Rocky Flats Environmental Technology Site

Draft

ACCELERATED SITE ACTION PROJECT

October 9, 1995

"REVIEWED FOR CLASSIFICATION/UCNI"
By: J. L. McLaughlin (UNU)
Date: 10/9/95

Rocky Flats Preliminary Concept

1995

2003

ABOUT THE COVER PICTURE

The figure on the cover contrasts the current condition with an artist's concept of the Rocky Flats Environmental Technology Site (RFETS) in the year 2003 after completion of the Accelerated Site Action Project (ASAP). More that 425 facilities and most Site utilities and roads have been demolished and their foundations removed or covered by the protective cap shown in the center of the picture. A small protective cap covers the current 800 area and another covers the current sanitary landfill. Only two buildings are shown, one for interim storage of plutonium and another for containerized waste storage. The east-west road is a county road with public access connecting Highway 93 and Indiana Avenue, with minor service roads to the two buildings. This depiction reflects only the RFETS mission needs in 2003. Additional facilities which have been converted for other mission needs, either federal, state, local, or commercial have not been shown but could exist in numerous locations south of the current Central Avenue.

ABOUT THE DOCUMENT

This document describes concepts and technical logic concerning the major issues and tasks at the Rocky Flats Environmental Technology Site. As such, it presumes the reader has an understanding of basic Rocky Flats mission elements, chemical hazards, radioactivity, and environmental regulations at the Site. A glossary is provided to provide some assistance with specific terms that may be unfamiliar.

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
ROCKY FLATS ACCELERATED SITE ACTION PROJECT (ASAP)

INTRODUCTION

The Rocky Flats Environmental Technology Site is developing and implementing a project, the Accelerated Site Action Project (ASAP), to radically decrease the Site risks and increase land availability for potential other uses as compared to the Site's current course of action. This draft plan document represents the first step in the process to determine a possible feasible alternative to accomplish the vision. Further, the document describes a feasible alternative (among many) for achieving the most rapid and economical stabilization of the Site. This stabilization will make the Site nearly risk free for on- and off-site populations and will provide for alternative uses of most of the Site's 6500 acres.

This feasible alternative begins to bracket what is possible at Rocky Flats before the next phase of planning begins. This was necessary to shatter certain cost and schedule paradigms at the Site that, if left unchecked, could have prevented the eventual cleanup. The following phase (described at the end of this summary) will build on this work to develop and evaluate additional alternatives while continuing to increase the value per dollar spent.

PROBLEM DEFINITION AND PROJECT STRATEGY

The fundamental problem at Rocky Flats is that the current nuclear material stabilization and environmental cleanup activities are far too slow, too uncertain in outcome, and too costly.

The *DOE Plutonium Vulnerability Study* identified the Site as having the highest-risk facilities in the nation, and these facilities are located within 50 miles of the Denver metropolitan area's 2 million people.

Compounding this problem is that even with past high funding levels, the Site has had difficulty making meaningful progress toward cleanup. In July 1995 a new contractor operating under a new performance-based contract took over operations at Rocky Flats. Now as the Site is poised to make progress, the budget is falling to levels that allow for little expenditure on risk reduction in the face of high nuclear facilities baseline safety costs. The projected outyear funding profile cannot address DOE's commitments for plutonium and waste treatment and stabilization, or environmental cleanup.

Even with the dramatically lower overall costs represented by this feasible alternative, its costs are still significant and will likely not be fully funded without strong alignment among the interested parties.

The Site's new management strategy is based on the following elements.

- To continue to seek ways to achieve early removal of plutonium and waste from the Site.

- To enable the DOE, Contractor, and workforce to bring the Site to a stable, interim closure state at the earliest possible date. Additional closure actions could be accomplished after this date at a lower overhead rate and higher efficiency than the current Site structure allows.

- To challenge current strategies for environmental restoration, waste management, and plutonium stabilization and storage to achieve risk reduction and land use value for much lower costs and with faster schedules.

- To recognize that the march of time represents the greatest cost at the Site. The Site has spent over $700 million per year in the past with little progress. The baseline for keeping the plutonium facilities safe and stable is about $400 million. Therefore, every month of inactivity or indecision on a path forward is costing taxpayers more than $30 million. This opportunity cost, which was simply accepted in the past, must be factored in to all future decisions.

- To aggressively challenge existing baseline activities and costs, including both DOE and environmental regulatory burdens.

- To view and manage Site activities as projects to better align DOE, the Contractor, and the employees and to increase accountability for scope, schedule, and cost.

- To establish a unifying vision of an interim state for the Site that will simultaneously reduce risks and budget outlays and that can be achieved in the professional lifetime of the people working at the Site.

THE FEASIBLE ALTERNATIVE

The key features of this feasible alternative are described below.

Plutonium and Waste. The plutonium and containerized waste will be in safe, stable storage awaiting the earliest possible shipment from the Site.

Land Use Criteria. While actual future land use was not in the scope of this project, the following land uses would be enabled by this alternative.

- The outer 5,000 acres of buffer zone would support unrestricted use, including open space.

- An inner 1,000 acres of buffer zone would meet standards for use as unoccupied open space.

- Of the remaining 500 acres associated with the industrial area or landfills, 300 acres would be cleaned up to allow future industrial or commercial development, if desired. The 200 most contaminated acres, including the current plutonium processing area, would be safely closed with a long-term landfill cap with long-term monitoring to ensure cap performance and integrity. A groundwater diversion system and passive reactive barriers would be installed.

- Bulk low-level cleanup and demolition waste would be placed under the cap.

- Most buildings, except those with a future economic value, would be demolished or covered by the cap. See **Exhibit 0.1** for a pictorial representation of the feasible alternative.

Importantly, the feasible alternative will not compromise the ability to clean up the entire Site in the future (i.e., to residential standards), including the demolition of the minimal plutonium and waste storage facilities.

Cost and Schedule. As shown in **Exhibits 0.2 and 0.3** this plan can be accomplished for about $6 billion, compared with the current estimate of more than $20 billion. However, it requires larger annual budgets through the year 2002 than are currently anticipated. Alternatively, preliminary estimates indicate that the work represented by this feasible alternative could be accomplished with the currently projected funding scenario by about 2015 for about $10 billion. Even this scenario represents a reduction of more than 50% from the current projection for Rocky Flats in the FY95 Baseline Environmental Management Report (BEMR)

Exhibit 0.4 shows the baseline work logic to accomplish the project by the year 2003. It is important to note that the schedule reflects some activities starting in FY96 that have not been funded. The critical path items are plutonium processing (stabilization), the final decommissioning of building 707 and its support buildings, and the placement of the landfill cap over the Protected Area.

By the end of 2003 (or 2015 at current funding levels), the Site population could drop to less than 300 from the current figure of more than 5,000. The annual operating cost could be less than $40 million, down from more than $600 million currently. The remaining facilities will be configured such that the final closure cost, the demolition of the plutonium and waste storage facilities, will cost less than $200 million. Bringing the 1,500 acres that are currently not designated as residential capable to that standard would cost an additional $5 billion and take an additional decade to complete.

There will also be additional costs, yet to be estimated, associated with the final disposition (shipment) of stored plutonium and waste. These outyear (beyond 2003) costs could be several hundred million dollars depending on disposal costs and criteria.

KEY ISSUES TO BE RESOLVED

Some of the key issues to be resolved in subsequent planning phases of the project include the following.

- Considering the logical array of alternatives that address most stakeholder concerns and determining aggregate stakeholder priorities.

- Evaluating methods to expedite plutonium and waste shipment from the Site.

- Achieving a fundable alternative. It is not clear that the current alternative, even with its dramatic cost and schedule savings, will be funded in preference to a longer duration project.

- Achieving consensus on the strategies for plutonium and waste storage and facility decommissioning.

- Determining the level of plutonium and waste processing, consistent with national interests, that should be done before the materials are placed in potentially long-term storage.

- Establishing the prudent planning horizon for the possibility of long-term storage of plutonium and waste.

- Determining the optimum remediation or stabilization strategy for soil and groundwater to identify the cost-benefit tradeoffs.

- Determining the appropriate authorization basis and safety controls necessary to balance safety and efficiency in proceeding with plutonium, waste, and decommissioning activities.

TECHNICAL SUMMARY

The draft document that follows this executive summary presents the feasibility analysis that was performed to determine whether an accelerated decommissioning of RFETS is possible. Six major tasks were evaluated as a part of the ASAP: Plutonium Consolidation and Stabilization, Waste Management, Facility Decommissioning, Interim Closure, Site Infrastructure, and Implementation. It is important to note that a number of the following tasks discussed are continuations of currently planned activities, such as major plutonium stabilization, while others, such as facility decommissioning, are new.

Plutonium Consolidation and Stabilization

This task selected a feasible alternative, considering recent analysis and plans, with the following attributes:

- Highly enriched uranyl nitrate (HEUN) solutions will be bottled and shipped off the site.
- Plutonium (Pu) metal and oxides will be packaged to meet DOE-STD-3013-94 in double, welded stainless-steel containers.
- Pu solid residues will be processed to meet safe, long-term storage criteria. Where possible, residues will only be repacked and managed as Transuranic (TRU) waste.
- Pu liquid residues will be moved from their current containers and stabilized for long-term storage.
- The Pu and residues to be managed as Special Nuclear Material (SNM) will be stored in a newly constructed storage facility (vault) after consolidation for staging in Building 371.
- Pu and residue processing will be conducted primarily in Building 707.
- Pu pits will be packaged in approved shipping containers.

The estimated cost for this activity is $800M, of which about $150 to $200M is for the new vault. The critical path schedule for both residue and Pu stabilization is expected to continue through 2001. Continued planning and analysis are needed to shorten the required schedule. The post 2003 operating costs are estimated to be $20M.

Issues that remain to be resolved include the following:

- The on-site Pu storage location (new vault, Building 371, or other alternative);
- The implementation methods to meet the criteria for safe, long-term storage of residues;
- Schedule compression, including technology choices for residue stabilization; and
- The quantity and types of materials to be shipped to Waste Isolation Pilot Plant (WIPP) or other locations.

Waste Management

The feasible alternative is to construct a new hardened TRU waste storage facility. This facility may store up to 3,000 kgs of plutonium within the waste matrix of approximately 20,000 drums. Other parts of the feasible alternative include the following elements:

- Bulk Low-Level Waste (LLW), Low-Level Mixed Waste (LLMW), and remediation and decommissioning waste would be disposed of in an on-site disposal facility located in the industrial area (probably in the Protected Area). Some waste may be shipped off-site and most waste will be disposed of in such a way that will facilitate future off-site disposal if it becomes cost effective.
- Waste treatment would be accomplished only as necessary regardless of regulatory imperatives to ensure safety for long-term storage or disposal.
- Waste would be stored temporarily in existing buildings outside the Protected Area while long-term storage capacity is constructed.
- All landfills and waste facilities would be closed by the end of 2003.

The cost for this alternative is about $550 M with about $100 M required for the new hardened TRU waste storage facility. This new facility would be expected to be operational in the year 2000. Long-term Operations and Maintenance (O&M) costs after 2003 are estimated to be about $3M per year.

Some issues for further consideration include

- On-site vs. off-site storage/disposal of all waste types;
- Treatment criteria for long-term storage or disposal for all waste types and regulatory alignment with criteria; and
- Lower-cost options for storing TRU waste than in a hardened facility.

Facility Decommissioning

There are more than 425 facilities at the Site to be decommissioned in some fashion. The feasible alternative has the following attributes.

- Most buildings are not radiologically contaminated and will be dismantled except for those deemed economically valuable (e.g., National Conversion Pilot Project (NCPP)).
- The major plutonium buildings and Building 881 will be partially dismantled with the lower-level portions entombed. This would involve removing significant contamination and then filling the basement areas with demolition debris, entombing the basement with material such as impervious clay slurry, and covering with a landfill cap.
- Many of the plutonium buildings must remain operational for several years in order to consolidate and stabilize plutonium and waste. The approach will therefore be to remove administrative and ancillary buildings first in order to clear space and to level the workload. Major plutonium facilities, such as Buildings 371 and 707, will be the last to be completely decommissioned.

Current planning indicates most facilities can be decommissioned by the end of FY02 at a total cost ranging from $1.5 billion to $2 billion.

The remaining issues to be addressed include further refinement of building sequencing and further development of a detailed logic, safety authorization basis, and cost estimates for all buildings. Other issues include

- Ensuring on-site and off-site safety during decommissioning;
- Determining the cost-benefit tradeoffs regarding the degree of contamination to be left with the building rubble or placed in a disposal cell;
- Defining the regulatory process for decommissioning; and
- Determining the workforce composition and skill mix.

Interim Closure

The feasible alternative for interim closure results in the unrestricted use (from a contamination perspective) of 5,000 of the Site's 6,500 acres. An additional 1,000 acres would be suitable for use as unoccupied open space, and 300 acres would be suitable for industrial reuse. The remaining 200 acres would be placed under a landfill cap, which includes the current landfill (OU7), the 800 old uranium processing area, and the plutonium processing area (Protected Area).

Groundwater and surface water would be protected to national standards for water leaving the site by upgradient diversion and down-gradient passive reactive barriers.

About 40 of the 173 individual hazardous substance sites (IHSSs) that are high or medium ranked from a risk perspective would be remediated. The remaining 133 Sites have low enough contamination and risk levels that they can be released without further action.

The cost for this activity is about $400M with about half the cost for IHSS remediation and half the cost for landfill caps and water management. Long-term monitoring will cost about $3M per year after 2003.

The final cap is on the critical path schedule. It will take about two years to complete and extend about six months after the last building (Building 707) has been fully decommissioned.

Issues to be resolved include the acceptability of the land use restrictions of the feasible alternative and the standards that apply to those land use criteria. Additionally, there are many who favor a "greenfield" site cleanup that would cost another $5 billion or so to achieve. This alternative will be developed in the next planning phase. Other issues include

- The methods to be used for surface and groundwater control (e.g., reactive barriers) and water quality standards;
- Integration with the issues to be resolved for waste management and facility decommissioning regarding on-site disposal of waste and decommissioning materials;
- The design of the landfill cap to ensure long-term integrity; and
- The impacts of excavating and placing the more than 2,000,000 cubic meters of material needed for the landfill cap.

Site Infrastructure

The feasible alternative requires a site infrastructure to support the remaining plutonium and waste storage facilities and about 300 total staff. The strategy for site infrastructure is to relocate most infrastructure off-site. This would be accomplished by using public or commercial utilities to provide power, gas, water, sanitary solid waste, etc., service directly to buildings. Sewage would be managed on-site in a small lagoon or septic system. Except for the protective security force, most emergency and health services would also be contracted for off-site. All office and support facilities would be located off-site to reduce the demand for expensive on-site infrastructure.

This commercial approach would have the advantage of bringing utility trunk services to the Site to support future private industrialization at the discretion of land use authorities.

It is estimated to cost about $70M to develop the infrastructure for commercial service to the Site and convert other site infrastructure to the new configuration. The post 2003 annual operating costs are estimated to be $12M. There are no critical path schedule items in this conversion.

Issues to be resolved include verifying the desirability of this fairly radical reconfiguration and the ability and willingness of the commercial and public utilities and emergency services to serve the Site. Additionally, once the configuration is approved, the timing for its implementation (sooner or later) needs to be evaluated.

Implementation

Some key implementation strategies include the following.

Regulatory Alignment. The regulatory structure and process needs must be aligned to accomplish the Site closure mission. Currently, the Site is regulated as an operating facility, which creates regulatory road blocks to an expedited cleanup that would not exist at a typical Superfund site.

Workforce Restructuring. DOE and the contractor will need to carefully coordinate realignment of required work, skills mix, and retraining to provide the most productive use of the workforce. A human resource plan must consider the inevitable downsizing of the workforce.

Stakeholder and Political Alignment. A scope, schedule, and funding package needs to be developed that meets the consensus needs of both the funders (i.e., Congress, DOE/HQ) and the beneficiaries (e.g., Colorado and the nation at large) of the project. A series of working sessions and briefings will be conducted to accomplish this over the next several months.

Site Productivity. The Contractor and DOE need to continue to evaluate procedural and motivational methods to increase the Site's productivity and cost, scope, and schedule accountability. It is believed that this preliminary integrated vision for the Site's new mission will be a key factor in this effort.

Projectizing. The implementation plan calls for projectizing the Site, as indicated by the word 'project' in the ASAP. Projectizing has some significant structural and process implications for DOE, the Contract, and the Contractor. One of the most important enablers would be to align DOE and Contractor performance measures to specific scope accomplishments rather than by fiscal year.

STAKEHOLDER INVOLVEMENT AND PROJECT PRECURSOR MILESTONES

Background. This ASAP concept, which had its formal beginning on August 1, 1995, had many important precursor events, described below. ASAP incorporates many of the features of previous work at RFETS.

- In 1993, the Site mission was changed from production to cleanup.
- In 1994, the Site responded to the mission change by issuing a request for proposals to procure a new performance-based integrating management contractor for the Site to carry out the new mission.
- In early 1994, the Site began negotiating a new cleanup agreement with the US Environmental Protection Agency (EPA) and the State of Colorado to reflect the fact that the previous agreement, the Interagency Agreement (IAG), did not reflect the mission change.

- In 1994, the Defense Nuclear Facilities Safety Board issued two important recommendations (94-1 and 94-3) dealing with plutonium stabilization and storage at the Site.

- In 1994, the Site issued a Strategic Plan with input from various stakeholder groups.

- In early 1995, a series of public meetings were held regarding the then-proposed solar pond remediation plan, which involved construction of a Corrective Action Management Unit (CAMU) waste disposal facility by the solar ponds.

- In early 1995, the Site had several important interactions with regulators and stakeholders to review the path-forward options for the Site. One of the most important of these was the March 4 summit. At the summit there was a consensus to place a higher priority on risk reduction by stabilizing plutonium than on environmental remediation. On-site disposal was also discussed by many attendees as a way to cut costs to enable more risk reduction. Another important event was the April regulatory summit, at which similar conclusions were reached.

