1989 for preparation of the FY 1991 budget.
5/34	Number of estimated vicinity properties increased from approximately 4630 to approximately 4925.	Estimated number of inclusions based on ORNL survey recommendations and inclusion rate to date.
5/38	Monument Valley added to sites for relocation.	Relocation to Mexican Hat was determined as preferred alternative for technical consideration.
6/12	States cost share increased from $67.5M to $77.1M.	State 10% share of new project total estimated cost.

7/31	Number of estimated vicinity properties increased from approximately 4630 to approximately 4925.	Estimated number of inclusions based on ORNL survey recommendations and inclusion rate to date.
8/8	Monument Valley added to sites for relocation.	Relocation to Mexican Hat was determined as preferred alternative for technical consideration.
11/3	Number of estimated vicinity properties increased from approximately 4630 to approximately 4925.	Estimated number of inclusions based on ORNL survey recommendations and inclusion rate to date.
14/18	Number of estimated vicinity properties increased from approximately 4630 to approximately 4925.	Estimated number of inclusions based on ORNL survey recommendations and inclusion rate to date.
15/24-25	Technology risk changed from medium to high for cost and from low to medium for schedule.	Impact of revised EPA groundwater standards is not fully known.
17/9	Statement added regarding draft revised EPA standards.	Draft standards were issued in September 1987.
18/13	Mark Matthews designated as Acting Project Manager.	Change of Project Manager.
18/38	DOE GJPO designated to perform long-term surveillance and maintenance.	DOE memo of November 1988.
20/34	Project vulnerability changed from moderate to low.	Vulnerability was downgraded during 1987 assessment.
22/19	Added statements extending duration of TAC and RAC contracts.	TAC and RAC contracts are planned to be extended through new Project end date of September 1994.
23/18-19	Added statement extending completion of certification and licensing for Grand Junction beyond completion of Project end date.	Remedial action cannot be completed prior to July 1994 due to constraints imposed by County Commissioners on truck haul schedule.

23/26-29	Updated status of milestones.	To conform with current status.
25/2	Total estimated cost (TEC) increased from $992.5 to $1,139.1.	Updated estimate during 1989 for preparation of the FY 1991 budget.
31/15	TEC increased from $992.5M to $1,139.1M.	Updated estimate during 1989 for preparation of FY 1991 Budget.
A-1	Tons of contaminated materials converted to cubic yards and updated.	Revised sites technical baseline to comply with quantities used in preparation of the FY 1991 budget.
A-1	Estimated number of vicinity properties increased from 4,629 to 4,925.	New estimate is for assumed properties to be included for remedial action, based on ORNL survey recommendations and inclusion rate to date.
A-2	Attachment 2, updated.	Reflects status of sites as of 7/1/89.
A-3	Attachment 3, updated	Reflects new TEC by site and by fiscal year.
A-4	Attachment 4, updated.	Reflects new TEC by Federal and state share by fiscal year.
A-13	Attachment 9 updated.	Technology cost risk changed from moderate to high impact and schedule and performance risks changed from low to moderate due to unknown final impact of revised EPA groundwater standards.
A-17	Attachment 13, updated	Reflects impact of revised TEC and budget constraints on sites master schedule.
A-18	Attachment 14, updated.	Reflects current Project Office organization.
A-19	Attachment 15, updated.	Reflects manpower increase related to stretch out of construction activities.

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1.0 MISSION NEED AND OBJECTIVES

1.1 MISSION NEED

The mission of the Uranium Mill Tailings Remedial Action (UMTRA) Project is explicitly stated and directed in the Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604, 42 USC 7901), hereinafter referred to as the "Act."

Title I of the Act authorizes the Department of Energy (DOE) to undertake remedial action at designated inactive uranium processing sites (Attachment 1 and 2) and associated vicinity properties containing uranium mill tailings and other residual radioactive materials derived from the processing site. The purpose of the remedial actions is to stabilize and control such uranium mill tailings and other residual radioactive materials in a safe and environmentally sound manner to minimize radiation health hazards to the public. The principal health hazards and environmental concerns are: (1) the inhalation of air particulates contaminated as a result of the emanation of radon from the tailings piles and the subsequent decay of radon daughters; and (2) the contamination of surface and groundwaters with radionuclides or other chemically toxic materials.

Remedial actions undertaken by DOE pursuant to the Act are to be accomplished in cooperation with the affected states and Indian tribes and with the concurrence of the Nuclear Regulatory Commission (NRC). Such remedial actions are to be performed in accordance with standards promulgated by the Environmental Protection Agency (EPA) (40 CFR Part 192) and with applicable Federal and state laws. Before the remedial actions can be initiated, DOE must complete the environmental analyses, documentation, and public review required by the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321-4347). In selecting remedial actions, DOE is required to examine the economic feasibility of reprocessing the tailings to extract valuable minerals.

The Act authorizes DOE to establish cooperative agreements with the affected states and Indian tribes. DOE is to pay 90 percent of the remedial action costs, with the states to pay the remaining ten percent. For sites on Indian lands, 100 percent of the costs for remedial action will be borne by the Federal Government.

In accordance with the provisions of the Act, the authority of DOE to perform the remedial actions was to terminate seven years after promulgation of the EPA standards - March 7, 1990. Due to schedule risks plus critical annual budget constraints, DOE submitted a legislative initiative to extend the authorization of the project to September 30, 1994. This extension was approved by Congressional legislation in November 1988 (PL 100-616).

The DOE Grand Junction Projects Office (GJPO) will perform long-term surveillance and maintenance of sites used for the final disposal of residual radioactive materials, pursuant to a license to be issued by the NRC. As stated in PL 95-604, title to such disposal sites will vest with the DOE.

1.2 PROJECT OBJECTIVES

The overall objectives of the UMTRA Project are:

- To obtain the cooperation of the affected states, Indian tribes, and property owners in accomplishing the mission of the Program.
- To carry out a public participation program that encourages public input into the Project decision-making process.
- To evaluate the economic feasibility of reprocessing the tailings for the recovery of minerals prior to stabilization.
- To develop uranium mill tailings stabilization and disposal technology for use by Project participants, and to transfer this technology to the private sector for use at active uranium processing sites.
- To assure that environmental factors are adequately addressed in the selection and implementation of remedial actions and that provisions of the NEPA, as implemented by Council on Environmental Quality Regulations (CEQ), and DOE guidelines (DOE, 1981), are satisfied.
- To plan, design, and perform remedial actions at the designated inactive uranium processing sites and vicinity properties in a safe and environmentally sound manner that brings these properties and the final disposal sites, if different from the processing sites, into compliance with the EPA standards and in accordance with applicable Federal and state law.
- To obtain licenses from the NRC for long-term,post-remedial action surveillance and maintenance of the tailings disposal sites, and to conduct interim site upkeep until such time as responsibility is turned over to the DOE GJPO for long-term surveillance and maintenance.

1.3 PROJECT BASELINE

In addition to the project objectives discussed above, accomplishment of the UMTRA Project mission will be governed by a set of performance, schedule, and cost objectives which form the project baseline. These baseline criteria are identified below.

1.3.1 Performance Objectives

EPA Standards

The primary performance objectives for remedial actions are the EPA standards, which provide the basis for remedial action planning, scheduling, and estimating of costs. The EPA standards for performing cleanup and disposal of the uranium mill tailings for open lands, structures, and disposal sites are summarized below.

(1) Standards for the Control of Residual Radioactive Materials from the Inactive Processing Sites.

Controls shall be designed to:

(a) Be effective for up to 1000 years, to the extent reasonably achievable, and, in any case, for at least 200 years, and

(b) Provide reasonable assurance that releases of Radon-222 from residual radioactive material to the atmosphere will not:

(1) Exceed an average release rate of 20 picocuries per square meter per second, or

(2) Increase the annual average concentration of Radon-222 in air at or above any location outside the disposal site by more than one-half picocurie per liter.

(2) Standards for Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials from Inactive Uranium Processing Sites.

Remedial actions shall be conducted so as to provide reasonable assurance that, as a result of residual radioactive materials from any designated processing site:

(a) The concentration of radium-226 in land averaged over any area of 100 square meters shall not exceed the background level by more than--

(1) 5 pCi/g, averaged over the first 15 cm of soil below the surface, and

(2) 15 pCi/g, averaged over 15 cm thick layers of soil more than 15 cm below the surface.

(b) In any occupied or habitable building--

(1) The objective for remedial action shall be, and reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 working level (WL). In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL, and

(2) The level of gamma radiation shall not exceed the background level by more than 20 microroentgens per hour.

In March 1983, EPA determined that the most appropriate course of action would be to require site-specific analyses of potential future contaminant discharge and a case-by-case evaluation of the significance of such a discharge. The current DOE implementation guidelines for the EPA standards call for hydrologic and geologic assessments at each site. However, in September 1987, EPA issued draft revised groundwater standards that are expected to be finalized in the fall of 1989. These revised standards are being implemented on those sites that do not have an approved final NEPA document.

Additional Guidelines

The EPA standards provide the primary performance objectives for the UMTRA Project; however, the following additional guidelines will also serve as operational standards in the performance of project activities.

- Health and Safety. A health and safety program has been established for the UMTRA Project to assure that all remedial actions will be performed in a manner that will protect the health and welfare of the workers and the general public. The health and safety program is set forth in the UMTRA Project Environmental, Health, and Safety Plan (DOE, 1989) and will be supplemented by site-specific health and safety plans prior to performance of remedial actions. The site-specific plans will provide for maintenance of a comprehensive monitoring program during scheduled periods of work to measure levels of contamination and radiation exposure. The plans will also identify the hazards of the remedial action operation, describe and analyze the adequacy of the measures taken to eliminate, control, or mitigate identified hazards, and analyze and evaluate potential accidents and their associated risks.

- Quality Assurance The UMTRA Project has established a project level quality assurance program to assure that all project activities are performed satisfactorily in accordance with DOE Order 5700.6a. The UMTRA Project Quality Assurance Plan (DOE, 1984) sets forth the mechanisms and delineates the responsibilities for ensuring the integrity of UMTRA Project operations.

- Technical Considerations. The residual radioactive materials at any processing site may be moved to a new disposal site, if unacceptable groundwater or surface-water intrusion, or other significant threat to the stability of the pile at its present location, is identified.

- Statutory Guidelines. The remedial action process takes into consideration the applicable Federal and state laws currently identified. Any additional laws determined to be pertinent during the design and permitting process

shall be incorporated into the remedial action process.

- o Surveillance and Maintenance. The Project will include in its planning the long-term surveillance and maintenance activities required to confirm attainment of the EPA standards and NRC licensing requirements. Although costs for long-term surveillance and maintenance (i.e., after the Project is terminated) of the sites are not included in the Project cost estimate, it is inherent in the EPA standards and NRC licensing process that such a program will be required for an indefinite period of time following completion of remedial actions and Project termination.

1.3.2 Schedule Objective

The Project schedule objective, pursuant to the provisions of the Act, is to accomplish the remedial actions within seven years from the date of promulgation of the EPA standards. EPA issued cleanup standards effective March 7, 1983, which established March 7, 1990 as the date for completion of all remedial actions (EPA, 1983). However, due to increased costs and annual budget constraints, DOE included in the FY-1989 Budget submission a legislative initiative to extend the end date to September 30, 1994, which was approved by Congressional legislation in November 1988.

Attainment of the schedule objective is contingent upon several factors, the most important of which are:

- o Timely authorization/appropriation of funds by Congress and the states in accordance with the UMTRA Project Baseline Resources Plan.
- o Timely completion of the NEPA requirements.
- o Timely concurrences on the part of the states, Indian tribes, and the NRC.
- o Timely disposal site acquisition by the states.

1.3.3 Cost Objective

The Project cost objective is to accomplish the remedial actions within the total estimated cost of $1,139.1 million (escalated 1989 dollars). Attachment 3 presents a summary of total estimated costs by Fiscal Year (FY) through Project completion, and includes state funding as well as Federal. The Project total estimated cost is predicated on several key assumptions:

- o The EPA standards.

- Twenty-four inactive uranium processing sites and approximately 4,925 included vicinity properties.

- Stabilization at the processing site for all sites with the exception of Salt Lake City, Durango, Gunnison, Grand Junction, Rifle, Lakeview, Belfield, Naturita, Riverton, and Monument Valley.

- Timely inclusion of vicinity properties.

- Project funding in accordance with the Baseline Resources Plan (Attachment 4).

- The validity of the DOE-prescribed escalation indices.