- In early 1995, Kaiser-Hill was selected as the new contractor to carry out the mission. Kaiser-Hill assumed responsibility for the Site on July 1, 1995.

- In June 1995, the Future Site Use Working Group issued a consensus opinion that the buffer zone should generally be open space and the industrial area should be for industrial use.

- A series of meetings were held in the summer of 1995 with the state of Colorado, regulators, and many stakeholders regarding the alternatives for plutonium storage at the Site, including the possibility of constructing a new vault. The possibility of long-term storage of plutonium at the Site was addressed.

Involvement In This Draft Plan. It is important to note that essentially most elements in this plan have enjoyed a stakeholder/regulator dialog in the past. However, this is the first time all the issues have been integrated into one product. The integrated concepts in this plan have been presented to representatives of the following groups:

- US EPA,
- Colorado Governor's Office,
- Colorado Department of Public Health and Environment (CDPHE),
- The Rocky Flats Citizen's Advisory Board,
- DNFSB,
- DOE Headquarters,
- Congressmen Skaggs and Schaefer,
- Rocky Flats Local Impact Initiative, and the
- General public (through the Site's monthly stakeholder meeting).

Participants' key areas of concern appear to be ensuring that

- Everything is being done to remove the plutonium and waste from the Site at the earliest possible time.
- The plutonium is stored in the safest possible configuration.
- The implications and choices are clearly outlined and openly made.
- There will be an adequate stakeholder involvement program.
- The tradeoffs among cost, schedule, and final cleanup criteria have been properly balanced.
- Future land use options, including both dedicated open space and economic conversion, have been accounted for and enabled.

NEXT STEPS

This document describes the first planning phase of the project. The Site is currently making adjustments in its FY96 operating activities to accommodate the most basic features of the strategy.

The next phase of the plan, to be accomplished by the end of 1995, will be to develop and evaluate alternatives to address the key policy choices and issues described at the front of this summary. This process will also look at outyear (beyond 2003) scenarios to ensure that the final Site strategy is represented.

It is expected that a preferred plan will emerge from this phase that will allow an even greater shift of resources during the FY96 execution year. This process will include rigorous stakeholder and regulator involvement to ensure mutual understanding and to arrive at a "best solution" that balances competing needs and concerns.

Once the draft master plan has been developed, key decisions and issues will be segregated to determine decision pathways and time frames and more detailed stakeholder involvement in the alternatives involved in those second-tier decisions.

Stakeholders will need to consider important milestones over the next few months. Some of these are described below.

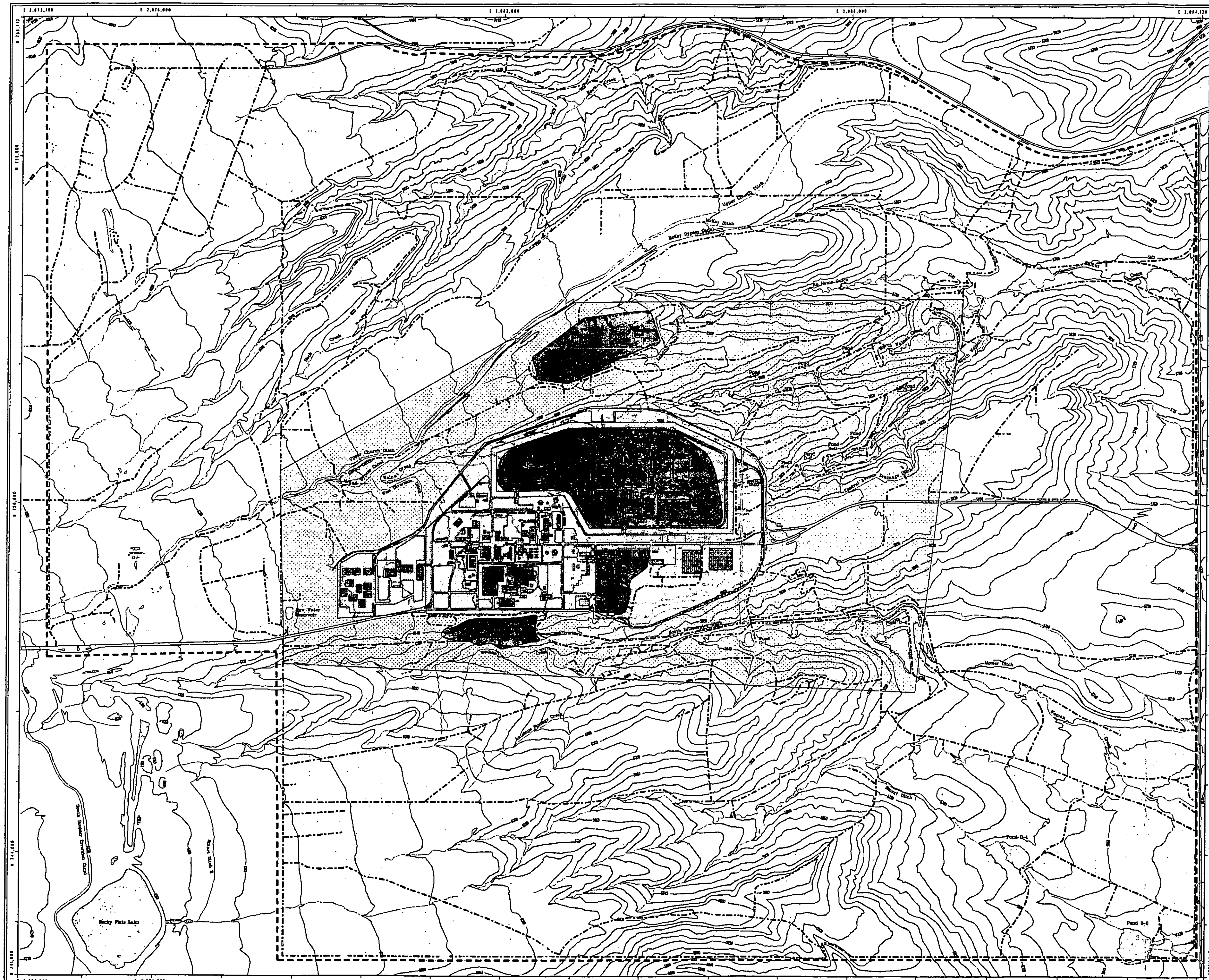
- The October 10 and 11 Workout Session between DOE, EPA, CDPHE, the DNFSB, and Kaiser-Hill to conceptually agree on the regulatory framework for the path forward. The new regulatory agreement, which may result from this workout, will be out for public comment in the November 1995 time frame.
- In November 1995, the Assistant Secretary is to make a recommendation regarding plutonium storage at the Site to respond to DNFSB recommendation 94-3.

- Also in November 1995, DOE will receive public comment on the June 1995 Future Site Use Working Group recommendations.

- A formal public review process will be under way soon to decide on the possible construction of a waste facility for storage or disposal of LLW and LLMW on-site. This expands on the disposal concept developed for the solar ponds remediation project and presented to the public in early 1995.

- As part of this process, in the next several months, the public will be evaluating the treatment and storage concepts for containerized waste on site. Additionally, the facility decommissioning alternatives will be discussed.

- The draft Sitewide Environmental Impact Statement (SWEIS) is due out for public comment early in 1996. The SWEIS will reflect the preferred ASAP alternative.



Conceptual View of Interim Closure

EXHIBIT 0.1

EXPLANATION

- OUTER BUFFER ZONE (4958.7 Acres)
- INNER BUFFER ZONE (1026.8 Acres)
- CLOSED LANDFILLS (53.1 Acres)
- INDUSTRIAL AREA (316.7 Acres)
- CAP (129.9 Acres)

Standard Map Features

- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 19640
1 inch represents approximately 1636.66 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: ***Draft*** September 29, 1995

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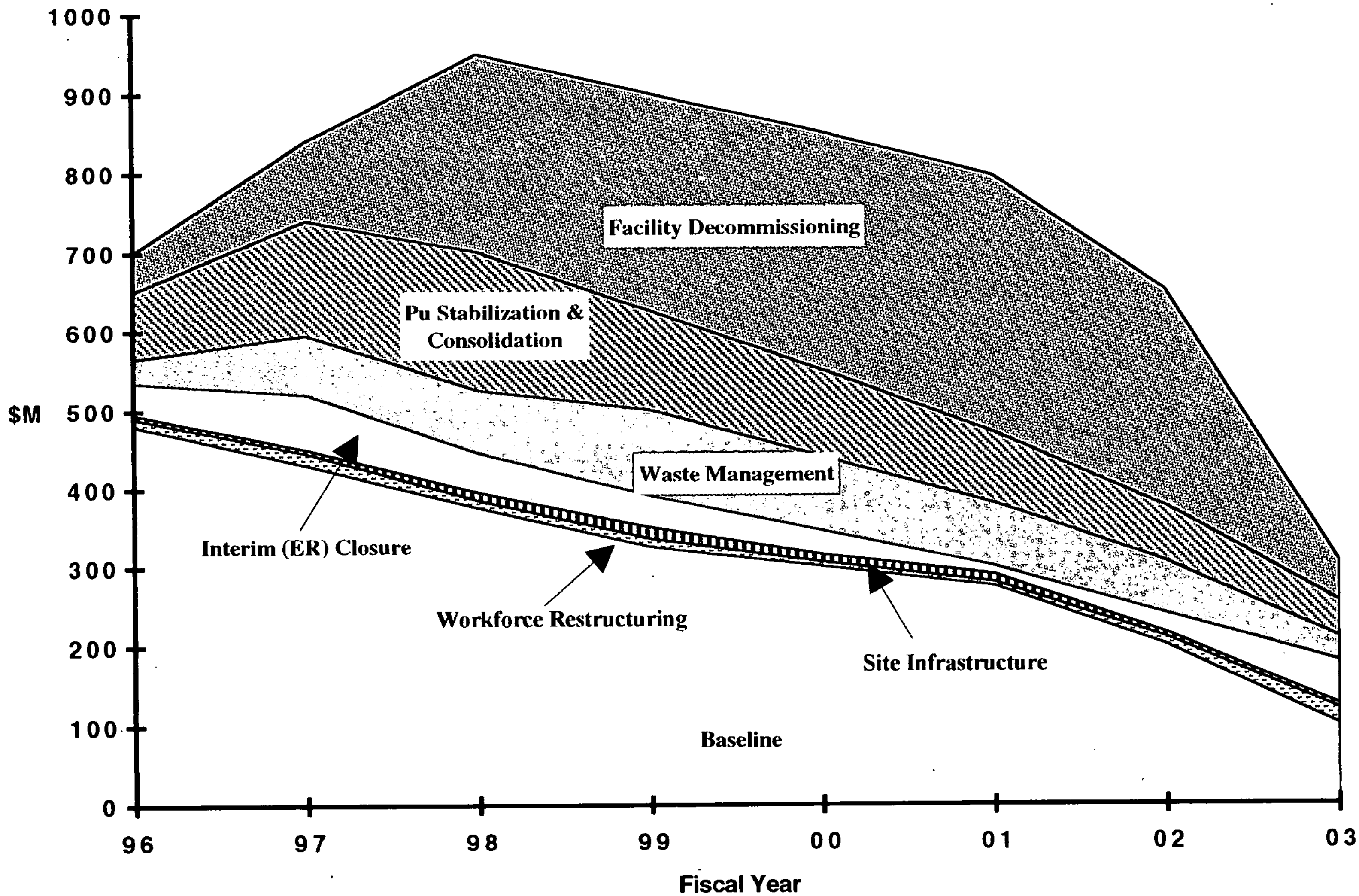
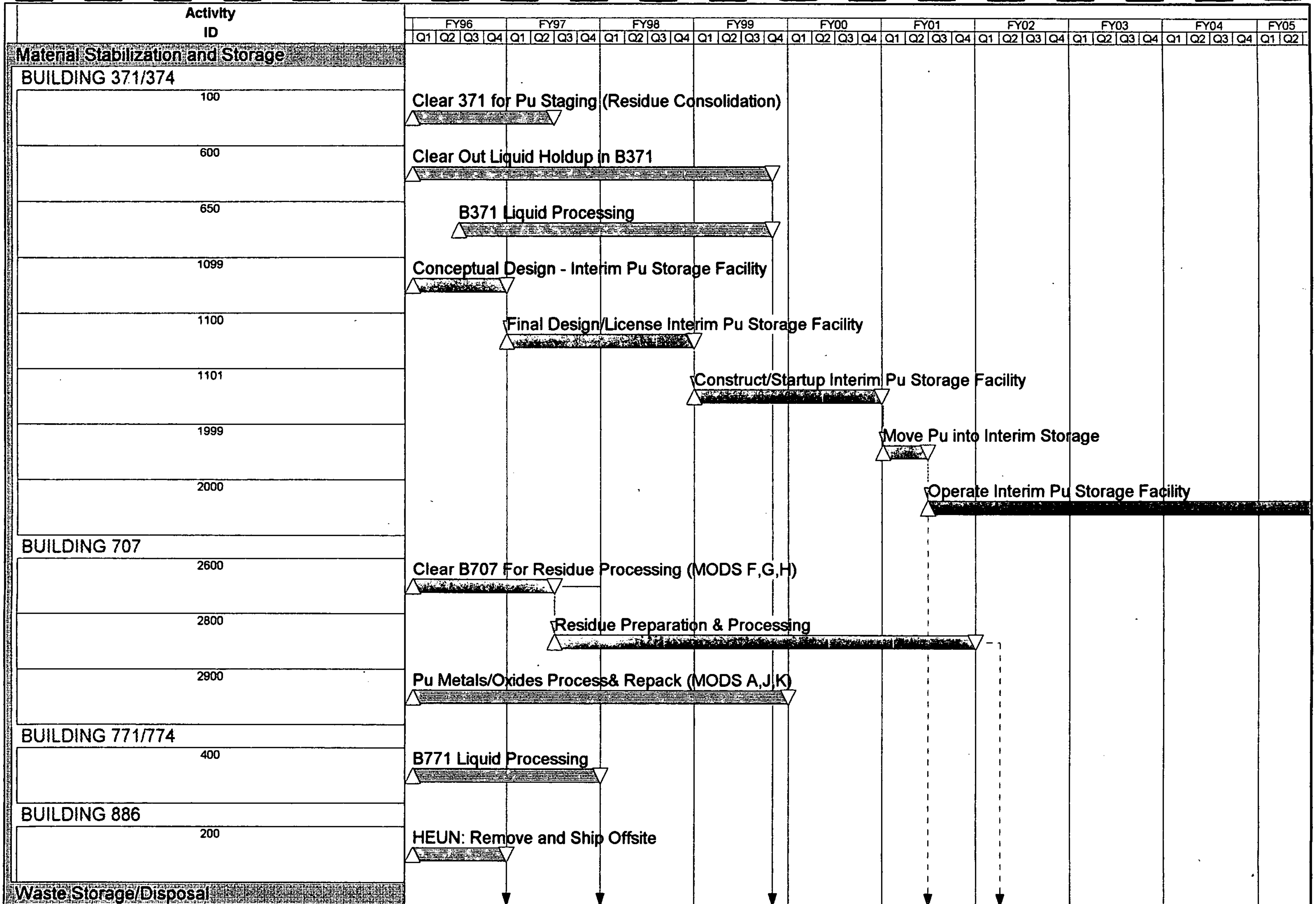
EXHIBIT 0.2: OPTION 1

Cost Profile
$Millions

FY	Workforce Restructuring	Site Infrastructure	Interim (ER) Closure	Pu Stabilization & Consolidation	Waste Management	Facility Decommissioning	Baseline	Total
96	10	5	40	118	30	50	480	733
97	15	5	70	199	65	100	430	884
98	10	10	70	172	80	250	375	967
99	10	15	70	142	110	275	325	947
00	5	15	50	115	90	300	300	875
01	5	10	10	67	75	325	275	767
02	10	5	25	11	60	275	200	586
03	20	5	55	11	25	50	100	266
Subtotal	85	70	390	835	535	1625	2485	6025

EXHIBIT 0.3: ASAP COST PROFILE





Project Start	02OCT95
Project Finish	01NOV05
Data Date	02OCT95
Plot Date	09OCT95

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Early Bar
Progress Bar
Critical Activity

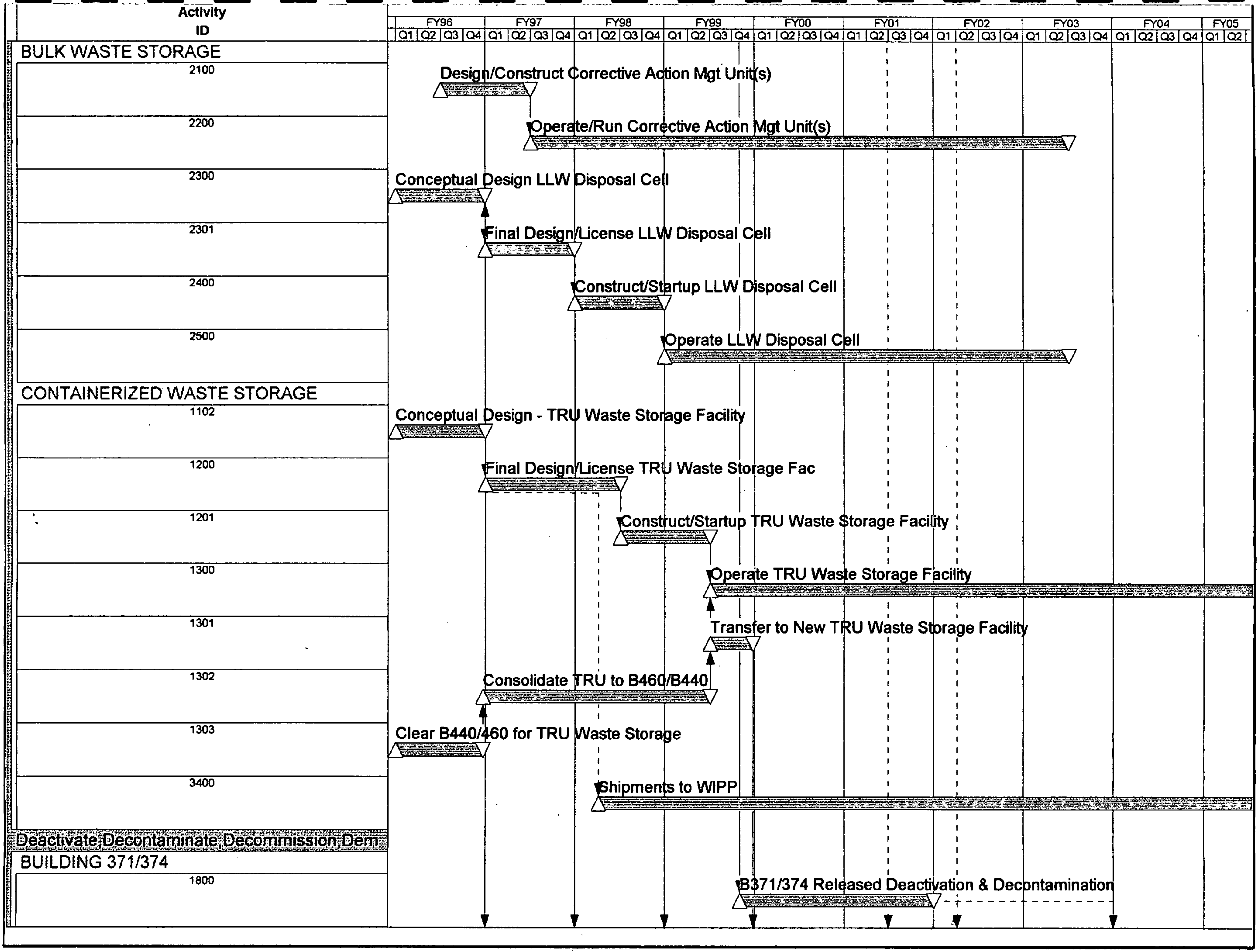
ASAP

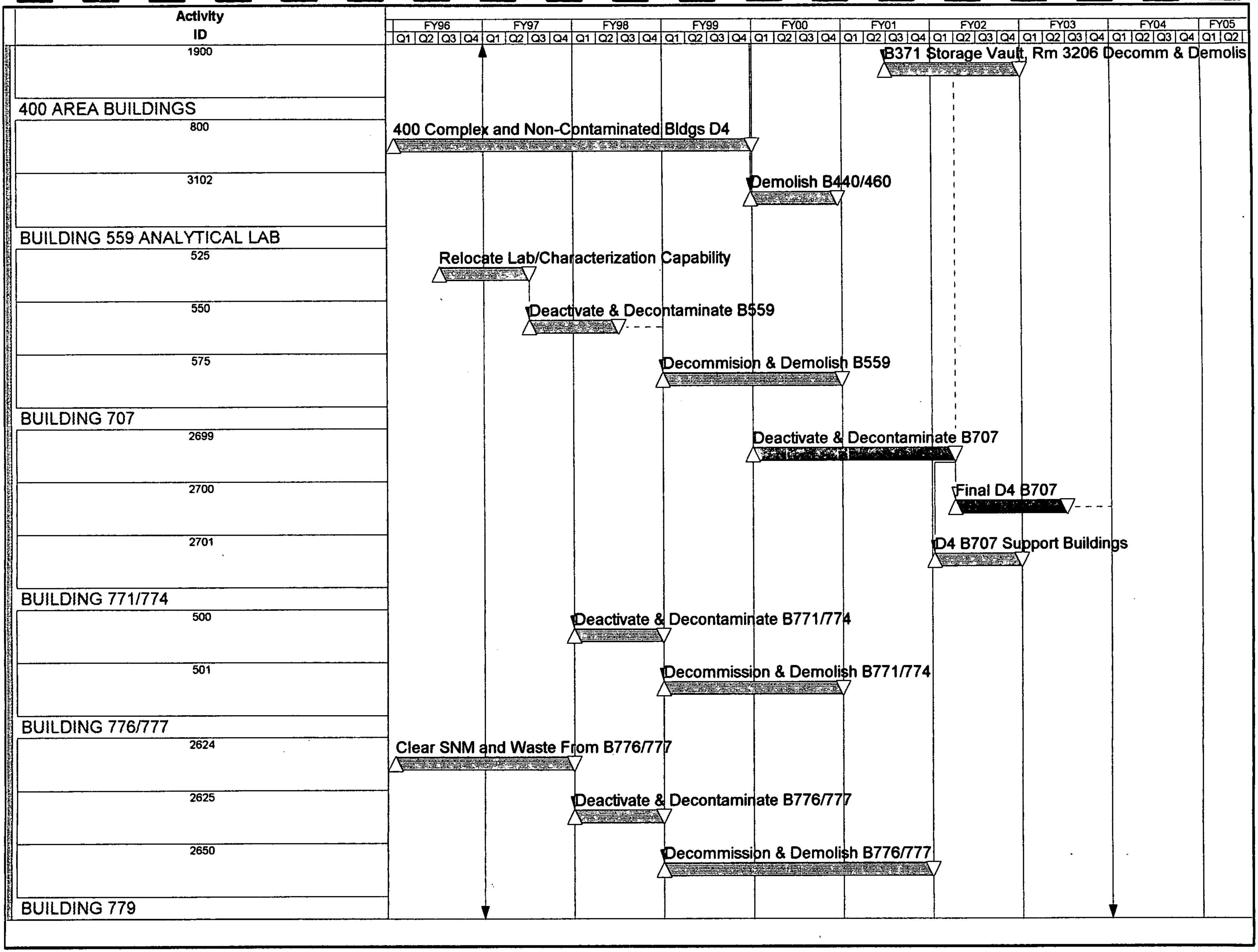
Rocky Flats Environmental Technology Site
Accelerated Site Action Project

Sheet 1 of 4

Revision 1: 9 October 1995

Date	Revision	Checked	Approved


Activity ID
FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05
Q1 Q2 Q3 Q4
BULK WASTE STORAGE
2100 Design/Construct Corrective Action Mgt Unit(s)
2200 Operate/Run Corrective Action Mgt Unit(s)
2300 Conceptual Design LLW Disposal Cell
2301 Final Design/License LLW Disposal Cell
2400 Construct/Startup LLW Disposal Cell
2500 Operate LLW Disposal Cell
CONTAINERIZED WASTE STORAGE
1102 Conceptual Design - TRU Waste Storage Facility
1200 Final Design/License TRU Waste Storage Fac
1201 Construct/Startup TRU Waste Storage Facility
1300 Operate TRU Waste Storage Facility
1301 Transfer to New TRU Waste Storage Facility
1302 Consolidate TRU to B460/B440
1303 Clear B440/460 for TRU Waste Storage
3400 Shipments to WIPP
Deactivate Decontaminate Decommission Dem
BUILDING 371/374
1800 B371/374 Released Deactivation & Decontamination


Activity ID
FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05
Q1 Q2 Q3 Q4
1900
B371 Storage Vault, Rm 3206 Decomm & Demolis
400 AREA BUILDINGS
800
400 Complex and Non-Contaminated Bldgs D4
3102
Demolish B440/460
BUILDING 559 ANALYTICAL LAB
525
Relocate Lab/Characterization Capability
550
Deactivate & Decontaminate B559
575
Decommision & Demolish B559
BUILDING 707
2699
Deactivate & Decontaminate B707
2700
Final D4 B707
2701
D4 B707 Support Buildings
BUILDING 771/774
500
Deactivate & Decontaminate B771/774
501
Decommission & Demolish B771/774
BUILDING 776/777
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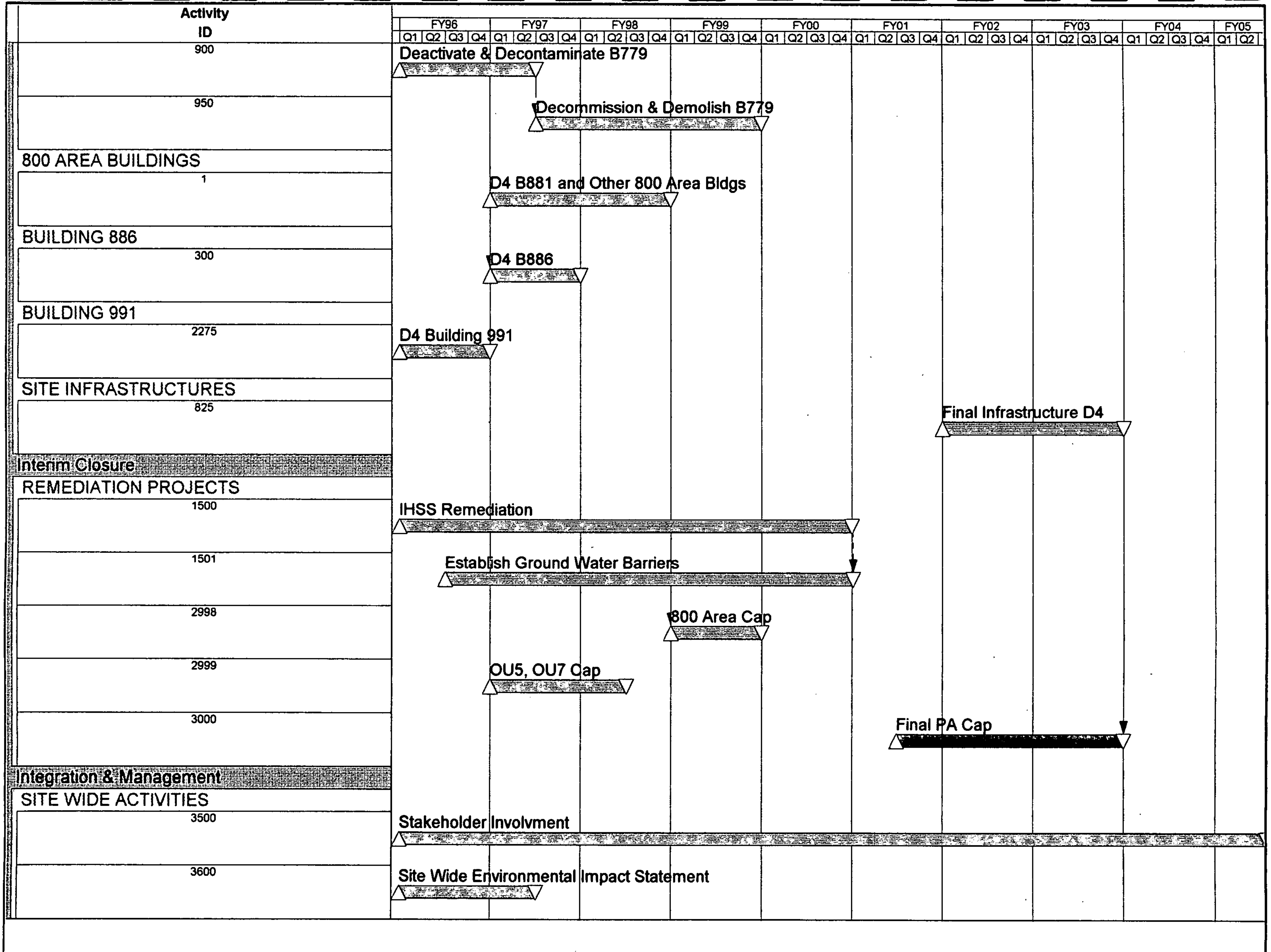
Clear SNM and Waste From B776/777
2625
Deactivate & Decontaminate B776/777
2650
Decommission & Demolish B776/777
BUILDING 779



Activity ID
FY96
FY97
FY98
FY99
FY00
FY01
FY02
FY03
FY04
FY05
Q1 Q2 Q3 Q4
900
Deactivate & Decontaminate B779
950
Decommission & Demolish B779
800 AREA BUILDINGS
1
D4 B881 and Other 800 Area Bldgs
BUILDING 886
300
D4 B886
BUILDING 991
2275
D4 Building 991
SITE INFRASTRUCTURES
825
Final Infrastructure D4
Interim Closure
REMEDIATION PROJECTS
1500
IHSS Remediation
1501
Establish Ground Water Barriers
2998
800 Area Cap
2999
OU5, OU7 Cap
3000
Final PA Cap
Integration & Management
SITE WIDE ACTIVITIES
3500
Stakeholder Involvment
3600
Site Wide Environmental Impact Statement

TASK 1

TASK 1: PLUTONIUM CONSOLIDATION AND STABILIZATION

1.1 SUMMARY

1.1.1 Goals

The desired goal for Rocky Flats is to safely ship all plutonium-bearing materials from the Site as quickly as possible to allow full closure of the site and reduce the risks associated with this material. The ASAP will place all currently unshippable plutonium-bearing materials in a form that is appropriate for shipping. Further, the material will be stored in a safe, stable configuration until the Nation identifies sufficient vault capacity or waste repository space in other parts of the United States or allied foreign countries to store it.

The objectives of this activity are to

- Enable the earliest possible shipment of material off the site when receiver sites become available by placing the material in a safe shippable form.

- Ensure safe on-site storage through the interim period, recognizing the uncertainty of available off-site storage and the potential need to store the material for a considerably longer time frame than is desired. Prudent management requires that safe storage be planned for an indefinite period to ensure that stakeholders and the environment are protected as long as nuclear materials remain at the site.

- Strive for the lowest-cost responsible implementation alternative that provides safe storage for the indefinite interim period.

- Strive for a safe storage configuration that will allow final disposition of the material without significant additional processing and additional costs.

Many credible alternative approaches were identified and evaluated to address these objectives, and the following approach has been developed as a feasible alternative.

- The highly enriched uranyl nitrate (HEUN) solutions would be shipped off the site for treatment and disposal, and the plutonium-contaminated solutions would be processed and stabilized on-site. This will eliminate the storage of plutonium and uranium liquids at Rocky Flats.

- The plutonium metal and plutonium oxides would be stabilized and packaged according to the current DOE safe storage standard for metals and oxides (DOE-STD 3013-94) in double, welded stainless steel cans.

- The plutonium and HEU parts will be placed in approved shipping containers for transport in Safe Secure Transports (SSTs) to other DOE sites outside Colorado.

- The stable plutonium metal, oxides, and pits would be stored in a new storage facility (vault).

- Plutonium-bearing solid residue materials would be processed as necessary using a variety of proven technologies to ensure they can be safely and predictably stored until an off-site repository is available.

- The plutonium materials would be staged into a single building, B371, and processed and stabilized in another single building, B707, to allow decommissioning of the other plutonium buildings as quickly as possible. This will foster early mortgage reductions and simplify the logistics of the stabilization activities.

The sequencing of the nuclear materials movement throughout the consolidation and stabilization activities leading up to the building decommissioning is depicted in Exhibit 1.1. B371 and B707 would be decommissioned and closed immediately after the material stabilization and repackaging activities have been completed and the material moved to the new storage facilities. The new storage facilities would be designed to minimize handling, maintenance, and surveillance and to facilitate their own demolition; they would be taken down as soon as all the plutonium-bearing materials have been removed from the site, estimated to be about 2020.

Consolidation of material into the staging building, B371, has been initiated consistent with existing program plans. Material processing and stabilization activities will be initiated in 1996 and completed by the end of 2001. Exhibit 1.2 summarizes the key cost, staffing, and schedule features of this plan. The total cost of these activities, including stabilization and consolidation of the nuclear materials and residues and the construction of the new plutonium storage facility, is estimated to be between $700M and $800M. The annual cost of operating the new material storage facility is estimated to be $11M. The breakout of the costs is shown in Exhibit 1.3.

The new plutonium storage facility is expected to be about 75,000 square feet and constructed both above and below ground. Its cost is estimated to be $150M to $200M, based on the estimated cost for a similar new facility at the Los Alamos National Laboratory. The material would be stored in a configuration that would enable the general public to use any area outside the protected area boundary which would be about 100 yards from the facility perimeter.