The Act does not contain funding authorization, but indicates that Project funds are to be included in annual authorization and appropriation acts. The Act provides that the affected states pay ten percent of remedial action costs. For purposes of DOE-state cost-sharing, remedial action costs are engineering design and construction costs for processing site and vicinity property remedial actions, as well as land acquisition costs except at those sites located on Indian lands. It is estimated that the affected states' share will be $77.1 million in escalated dollars over the life of the project. Attachment 4 presents the projected state funding requirements.

2.0 TECHNICAL PLAN

2.1 PROJECT SCOPE

One of DOE's first responsibilities was to designate the inactive uranium processing sites at the 22 locations cited in the Act, together with any other processing sites meeting the Act's definition of processing sites. Data collected by preliminary radiological and engineering assessments were used by the DOE Assistant Secretary for Environmental Protection (ASEP) to designate 25 sites in November, 1979. Following site designation and in conjunction with the EPA, DOE/ASEP ordered the sites designated for remedial action on the basis of the assessed potential health effects. One site, Baggs, Wyoming, included in the original designation of 25 sites was subsequently determined to be ineligible for remedial action under the Act, and was deleted from the Project scope. (See Attachment 1 for a listing of the 24 designated inactive uranium processing sites, their priorities, and the estimated amount of contaminated materials at the sites; and Attachment 2 for a map showing the geographical location of the sites).

The Act also authorizes the cleanup of properties in the vicinity of the processing sites which have become contaminated with radioactive materials derived from these sites. Based on currently available data, approximately 8000 properties show some evidence of such contamination. These properties were designated on February 2, 1984. "Designated" properties are those which have been identified by baseline surveys as being contaminated to some degree by tailings and consequently are candidates for UMTRA inclusion. "Included" properties are those properties, both designated and undesignated, which have been found to be contaminated with residual radioactive contamination in excess of EPA standards. Subsequently, based on more detailed on-site radiological surveys, a determination will be made as to whether the level of contamination exceeds that permitted by the EPA standards, making the property eligible for inclusion in the program. Based on surveys conducted to date it is estimated that approximately 4,925 will be found eligible for remedial action.

By enactment of Public Law 97-415 (January 4, 1983), the Act was amended such that DOE is also to perform remedial actions at vicinity properties in Edgemont, South Dakota. (The Edgemont processing site is to be cleaned up under Title II of the Act by the Tennessee Valley Authority pursuant to NRC license.)

In January 1983, the Assistant Secretary for Nuclear Energy (ASNE) assumed responsibility from ASEP for conducting radiological assessment studies of processing sites and vicinity properties and for inclusion of eligible vicinity properties at the designated processing sites.

Engineering assessments have been performed for all 24 sites. The assessments represented the initial effort to define present site conditions and problems, identify alternative remedial actions, and determine the scope and estimated cost of remedial action alternatives. The assessments include consideration of stabilization of tailings at the

present sites and removal of tailings to alternative disposal sites are being supplemented, as necessary, by additional data-gathering activities at the sites. The final determination as to the extent and type of remedial action required for each site will be based on the EPA standards, the environmental impacts of the alternative actions, the potential for reprocessing the tailings, and the physical conditions of the site. However, the contaminated materials at the Salt Lake City site have been relocated to a disposal site near Clive, Utah; and current plans call for relocating the tailings at Durango, Grand Junction, Rifle, Lakeview, Belfield, Naturita, Riverton, Gunnison and Monument Valley to alternate disposal sites.

2.2 TECHNICAL APPROACH

2.2.1 Technology Status

As a result of the Research and Technology Development (R&TD) program sponsored by the UMTRA Project, and other related research efforts, the technology available for remedial actions has been enhanced significantly over the past several years. Major technical improvements have been achieved in the key areas of:

- o Radon barrier design.
- o Evaluation and prediction of contaminated migration.
- o Evaluation of long-term stability.

Field and laboratory testing of earthen and asphaltic radon barrier cover systems have shown them to be effective and to be capable of meeting the EPA standards. Research has identified controlling parameters and provided both theoretical and empirical bases for the design of cost-effective cover systems. The EPA standards require that remedial actions be based on predicted cover effectiveness, and the models developed under the UMTRA R&TD Program will provide the basis for such predictions.

2.2.2 Project Phases

The Project has been phased and baselined against key decision milestones, with the remedial action process for each UMTRA Project site to be accomplished as shown in Attachments 5 and 6. The process begins with planning and design development and proceeds through NEPA analysis, remedial action plans, engineering design, remedial actions, certification and licensing, and surveillance and maintenance. The typical functional workflow for both an inactive uranium processing site and a vicinity property is depicted in Attachments 7a and 7b.

The UMTRA Project is currently in the Operations Phase of the DOE Major Systems Acquisition process. Key Decision #1 was confirmation of the Project Mission Need and approval of the

original Project Plan by the Acquisition Executive. The Remedial Action Plan and Detailed Engineering Design for the first site, Canonsburg, provided the basis for the Acquisition Executive's Key Decisions #2 and #3 (see Attachment 5) to proceed with the Operations Phase of the project. Key Decision #4 will be the approval of the completed remedial action and licensing of the last site, with a determination to terminate the Project and commence long-term surveillance and maintenance.

The control points and associated program decisions are reflected in Section 10.0, Scheduled Decision Points.

2.2.3 Work Breakdown Structure

The UMTRA Project Work Breakdown Structure is shown in Attachment 8. Level 1 represents the overall Project, Level 2 contains the major Project work elements, and Levels 3 and 4 reflect detailed tasks by site that must be accomplished to achieve the Project objectives.

3.0 RISK ASSESSMENT AND MITIGATING MEASURES

3.1 BACKGROUND

The UMTRA Project involves managing 22 major construction projects (24 processing sites) and approximately 4,925 small construction activities (vicinity properties) which creates a dynamic Project environment with considerable cost, schedule, and performance vulnerability. Furthermore, requirements of the Act, the NEPA, the number and level of Project participants, and the technological considerations inherent to the mission compound the Project complexity.

The major risk areas associated with accomplishment of the Project are identified in Attachment 9 and are characterized with respect to their potential impact on the Project. Risks outside the Project span of control such as possible changes to the enabling statute or funding shortfalls have not been addressed. It should be noted, however, that to achieve the baseline Project schedule, the funding profile set forth in Attachment 4 must be sustained. Further, the affected states must provide timely reimbursement to DOE for their share of the remedial action costs.

The discussion which follows describes each major risk area within the Project span of control and identifies actions being taken to mitigate the potential impacts.

3.2 INSTITUTIONAL INTERFACES

The UMTRA Project's institutional environment is for the most part determined by the provisions of the Act. However, the requirements of the NEPA process introduce significant institutional interfaces as well. The overall risk with respect to institutional interfaces is assessed to be in the high category. The following paragraphs summarize the inherent cost, schedule, and performance vulnerabilities of the Project with respect to its institutional interrelationships and describe the steps being taken to mitigate the risks.

3.2.1 Institutional Interfaces Under the Act

The Act identifies the roles and responsibilities of the DOE in regard to the NRC, the EPA, the states, Indian tribes, and the public. These relationships and their impact on the Project are discussed below.

The Act requires NRC involvement as follows:

- Consultation in the designation of sites and establishment of site boundaries.
- Concurrence in cooperative agreements with the states and Indian tribes.

- o Concurrence in land acquisition and disposal decisions.
- o Concurrence in reprocessing for mineral recovery.
- o Concurrence in the remedial action option selected.
- o Concurrence in a decision that remedial actions at a processing site are complete.
- o Issuance of an NRC license for long-term site surveillance and maintenance.

To facilitate the various NRC concurrences required by the Act, the Project Office has implemented a policy of close coordination from the earliest phases of the planning process concerning cooperative agreements, acquisition of processing or disposal sites, and selection and performance of remedial actions. In July, 1985 the DOE and NRC entered into a Memorandum of Understanding (MOU) in order to provide for an orderly process for executing their respective statutory responsibilities under Title I of the Act. It is contemplated that such process will minimize or eliminate unnecessary duplication of effort, will facilitate and expedite reviews and concurrences, and will promote the accomplishment of the objectives of Title I of the Act within reasonable timeframes.

The Act requires state and Indian tribal involvement in the following areas:

- o Consultation and notification regarding site designation; and
- o Execution of the cooperative agreement providing for cost-sharing (as appropriate), acquisition of sites, participation in the selection and performance of the remedial action, rights-of-entry, and owner consents.

Public perception of the health problems existing at the tailings sites and public acceptance of the proposed remedial actions may be deciding factors for state and Indian tribal concurrences with the proposed remedial actions, including concurrences regarding the location of disposal sites.

As in the case of NRC's involvement, the highest risk for potential impact, as a result of the state and Indian tribe institutional interface, is with Project schedules. However, the extent to which states and Indian tribes participate in the selection and performance of the remedial action could impact the total estimated cost of the Project as well as the performance of remedial actions.

To mitigate the risks inherent in the DOE's interaction with the states and the Indian tribes, the Project Office has taken steps to establish a working relationship, under cooperative agreements, with appropriate state and tribal staffs. The

Project Office has also implemented a policy of close coordination and concurrence with the states and the Indian tribes to provide for an effective interface.

In November 1983 the Project Office initiated States/Tribes liaison meetings to improve communication among the Project participants. The meetings, held about twice a year, bring together representatives from DOE, the states and tribes, NRC, EPA, and DOE's contractors to review overall project status, plans, concerns, and issues.

The Act encourages DOE to hold public hearings in the affected states relative to the following items:

- o Site designation and prioritization;
- o Selection of remedial actions; and
- o Execution of cooperative agreements.

In addition, the NEPA requires public involvement in connection with environmental documents. The public participation is designed to provide public input into the Project Office decision-making process. The potential for adverse impact on Project costs, schedules, or performance arises in the possibility of public opposition to the UMTRA Project decisions.

The Project has implemented a coordinated information and public participation program as a means of communicating Project objectives and plans with members of the public. The program also serves to mitigate the high risk impacts associated with possible public misunderstanding of and/or opposition to the program. An UMTRA Project Public Participation Plan has been published to outline the Project Office approach to achieve compliance with public participation provisions of the Act and the NEPA. A Public Information Plan has also been published which details UMTRA Project policy for the dissemination of information to the public by means of various forums and media. In addition, under the cooperative agreements, affected states and Indian tribes have the prerogative of appointing local citizen task forces to interact with DOE and the state for the purpose of information exchange. A number of these groups have been established to address plans and issues at each site.

3.2.2 NEPA Institutional Interface

Development and approval of the environmental documentation for UMTRA Project activities involves interaction with the NRC, the Department of Interior (DOI), the EPA, state and local governments, Indian tribes, and the general public. The time required for public meetings, environmental document review, and

public comment presents the potential for adverse impact on Project schedules. Expansion of data-gathering efforts to satisfy institutional concerns could also impact both the cost and schedule for completion of NEPA activities. Additionally, public perceptions may give rise to potentially severe opposition during the NEPA process, thus extending the overall schedule for completion of the project.

Many of the steps being taken to mitigate the cost, schedule, and performance risks inherent to the institutional interfaces required by the provisions of the Act will be effective in reducing the Project's vulnerabilities in the NEPA-related institutional interfaces. The Project's policy of close coordination and concurrence with other involved entities, and the implementation of the Project's public participation program, are also intended to mitigate the institutional interface risks inherent in the NEPA process.

3.3 VICINITY PROPERTIES

One of the most significant considerations affecting accomplishment of the Project mission is the workload and costs associated with the vicinity properties (approximately 25 percent of the total Project cost estimate is related to vicinity property work). At this time there are uncertainties as to the number of properties, the extent of contamination, and the complexity of remedial action required at each location.

The Project plans, schedules, and cost estimates are based on the best currently available data that approximately 4,925 vicinity properties are to be included for remedial action and that the identification of the properties shall be accomplished according to schedules that are compatible with Project site schedules. Attention will be given to reviewing and improving this estimate periodically.

The potential impacts of the risks produced by the uncertainties associated with vicinity properties are assessed as being low on performance, high on cost estimates, and high on schedules. The projected impact on schedules is due primarily to the uncertainties concerning the number of vicinity properties, the quantities of contaminated materials at the properties, the complexities of the remedial actions required, and the anticipated rate of vicinity property inclusions.

3.4 SITE ACQUISITION

Prior to site acquisition the Project has need for access to the processing sites for remedial action planning and design development. In the majority of the cases, rights-of-entry have been negotiated by AL with the persons owning interests in the processing sites. In a few cases, the lack of such rights-of-entry has impeded Project planning and design activities; however, experience to-date has shown the risk to the Project in connection with this phase of site acquisition to be low.