Material Flow For Consolidation, Processing, and Storage

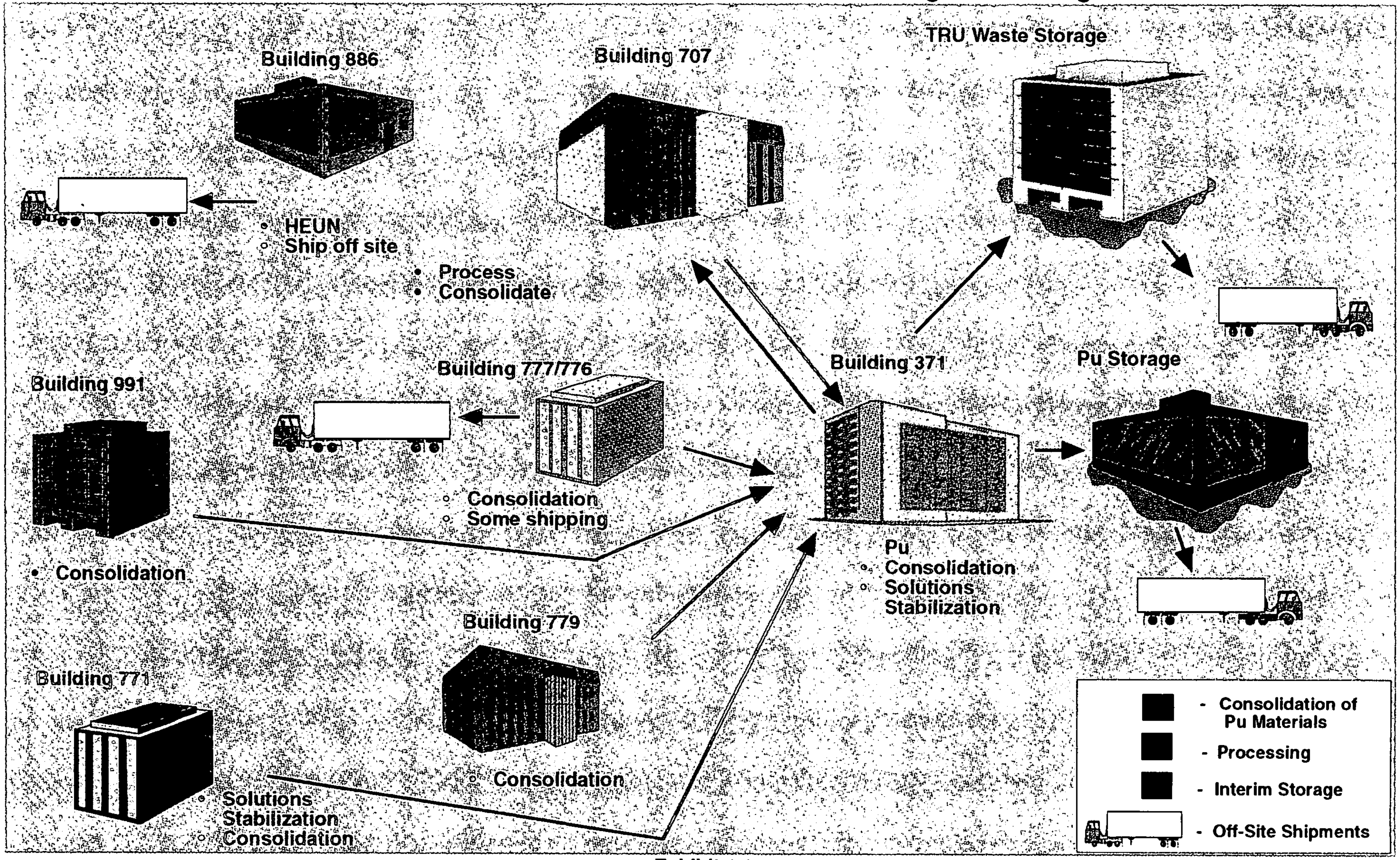


Exhibit 1.1

EXHIBIT 1.2

SUMMARY OF PLUTONIUM AND ENRICHED URANIUM STABILIZATION, CONSOLIDATION, AND STORAGE PLAN

Activity	Description	Start Schedule	End Schedule	Program Cost	O&M Staffing	O&M Cost
PROCESSING						
Pu liquid stabilization	Drain and solidify 30,000 L of solution, containing 143 kg of actinide, stored in tanks, piping, and bottles in B771 and B371	In progress	June 1999	$63M	NA	NA
Pu metals	Brush to remove loose oxide and package to DOE-STD-3013-94	Brushing in progress; packaging to DOE-STD-3013-94 January 1997	Dec 2001	$35M to $45M	NA	NA
Pu oxides	Stabilize and package to DOE-STD-3013-94; incorporate additional processing if identified to be cost effective	Stabilization in progress; packaging to DOE-STD-3013-94 January 1997	Dec 2001	$45M to $55M	NA	NA
Pu solid residues-all	RTR all drums, certify for WIPP or process as described below	October 1995	September 2001	$335 to $350M	NA	NA
-Pu solid residue— salts	Repackage to interim standards and if needed scrub Alloy MSE Salts & Oxidize all salts.	October 1998	September 2001	NA	NA	NA
-Pu solid residue— combustibles	RTR dry combustibles, wash/ immobilize ion exchange resins, calcine greases/sludges, wash/dry wet and nitrate-containing combustibles and acid-containing filters, thermal desorption of organic-containing filters, repackage to interim standards	October 1998	September 2001	NA	NA	NA
-Pu solid residue—ash	Calcine and repackage to interim standards in pipe component	October 1998	September 2001	NA	NA	NA
-Pu solid residue— inorganics	Declassify shapes, surface decon, dry Raschig rings, repackage to interim standards in pipe compon.	October 1998	September 2001	NA	NA	NA
CONSOLIDATION						
Pu staging B371	Consolidate all Category I and II SNM into B371	In progress	March 1999	$35M to $40M	NA	NA
Pu vault	Plan, design, license, construct, and start up new vault complex, including new PA boundary	Predecisional work in progress	Oct 2000	$150M to $200M	35	$18M to $20M
Pu consolidation	Move Category I and II SNM from B371 to new building	FY00	Mar 2001	$1M to $3M	NA	NA
SHIPMENT						
HEUN liquid shipment	Drain 2700 L of liquids from tanks and lines in B886 and ship off-site in liquid form	In progress	Sept 1996	$30M	NA	NA
Pu/eU shipments	Shipment of Pu and eU to off-site locations (2400 items)	In progress	September 1999	$8M to $10M	NA	NA
TOTAL				$700M to $835M		

Notes:

1. All costs are above baseline, which supplies basic infrastructure but includes direct infrastructure costs for the activity.

EXHIBIT 1.3

FUNDING AND RESOURCES REQUIRED TO IMPLEMENT THE FEASIBLE OPTION

CASH FLOW

(Numbers are ±20% except where noted.)

Subtask	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Processing								
Liquids	17	27	17	8	0			
Pu Metals + Oxides[1]	19	18	10	23	23	23		
Solid Residues	47	101	82	55	41	18	1	1
Consolidation								
Staging	11	24	13	6	1	1	0	
Pu Vault[2,3]	2	20	50	50	50	25	10	10
Shipment								
HEUN	22	9	0	0	0			
Total	118	199	172	142	115	67	11	11

DIRECT FUNDED PEOPLE

Subtask	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Processing								
Liquids	82	203	93	44	0	0	0	0
Pu Metals + Oxides	90	75	50	85	75	75	0	0
Solid Residues	37	74	105	100	100	85	5	5
Consolidation								
Staging	75	140	65	22	3	3	0	0
Pu Vault[2,3]	5	35	75	75	75	50	35	35
Shipment								
HEUN	47	15	0	0	0	0	0	0
Total	336	542	388	326	253	213	40	40

Notes:

1. $1M contingency funding has been included in FY96 and FY97.
2. The reliability of this number is 60%.
3. Operating costs afterward are approximately $11M and 35 people.

1.2 KEY ISSUES TO BE ADDRESSED

The following have been identified as key issues for nuclear materials staging, processing and storage.

1. Special Nuclear Material (SNM)

Location Building 707

- Schedule to support internal decommissioning and installation of modular units processing equipment
- Potential conflict with decommissioning schedule end date
- Authorization basis for modular unit processes
- Required space for processing
- Availability of qualified operators
- Aqueous processing in B707, if needed
- Schedule to install process line to meet end date
- Capability of receiver sites to accept Highly Enriched Uranium (HEU) metal parts to decontaminate.

Liquids

- Authorization basis for B771 and B371
- Lack of experience in tapping and draining pipes
- Reliance on liquid waste treatment processes in B774/374

Solid Residues

- Opening of Waste Isolation Pilot Plant (WIPP), and potential of changing requirements
- Interim storage requirements (WIPP vs. Interim standards vs. RFETS standards) for predictable safe storage to satisfy the Accelerated Site Action Project (ASAP)

HEUN

- Ability to stage and ship from B371
- Availability of Safe, Secure Transport (SST) vehicles
- Final acceptance to receive at the Oak Ridge Y-12 Plant

2. Staging

Location in B371

- Reliability of B371
- Seismic Concerns (Defense Nuclear Facilities Safety Board [DNFSB] recommendation 94-3)

- Conflict with liquid stabilization, shipping, and International Atomic Energy Agency (IAEA)
- Required space

3. Storage

- Licensing of storage facility
- Future processing requirements
- Security (attractiveness level)
- Cost/Benefit of new facility compared to B371
- Transuranic (TRU) waste storage capacity

1.3 TASK DESCRIPTION

This task is to identify and evaluate options for the staging, processing, and storage of plutonium-bearing materials and to recommend a feasible course of action. The materials covered in this task include plutonium metal, oxides, and pits; enriched uranium; liquid solutions; solid residues containing plutonium, and highly enriched uranyl nitrate solutions.

The goal of consolidation and stabilization is to place the materials at RFETS in a safe, stable, predictable, and ultimately transportable interim storage configuration, within the ASAP time frame. Priority was given to the need to achieve a low-cost storage configuration that would allow final disposition of the material without significant additional processing and associated cost.

When production and recovery operations at the site were stopped in 1989, a large quantity of the plutonium inventory was left in forms and packages unsuitable for long-term storage. These items include potentially pyrophoric and highly dispersible plutonium oxides; liquids left in tanks, piping and poly bottles; and residues in a wide variety of forms stored in thousands of drums. Plutonium is a highly toxic, radioactive metal that can present a high risk to workers and the public if not appropriately handled and stored. The team developed options to stage, process, and store these plutonium-bearing materials.

Staging refers to those activities necessary to consolidate materials into one facility in order to reduce the other facilities baseline mortgage costs. These mortgage costs include maintaining surveillance, safeguards, and security, and facility infrastructures. This activity will allow for immediate cost reduction and for decommissioning activities to commence.

Processing refers to those activities necessary to put the liquids and residues into a safe, predictable storage form and greatly reduce the overall risk of interim and long-term storage. **The term "processing" is used to describe any step in which plutonium-bearing material is handled, including unpackaging, sorting, plutonium assay, stabilization, repackaging, or inspection and certification.** Some materials will require stabilization steps. The stabilization processes selected as feasible options are shown in Exhibit 1.4.

EXHIBIT 1.4

FEASIBLE OPTION SUMMARY

PROCESS SELECTED

Material	Process
• Pu Metal and Oxides	Calcination
• Liquids	Precipitation → Cementation / Calcination
• Residues	
- Salts	Oxidation Repackaging
- Ash	Calcination Repackaging
- Dry Combustibles	Repackaging
- Inorganics	Repackaging
- Wet Combustible Wet/Misc	Washing/Repackaging

Location Selection

• Pu Metal and Oxides	Building 707 - Modular Process Units
• Residues - Salts - Ash - Dry Combustibles - Wet Combustibles - Inorganics - Wet/Misc	↓
• Liquids	B771 & B371

The team addressed both interim and long-term storage of materials. Until a receiver is identified and WIPP is ready to receive shipments, this material will need to be stored on site in a safe, low-cost, shippable form. Several feasible options have been identified to meet this need and are discussed in the options analysis section. A conceptual drawing of the proposed storage vault is shown in Exhibit 1.5.

1.4 OPTIONS ANALYSIS

Six subtasks were defined as discussed below to address the scope of Task 1. The team considered a range of options for each subtask and qualitatively evaluated each by comparing it to the feasible subtask option. Presented below are the options for each subtask. Following each listing of options is a table showing the options evaluated and evaluation criteria. The feasible option is selected as the base case on the tables, and the other options are compared to it. All criteria for the feasible option are set as zero (0). Options are compared as the same (0), better (+1), or worse (-1) for each criterion. The highest-ranking option is not always the selected feasible option, because of the nature of the summary tables. The criteria are weighted equally and, as a result, a criteria that may in fact make an option significantly less feasible is rated the same as one that is slightly less desirable. As a result, a short explanation appears after each table.

Plutonium Metal and Oxides

The plutonium metal and oxides subtask addressed options for stabilizing and packaging the materials to provide stable, long-term, low-maintenance storage and ultimate off-site shipment. Pits and uranium metal will be shipped off-site in the near-term and is therefore not discussed in this document. When production and recovery operations at the site were stopped in 1989, a large quantity of the plutonium inventory was left in forms and packages unsuitable for long-term storage. These items include potentially pyrophoric and highly dispersible plutonium oxides; metals susceptible to oxidation, which could lead to pressurization or rupture of storage containers; and interim storage containers that exacerbate these conditions.

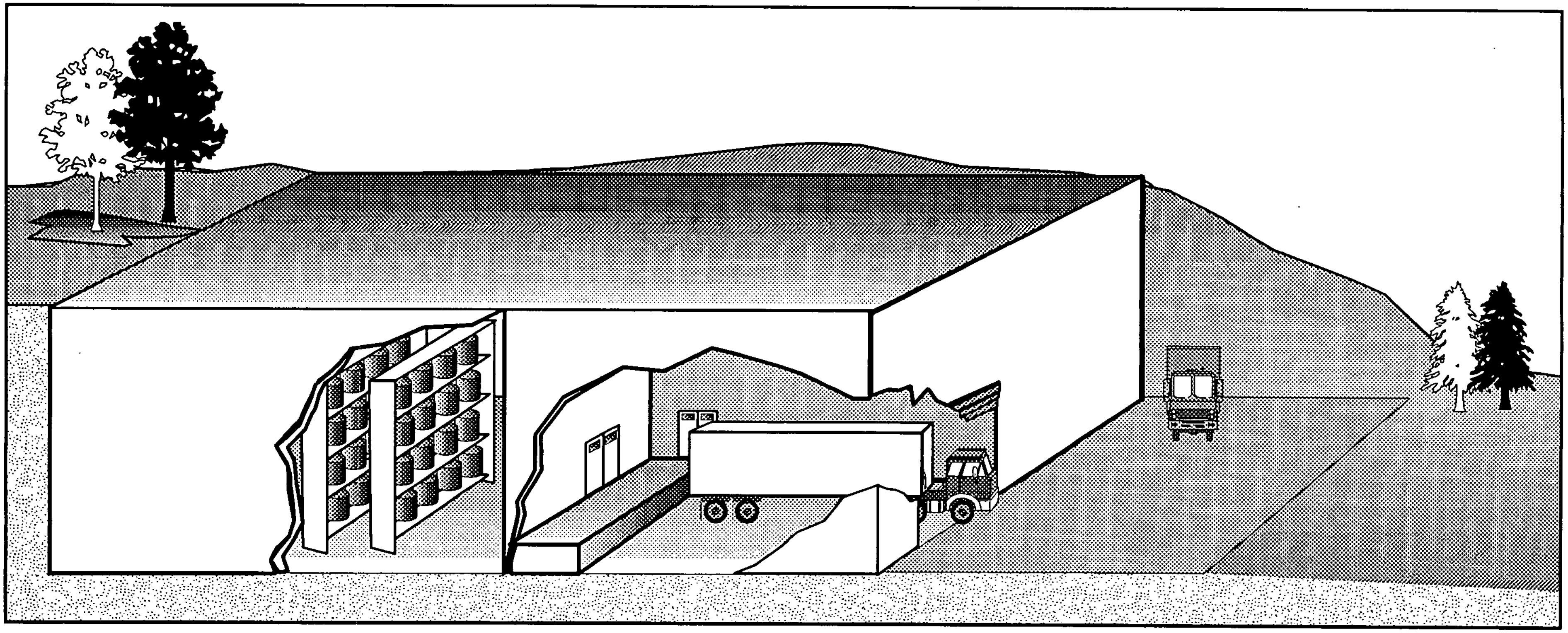
The team members considered the following options.

1. Do Nothing: Leave material in current form and packaging configurations.

2. No Processing: Store in Robust Container: Perform no additional processing to prepare material for interim storage; package in a robust container to provide containment.

3. Ship Material Off the Site for Processing/Packaging: Transport all material in current form and package to an off-site receiver, where processing or repackaging, if any, will take place.

4. Process Material to Specific Repository Criteria: Process to a specific criterion, such as to enable subsequent shipment to other facilities or to enhance long-term stability, such as vitrification.



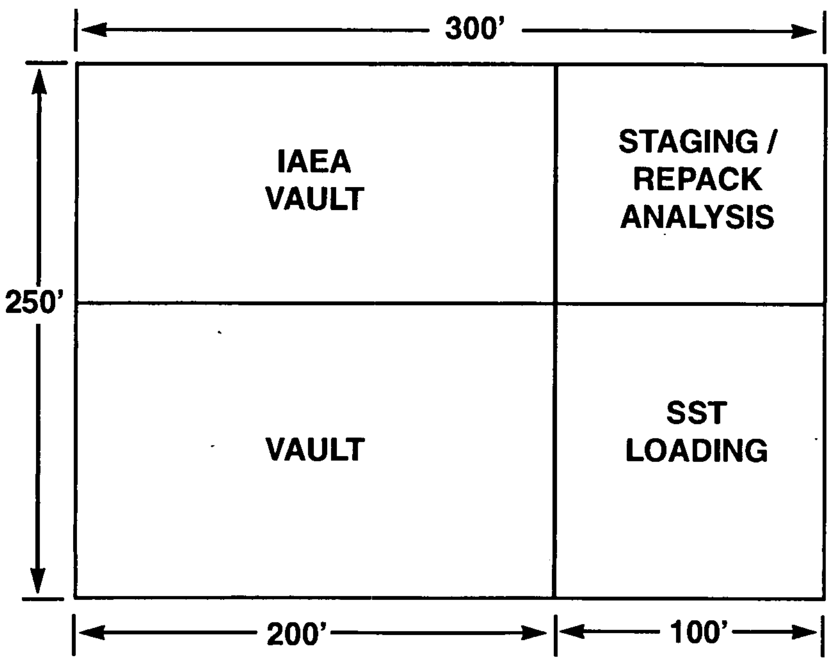


EXHIBIT 1.5

PLUTONIUM STORAGE FOOT PRINT

5. Process to meet DOE-STD-3013-94: Stabilize oxide to 0.5% LOI and package both metal or oxide in boundary containers.

6. Perform Additional Packaging: Identify packaging layers or new packaging configurations in addition to DOE-STD-3013-94 that will further reduce risk (e.g., reduce dispersibility of oxides), and package all material to that level.

7. Perform Additional Processing: Identify additional processing steps that will further reduce risk (e.g., reduce dispersibility of oxides), and perform that process on all material.

PLUTONIUM PROCESSING OPTIONS

Criteria / Options	ASAP Implementation Cost	Post ASAP Cost	Schedule	Feasibility	Risk	Total Score
1. Do Nothing	+	-	-	+	-	1-
2. No Process, Robust Container	0	0	0	0	-	1-
3. Ship off the site for Processing	+	+	-	-	+	1+
4. Process to Specific Criteria	0	0	0	0	0	0
5. Process to meet DOE-STD-3013-94	0	0	0	0	0	0
6. Perform additional packaging	-	0	0	0	+	0
7. Perform additional processing	-	0	0	0	+	0

The selected feasible option is to process the plutonium metal, oxides, and pits to meet DOE-STD-3013-94 (See Appendix 2 for definition). DOE-STD-3013-94 offers specific stabilization (calcining) and packaging requirements to ensure that plutonium is in a safe configuration for long-term storage. Complying with the standard also would reduce future maintenance costs, because the material would be in a form that is stable and in a package that prevents or minimizes reactions. In addition, the packaging and form would simplify accountability requirements. The package is also compatible with existing and envisioned off-site shipping requirements. The processing required to meet the standard is not technically challenging; and has been in use for decades. The drawbacks to this option are the initial implementation costs of a new processing line(s) and the waste generated from processing. The site has an ongoing program to perform this type of processing and to install a prototype processing line in Building 707 in early FY97.

While shipping off-site for processing ranks higher than the selected option, no receiver site has yet been identified.

Liquid Residues

The liquid residues subtask addresses plutonium nitrate solutions and plutonium and uranium in nitrate and chloride solutions. Curtailment of plutonium operations at RFETS in November 1989 was anticipated to last for only a short time while safety concerns were addressed. However, the end of the cold war resulted in change of the site mission from one supporting Defense Programs to one supporting Environmental Management. Solutions had been left in tanks, piping, and poly bottles at the time of curtailment, in anticipation of resumption. These solutions must now be stabilized to achieve safety and enable the decommissioning of plutonium buildings.

The team considered the following options.

1. Do Nothing: Leave actinide solutions in their current condition in tanks, piping, and bottles in the plutonium buildings.

2. Store in New Bottles: Drain tanks and piping into new bottles and store the bottles, and subsequently change the bottles as necessary.

3. Store in New Tanks: Install new tanks and transfer solutions from existing tanks, piping, and bottles into the new system.

4. Encapsulate in Polymer: Evaporate water and fix the residues remaining in molten low density polyethylene (LDPE).

5. Vitrify: Denitrate the oxides, add glass-formers, and heat to stabilize the oxides in a glass matrix.

6. Denitrate/Salt Distillation: Evaporate solution to remove water and form actinide oxides. For chlorides, oxidize actinides and distill chloride salts.

7. Carrier Precipitation: Precipitate nitrate solutions with ferric hydroxide.

8. Direct Cementation: Adjust pH with sodium hydroxide and mix actinide solution with Portland and Ramcote cements in a 55-gallon drum.

9. Oxalate Precipitation: Precipitate actinide (plutonium and americium) nitrate solutions containing >6 g actinide/liter with oxalic acid.

10. Hydroxide Precipitation: Precipitate mixtures of uranium and plutonium in nitrate and chloride solutions containing >6 g actinide/liter with sodium hydroxide.

11. Current Baseline: Use of direct cementation, carrier precipitation, oxalate precipitation and hydroxide precipitation based on solution actinide concentrations and other constituents, i.e. nitrate and chloride.

The following table displays the options and the evaluation criteria. Each of these stabilization options is rated considering its capability to process all of the actinide solutions.

LIQUID RESIDUE STABILIZATION PROCESS OPTIONS

Criteria / Options	ASAP Implementation Cost	Post ASAP Cost	Schedule	Feasibility	Risk	Total Score
1. Do Nothing	+	-	+	-	-	1-
2. Bottle & Store	-	-	+	-	-	3-
3. Transfer to New Tanks	-	-	-	-	-	5-
4. Polymer Encapsulation	-	-	-	-	+	3-
5. Vitrify	-	0	-	-	0	3-
6. Denitration/ Salt Distillation	-	-	-	-	0	4-
7. Carrier Precipitation	-	0	-	-	0	3-
8. Direct Cementation	-	0	-	-	0	3-
9. Oxalate Precipitation	-	0	-	-	0	3-
10. Hydroxide Precipitation	-	0	-	-	0	3-
11. Current Baseline	0	0	0	0	0	0

The selected feasible option is the current baseline. This includes a combination of carrier precipitation, direct cementation, and both oxalate and hydroxide precipitation based on the solutions to be processed. Its main advantages are that it makes use of existing facilities within the facilities decommissioning schedule and produces stable solids for storage and/or shipment. Each sub-unit process has been optimized for effectiveness and waste minimization. This allows the rapid draining of the tanks and mitigates the safety concerns of continued storage of the liquids faster than the other options.

Solid Residues

This subtask addressed the stabilization, consolidation, and interim on-site storage of the wide variety of complex forms of nuclear materials, called solid residues, that are currently stored in several of the previous RFETS plutonium operations buildings. When the Rocky Flats Plant was shut down in 1989, a wide variety of plutonium-bearing materials, or residues, were left in various forms and storage conditions throughout the site. Some forms of plutonium are chemically unstable or reactive, and these materials were thus either in special controlled-atmosphere production lines awaiting further processing or in temporary storage. They were not in a chemically or physically stable form and were never intended for long-term stable storage.

The team considered the following options.

1. Do nothing.

2. Repack and Store in Robust Container: Repackaging residues into a welded thick-walled steel container, which would be strong enough to withstand any safety hazard generated by the residues.

3. Repack and Store to WIPP WAC: Repackage residues to meet WIPP WAC in currently available packaging without stabilization.

4. Entomb on-site: Process residue to a stable form, such as glass, and store it indefinitely on-site in some very stable facility, such as an underground vault.

5. Process to Meet the Current WIPP WAC, Store on-site, and Ship to WIPP: Stabilize, if necessary, and repackage residues to meet current WIPP WAC, using existing facilities.

6. Current baseline: Stabilizing residues in various buildings (B779, B707, and B371), using previously existing facilities to the extent possible, and repack stabilized residues to meet WIPP WAC. This is the pathway RFETS was pursuing before the ASAP proposal.

7. Repack and Store in Pipe Component: Repackage residues to meet WIPP WAC with only minimal processing. The residues would be stored in the "pipe component," a container being developed by the DOE Rocky Flats Field Office (DOE/RFFO).

8. Entomb in Decommissioned Buildings: Leave residues in their current locations and entomb them in place by filling the building with concrete or using another method that isolates the residues from the environment.

9. Consolidate in B371 and/or B707: Without stabilization, remove residues from buildings to be decommissioned and relocate them into B371 and/or B707.

10. Perform Actinide Separation, Store SNM in New Vault, and Store Waste in New Storage Facility: Perform actinide separation, remove and concentrate plutonium from the residue materials, and store the resulting minimal volume of plutonium (~700 cans) in a new vault, and store the resulting TRU waste (~16,000 drums) and low-level waste (LLW) (~13,000 drums) in a new waste facility.

11. Process for Stabilization Off the Site and Return Materials to RFETS: Ship all residues off the Site for processing using capabilities at other DOE sites.

12. Process in B707 and Store in B371: Re-package and, if necessary, stabilize residues in modular systems in B707, store stabilized residues in B371, without construction of a new vault.

13. Ship off the site Directly: Ship residues to another DOE site, possibly a missile silo, without any processing.

14. Stabilize in B707 and Store in New Vault and Waste Facility: This is the feasible option.

SOLID RESIDUE STABILIZATION OPTIONS

Options / Criteria	ASAP Implementation Cost	Post ASAP Cost	Schedule	Feasibility	Risk	Total Score
1. Do Nothing	+	-	-	+	-	1-
2. Repack, Store-Robust Container	0	-	-	-	-	4-
3. Repack, Store-WIPP/WAC	0	-	-	0	-	3-
4. Entombment on-site	0	-	0	-	-	3-
5. Process to WIPP WAC, Store, Ship To WIPP	-	-	-	0	-	4-
6. Current Baseline	-	0	-	0	0	2-
7. Repack, Store-Pipe Component	+	-	0	0	-	1-
8. Entomb in Decommissioned Buildings	+	-	+	-	-	1-
9. Consolidate in B371 &/or B707	+	-	-	+	-	1-
10. Actinide Separation, Store SNM in Vault, Waste to New Storage	-	+	-	0	0	1-
11. Stabilize off-site & Store in Waste Facility &/or New Vault	0	0	0	0	0	0
12. Process in B707, Store in B371	+	-	0	+	0	1+
13. Ship off the site Directly	+	+	0	-	0	1+
14. Stabilize in B707, Store in Waste Facility &/or New Vault	0	0	0	0	0	0

The off-site options are attractive for subsets of the solid residues, but a permanent receiver site has not yet been identified. Some of the materials require processing to meet Department of Transporation (DOT) shipping requirements prior to shipping off-site which further dilutes the advantages of this option.

The option incorporating processing in B707 and storing in the new vault and waste facilities is the selected feasible option. It is the most robust option, providing for treatment of residues when needed and resulting in materials prepared for either shipping off the site or long-term storage. Therefore, when an off-site repository such as WIPP opens, the materials can be shipped without further processing under this option. In the meantime, they are in a safe form for long-term storage, if that becomes necessary. By consolidating the processing into B707, this option meets the schedule for decommissioning buildings and makes use of the facility currently best able to sustain operations.

Highly Enriched Uranyl Nitrate (HEUN) Solutions

This subtask is to remove from Building 886 and RFETS, the Highly Enriched Uranyl Nitrate (HEUN) solutions and process them to an acceptable storage form. The completion of the HEUN removal project would eliminate the risks of HEUN spills and leaks in B886, prepare the building for decommissioning, and reduce building baseline costs. Surveillance and safeguards and security requirements would decrease after the solution is removed.

The team considered the following options.

1. Do Nothing.

2. Process to an Oxide at RFETS and Ship Oxide Off the Site.

3. Blend to <20% ^{235}U at RFETS and ship off the site for processing to low enrichment uranium (LEU) oxide.

4. Ship in bottles as HEUN and process to HEU oxide off site.

HEUN REMOVAL OPTIONS

Options / Criteria	ASAP Implementation Cost	Post ASAP Cost	Sched-ule	Feasibility	Risk	Total Score
1. Do Nothing	0	-	+	-	-	2-
2. Process to an oxide at RFETS and ship oxide off the site	-	0	-	-	-	4-
3. Blend to <20% ^{235}U at RFETS and ship off site for processing to LEU Oxide	0	0	-	-	0	2-
4. Ship in Bottles as HEUN and process to HEU Oxide off the site	0	0	0	0	0	0

Shipping HEUN in bottles to an off-site processing facility is the selected feasible option. This program is underway and should be completed in 12 months. No other option offered advantages sufficient to disrupt this existing program. While the blending option minimizes the number of shipments of fissile material because the tanker can carry a larger amount of material, the HEUN form is limited to critically safe containers. A major disadvantage of the blending option is that the tanker does not have the safety defense in depth that an SST vehicle has to protect the material while in transit. There are also no temperature limitations with shipping in an SST to prevent stratification of the solution.

Storage

The storage task addresses the facility(ies) and location(s) for the storage of stabilized plutonium metal, oxide, pits and high-assay residues during the ASAP period. Under ASAP, the metal, oxide, and high-assay residues would be stored until national policy is established to allow for final disposition. This requires a facility(ies) appropriately sized to safely and securely store all defined material consistent with low-cost operation after FY2003.

The team considered the following options.

1. Maintain current buildings: Keep materials in their current locations.

2. Use Building 707 with a new vault: Perform all processing and storage within one building (B707).

3. Combine off-site shipment and on-site storage: Ship certain materials to off-site storage locations.

4. Abandoned Missile Silos: Use abandoned missile silos in the state of Colorado to store the nuclear materials.

5. Building 371: Consolidate and store all materials in an upgraded B371.

6. New vault: Construct a new facility and transfer all material into it.

7. Sellafield Portable Casks: Use concrete mini-structures to house the materials in robust containers.

8. Ship material off the site: Ship all materials to an off-site receiver for final disposition.

PLUTONIUM STORAGE OPTIONS

Options / Criteria	ASAP Implementation Cost	Post ASAP Cost	Sched-ule	Feasibili-ty	Risk	Total Score
1. Maintain Current Buildings	-	-	+	-	-	3-
2. B707 With New Vault	-	-	+	0	0	1-
3. Combine off-site Shipment and on-site Storage	+	0	-	-	-	2-
4. Abandoned Missile Silos	+	0	0	0	-	0
5. Upgrade B371	-	-	0	0	0	2-
6. Construct New Vault	0	0	0	0	0	0
7. Use Modular Cask	+	0	+	-	0	1+
8. Ship Off the Site	+	+	-	-	-	1-

The selected feasible option is to build a new storage facility (vault) on-site. This option provides a tailored facility to meet the long-term storage needs. The facility would be constructed to minimize operation and maintenance costs and be designed for rapid decommissioning when its mission has ended. However, options merit additional consideration, including using modular casks similar to those used in England for waste, upgrading B371, and using abandoned missile silos. Ongoing studies of these options should continue. For purposes of the ASAP, however, the most promising option is a new on-site facility.

Staging

The staging subtask evaluates options to stage the plutonium metal, oxide, pits, and residues in a location(s) compatible with other subtasks. Staging will end when material is placed in storage or shipped off the site. The staging subtask is a transitional activity to account for the temporary location of material as the Site constructs the new Pu storage facility or ships the material off the site. It will coordinate with and support mortgage reduction and material processing activities.

The team considered the following options.

1. Do nothing: Leave all materials in current storage buildings and locations.

2. Ship off the site: Ship all materials immediately to off-site receiver, with no intermediate disposition.

3. Consolidate into new building: Construct new building and transfer all materials to it upon completion.

4. Consolidate into B707: Transfer all material to B707 to await further disposition.

5. Consolidate into both Buildings 371 and 707: Transfer all material to storage locations in both buildings.

6. Consolidate into Building 371: Transfer all material to Building 371 to await disposition.

STAGING OPTIONS

Criteria / Options	ASAP Implementation Cost	Cost ASAP Cost	Schedule	Feasibility	Risk	Total Score
1. Do Nothing	+	-	+	-	-	1-
2. Ship Off the site	-	+	-	-	-	3-
3. Consolidate in new building	-	+	-	-	0	2-
4. Consolidate in Building 707	-	+	0	0	0	0
5. Consolidate in Building 707 and 371	0	-	+	0	0	0
6. Consolidate in Building 371	0	0	0	0	0	0

The selected feasible option is consolidation of all materials into B371 until they are processed, shipped, or placed into new storage facilities. B371 currently has the largest repository of plutonium metals, oxides, and pits on-site, and the ongoing expansion of the vault will provide space for the entire Site inventory. In addition, liquid processing will take place in B371, and adding residue storage to its interim mission should be straightforward. Consolidating into one location has the advantages of supporting the decommissioning schedule and simplifying the logistics as well as providing early mortgage reductions. Building 707 also rated high as a feasible option, but it is also the selected feasible option for material processing and stabilization.

TASK 2

TASK 2: WASTE MANAGEMENT

2.1 SUMMARY

The desired interim and final end state is to have all wastes removed from the site, thereby (1) eliminating public health and environmental risks associated with the inadvertent release of contaminants to the surrounding area; (2) avoiding the large, ongoing operating costs necessary to maintain the numerous facilities currently storing wastes; and (3) maximizing future land use and economic development options. However, several constraints preclude total waste removal:

- 2,680 m3 of pond sludge and other waste liquids are not currently shippable under existing regulatory requirements;
- 14,500 m^3 of pondcrete and other low-level mixed waste (LLMW), most of which fail Resource Conservation and Recovery Act (RCRA) land disposal restriction (LDR) requirements, do not meet waste acceptance criteria (WAC) of off-site waste disposal facilities and are prohibitively expensive to treat;
- no off-site storage facilities are currently available that are approved to accept RFETS transuranic (TRU) waste for an indefinite storage period; and
- transportation costs for off-site disposal do not result in a commensurate benefit in on-site risk reduction especially in view of the increased transit hazards.

Given these constraints, the objective of this task is to accomplish the following: (1) dispose of as much waste as is technically prudent and cost effective using a combination of on-site and off-site disposal and treatment options, (2) ensure safe and fiscally responsible storage for remaining waste forms that are retained on site, and (3) implement waste management options that result in meaningful risk and cost reductions.

To meet this objective, the following feasible alternative was developed.

1. TRU wastes (both straight and mixed) would be retained on-site in retrofitted storage facilities (e.g., Buildings 371, 460, 707, etc.) until they can be transferred to a newly constructed centralized waste storage facility. The new waste storage facility would be a hardened reinforced concrete structure located south of Building 371 and outside of the Protected Area (PA). The building would be equipped, for example, with a fire protection system, criticality and alpha contamination alarms, and loading/shipping capability. TRU wastes would remain in the new waste facility until the Waste Isolation Pilot Project (WIPP) opened and it became fiscally prudent to ship off-site. The duration of on-site storage is dependent upon the opening of WIPP (expected in 1998) and the availability of transport vehicles (i.e., TRUPACT II). Use of existing facilities for temporary storage allows for timely relocation of TRU wastes from buildings being dismantled and avoids delays associated with construction lead times and line-item funding cycles. Small amounts of radioactively contaminated polychlorinated

biphenyls (PCBs) and possibly some containerized LLMW liquids would also be stored in the new storage facility.

2. Portions of the existing standing waste inventory that are readily available for shipping would be sent off-site to approved disposal facilities in FY96 and FY97. Such shipments are necessary to allow for relocation of stored wastes from surplused buildings and to make storage space available for newly generated wastes from accelerated stripout and decommissioning activities. Waste forms sent off-site for disposal in FY96 and FY97 include saltcrete, hazardous wastes, and low level wastes (LLW). Subpopulations of these wastes that cannot readily meet WAC of off-site disposal facilities without undergoing major recharacterization work or repackaging would be retained for on-site disposal (e.g., legacy waste).

3. Demolition wastes (i.e., construction debris) and environmental remediation wastes (e.g., soils, sludges) would be disposed on-site in landfill disposal cells. In addition, other waste forms such as containerized LLW (unshippable), LLWM, and pondcrete, would be placed in retrievable and monitored disposal in an on-site landfill. It is proposed that no treatment be performed on low level mixed wastes and pondcrete prior to disposal. This will require regulatory relief through waiving LDR requirements, delisting, or other means because much of this waste is not LDR compliant. Pursuit of such a waiver is technically prudent and fiscally responsible since the affected waste forms are relatively benign, controls in place within the disposal cell provide adequate environmental protection from contaminant release and migration, and the incremental cost to treat this waste ranges from more than $49M to $250M. The benefits derived from treating these wastes do not warrant the significant costs incurred. Solar pond sludge would be solidified on-site and disposed in the Corrective Action Management Unit (CAMU).