The Act requires that cooperative agreements with affected states include provisions for state acquisition of disposal sites, which may be the processing site. Acquisition of the disposal sites may pose significant difficulties and risks affecting project schedules and costs, since some site owners may not be willing sellers. In such cases, state condemnation actions will be necessary, which for some states may require state legislative action. Other factors contributing to the cost and schedule vulnerability of the Project with respect to site acquisitions include: court-determined values in excess of appraised values, property mineral values, dependence on state resources for acquisition actions, and the time required for condemnation proceedings. Risk in site acquisition is estimated to be high for schedule and cost impact and low for performance.

Efforts planned to mitigate state site acquisition vulnerability include the identification of sufficient lead times for initiation of site acquisition activities, performance of independent property appraisals, and coordination of site-related activities with affected property owners.

In some cases DOE may acquire a disposal site through permanent withdrawal of pubic lands from the DOI through the Bureau of Land Management (BLM) in accordance with PL 100-616. In such cases, DOE is required to initiate withdrawal requests through the affected state, which necessitate extensive time and effort by the Project and tend to cause schedule delays in the start up of site remedial action.

3.5 TECHNOLOGY

The most significant Project performance objective is attainment of the revised EPA standards at the sites and associated vicinity properties. The Project R&TD Program has contributed to the accomplishment of this objective, primarily through tasks designed to ascertain the effectiveness, integrity, and longevity of tailings containment systems under normal and abnormal conditions. Knowledge of the tailing characteristics and the effectiveness and cost of tailings containment technology has improved significantly over the past several years; however, attainment of the revised EPA standards can not be predicted with a high level of confidence.

Given the status of technology and the EPA standards, the impact of the technological risk to the Project is assessed to be high for cost baselines, and medium for the performance and schedule baselines. These assessments are used since currently available technology and techniques can not be used in all cases to stabilize and contain uranium mill tailings, and site-specific NRC and state requirements may cause estimated costs to increase. The Project's R&TD Program has contributed significantly to the mitigation of performance risk in the application of tailings impoundment and containment technology to the activities of the UMTRA Project; however, impact to the groundwater in the vicinity of the tailings piles is still relatively unknown.

3.6 ENVIRONMENTAL, HEALTH, AND SAFETY

The environmental, health, and safety risks associated with UMTRA Project activities occur during the remedial action phases of the Project and are predominantly construction-related or occur as the result of the construction.

The environmental consequences of UMTRA Project activities are identified in the NEPA documentation prepared for each site, and all concerns over possible risk to the environment will be addressed in the final environmental documents for the sites. The presumption is that performance of remedial action will present less environmental risk than if no action were taken at all, and that the process of preparing the environmental documentation provides a means of assuring that all mitigating measures are considered. The concurrences required for the Remedial Action Plan/Site Conceptual Design (state/tribe and NRC) also provide a systematic means of assuring that the environmental risk of proposed actions is minimized.

From this context, the risk of adverse environmental impact resulting from UMTRA Project activities is assessed as low. Accordingly, the potential for impact on Project cost, schedule, and performance as a result of potential adverse environmental impact is also assessed as low.

As with any construction-type activity, there are health and safety risks present in regard to UMTRA Project operations. Additionally, since the Project involves residual radioactive materials, there are additional concerns with respect to low-level radiation exposure, and there may be hazardous or mixed waste encountered on the processing sites. Steps have been taken to mitigate these risks and are set forth in the UMTRA Project Environmental, Health, and Safety Plan. As a result of the mitigating measures which have been taken in regard to health and safety risks, the potential for adverse health and safety impact on Project cost, schedule, and performance is assessed to be very low.

4.0 MANAGEMENT APPROACH

4.1 ORGANIZATIONAL RESPONSIBILITIES

The Act assigns responsibility for legislative implementation of the Act to several Federal entities. Attachment 10 presents a graphical summary of the various organizational responsibilities provided for in the Act, and the paragraphs below elaborate on the specific assignments.

The EPA, in accordance with the provisions of the Act, has promulgated standards for remedial actions at inactive uranium processing sites. The standards were published January 5, 1983, and became effective March 7, 1983. However, that portion of the standards dealing with groundwater contamination was remanded in September 1985 and draft revised standards were issued in September 1987.

The NRC's responsibilities under Public Law 95-604 are extensive, as outlined in Section 3.2.1.

Responsibilities of other non-DOE Federal entities for provisions of the Act include: consultation by the DOI concerning sites on Indian lands and the possible use of public lands for disposal sites; and a determination by the Department of Justice (DOJ) regarding liability of owners and operators of the designated sites for remedial action costs.

Within the DOE, three organizations have been assigned responsibilities called forth in the Act: the Office of General Counsel (OGC); the Office of Assistant Secretary for Environment, Safety and Health (EH); and the Office of Assistant Secretary for Nuclear Energy (NE). The respective responsibilities of these organizations are summarized below.

OGC is responsible for providing program legal assistance relative to implementation of the Act, for the preparation of model cooperative agreements to be executed with states and Indian tribes, and for the drafting of memoranda of understanding between DOE and other Federal agencies when necessary.

EH is responsible for providing occupational safety, environmental and quality assurance overview for the program, and for review and approval of NEPA documents.

The remaining UMTRA Project functions at DOE Headquarters are the responsibilities of NE. NE is responsible for designation of the processing sites and associated vicinity properties, for characterization of the sites as to health effects, performance of radiological surveys, and certification of completion of remedial actions. NE is also responsible for: accomplishment of remedial actions at the processing and disposal sites and vicinity properties; investigation of the feasibility of reprocessing of the tailings; development of stabilization technology; compliance with NEPA requirements; negotiation and execution of cooperative agreements with the affected states and Indian tribes; and surveillance and maintenance of the sites after remedial actions are completed.

4.2 DECISION DELEGATIONS

The UMTRA Project has been designated as a Major Systems Acquisition (MSA) activity (MSA-143), with day-to-day management assigned to AL in the Project Charter (formerly Project Management Agreement) approved in June 1980, as amended in 1980, 1982 and 1986. The Project Charter defines the purpose of the Project, the mission of the AL Project Office, responsibilities and authorities of headquarters organizations and AL, reporting relationships, resources, and project management control system. Table 1 of the Project Charter delineates agency responsibilities under the Act, Table 3 presents the division of DOE responsibilities, and Table 4 identifies the major UMTRA Project planning documents which require NE approval. AL has been delegated authority to manage and execute UMTRA Project functions within established procurement, real estate, and other operational approval thresholds.

Responsibilities for AL management of the UMTRA Project has been assigned to the UMTRA Project Manager. The Acting UMTRA Project Manager is Mark Matthews, who is supported by: the Project Office staff; AL staff matrix support; the DOE Grand Junction Projects Office (GJPO); Jacobs Engineering Group Inc., the Technical Assistance Contractor (TAC); MK-Ferguson Company, United Nuclear Corporation Geotech, and the State of Utah, as Remedial Action Contractors (RACs); and other selected support contractors. The Project Office is responsible for the management of the Project and its contractors in accordance with overall program policy and guidance provided by DOE Headquarters.

Specifically the Project Office is responsible for:

- Coordination of activities with Indian tribes, state and local governments, and the public.
- Negotiation of cooperative agreements.
- Development of disposal and stabilization technology for uranium mill tailings.
- Operation of the Project management control system.
- Management of the NEPA process.
- Management of the selection and implementation of remedial action activities.
- Procurement and management of project participants.
- Acquisition of necessary licenses and permits.
- Operation of the short-term surveillance and maintenance program pending turnover of long-term surveillance and maintenance to DOE GJPO.

The Project Office is assisted in meeting these responsibilities by AL matrix support from procurement, public affairs, quality assurance, project management, legal, safety, finance, budget, and engineering personnel.

4.3 PROJECT PARTICIPANTS

The UMTRA Project Office is supported by two major categories of contractors: a Technical Assistance Contractor (TAC) and three Remedial Action Contractors (RACs). The TAC develops and implements site characterization; monitors technology development; prepares NEPA documentation; develops site remedial action concepts; prepares site Remedial Action Plans, conceptual designs, and design criteria; reviews detailed designs prepared by the RAC; prepares certification reports on performance of remedial actions; coordinates site licensing, and plans and conducts short-term surveillance and maintenance activities at disposal sites. The TAC is also responsible for development and implementation of Project-level programs for health and safety, quality assurance, and public participation, and operates the Integrated Project Management System (IPMS). The RACs perform preliminary and detailed engineering for the vicinity properties and the processing sites, award subcontracts for the actual construction work, and provide construction management and inspection necessary for the conduct of remedial action work. The RACs are also responsible for on-site health and safety, and they administer site radiation monitoring efforts during the construction phase.

4.4 PROJECT MANAGEMENT CONTROL SYSTEM

The Project management control system is based on the Project work Breakdown Structure (PWBS) shown in Attachment 8 which outlines and integrates all facets of the project activities. The system comprises six major elements.

- o Work definition. Ensures that all project work is identified and defined to the PWBS and is planned, scheduled, and budgeted prior to authorization.

- o Work authorization. Provides control of the initiation of work and changes to previously authorized work.

- o Work scheduling and control. Provides for establishing an approved project master schedule, implementing milestone monitoring and updating, ensuring systematic and in-depth impact analyses, and providing systematic and consistent change control.

- o Acquisition strategy. Identifies planned procurement and contracting activities (including acquisition of land or interests in land), defines the relationships and responsibilities of all project participants, and provides for realistic contingency planning.

- o Management reporting and reviews. Uses the DOE Uniform Contractor Reporting System to establish a standard procedure for collecting and integrating essential cost, manpower, schedule, and technical information for managing contractual performance.

- o Change control. Assures that change control procedures are developed and implemented for orderly control and management and that project baseline integrity is maintained.

Project progress is measured against technical, cost, and schedule baselines (discussed below) that are established by the UMTRA Project Office and approved by the Program Manager. The UMTRA Project Office uses the baseline data to develop detailed work plans for the Project and its participants. Attachment 11 identifies the baseline documents (the Quality Assurance Plan; Environmental, Health, and Safety Plan, and the like), used for management of the Project.

- o Technical Baseline. The technical baseline evolves from the EPA standards, applicable Federal and state laws, and the like, to the remedial action plans and engineering designs that detail the remedial actions.

- o Schedule Baseline. The schedule baseline is based on the approved extension to 1994. The scheduling system incorporates these requirements and consists of a hierarchy of schedules that start at the Project level and extend down to contractor schedules used for time-phasing detailed work packages.

- o Cost Baseline. The cost baseline is based on the Project cost estimate summarized in this Project Plan. The Project Office controls cost through management of the total estimated cost and through modified application of the DOE Cost and Schedule Control Systems Criteria (CSCSC) for the TAC and the RAC. This control technique results in the following actions: reconciliation and agreement on the cost baseline by all project participants; minimization of changes to the approved baseline; controlled communication among project participants; trend analysis reporting; and maintenance of a consistent approach to evaluating and processing changes.

- o Funding Baseline. The UMTRA Project funding baseline is predicated on the cost baseline and is provided through the annual AL Approved Funding Program. Control of contingency funds rests with the UMTRA Project Manager. Any changes to the Project funding baseline will result in corresponding changes to the other baselines in accordance with the change control procedures.

Cost and schedule thresholds for project control are described in Section 8.0, Controlled Items.

4.5 PROJECT VULNERABILITY ASSESSMENT

An analysis of the general control environment, the inherent risk, and the control safeguards for the UMTRA Project were performed and resulted in an overall assessment of moderate vulnerability. During 1987, this assessment rating was reviewed, and it was determined that the rating be downgraded to an assessment of low vulnerability.

A program is in effect to ensure that proper controls exist. This program reduced Project vulnerability by development and implementation of appropriate organizational checks and balances and administrative controls for the Project Office.

5.0 ACQUISITION STRATEGY

In accordance with DOE policy, a business strategy group is used to develop the Project acquisition strategy. The initial acquisition strategy adopted took into consideration the overall Project environment, functional mission-oriented requirements, and institutional interrelationships. Consideration was also given to the objectives of maximizing competition and maintaining contractual flexibility, and obtaining the optimal balance of overall coordination, integration, and management responsibility between project participants.

The acquisition strategy initially developed provided for three primary participants; a NEPA contractor, a technical assistance contractor, and a remedial action contractor. The NEPA contractor's activities have subsequently been transferred to the technical assistance contractor. The responsibilities of each are summarized below.

Technical Assistance Contractor (TAC)

- Technology development support.
- Environmental data gathering.
- Processing and disposal site characterizations.
- NEPA document preparation.
- Environmental activities management (to include radiological and health and safety site audits).
- Site conceptual designs and remedial action plans.
- Radon monitoring of the tailings before and after remedial action.
- Site short-term surveillance and maintenance.
- Planning and management support in the areas of:
  - Health and safety
  - Quality assurance
  - Licensing and certification
  - Project control (to include the Integrated Project Management System)
  - Public participation
  - Document control

Remedial Action Contractors (RACs)

- Engineering design.
- Contracting for remedial actions.
- Construction management.

- o Radon monitoring during remedial action.
- o Site health and safety.
- o Site quality assurance.

The purpose of having a TAC and RACs is to assure an independent assessment of both the TAC prepared conceptual design (by the RACs) and the RACs prepared final design (by the TAC). Through its planning and management support efforts, the TAC provides for overall Project integration by assisting the DOE in developing and implementing Project-level plans, budgets, and schedules. Project management authority is retained in the Project Office along with the responsibility for Project control and overall technical management. The RACs provide for on-site management of the remedial actions under the direction of the Project Office engineers who serve in a liaison capacity. The TAC also manages all UMTRA Project environmental activities and assists the Project Office in coordinating data-gathering and site characterization efforts.

The acquisition strategy also identifies: (1) cooperative agreements as the vehicles for DOE-state cost sharing, state/Indian tribe participation, and site acquisition; (2) an UMTRA Project Technology Steering Committee to coordinate the activities of the R&TD Program; and (3) the contracting structure for vicinity property remedial actions.

Due to the project schedule delays resulting from technical and resources impacts, the TAC contract was extended for 18 months. With the completion of the TAC contract in September 1990, a competitive procurement will be conducted to select a new TAC for the period of October 1990 to September 1994. The scope of work is anticipated to provide for technical support activities required through the end of the project. It is also intended that the MK-Ferguson contract be extended to cover all remaining work to the end of the Project.

In this manner the acquisition structure has been designed to provide a balanced and integrated basis for achieving the Project objectives. Attachment 12 summarizes the current status of the acquisition strategy.

6.0 PROJECT SCHEDULE

6.1 BACKGROUND

UMTRA Project schedules will consist of a hierarchy of schedules that start at the Project level and extend down to schedules used for time-phasing of detailed work by Project participants. Each of the lower tier schedules will be compatible with the Project Master Schedule, with key milestones traceable from the top level schedule to lower tier schedules. Vicinity properties remedial actions are scheduled to be completed prior to completion of remedial action of the associated processing sites, since residual radioactive materials removed from such vicinity properties should be included with material from the processing site when the final stabilization is accomplished.

The Project scheduling hierarchy is as follows:

- o UMTRA Sites Master Schedule (Attachment 13).
- o Individual site schedules.
- o Contractor supporting schedules.
- o Specific critical element schedules.

All schedules have been aligned to provide for completion of remedial actions by July 30, 1994 and for completion of certification and licensing by September 30, 1994 for all sites with the exception of Grand Junction, which will be certified and licensed after the Project end date.

6.2 STATUS

Several Key Project milestones have been accomplished since the establishment of the Project Office in early FY 1980, including the following:

- o Award of the TAC contract.
- o Award of the RACs contracts.
- o NEPA documentation complete or underway at all sites.
- o Completion/initiation of processing site remedial action at 15 sites.
- o Completion/initiation of vicinity property remedial action at 3,570 properties.
- o Execution of Cooperative Agreements with all involved states.

7.0 RESOURCES PLAN

7.1 COSTS

The Project total estimated cost (TEC) is estimated to be $1,139.1 million in 1989 escalated dollars. This estimate is based on the current UMTRA Sites Master Schedule and is subject to change, if this schedule is impacted. (Attachment 3 presents the Project total cost estimate by site and fiscal year for the duration of the Project. Attachment 4 shows the Baseline Resources Plan for Federal and state funding associated with the UMTRA Sites Master Schedule).

7.2 MANPOWER

Project Office staffing will be phased to correspond to the scheduled accomplishment of the project mission. Attachment 14 depicts the UMTRA Project Office organization and Attachment 15 presents UMTRA Project staffing estimates for key participants.

7.3 FACILITIES

Title I of the Act requires that affected states acquire disposal sites unless the disposal sites are acquired directly by DOE in accordance with Section 106. The title to state-acquired disposal sites will be transferred to the Federal Government upon completion of remedial actions at the sites.

8.0 CONTROLLED ITEMS

Selected performance, cost, and schedule parameters have been established for baseline control and performance measurement. The following documents will be baselined and can be changed only through formal change control (refer to Section 4.0):

Control Baseline	Document
Performance	Project Charter Project Plan Environmental Documents Remedial Action Plans Remedial Action Designs
Cost	Project Plan (TEC) Project Schedule and Cost Estimate (PS/CE) Report
Schedule	Project Plan (UMTRA Sites Master Schedule) PS/CE Report (Site Schedules)

The thresholds for cost and schedule performance assessment reporting are established uniformly on a site basis. Any difference between a site's planned and actual performance which exceeds plus or minus 15 percent or schedule slippage of 30 days, shall be addressed. Notification and explanation of cost and schedule variances exceeding these thresholds shall be provided in a variance analysis to be included in the quarterly Project Manager's Progress Report (PMPR) to DOE Headquarters. In addition to the thresholds identified for cost and schedule, any change required in performance objectives shall also be reported to DOE Headquarters in the PMPR.

9.0 SCHEDULED DECISION POINTS

The following decision points have been established for the Project:

Decision Point	Date	Authority
Key Decision #1 - Confirmation of the Project Mission Need and Approval of the Project Plan	3rd Qtr FY '83 (accomplished)	DOE/Acquisition Executive
Key Decision #2 - Approve First Remedial Action Plan (RAP). Proceed to Engineering Development	4th Qtr FY '83 (accomplished)	DOE/Acquisition Executive
Key Decision #3 - Approve Engineering Design for First Site. Proceed to Remedial Operations	4th Qtr FY '83 (accomplished)	DOE/Acquisition Executive
Key Decision #4 - Terminate Project and Commence Long-Term DOE Site Surveillance and Maintenance	4th Qtr FY '94	DOE/Acquisition Executive

The Acquisition Executive Key Decisions #2 and #3 were based on planning for the Canonsburg site, as the lead site for the UMTRA Project. Following key Decisions #2 and #3, the Remedial Action Plan/Site Conceptual Designs for the subsequent sites will be submitted for approval to the Director, Division of Uranium Mill Tailings Projects. Key decision #4 will follow completion of certification and licensing for the last site(s).

10.0 SUBMISSIONS AND APPROVALS

This UMTRA Project Plan is submitted by:

Mark L. Matthews, Acting Project Manger

Sally A. Mann
Division of Uranium Mill Tailings Projects

Bruce G. Twining, Manager
Albuquerque Operations Office

John E. Baubilitz, Acting Director
Office of Remedial Action and
Waste Technology

The plan identifies the mission and objectives of the project, outlines the technical and managerial approach for achiving them, and summarizes the performance, cost, and schedule baselines which have been established to guide operational activity. Project schedules are aligned for completion of UMTRA Project remedial actions by September 30, 1994, at a total estimated cost of $1,139.1 million (escalated 1989 dollars). Approval will be required by the Acquisition Executive if the scope of the project is changed, or if the Total Estimated Cost increases by 15 percent, or if the schedule slips by six months.

Approved:

Assistant Secretary,
Nuclear Energy Programs

Acquisition Executive Date

REFERENCES

CEQ (Council on Environmental Quality). Regulation for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500-1508.

DOE (U.S. Department of Energy), 1989. UMTRA Project Environmental, Health and Safety Plan, UMTRA-DOE/AL-150224.0006, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1984. UMTRA Quality Assurance Plan, UMTRA-DOE/AL-400325, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1981. Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR Part 192), EPA 520/4-82-013; 1 and 2, Washington, D.C.

UMTRA PROJECT PLAN

ATTACHMENTS

1 - 15

TABLE OF CONTENTS

Attachment 1

Processing Sites and Priorities

Designated Processing Sites	State	Priority (a)	Tailings Area Acres	Contaminated Materials (CY 000) Tailings	Other Materials	Estimated No. of Vicinity Properties
Monument Valley (b)	Arizona	Low	30	1,080	100	1
Tuba City (b)		Medium	33	780	850	1
Durango	Colorado	High	14	1,400	1,100	123
Grand Junction		High	60	2,840	1,330	4,114[c]
Gunnison		High	32	490	270	9
Maybell		Low	80	2,890	280	0
Naturita		Medium	23		620	26
New Rifle		High	32	2,750	1,100	90
Old Rifle		High	11	330	300	6
Slick Rock (MC)		Low	6	40	240	4
Slick Rock (UC)		Low	19	280	830	0
Lowman	Idaho	Low	10	60	130	25
Ambrosia Lake	New Mexico	Medium	105	2,660	1,880	6
Shiprock (b)		High	72	1,080	1,720	15
Belfield	North Dakota	Low			60	8
Bowman		Low			90	0
Lakeview	Oregon	Medium	30	660	280	8
Canonsburg	Pennsylvania	High			270	162
Falls City	Texas	Medium	150	4,610	960	6
Green River	Utah	Low	9	210	--	19
Mexican Hat (b)		Medium	68	2,720	200	9
Salt Lake City		High	100	2,710	--	119
Spook	Wyoming	Low	5	160		4
Riverton		High	72	1,500	100	35
		Totals	961	29,280	12,710	
Edgemont Vicinity Properties	South Dakota					135
					Total	4,925

Notes:

[a]Based on Health Hazard.
[b]Processing Site on Tribal Lands.
[c]Does not include 123 properties dovetailed in conjunction with the Colorado Grand Junction remedial action project.

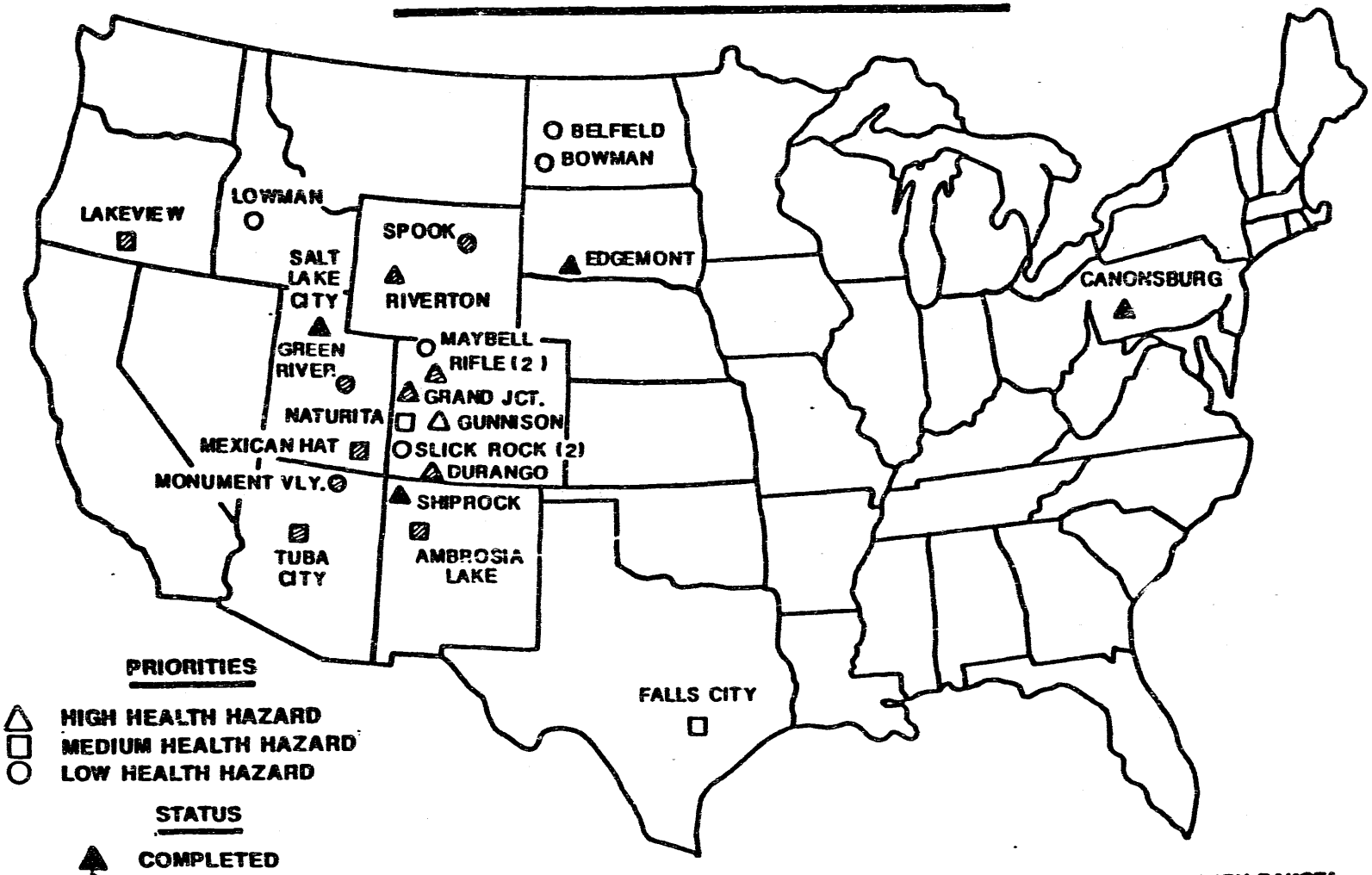
ATTACHMENT 2 UMTRA PROJECT INACTIVE URANIUM PROCESSING SITE LOCATIONS

United States Department of Energy

Uranium Mill Tailings
Remedial Action Program

UMTRA

UMTRA SITE LOCATIONS



PRIORITIES

- HIGH HEALTH HAZARD
- MEDIUM HEALTH HAZARD
- LOW HEALTH HAZARD

STATUS

- COMPLETED
- IN-PROCESS
- IN-PLANNING

NOTE: EDGEMONT, SOUTH DAKOTA, VICINITY PROPERTIES ONLY

ATTACHMENT 3 TOTAL SITE COST SUMMARY

1991 - Revision C
Total : All Contractors

UMTRA Budget Estimate
All WBS Codes
(Escalated - $000)