Regardless of the alternative ultimately selected, certain prerequisite actions need to be done in preparation for the Accelerated Site Action Project (ASAP). These actions include (1) developing temporary storage area(s) so that wastes can be removed from buildings scheduled for stripout and dismantlement, and (2) having a staging area for final load preparation and loading for shipping to either on-site or off-site locations. Plans are under way to evaluate out-of-service processing areas in Buildings 371 and 707 to locate suitable temporary storage areas for wastes with high plutonium gram values, which require HEPA filtration and other protective and safeguard measures offered by former production buildings. These rooms would have processing equipment (e.g., process equipment, gloveboxes, hoods, fabrication machinery, etc.) removed to enable storage of containerized waste. Other buildings, such as Buildings 440, 460, and/or 906, would also be examined for temporary storage of waste and for staging and loading activities.

Exhibit 2.1 presents the key cost and schedule features of this plan. In summary, the new storage facility would be completed by the third quarter of FY99. TRU wastes would be temporarily stored in existing buildings (possibly Buildings 371, 460, and 707) while the new storage facility is under

EXHIBIT 2.1:

SUMMARY OF WASTE MANAGEMENT PLAN

Activity	Description	Start Sched.	End Sched.	Program Cost	O&M Staffing	O&M Cost
STORAGE						
• On-site storage	Design and construct facility for long-term storage; store 6960m^3 of TRU, TRUM containerized waste.	October 1996	September 2003	$100 M	15	$3 M
TREATMENT						
	Design and construct treatment system for pond sludge; solidify and dispose on-site.	October 1996	September 1999	$12 M	N/A	N/A
TRANSPORTATION						
	Transportation activities captured as part of disposal below.	N/A	N/A	N/A	N/A	N/A
DISPOSAL						
• On-site disposal	Dispose of 195,000 m^3 of current inventory and newly generated construction debris.	October 1995	December 2003	$49 M	N/A	N/A
• On-site disposal	Dispose 263,000 m^3 of current inventory and newly generated demolition waste, ER waste, saltcrete, hazardous waste, LLW, LLWM, and pondcrete in on-site CAMU or disposal cell.	October 1996	December 2003	$263 M	N/A	N/A
• Off-site disposal	Continue off-site disposal of hazardous waste, LLW, and saltcrete.	October 1995	September 1997	<$3 M	N/A	N/A
SUBTOTAL				$427 M		$3 M
Contingency (25%)				$107 M		
TOTAL ESTIMATE				$534 M		$3 M

construction. Waste disposal activities would be completed by 2003. Total cost of this plan is $534 million excluding O&M costs for the new waste storage facilities. This estimate includes a 25 percent contingency to allow for uncertainties in waste projections, interim waste handling costs associated with temporary staging and storage, and escalation costs associated with construction of disposal cells. Subsequent options analyses reported in this document were performed without contingency included in order to keep option analyses comparable, (i.e., $427 M program costs were used). Annual operating costs for the on-site storage building are $3 million and would require a staff of approximately 15 after FY03.

The new TRU waste storage facility, shown in Exhibit 2.2, would be approximately 99,000 ft^2 and would be located south of existing Building 371 (see Exhibit 2.3). A perimeter fence would be installed to control access. The building would meet compliance requirements for the RCRA. Selection of this alternative attempts to optimize cost savings, environmental protection, risk and liability reduction, and future land use/economic development desires of stakeholders. It provides a balanced approach to achieving the ASAP vision in a technically defendable and cost-beneficial manner.

2.2 KEY ISSUES TO BE ADDRESSED

The following constraints need to be addressed to successfully implement the feasible alternative.

- The plutonium content of stored TRU wastes, in aggregate, will be approximately 3100 kilograms contained within approximately 20,000 55-gallon drums, and require that a hardened structure (e.g., reinforced concrete) be built. The quantity of plutonium may influence maximum credible accident scenarios, land use considerations, and public access to areas surrounding the storage facility.

- The TRU waste storage facility will require a site RCRA permit modification. Based on the potential magnitude of the capacity change, it is anticipated that a Class 3 modification will be necessary. This requires a public comment period, which may be lengthy.

- The feasibility of building additional waste transport vehicles (e.g., TRUPACT II vehicles) to expeditiously ship TRU waste off-site in lieu of constructing a new waste storage facility needs to be further explored. This would require temporarily storing TRU wastes in existing buildings until WIPP opens and the wastes could be shipped off-site.

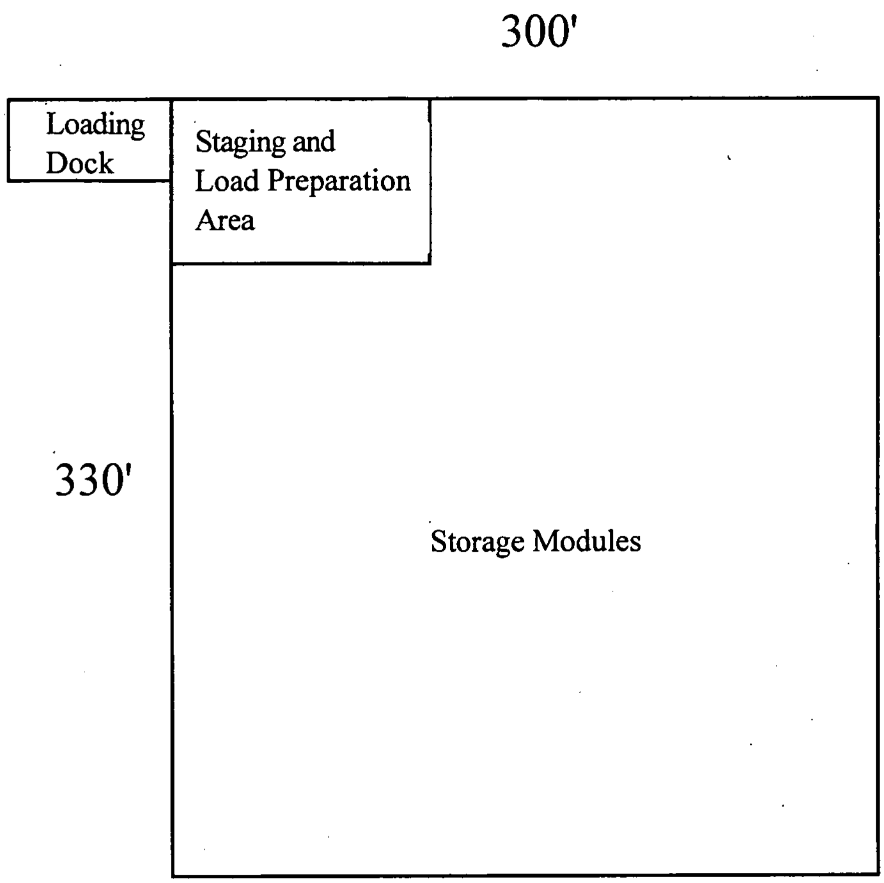
- Agreement needs to be reached on whether or not the portion of the on-site disposal cell designated as a CAMU can receive construction debris from demolition activities.

- Regulatory relief is necessary to dispose of RCRA-regulated LLMW in the on-site disposal cell. Although relatively benign, most of this waste does not meet current LDR requirements. Disposal in a monitored landfill will require waiving LDR requirements, delisting, or other method to allow placement of waste forms. Further analysis is necessary to identify if any LLMW forms are not suited for on-site disposal because of unacceptable environmental risks. It may be more appropriate to treat particular waste forms (i.e., some portion of the total LLMW population) instead of using landfills.

- Regulatory relief will also be required to allow for prolonged storage of LDR wastes without treatment and for radioactively contaminated PCB wastes.

EXHIBIT 2.2

TRU WASTE STORAGE FACILITY FOOT PRINT



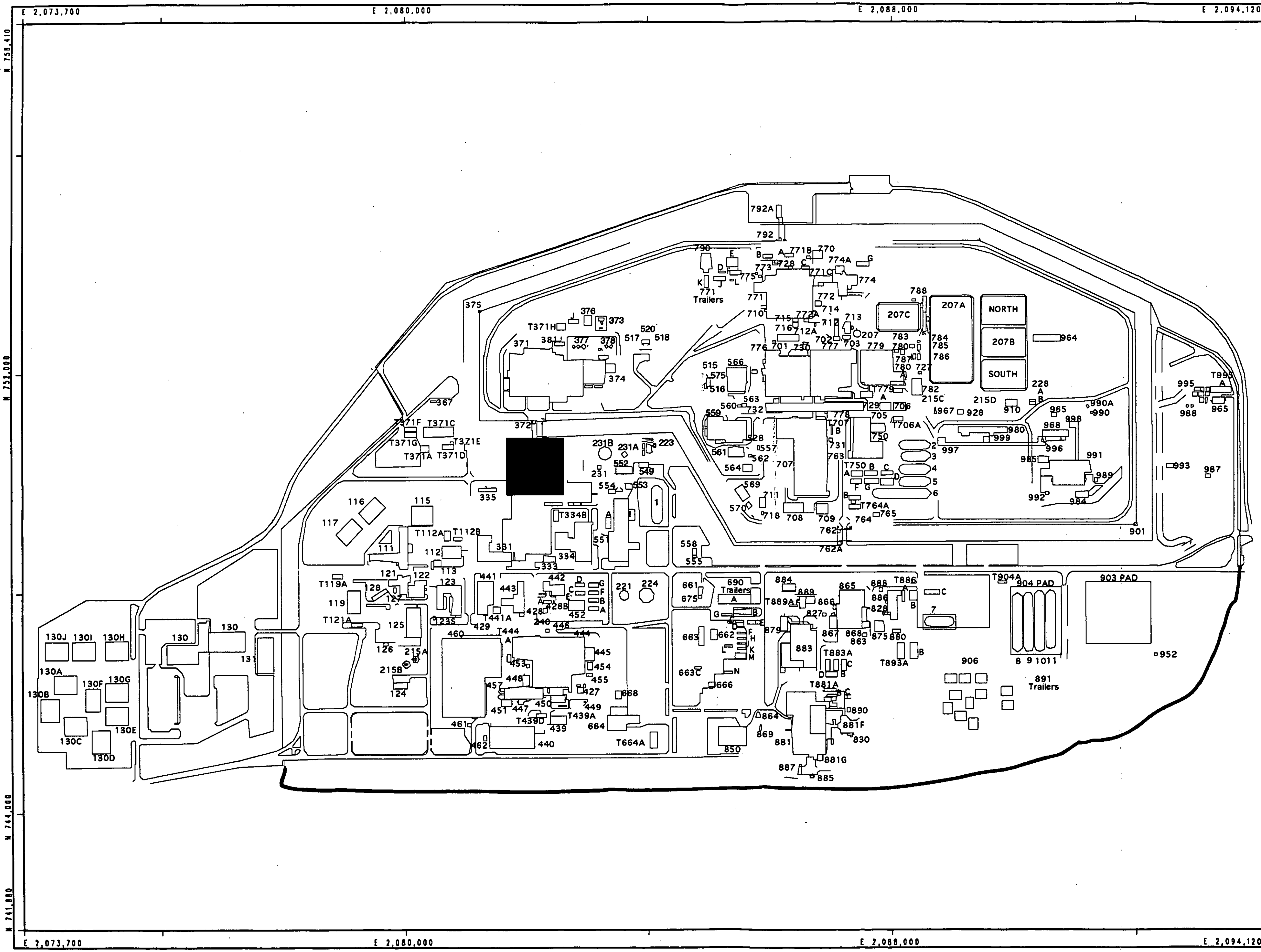
CHARACTERISTICS

- Enhanced structure-reinforced concrete
- Fire protection system
- Criticality alarms
- Ventilation system
- Loading/shipping capability

COST ESTIMATE

$100M

Exhibit 2.3
New Waste Storage Facility



EXPLANATION

- Existing Buildings or other Structures
- New Waste Storage Facility

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 19500
1 inch represents 1625 feet
0 — 2600

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility July 26, 1995

- Temporary storage of wastes in existing buildings needs to be further addressed, including Buildings 371, 440, 460, 664, 707, and 991. Cost, schedule, and institutional considerations need to be explored to accommodate proposed decontamination and decommissioning (D&D) activities.

2.3 TASK DESCRIPTION

This task describes the activities that are planned to address the large volumes of waste materials that need to be dispositioned in order to successfully realize the goals of the ASAP. Proper waste management is essential for worker and public safety, environmental protection, and retention of a suitable range of future land use and/or economic development options for the site. The diverse array of waste forms existing and yet-to-be generated at the site present special challenges because of the unique hazards, formidable regulatory constraints, and sheer quantity of material requiring dispositioning.

The purpose of this task is to develop a waste management program to address both standing inventory and newly generated wastes. A number of treatment, storage, and disposal alternatives are being considered to develop a program that is technically prudent, and cost-effective and that will achieve meaningful risk reduction. This will be accomplished by (1) identifying viable alternatives for waste dispositioning; (2) developing information pertinent to issues affecting waste management decisions; (3) evaluating these alternatives in terms of technical and regulatory feasibility, cost-benefit, risk and liability reduction, stakeholder acceptability, and ease of implementation; and (4) identifying an apparent-best feasible alternative.

RFETS currently stores over 22,700 m^3 of wastes in 68 separate facilities (i.e., buildings, tents, storage pads, and cargo container areas). Limited off-site shipping is done for waste forms meeting off-site disposal facilities' WAC. This includes LLW that are sent to the Nevada Test Site (NTS), saltcrete and certain remediation wastes that are sent to Envirocare in Utah, and hazardous wastes sent to commercial recycling and disposal facilities. Current annual operating costs to maintain the numerous facilities where wastes are currently stored and to stage and ship wastes are approximately $324M (based on FY95 actuals). Most of this money is spent on maintaining buildings in a safe operating configuration (i.e., building baselines), waste storage, and characterization to meet regulatory requirements and off-site repository WAC. Only about $3M is spent annually on shipping wastes off-site. This is clearly a large annual expenditure for retaining wastes in existing site facilities with little progress made toward actual risk reduction. Good stewardship of taxpayer dollars demands changes in the manner in which wastes are managed on site. The ASAP addresses these needed changes.

2.4 OPTIONS ANALYSIS

The wastes to be addressed are process wastes from previous and ongoing operations, construction debris from demolition activities, and soils from remediation activities. These materials include uncontaminated demolition debris and soils, hazardous waste, LLW and LLMW, TRU and TRUM wastes, asbestos, and PCBs. Sanitary solids (e.g., office trash) are not evaluated here because such wastes will continue to be disposed in the on-site sanitary landfill until such time as arrangements are made for off the site municipal disposal.

Existing and projected waste volumes are shown in Exhibit 2.4. Most of the standing inventory is LLMW. The projected newly generated waste is predominantly LLMW and construction debris, which collectively account for about 90 percent of the total. A breakout of total wastes to be managed under this plan is shown in Exhibit 2.5.

There are three general methods for dispositioning site wastes. These are storage, treatment, and disposal, each of which can be accomplished both on-site and off the site. A number of basic options are indexed to the waste forms addressed and the amount of waste material being treated, stored, or disposed. These options are then grouped together in various combinations to form alternatives.

To evaluate the various combinations of options possible for the diverse array of waste forms present at the site, a logic continuum (Exhibit 2.6) was developed such that the baseline case (i.e., starting point) assumes on-site storage of all waste. Estimates are prepared for the size of the required storage facility and the storage costs (both construction and annual operating costs). All subsequent alternatives are compared against the baseline case to determine the benefits derived from dispositioning certain waste forms. The benefits are presented in terms of decreased amount of land area committed to long-term waste storage (i.e., size of storage facility), and to reduced construction and operating costs (i.e., cost savings). To achieve these benefits, numerous options are displayed for dispositioning specific waste forms. The incremental costs associated with these options and the barriers to overcome to implement are presented. Seven alternatives are presented along the logic continuum. A preliminary feasible alternative was selected based on least cost and on feasibility in overcoming the technical and regulatory constraints imposed by the options included in the alternatives.