	FY'79-81	FY '82	FY '83	FY '84	FY '85	FY '86	FY '87	FY '88	FY '89	FY '90	FY '91	FY '92	FY '93	FY '94	Total
Ambrosia Lake	765.76	513.45	249.48	72.15	1156.89	1456.62	4968.56	3100.50	2478.91	169.55	12019.52	10045.17	6697.87	298.13	43992.56
Bellfield	1527.42	1026.63	495.70	123.54	102.52	658.85	1021.84	1278.78	1492.91	666.94	1595.38	980.03	13455.65	368.61	24795.40
Bowman	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	547.26	20.78	0.00	0.00	838.43	283.56	1690.03
Canonsburg	2940.58	3194.54	8202.85	9673.49	10084.42	7622.36	3319.25	812.80	634.30	671.76	549.16	709.64	416.33	38.93	48870.41
Durango	772.56	721.55	715.71	1436.80	2792.14	4277.60	17934.46	11556.71	11889.10	3280.69	924.23	463.10	349.20	38.93	57152.78
Edgemont	189.06	113.98	97.68	883.72	1149.96	949.00	50.84	2052.80	-2.00	52.40	0.00	0.00	0.00	0.00	3537.44
Falls City	763.95	513.37	249.11	73.67	305.39	2407.36	1183.05	1121.62	1148.31	4552.85	9350.52	11652.53	10960.11	607.81	44889.65
Grand Junction	918.01	868.21	2561.51	2645.78	12255.50	17970.17	33415.75	39714.91	47372.05	56173.58	43877.26	27950.81	26049.60	11956.77	323729.91
Green River	764.23	705.19	462.92	60.87	304.56	1259.41	1781.49	7904.70	2920.43	3664.71	436.89	456.41	271.63	38.93	21034.37
Gunnison	769.21	705.41	552.38	2165.23	1609.37	1263.52	1866.62	1890.30	1981.64	6295.43	9755.26	9265.08	10410.00	446.44	48965.89
Lakeview	769.26	705.41	507.71	1608.33	4022.10	3786.17	13155.94	2945.73	2771.39	1044.82	556.79	602.53	452.73	38.93	32967.84
Lowman	763.57	513.36	246.73	60.50	57.18	1162.76	1604.30	1098.63	685.17	840.43	710.62	1060.74	10729.32	486.79	20020.10
Maybell	764.22	705.19	462.92	66.63	281.77	1265.62	809.22	820.66	1491.15	2109.44	7336.69	10921.53	1629.43	38.93	28703.40
Mexican Hat	765.80	705.26	520.28	277.40	1166.38	999.92	2921.82	6636.98	6993.29	504.66	8752.02	10284.02	560.73	38.93	41127.49
Monument Valley	765.84	513.46	258.93	295.47	1224.95	932.99	1028.26	1544.30	2499.83	430.65	8600.95	3300.87	465.96	38.93	21901.39
Naturita	764.43	513.40	249.28	79.98	442.98	1169.81	1044.03	1341.40	1902.64	1885.43	8141.23	10407.76	12425.21	1950.60	42318.18
Rifle	889.20	705.37	606.47	332.10	1925.02	1659.68	2674.61	6461.15	5082.25	17507.23	17558.47	27156.37	25164.54	455.34	108178.50
Riverton	771.64	705.51	648.30	2719.89	2042.47	415.91	3400.93	13608.60	19877.61	2756.07	741.70	542.30	215.01	38.93	48484.87
Salt Lake City	4411.33	2540.59	2858.34	3451.74	17384.49	32274.42	23585.44	2256.72	582.65	316.00	187.86	206.91	147.60	38.93	90243.02
Shiprock	830.69	705.71	702.31	1588.20	3668.01	11649.80	622.27	364.89	407.26	514.78	501.40	556.20	418.24	38.93	22568.69
Slick Rock	763.24	513.37	249.09	76.03	232.54	1351.66	1695.34	886.54	784.39	506.68	911.37	7035.79	8944.47	248.19	24199.60
Spook	763.50	513.36	246.74	65.16	72.70	279.42	2279.64	2021.85	2897.87	960.01	483.64	416.65	239.14	38.93	11339.11
Tuba City	767.53	513.53	255.37	557.36	1953.09	2130.83	1854.84	6308.31	6564.37	1946.34	786.04	338.54	280.18	38.93	25355.31
Totals	23202.53	18215.85	21399.81	28314.04	64234.43	96944.08	122218.70	117718.88	123002.78	106871.23	133779.80	134412.98	131181.38	17569.40	1139065.94

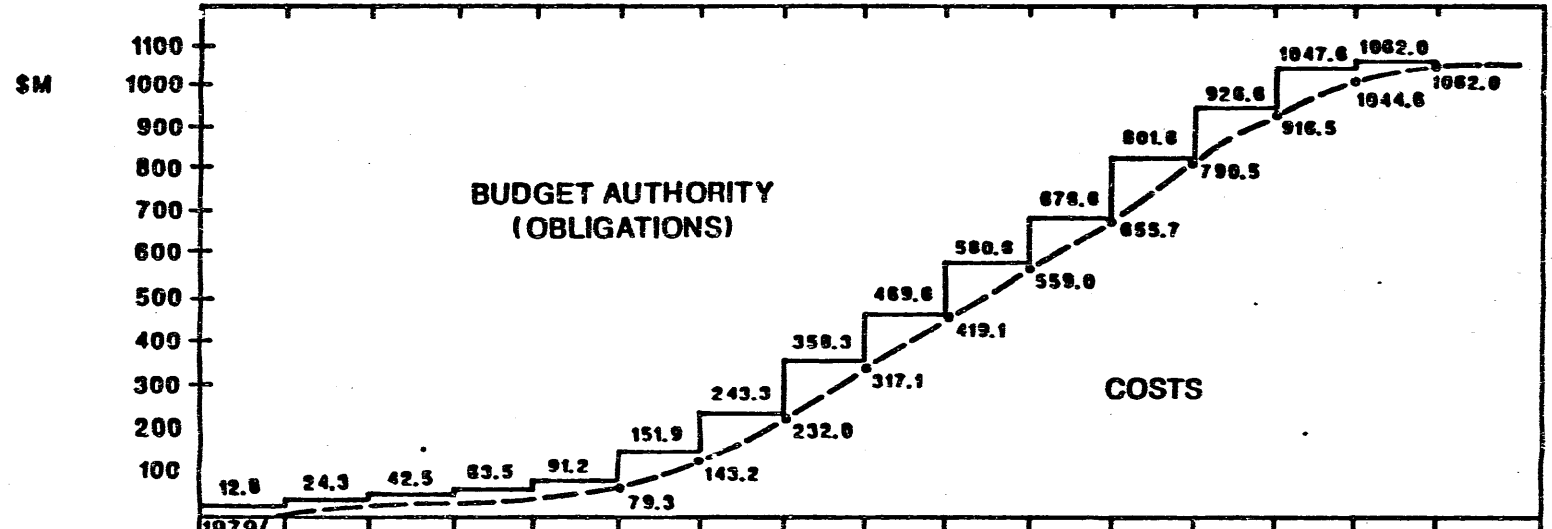
United States Department of Energy

Uranium Mill Tailings
Remedial Action Program

UMTRA

PROJECT BASELINE RESOURCES PLAN

(ESCALATED - $M)



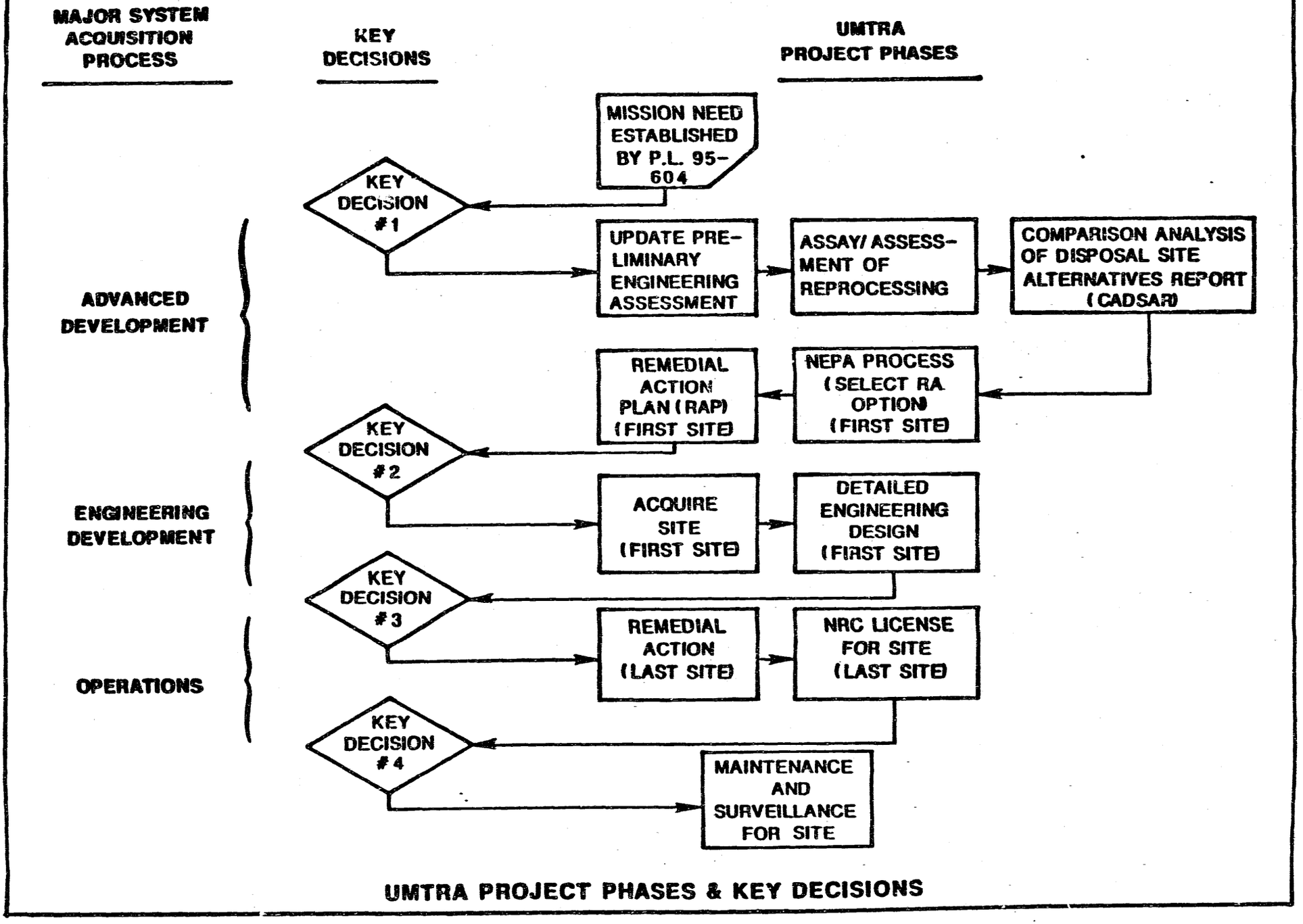
	1979/1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	TOTAL
BA	12.8	11.5	18.2	21.0	27.7	60.7	91.4	115.0	111.3	111.0	98.0	125.0	125.0	121.0	14.4	1062.0
BO	5.7	12.0	16.2	19.5	25.9	63.9	88.8	85.1	102.0	139.9	96.7	135.2	125.6	128.1	17.4	1062.0

FED SHARE:	12.8	11.5	18.2	21.0	27.7	60.7	91.4	115.0*	111.3	111.0	98.0	125.0	125.0	121.0	14.4	1062.0
STATE SHARE:	0.0	0.3	0.2	0.7	1.5	3.7	3.8	6.0	6.4	12.0	10.9	8.8	9.4	10.2	3.2	77.0
TOTAL COSTS:	12.8	11.8	18.4	21.7	29.2	64.4	95.2	121.0	117.7	123.0	106.9	133.8	134.4	131.2	17.6	1139.0**

* FY 1987 amount excludes $1M reprogrammed from the uranium enrichment activities.

** Reflects rounding (TEC = $1139.1M)

ATTACHMENT 5 UMTRA PROJECT PHASES AND KEY DECISIONS



UMTRA PROJECT PHASES & KEY DECISIONS

ATTACHMENT 6 UMTRA PROJECT PHASING

Project phase	Activity	Description	Product	Decision
Technology Development	Provide support to design development.	Develop cost-effective technological alternatives for mitigating environmental problems associated with disposal sites.	Technology improvements for stabilizing tailings.	Is the proper technology being developed? transferred?
Advanced Development				
Planning	Scope Project.	Identify sites.	Project workload.	Is the Project properly scoped?
	Establish Project management concept.	Prepare Project Plan, and implement compliance with DOE MSA requirements.	Project Plan and other Project-level management documentation.	Should the Project proceed as planned? o MSA Key Decision # 1 Should the Project Mission Need be confirmed and the Project Plan approved?
Site Characterization	Update preliminary Engineering Assessments.	Review available data and perform limited measurements to estimate the extent of contamination and environmental hazards.	Processing/Disposal site descriptions.	Are available site data sufficient to choose and justify proposing a remedial action option?

ATTACHMENT 6 UMTRA PROJECT PHASING

Project phase	Activity	Description	Product	Decision
	Select preferred alternative.	Conduct the early site appraisal and alternate site selection process, identify the additional site characterization needs and the technical approach for remedial action (draft CADSAR), and agree with NRC and affected state or tribe on preferred remedial action option (final CADSAR).	Draft/Final Comparative Analysis of Disposal Site Alternatives Report (CADSAR).	Do the Project participants agree on the technical approach?
	Evaluate reprocessing.	Determine the technical feasibility and economic viability of reprocessing the mill tailings.	Expressions of interest from commercial reprocessors.	Is reprocessing economically and technically viable?
NEPA Process	Develop remedial action and disposal options.	Develop options for remedial action including preliminary schedules, costs, risk and benefit assessment. Evaluate principal options of stabilization in place or off-site disposal.	Draft Environmental Assessment (EA)/ Environmental Impact Statement (EIS).	What are environmental impacts of remedial action options?
	Conduct environmental assessment.	Perform required data collection and analyse to obtain environmental data and characterize the impacts of remedial operations.	Final EA/Finding of No Significant Impact.	Are there any significant impacts? Should the preferred option be implemented or is an EIS required?

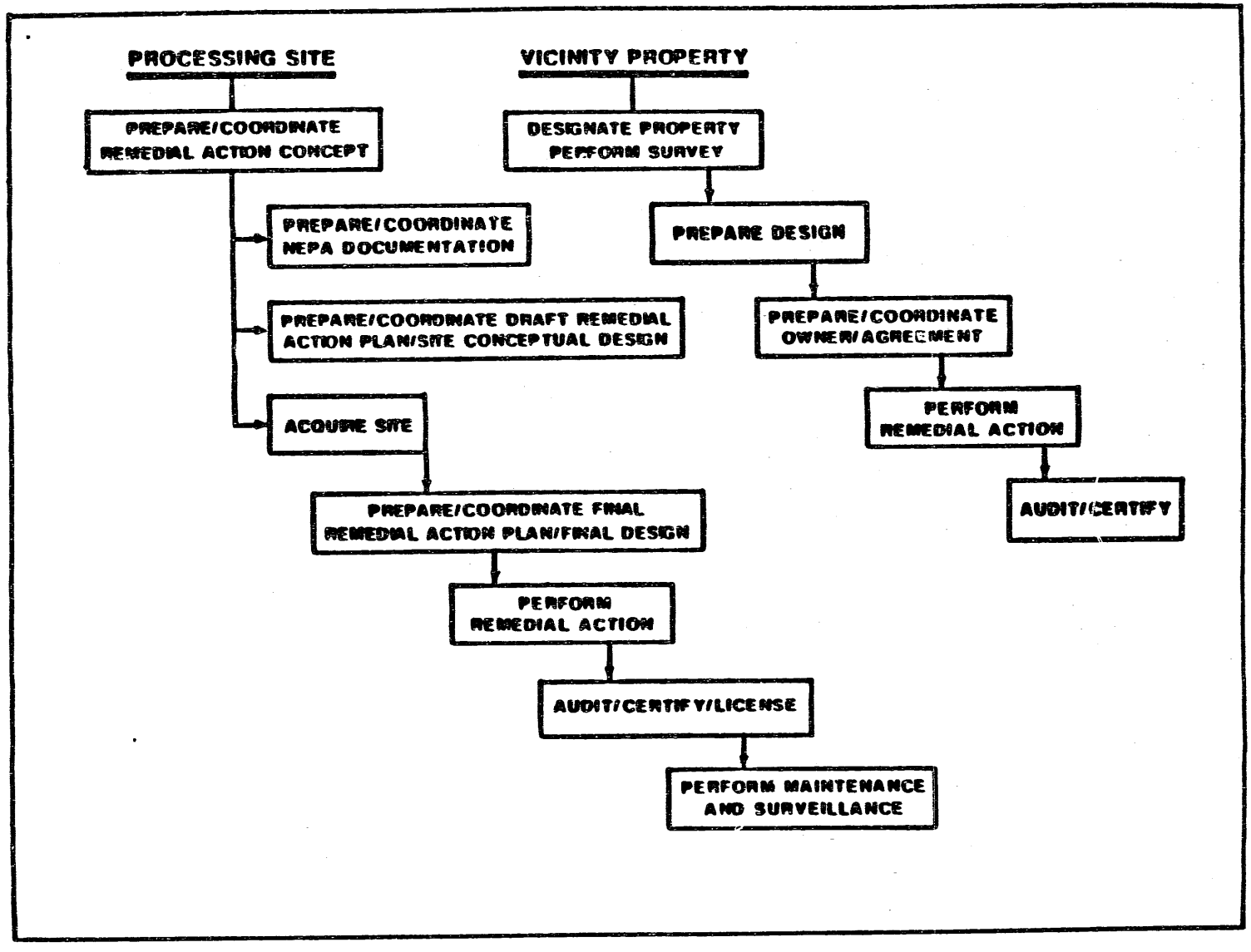
ATTACHMENT 6 UMTRA PROJECT PHASING

Project phase	Activity	Description	Product	Decision
	Analyze in detail the environmental impact.	Prepare an EIS and make available for public, State/Tribe, and NRC review.	Final EIS/ROD.	Should the preferred option be implemented?
Remedial Action Planning	Perform remedial action planning and design development.	Prepare a detailed site plan that includes problem description and remedial measures, environmental, health and safety requirements, responsibilities of Project participants, schedule, cost estimate, conceptual design (draft RAP).	Draft Remedial Action Plan (RAP).	Does the RAP meet the EPA standards? o MSA Key Decision # 2 Should the Project proceed into engineering development?
Engineering Development				
Site Acquisition	Acquire processing site or disposal site where appropriate.	Purchase fee simple title (including mineral rights and surface mineral value) or withdraw land from public domain (except Indian lands).	Remedial Action Agreement, real estate purchase agreement, or land withdrawal application.	Will the land be acquired in time to support the remedial action schedule?
Remedial Action Design	Perform detailed engineering.	Prepare the final drawings, specifications, cost estimate, and schedule; finalize the RAP for the remedial action and tailings disposal; and assure that the final design meets EPA standards.	Final RAP/final design.	Is the design consistent with design criterion? Does design meet the remedial action schedule? o MSA Key Decision # 3 Should the Project proceed into remedial operations?

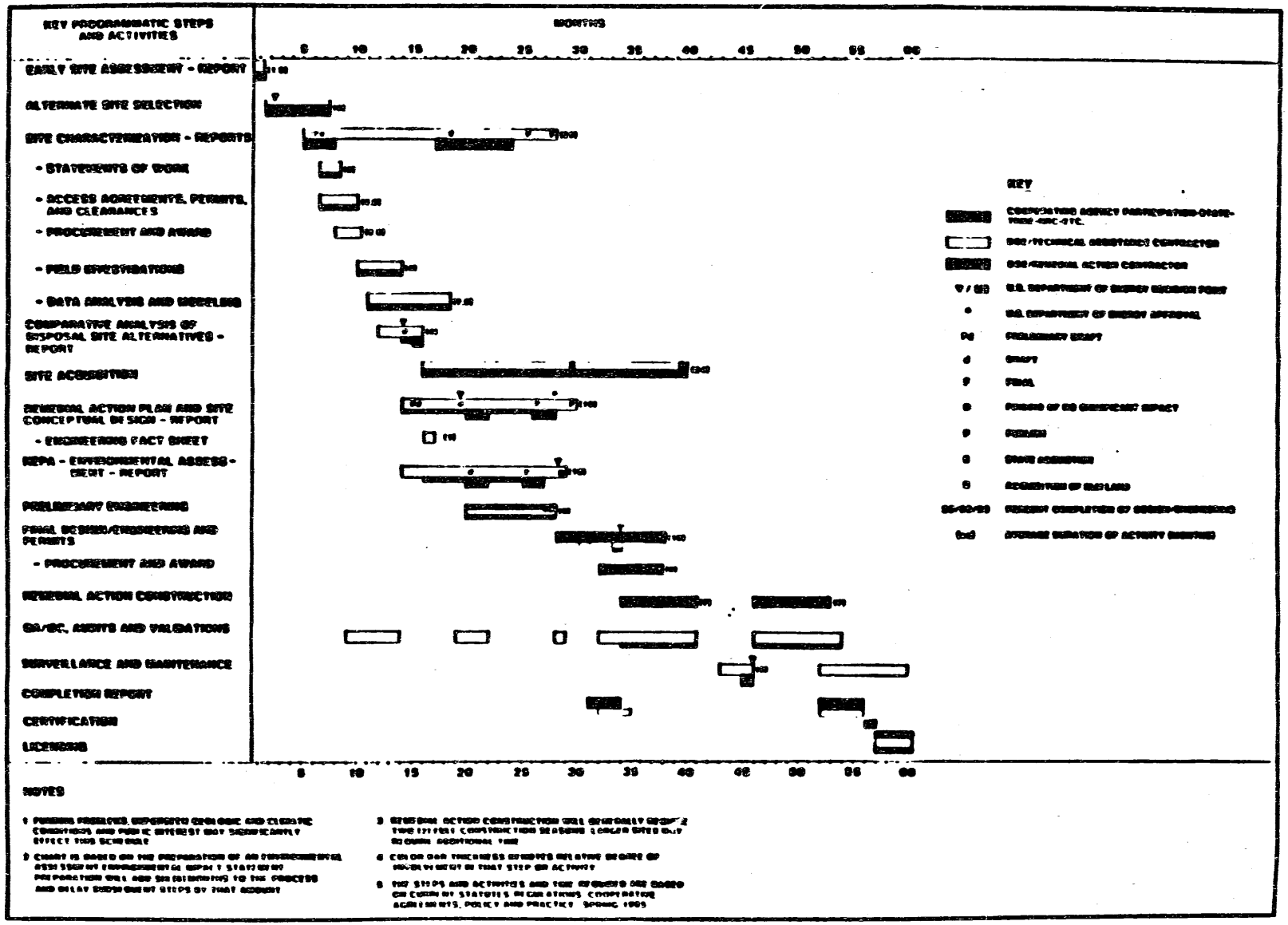
ATTACHMENT 6 UMTRA PROJECT PHASING

Project phase	Activity	Description	Product	Decision
Operations				
Site Remedial Action	Conduct remedial operations.	Implement the remedial action as outlined in the technical specifications, plans, procedures, and drawings.	Stabilized site and Site Completion Report.	Does the remedial action comply with the EPA standards?
Certification	Verify EPA standards have been met.	Certify, with NRC concurrence, that the provisions of the final design have been satisfied.	Certification Report.	Has the final disposal site been constructed per the final design?
Licensing	Obtain NRC license for disposal site.	Prepare and submit to NRC the Site Surveillance and Maintenance Plan.	General license for post-remedial maintenance.	Will the disposal site integrity be maintained after remedial action?
Surveillance & Maintenance	Implement monitoring.	Conduct site inspections to ensure the site remains environmentally sound.	Site inspection and annual Surveillance & Maintenance Reports.	Does the disposal site continue to function as designed? o MSA Key Decision # 4 Should the Project be terminated and long-term surveillance and maintenance begin?