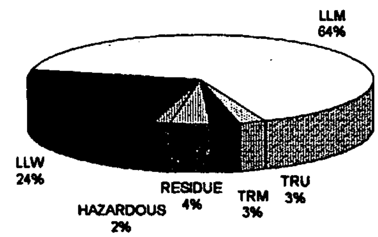
EXHIBIT 2.4

EXISTING AND PROJECTED WASTE VOLUMES

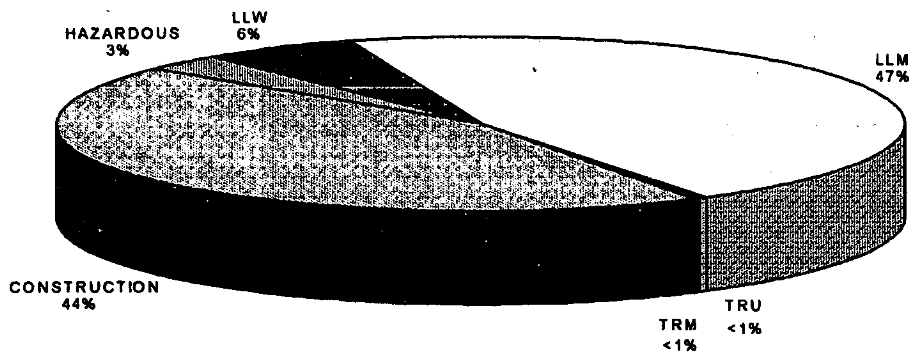
WASTE TYPE	STANDING INVENTORY m3	NEW GENERATION m3	TOTAL WASTE m3
		HAZARDOUS	
• Containerized	146	1330	1470
• ER	239	12400	12700
• Construction	0	30	30
		LLW	
• Containerized	5470	12300	17800
• ER	2	12300	12400
• Construction	0	996	996
		LLMW	
• Containerized	2890	5330	8220
• ER	80	194000	194000
• Construction	0	29	29
• Pondcrete	5700	0	5700
• Saltcrete	3470	6430	9890
• Pond Sludge	2680	0	2680
		TRU	
• Containerized	584	1360	1940
• Construction	0	54	54
		TRU MIXED	
• Containerized	586	1480	2070
• Construction	0	1	1
RESIDUES	833	0	0[1]
		DEMOLITION WASTES	
• Construction Debris	0	167000	167000
• Hazardous	0	1000	1000
• Low Level	0	24000	24000
• Low Level Mixed	0	500	500
• TRU/TRU-Mixed	0	2900	2900
• Other Regulated Waste (asbestos, PCB, etc.)	0	2000	2000
TOTAL			467,000

1 Assumes that residue inventory is converted to TRU and LLW forms through processing.

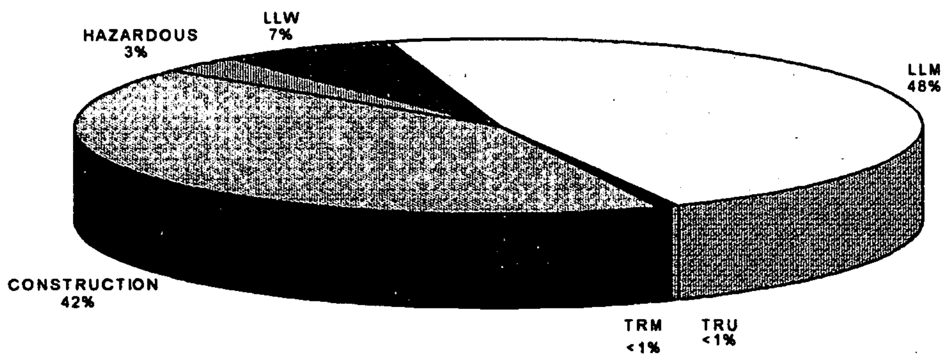
EXHIBIT 2.5 - WASTE DISTRIBUTION



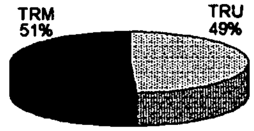
EXISTING INVENTORY
22,700 m³



PROJECTED NEW GENERATION
445,000 m³



EXISTING AND PROJECTED WASTE VOLUMES
467,000 m³



POST ASAP IMPLEMENTATION
6960 m³

NOTE: Not To Scale

	(Alt. 1)	(Alt. 2)	(Alt. 3)	(Alt. 4)	(Alt. 5)	(Alt. 6)	(Alt. 7)
Barriers to Overcome		Onsite Landfill: • Certificate of Designation from JeffCo • $21,700,000 Onsite CAMU: • State Approval • Agreement that D&D Waste is Remediation Waste • $27,500,000 Onsite Subtitle C: • RCRA Permit • $27,500,000 Offsite Shipping: • $93,000,000	Increase Capacity of Onsite CAMU or Subtitle C: • Radiological Perf-Assessment • RCRA Permit • State Approval • $229,000,000 Offsite Shipping: • $755,000,000	Increase Capacity of Onsite CAMU or Subtitle C: • Radiological Perf-Assessment • RCRA Permit • $20,000,000 Offsite Shipping: • $67,000,000	Treat Onsite and Dispose: • CAA Approval • RCRA Permit • State Approval of Treatment Technology • $3,700,000,000 Treat & Dispose Offsite: • Locate Available Repository • $655,000,000 Increase Capacity of Subtitle C or CAMU: • Locate Available Repository • LDR Waiver • Decision Approval • $208,000,000 Offsite Shipping: • RCRA Permit • LDR Waiver • Decision Approval • $686,000,000	Treat & Dispose Onsite: • CAA Approval • RCRA Permit • State Approval of Treatment Technology • $12,000,000 Treat & Dispose Offsite: • DOT Exemption • CAA Approval • RCRA Permit • State Approval of Treatment Technology • $11,000,000 Offsite Shipping: • $8,830,000	Store Offsite: • Locate Available Receiver Site • Transport Vehicle Availability • $ ____ Dispose Offsite: • WIPP Opening • Transport Vehicle Availability • $230,000,000 Dispose Onsite: • Radiological Perf. Assessment • RCRA Permit • LDR Waiver • Delisting Approval • $7,000,000
Options		Onsite Landfill; Onsite CAMU; Onsite Subtitle C; Offsite Shipping	Increase Capacity of Onsite CAMU or Subtitle C; Offsite Shipping	Increase Capacity of Onsite CAMU or Subtitle C; Offsite Shipping	Treat Onsite and Dispose; Treat & Dispose Offsite; Increase Capacity of Subtitle C or CAMU; Offsite Shipping	Treat & Dispose Onsite; Treat & Dispose Offsite; Offsite Shipping	Store Offsite; Dispose Offsite; Dispose Onsite
Alternative	**Store All Wastes** →	**Dispose of Demolition Wastes + Sanitary Construction** →	→ **Dispose Alt. 2 + ER Wastes + Saltcrete** →	**Dispose Alt. 3 + Hazardous + Low Level** →	→ **Dispose Alt. 4 + Low Level Mixed + Pondcrete** →	→ **Dispose Alt. 5 + Pond Sludge + Other Misc. Liquids** →	→ **Dispose Alt. 6 + TRU + TRM**
Required Longterm Storage Capacity (m^3)	661,600 + Demolition Wastes	466,900	237,900	217,600	9,600	6,960	0.00
Storage Facility Size	9,451,000 ft^2	6,671,000 ft^2	3,400,000 ft^2	3,109,000 ft^2	137,600 ft^2	99,400 ft^2	0 ft^2
Storage Costs	$820,000,000 • construction • operation (annual) $35,000,000	$606,000,000 • construction • operation (annual) $24,000,000	$354,000,000 • construction • operation (annual) $15,000,000	$331,000,000 • construction • operation (annual) $12,000,000	$103,000,000 • construction • operation (annual) $5,000,000	$100,000,000 • construction • operation (annual) $3,000,000	$ 0.00 • construction • operation (annual)

Exhibit 2.8 Logic Continuum

Exhibit 2.7 summarizes the results of the options analysis. Approximations of projected costs are presented under the heading of Cost Estimates. Program costs are those associated with capital construction projects (e.g., building the new waste storage facility, treatment unit construction) and costs incurred in executing the actions necessary to disposition the affected waste forms. Annual O&M costs are those associated with the ongoing operation of the new waste storage facility. The Options Analysis rates each option against five criteria. The rating system is subjective but provides preliminary qualitative comparative information for each option.

In most cases economic considerations govern the comparative desirability among options. Preference is given to the lowest-cost option unless other considerations override an exclusive economic decision (e.g., risk reduction, regulatory requirements, long-term liability). For cases in which treatment is required to meet regulatory requirements, the analysis examines risk reduction and environmental protection actually gained through treatment. If no significant benefit is achieved, then regulatory relief would be sought.

The qualitative options analysis shown in Exhibit 2.7 assumes the following rating system for the five criteria evaluated.

Program costs:

- positive (+): when below $450M
- neutral (0): when between $450M and $600M
- negative (-): when greater than $600M

Operating and Maintenance (O&M) costs:

- positive (+): when $3M or less
- neutral (0): when between $3M and $5M
- negative (-): when greater than $5M

Schedule

- neutral (0): schedule criterion considered neutral unless following negative attribute applies.
- negative (-): when involves a treatment technology other than solidification, or when option dependent upon WIPP opening, or when requires identifying an off-site location to store transuranics.

Note: rationale for downgrading nonsolidification treatment options to negative is due to uncertainties associated with implementing complicated and/or controversial treatment technologies.

Feasibility

- neutral (0): feasibility criterion considered neutral unless following negative attribute applies.
- negative (-): when involves a nonsolidification treatment technology, or when requires reliance on regulatory relief (e.g., RCRA or Department of Transportation), or when requires locating an off-site storage facility for transuranic wastes.

Risk

- neutral (0): risk criterion considered neutral unless following negative attribute applies.
- negative (-): when regulatory relief is required or when transport of liquids is involved, or when option relies on WIPP opening, or when requires locating an off-site storage facility for transuranic wastes.

EXHIBIT 2.7

OPTIONS ANALYSIS

Options	COST ESTIMATES: Program Costs ($M)	COST ESTIMATES: Annual O&M Costs ($M)	OPTIONS ANALYSIS: Program Costs	O&M Costs	Schedule	Feasibility	Risk	Score
Alternative No. 1								
Baseline -On-site storage of all waste	606	35	0	-	0	0	0	1-
Alternative No. 2								
a. On-site storage plus <u>on-site disposal</u> of: - sanitary construction debris - other demolition waste	441	24	+	-	0	0	0	0
b. On-site storage plus <u>off the site disposal</u> of: - sanitary construction debris - other demolition waste	485	24	0	-	0	0	0	1-
Alternative No. 3								
a. On-site storage plus <u>on-site disposal</u> of: - sanitary construction debris - other demolition waste - ER waste - saltcrete	418	15	+	-	0	0	0	0
b. On-site storage plus <u>off the site disposal</u> of: - sanitary construction debris - other demolition waste - ER waste - saltcrete	988	15	-	-	0	0	0	2-

EXHIBIT 2.7

OPTIONS ANALYSIS (cont)

Options	COST ESTIMATES: Program Costs ($M)	COST ESTIMATES: Annual O&M Costs ($M)	OPTIONS ANALYSIS: Program Costs	O&M Costs	Schedule	Feasibility	Risk	Score
Alternative No. 4								
a. On-site storage plus on-site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste	416	12	+	-	0	0	0	0
b. On-site storage plus off the site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste	1033	12	-	-	0	0	0	2-
Alternative No. 5								
a. On-site storage plus on-site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste - low level mixed waste - pondcrete	415	5	+	0	0	-	-	1-

EXHIBIT 2.7

OPTIONS ANALYSIS (cont)

Options	COST ESTIMATES: Program Costs ($M)	COST ESTIMATES: Annual O&M Costs ($M)	OPTIONS ANALYSIS: Program Costs	OPTIONS ANALYSIS: O&M Costs	OPTIONS ANALYSIS: Schedule	OPTIONS ANALYSIS: Feasibility	OPTIONS ANALYSIS: Risk	OPTIONS ANALYSIS: Score
Alternative No. 5 (cont)								
b. On-site storage plus off the site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste - low level mixed waste - pondcrete	1064	5	-	0	0	-	-	3-
c. On-site storage plus on-site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste plus treatment and on-site disposal of: - low level mixed waste - pondcrete	655	5	-	0	-	-	0	3-

d.	On-site storage plus <u>off the site disposal</u> of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste plus <u>treatment and off the site disposal</u> of: - low level mixed waste - pondcrete	1068	5	-	0	-	-	0	3-

EXHIBIT 2.7

OPTIONS ANALYSIS (cont)

Options	COST ESTIMATES: Program Costs ($M)	COST ESTIMATES: Annual O&M Costs ($M)	OPTIONS ANALYSIS: Program Costs	OPTIONS ANALYSIS: O&M Costs	Schedule	Feasibility	Risk	Score
Alternative No. 6								
a. On-site storage plus <u>on-site disposal</u> of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste plus <u>treatment and on-site disposal</u> of: - low level mixed waste - pondcrete plus <u>treatment and on-site disposal</u> of: - pond sludge - other liquids	424	3	+	+	0	0	0	2+
b. On-site storage plus <u>off the site disposal</u> of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste plus <u>treatment and off the site disposal</u> of: - pond sludge - other liquids	1072	3	-	+	0	-	-	2-

EXHIBIT 2.7

OPTIONS ANALYSIS (cont)

Options	COST ESTIMATES: Program Costs ($M)	Annual O&M Costs ($M)	OPTIONS ANALYSIS: Program Costs	O&M Costs	Schedule	Feasibility	Ris k	Score
Alternative No. 7								
a. No on-site storage plus off the site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste - transuranic waste - transuranic mixed waste plus treatment and off the site disposal of: - pond sludge - other liquids	1202	0	-	+	-	0	-	2-
b. No on-site storage plus on-site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste - transuranic waste - transuranic mixed waste plus treatment and on-site disposal of: - pond sludge - other liquids	331	0	+	+	0	-	-	0

EXHIBIT 2.7

OPTIONS ANALYSIS (cont)

Options	COST ESTIMATES: Program Costs ($M)	COST ESTIMATES: Annual O&M Costs ($M)	OPTIONS ANALYSIS: Program Costs	O&M Costs	Schedule	Feasibility	Risk	Score
Alternative No. 7 (cont)								
c. No on-site storage plus on-site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste plus treatment and on-site disposal of: - pond sludge - other liquids plus off the site storage of: - transuranic waste - transuranic mixed waste	UNK	0	-	+	-	-	-	3-
d. No on-site storage plus on-site disposal of: - sanitary construction debris - other demolition waste - ER waste - saltcrete - hazardous waste - low level waste off-site disposal of: - transuranic waste - transuranic mixed waste plus treatment and on-site disposal of: - pond sludge - other liquids	554	0	0	+	-	0	-	1-

The most feasible alternative identified in the preliminary analysis is to implement the on-site disposal options for Alternatives 2 through 5 coupled with on-site treatment of pond sludge and other small amounts of LLMW liquids, and to store TRU wastes on-site. For Alternatives 2 through 5, on-site disposal is less expensive than on-site storage or off-site disposal. The main impediments to on-site disposal are the need to gain regulatory exemptions to place LDR wastes in a landfill and public acceptability of disposing of radioactive and hazardous wastes on-site. The risk posed by disposing of pondcrete and containerized low level mixed solids in a monitored landfill is considered low in view of the benign nature of the wastes and the controls installed in the disposal cell (e.g., double liner, leachate collection, etc.) The additional treatment costs to make these waste forms LDR compliant do not result in a commensurate benefit in risk reduction nor environmental protection. Therefore, a recommended course of action is to seek regulatory relief in order to dispose of these wastes in the on-site disposal cell.

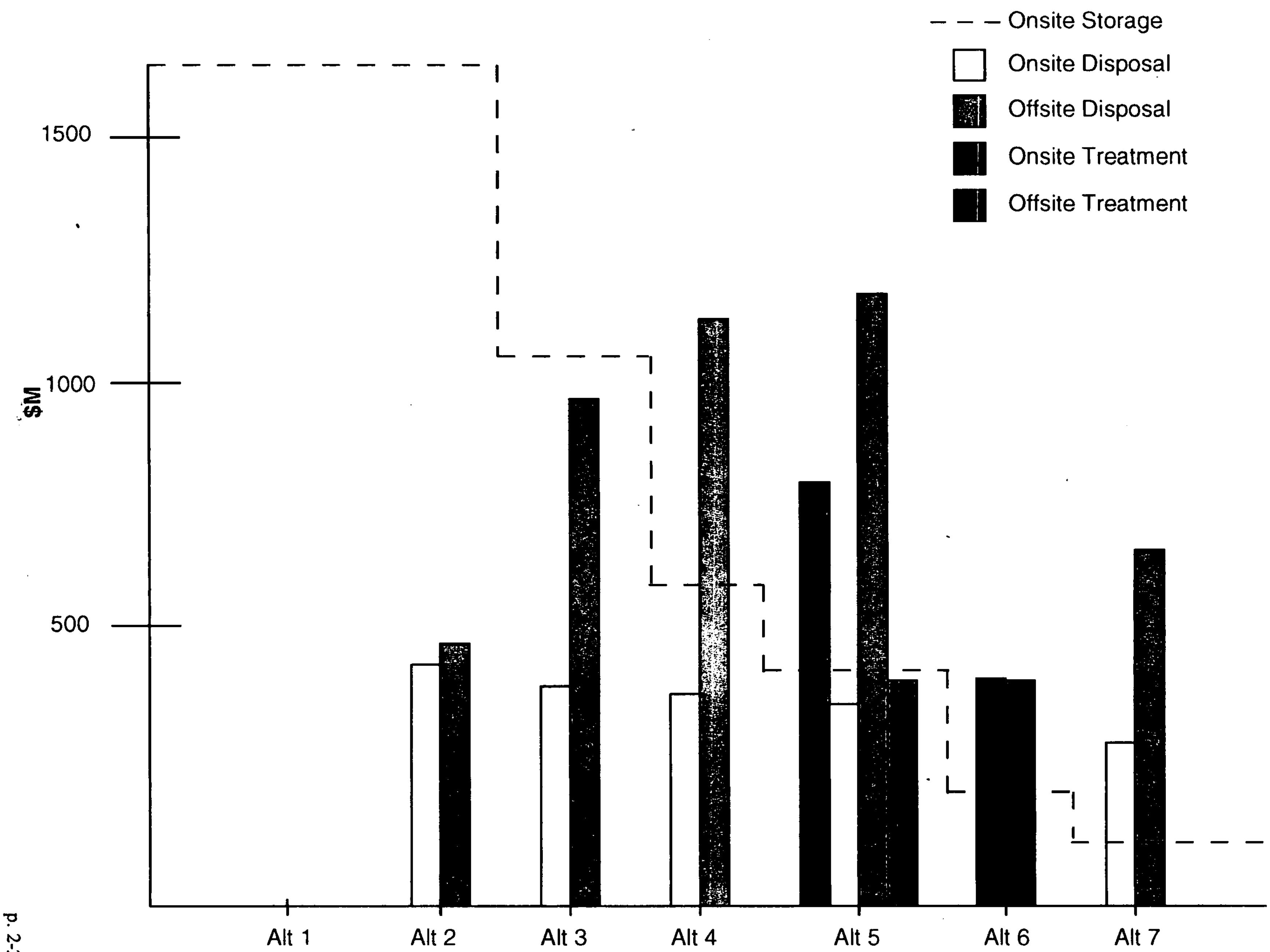
On-site treatment of pond sludge in Alternative 6 is preferred over on-site disposal because placing free liquids in the amounts present in the sludge is not technically prudent. Solidification prior to placement in the landfill significantly improves the environmental protection and risk reduction criteria. Continued storage of TRU wastes is required until WIPP opens and it is economically prudent to ship wastes. On-site disposal is ruled out because of long-term liability considerations and uncertainties associated with disposal cell configuration requirements. Implementation of this alternative would require near-term shipping of saltcrete, LLW, and hazardous wastes to off the site disposal facilities in order to make storage space available for wastes moved out of surplused buildings. It is proposed that readily shippable wastes be sent off the site over the next two-year period to facilitate relocating existing waste inventories from buildings scheduled for facility decommissioning.