ATTACHMENT 7A UMTRA PROJECT FUNCTIONAL WORKFLOW



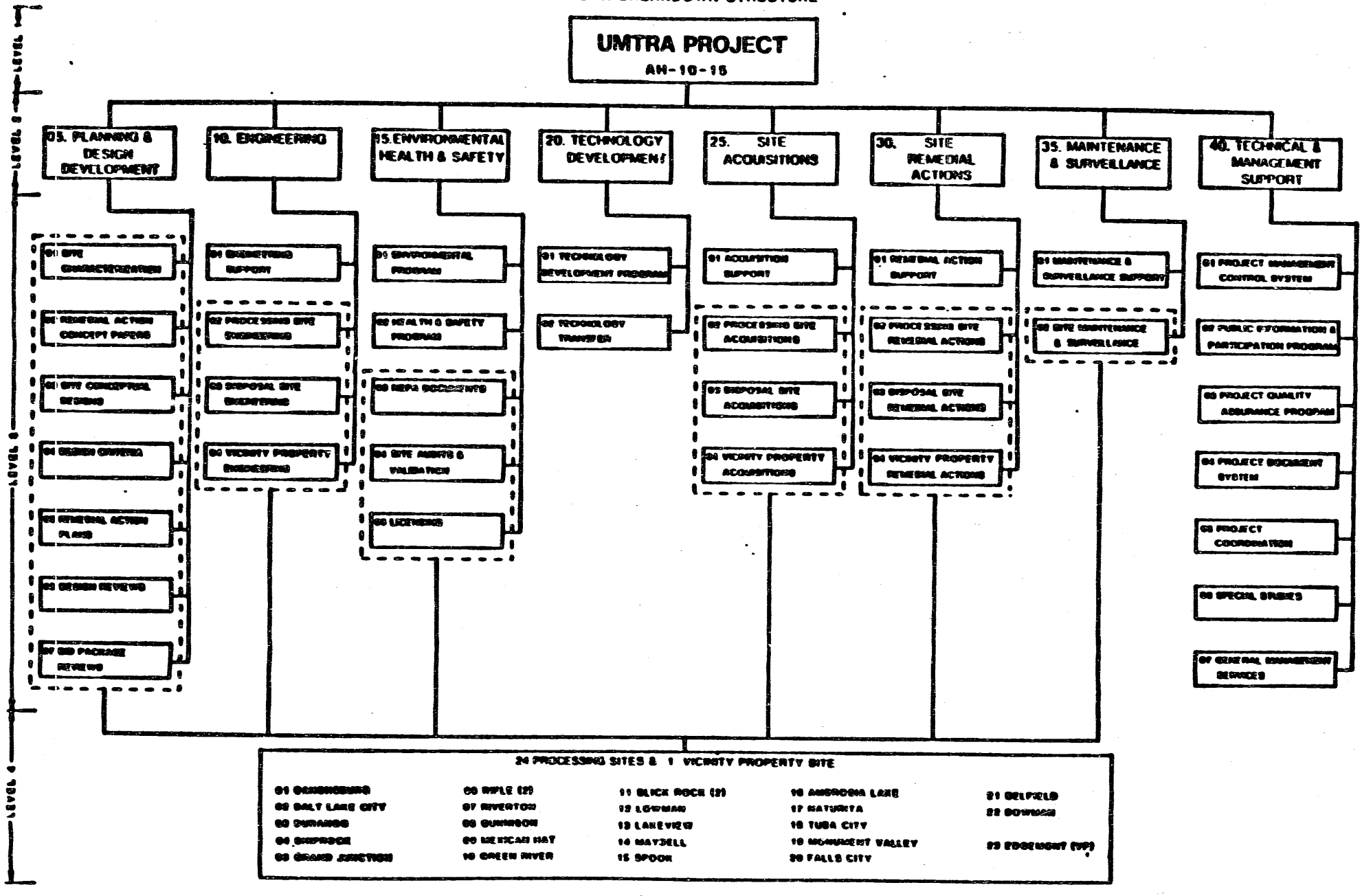
ATTACHMENT 7B GENERALIZED UMTRA REMEDIAL ACTION FLOW CHART



ATTACHMENT 8

URANIUM MILL TAILINGS REMEDIAL ACTIONS (UMTRA) PROJECT

WORK BREAKDOWN STRUCTURE



ATTACHMENT 9 UMTRA PROJECT RISKS AND IMPACT ASSESSMENT

PROJECT BASELINES	MAJOR RISK AREAS AND IMPACTS				
	INSTITUTIONAL INTERFACES	VICINITY PROPERTIES	SITE ACQUISITION	TECHNOLOGY	ENVIRONMENTAL HEALTH & SAFETY
SELECTION/PERFORMANCE REMEDIAL ACTION CONCEPTS NEPA DOCUMENTATION REMEDIAL ACTION PLANS REMEDIAL ACTION DESIGNS	HIGH IMPACT	LOW IMPACT	LOW IMPACT	MODERATE IMPACT	LOW IMPACT
COSTS PROJECT TOTAL COST ESTIMATE STATE COST SHARE	HIGH IMPACT	HIGH IMPACT	MODERATE IMPACT	HIGH IMPACT	LOW IMPACT
SCHEDULES PROJECT MASTER SCHEDULE PROCESSING SITE SCHEDULE VICINITY PROPERTY SCHEDULE SITE SCHEDULES	HIGH IMPACT	HIGH IMPACT	HIGH IMPACT	MODERATE IMPACT	MODERATE IMPACT

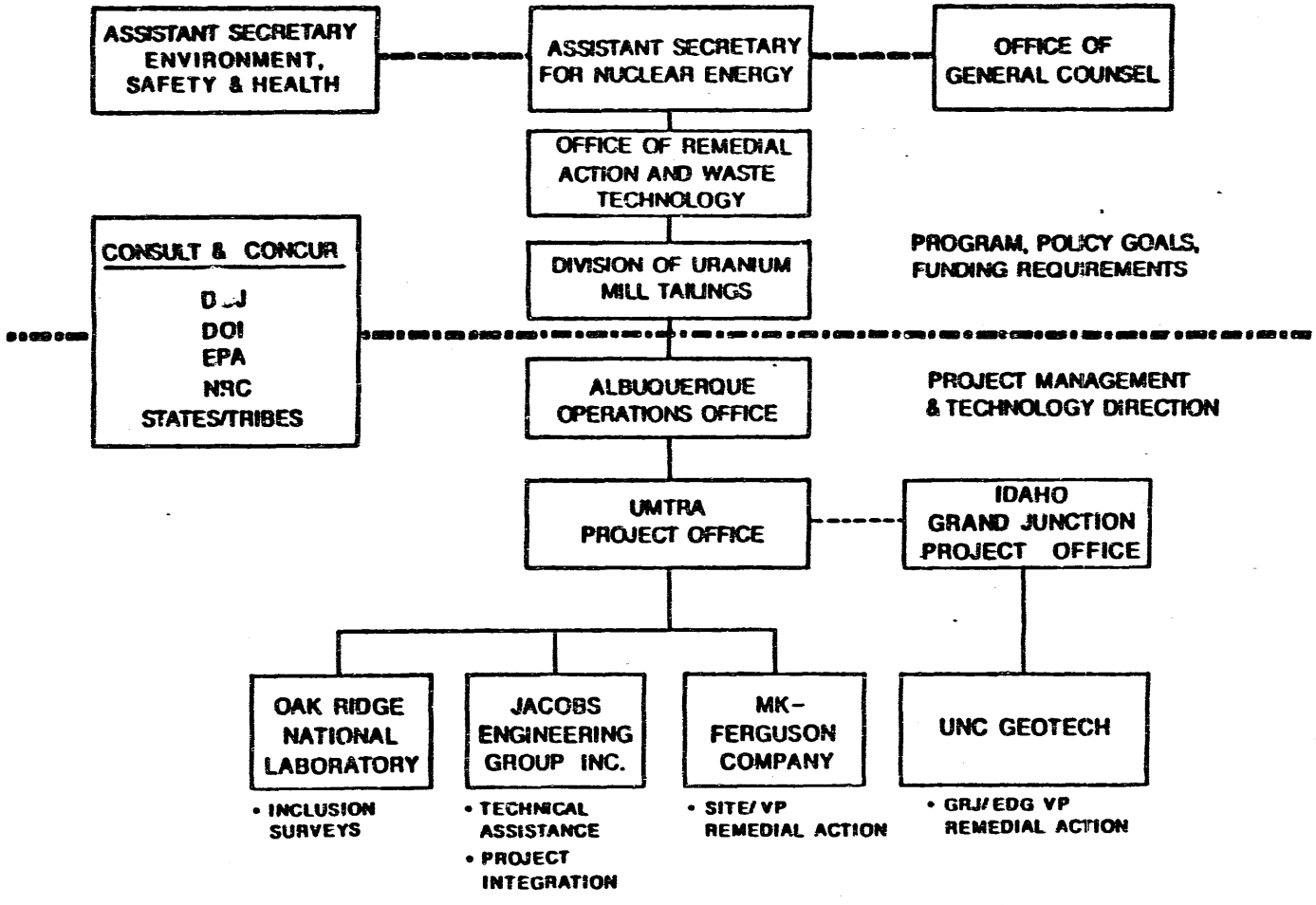
ATTACHMENT 10 UMTRA PROGRAM ORGANIZATION AND INTERFACES

United States Department of Energy

Uranium Mill Tailings
Remedial Action Program

UMTRA

UMTRA PROJECT PARTICIPANT STRUCTURE



ATTACHMENT 11

UMTRA PROJECT DOCUMENT RESPONSIBILITIES

	NE	EH	PO	TAC	RAC
MANAGEMENT DOCUMENTS					
Project Charter	A/P		P		
Project Plan	A		P		
Project Management Plan	A		P		
Project Work Breakdown Structure	R		A/P		
Contractor Management Plan			A	P	P
Contractor Procedures			R	A/P	A/P
Project Surveillance & Maintenance Plan	A		A	P	I
PROJECT PROCEDURES					
Change Control Procedures	R		A	P	I
Public Information Plan	R		A	P	I
Public Participation Plan	R		A	P	I
Quality Assurance Plan	R	R	A	P	I
Environmental Health and Safety Plan	R	R	A	P	I
Vicinity Properties Management & Implementation Manual	R		A	P	I
Plan for Implementating EPA Standards at UMTRA Sites	R		A	P	I
Key Programmatic Steps and Activities for Implementing the UMTRA Program	R		A	P	I
Processing Site Certification Plan	A		A	P	I
TECHNICAL DOCUMENTS					
Site Characterization Reports	R		A	P	P
Comparative Analysis of Disposal Sites Alternatives Report	R		A	P	
Environ. Assess./Impact Statement	A/R*	A	R	P	
Remedial Action Plan	A		A	P	I
Detailed Design			A	R	P
Site Certification Reports	R		A	P	P
Site Surveillance and Maintenance Plans	R		A	P	
Site License Application	R		A	P	
SCHEDULE AND COST ESTIMATE DOCUMENTS					
Headquarters Controlled Milestones	A/P		R/I	I	I
Project Sites Master Schedule	A		P	I	I
Contractor Schedules			A	P	P
Project Schedule & Cost Estimate Report	C		A	P	I
Preliminary Design Estimate			A	I/R	P
Definitive Design Estimate			A	I/R	P

NE - UMTRA Program Office
EH - Office of Environment, Safety and Health
PO - UMTRA Project Office
TAC - Technical Assistance Contractor
RAC - Remedial Action Contractor

A - Approve
R - Review
P - Prepare
C - Concur
I - Input

*Reviews all documents and approves Records of Decisions.

ATTACHMENT 12 UMTRA PROJECT ACQUISITION STRUCTURE

UMTRA PROJECT ACQUISITION STRUCTURE

STRUCTURE COMPONENT	CONTRACTOR	CONTRACT IDENTIFICATION	CONTRACT TYPE	AWARD DATE	TERMS	COMMENT
Technical Assistance Contractor	Jacobs Engineering Group Inc.	AL 14086	CPFF	3-25-82	36 Mos.*	Negotiated and funded via discrete term task agreements. Includes options for CPAF conversion.
Remedial Action Contractor	MK-Ferguson Company	AL 18796	CPFF	4-18-83	36 Mos.**	Negotiated and funded via discrete term task agreements.
Cooperative Agreements	Colorado	AL 16257	CA	10-19-81	84 Mos.	Sole source awards for 84 months. All except Navajo and Hopi Tribes include provisions for 10 percent cost sharing. All include provisions for site acquisition, remedial action plan concurrence, and site access agreements.
	Utah	AL 16309	CA	3-30-83	84 Mos.	
	Pennsylvania	AL 19487	CA	9-05-80	84 Mos.	
	North Dakota	AL 20536	CA	2-23-83	84 Mos.	
	Idaho	AL 20535	CA	3-11-85	84 Mos.	
	Navajo Tribe	AL 16258	CA	10-07-83	84 Mos.	
	New Mexico	AL 20533	CA	9-27-85	84 Mos.	
	Oregon	AL 20534	CA	7-24-84	84 Mos.	
	Texas	AL 20532	CA	3-31-86	84 Mos.	
	Wyoming	AL 19454	CA	1-30-84	84 Mos.	
	South Dakota	AL 23867	CA	5-22-84	84 Mos.	
	Navajo-Hopi Tribe	AL 26731	CA	10-07-83	84 Mos.	
Inclusion Survey Contractor	Oak Ridge National Laboratories	OR 21400	CR	N/A	N/A	Funded through work package authorization.
GRJ/EDG Vicinity Properties	United Nuclear Corporation-Geotech, Inc.	ID 12584	CR	N/A	N/A	Funded through work package authorization.

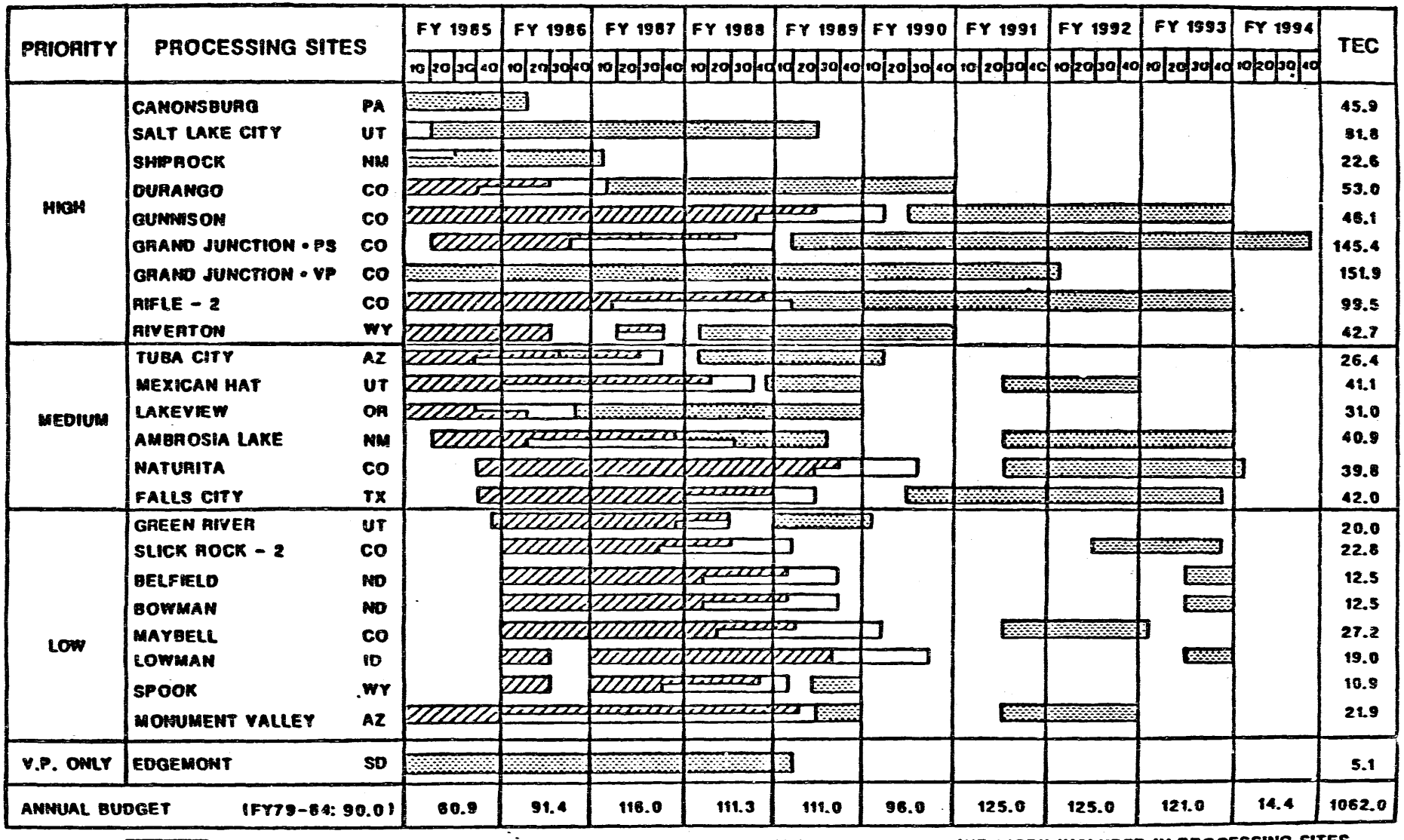
* With 2-24 month options plus 1-18 month extension.

** With 2-24 month options.

ATTACHMENT 13 UMTRA SITES MASTER SCHEDULE

UMTRA PROJECT SCHEDULE

($ IN MILLIONS)



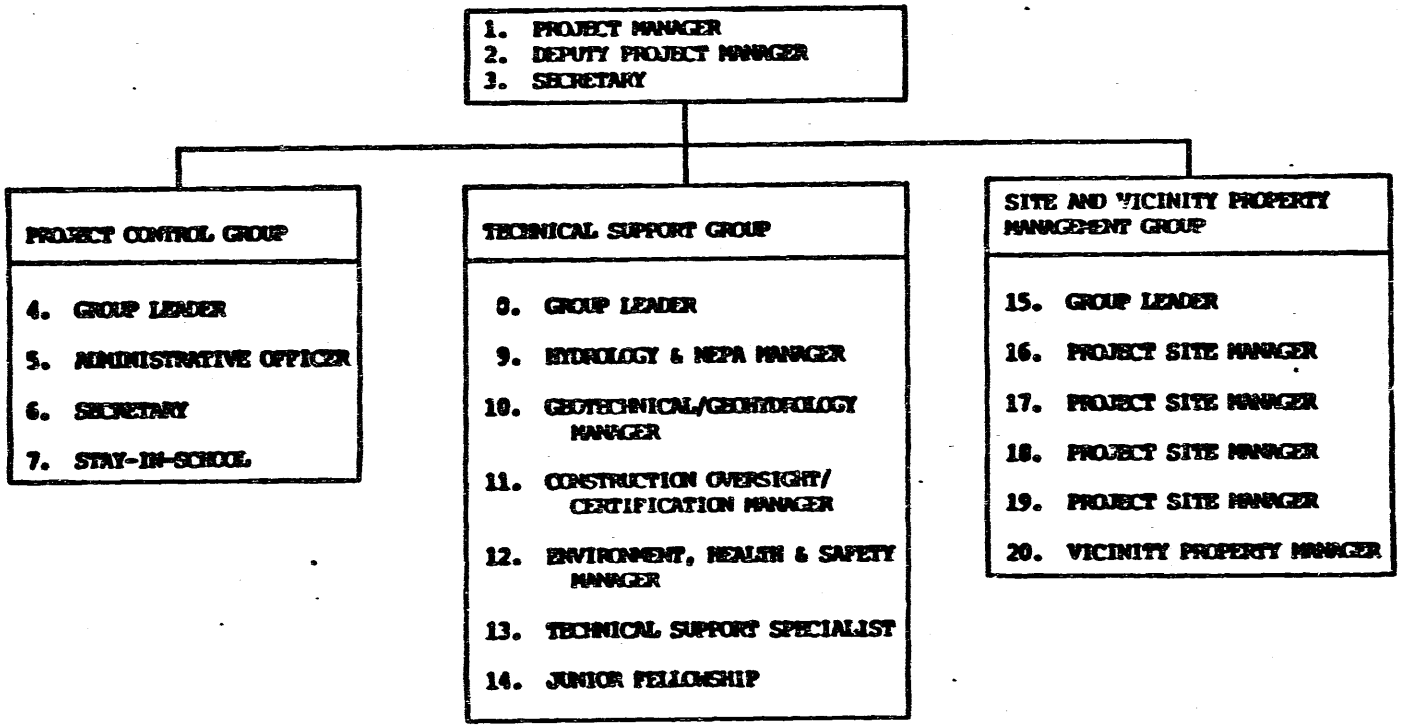
ATTACHMENT 14 UMTRA PROJECT OFFICE ORGANIZATION

United States Department of Energy
Energy Systems Acquisition Review

Uranium Mill Tailings
Remedial Action Program

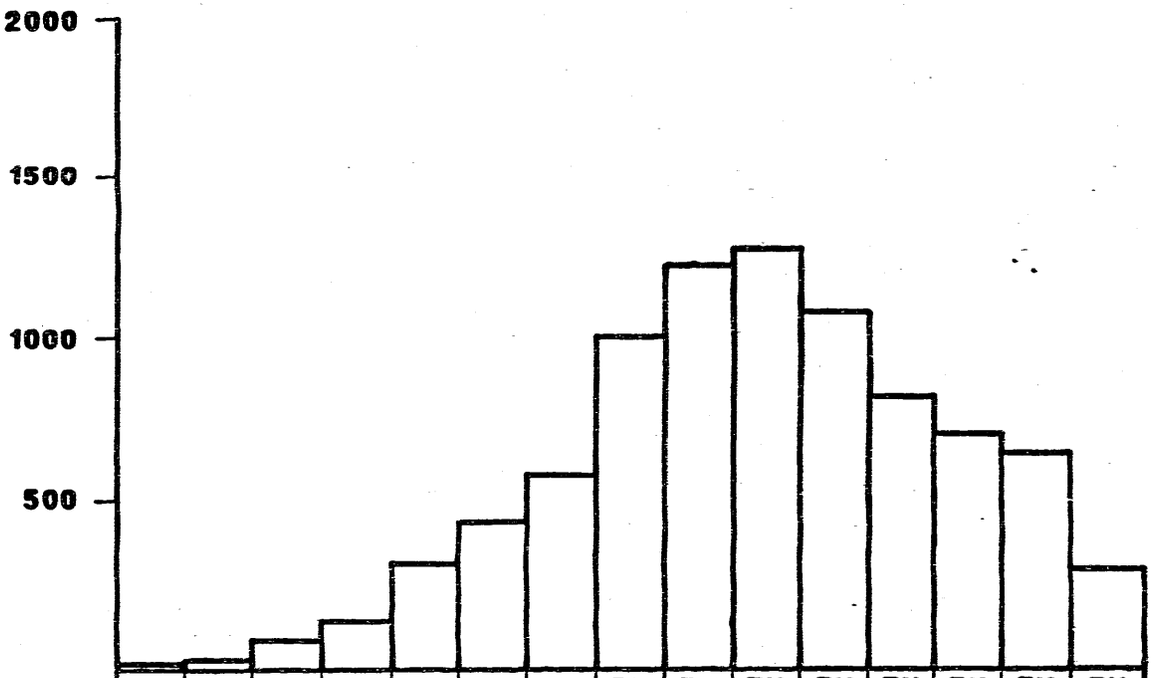
UMTRA

UMTRA PROJECT OFFICE ORGANIZATION



PERSONNEL

(FULL-TIME EQUIVALENTS)



	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
UMTRA PROJECT OFFICE	2	2	4	9	13	19	19	19	19	19	18	15	10	7	5
AL MATRIX *	2	3	3	3	3	3	3	3	3	3	3	3	2	2	2
NEPA CONTRACTOR	4	12	18	18	1										
TAC			35	45	55	125	116	102	105	108	75	74	74	69	31
RAC (NON-CONSTRUCTION)				30	80	80	110	200	300	300	250	250	200	200	50
RAC (CONSTRUCTION)					100	100	150	400	500	600	500	500	500	500	100
GRJ & EDG VP RAC (NON-CONSTRUCTION)	2	2	7	18	17	100	120	125	129	131	77	20	7		
GRJ & EDG VP RAC (CONSTRUCTION)					31	40	40	70	94	92	82	13	5		
INCLUSION SURVEY CONTR.					9	15	35	50	40	15	15	6			
RADON MONITORING CONTR.					6	6	6								
INDEPENDENT VERIF. CONTR.									2	2	2	1	1	1	
TOTALS	10	19	67	123	315	488	599	969	1192	1270	1022	882	799	779	188

* UMTRA PROJECT AUTHORIZED POSITION

UMTRA PROJECT STAFFING

END

DATE FILMED

02 / 12 / 91