A graphic depiction of the logic used to arrive at a feasible alternative is shown in Exhibit 2.8. The cost of implementing each alternative is compared with other waste-handling options for the same waste types. The cost of long-term storage is used as the baseline case for the comparative evaluation. The storage options include capital costs to construct the new waste storage facility and O&M costs associated with a 30-year operating period. For each of the waste forms considered in Alternatives 2 through 5, on-site disposal is most cost effective, i.e., it costs less to dispose on-site than to store or ship off the site. Disposal options were not considered for the pond sludge and LLMW liquids in Alternative 6. In this case it is cheaper to store the waste; however, treatment is recommended as the feasible alternative because solidification and disposal on-site eliminate risks associated with storing liquids wastes, the need to maintain tank systems, and the need to conduct daily RCRA inspections. TRU wastes are stored because neither on-site nor off the site disposal is technically feasible at this time.

Implementation of the ASAP represents a major change in waste management philosophy at RFETS. The current practice relies heavily on long-term storage and/or off the site disposal for the various waste forms. The new strategy favors predominantly on-site waste disposal except for certain types (e.g., TRU wastes, pond sludge). There is a large cost differential between on-site and off-site disposal, especially with radioactive and regulated wastes. The cost components contributing to total waste management expenditures are presented in Exhibit 2.9. Examination of these cost components indicates that a major difference is in the large amount of monies spent on administrative and documentation activities to meet regulatory requirements and WAC of off-site repositories. Major costs are incurred for repackaging; certifications; and storage O&M, which includes activities such as inspections, rad-screening, fingerprint analysis, characterization, etc. Arguably such expenditures do not contribute directly to meaningful and measurable risk reduction nor improved public health and environmental protection. By emphasizing on-site disposal, the ASAP strategy eliminates much of these administrative costs and allows these monies to be applied directly to significantly by reducing risk and to achieving safer site conditions. This would be accomplished by greater reliance on engineering controls (e.g., physical barriers, leachate collection, and monitoring) instead of administrative controls.

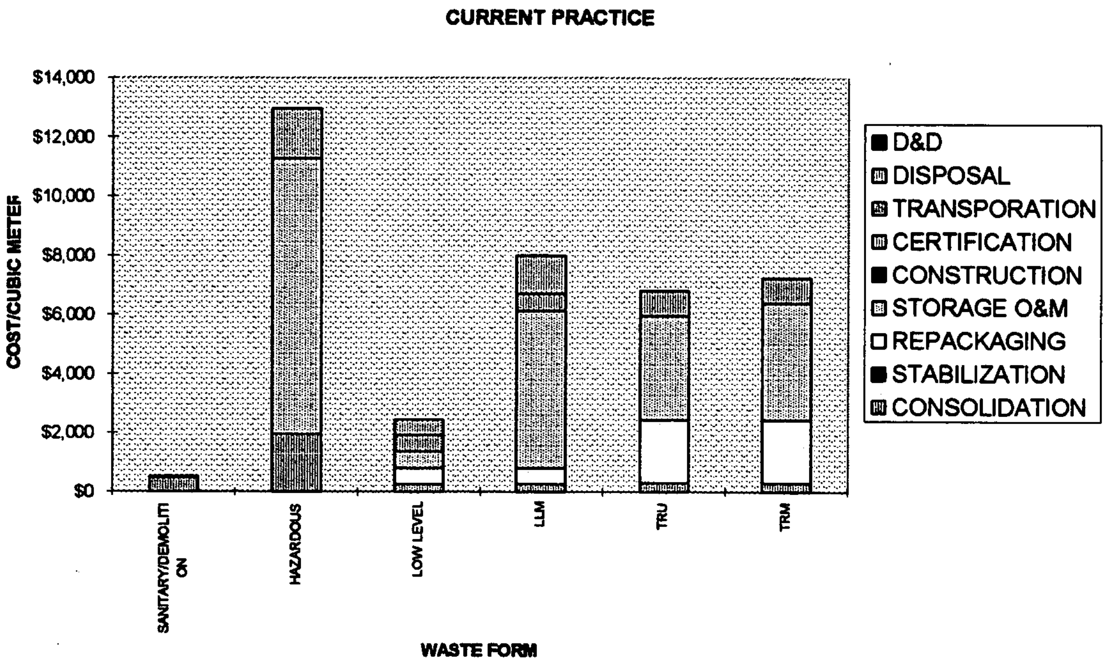
Once safe on-site storage is achieved for TRU wastes, the issue of final disposition of these materials becomes more problematic. Shipment to WIPP, with its projected high disposal fees, is very expensive (i.e., estimated to be $230M). The comparatively low O&M costs to operate the waste storage facility make long-term on-site storage more cost effective than shipping. Exhibit 2.10 shows a cost comparison for off-site disposal to WIPP and for 30-year on-site storage. Only O&M storage costs are considered since capital construction costs are applicable to both options. The prudent course of action may be to continue on-site storage of TRU wastes until a more cost effective means of disposal becomes available either at WIPP or elsewhere.

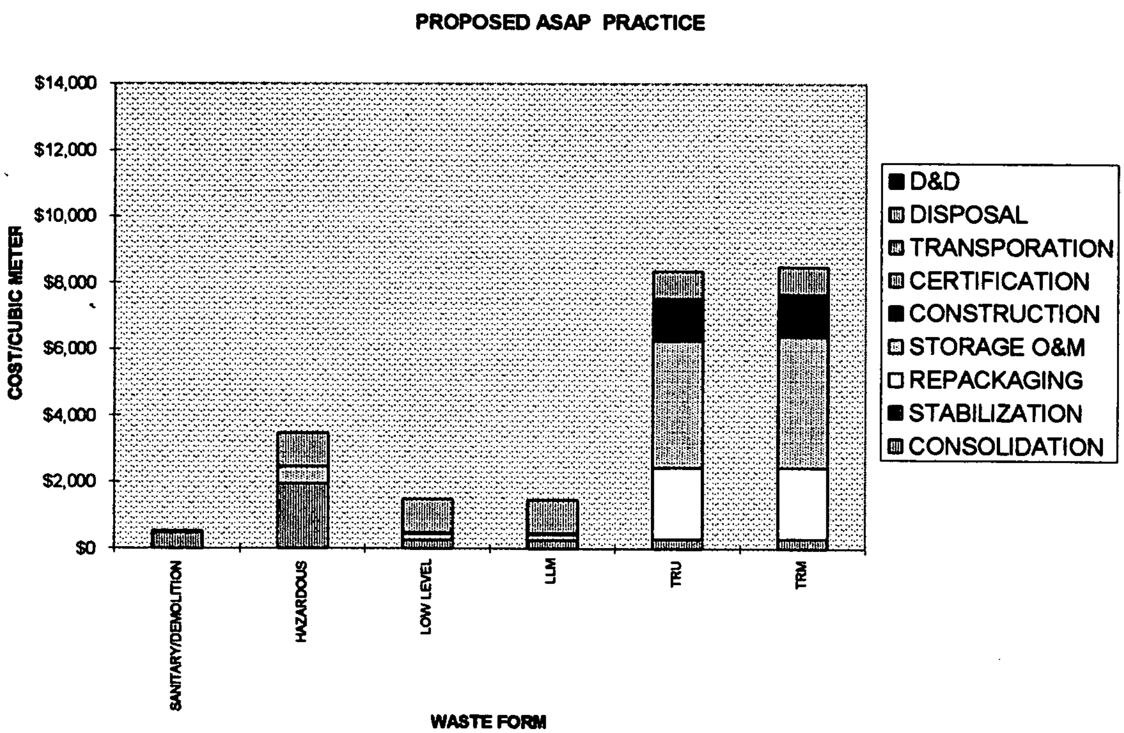
Exhibit 2.8 Decision Logic



This graph shows cost differences related to onsite vs. offsite storage, treatment, and disposal. It demonstrates that unless there are overriding considerations, onsite disposal is most economical.

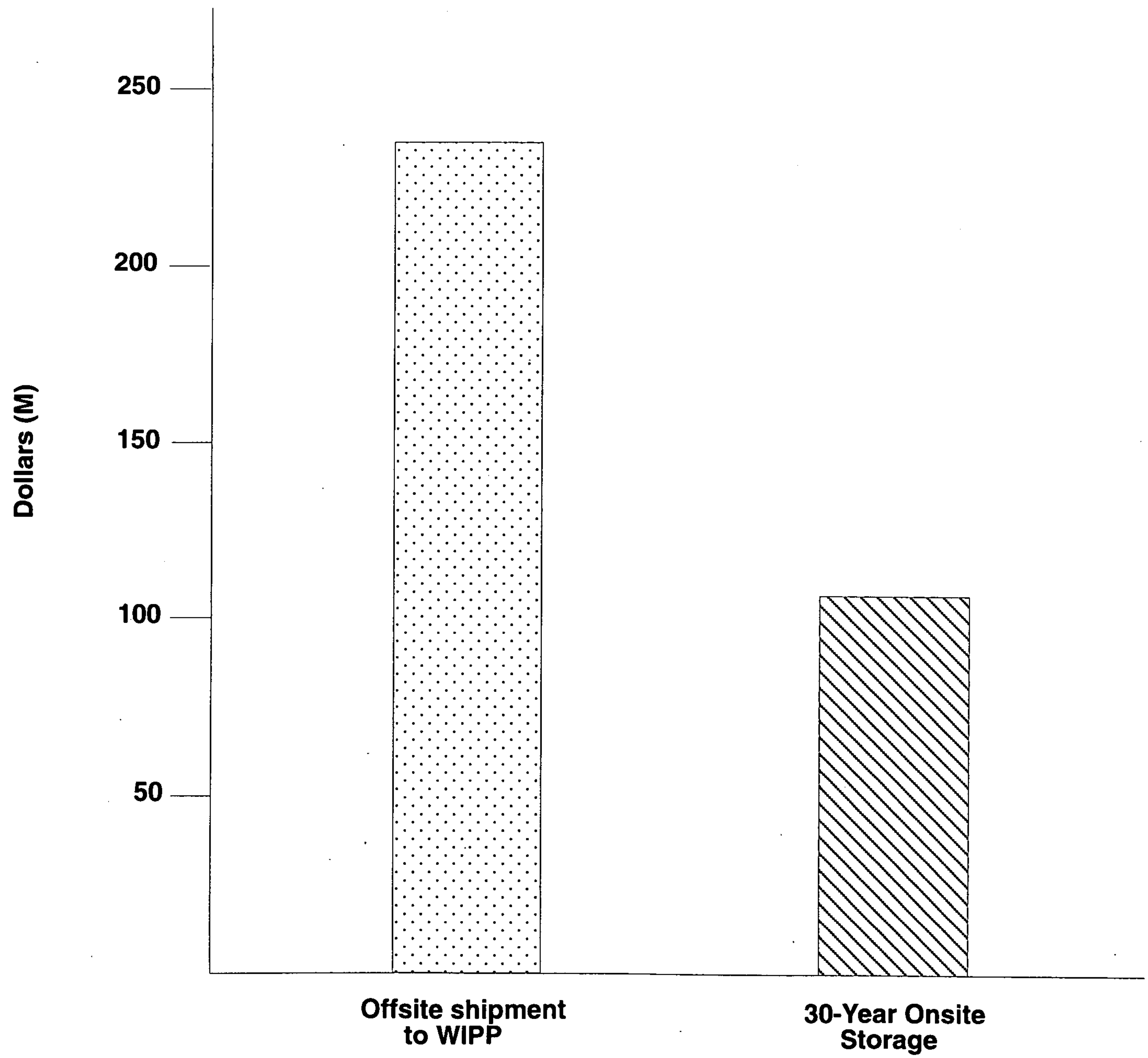
EXHIBIT 2.9





NOTE: construction costs associated with disposal and storage facilities are annualized based on a 30 year operating period

Exhibit 2.10 Comparative Costs of Offsite Shipment vs 30-Year Onsite Storage of Transuranic Wastes



TASK 3

TASK 3: FACILITY DECOMMISSIONING

3.1 SUMMARY

3.1.1 Goals

The most desirable decommissioning final end state would be to completely decontaminate, dismantle and remove all of the more than 425 Site facilities (except those assigned to commercial/economic use) such that a final closure configuration could result in unrestricted use of the Site. These facilities (Exhibit 3.1) include nuclear facilities such as former plutonium and uranium processing buildings, administrative/shop/laboratory buildings typical of a large industrial complex, and infrastructure buildings such as the steam plant and sewage treatment plant. Most of the buildings, and the related support structures, are not contaminated with radionuclides. Some contain stored Special Nuclear Material (SNM), plutonium residues and wastes, and other hazardous materials in addition to radioactively contaminated equipment, tanks, pipes, gloveboxes, and building structures. Plutonium in ventilation ducts and other untoward places will also be addressed under this task. The Baseline Environmental Management Report (BEMR) indicates achieving this decommissioning final end state would take in excess of 70 years and $10 billion.

3.1.2 Objectives

The objectives of the Decommissioning Task are therefore as follows:

- Reduce risk associated with facilities and prepare them for dismantlement or demolition by removing chemicals, de-energizing electrical equipment, draining systems, removing classified tooling, etc.

- Dismantle or entomb existing facilities in a safe and compliant manner such that they can be disposed of on-site within an engineered disposal facility (Reference Task 4). Contamination control during these activities is a key requirement of the decommissioning task.

- Safely remove uncontaminated equipment and facilities for reuse or disposal as appropriate.

- Ensure facilities are removed or demolished in an integrated manner and that any facilities which are to remain in support of other federal, state, or local government or commercial projects are integrated into the decommissioning plan.

- Reduce operations and maintenance costs of the facilities by decommissioning them as expeditiously as possible.

EXHIBIT 3.1 FACILITY ATTRIBUTES

DRAFT

Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
COMPLEX 371/374															$414,000,000
371	PU RECOVERY BUILDING	315000	X		X			HAZ	50347	2198	7040	13478	93	2550	$264,500,000
373	WATER COOLING PROCESS	3200					X		511	22	72	137	1	163	$1,900,000
374	WASTE TREATMENT PLANT	43600	X		X		X	HAZ	6974	304	975	1867	13	1281	$145,200,000
377	AIR COMPRESSOR BUILDING	200							26	1	4	7	0	107	$100,000
378	WASTE COLLECTION PUMP HOUSE	100	X		X				21	1	3	6	0	107	$100,000
381	FLUORINE TRANSFER BUILDING	1300							42	2	0	0	0	86	$100,000
383	COOLING TOWER FOR 371	1000							31	1	0	0	0	135	$1,900,000
384	COOLING TOWER FOR 371	1000							31	1	0	0	0	135	$200,000
COMPLEX 444															$23,500,000
427	EMERGENCY GENERATOR	300							39	2	6	11	0	109	$200,000
439	MAINTENANCE SHOP	5100						U-238	657	29	92	176	0	222	$600,000
440	MODIFICATION CENTER	32600		X			X	HAZ	4173	182	583	1117	0	489	$1,600,000
444	MANUFACTURING BUILDING	162000												1171	$15,200,000
445	CARBON STORAGE	3300						HAZ	418	18	59	112	0	100	$200,000
448	STORAGE BUILDING	3600							462	20	65	124	0	100	$200,000
449	OIL & PAINT STORAGE	200						HAZ	31	1	4	8	0	72	$100,000
450	VENTILATION SUPPLY (FILTER)	200						RAD	26	1	4	7	0	178	$100,000
451	FILTER PLENUM	2800						RAD	353	15	49	94	0	178	$1,600,000
453	OIL STORAGE	400					X	HAZ	49	2	7	13	0	72	$100,000
454	COOLING WATER TOWER	400							48	2	7	13	0	65	$100,000
455	FILTER PLENUM	1800							230	10	32	62	0	221	$1,600,000
457	COOLING WATER TOWER	200							29	1	4	8	0	65	$100,000
664	WASTE STORAGE AND SHIPPING	28000	X	X				HAZ	3584	156	501	959	0	265	$1,600,000
964	WASTE STORAGE	2000							256	11	36	68	0	64	$200,000
439TA	CONSTRUCTION COORDINATION	500							64	3	9	17	0	33	$100,000
439TD	REMOTE ENGINEERING	1300							171	7	24	46	0	33	$100,000
444TA	SHOWERS/LOCKERS	500							66	3	9	18	0	33	$100,000
COMPLEX 559															$147,500,000
528	PROCESS WASTE PIT	600	X					HAZ	101	4	14	27	0	107	$100,000
559	PU ANALYTICAL LABORATORY	30600	X				X	HAZ	4891	214	684	1309	9	1113	$145,200,000
560	COOLING TOWER	400							64	3	9	17	0	64	$100,000
561	FILTER PLENUM BUILDING	5400	X	X	X		X	HAZ	869	38	122	233	2	220	$1,600,000
562	EMERGENCY GENERATOR	400							61	3	9	16	0	109	$200,000
563	COOLING TOWER	300							40	2	6	11	0	64	$100,000
564	ADMINISTRATION	3000							479	21	67	128	1	72	$100,000
732	LAUNDRY WASTE PIT	100							12	1	2	3	0	64	$100,000
COMPLEX 707															$239,200,000
223	STORAGE TANK	3500							559	24	78	150	1	101	$200,000
707	PRODUCTION BUILDING	196900	X				X	HAZ	31474	1374	4401	8426	58	2231	$236,600,000
711	COOLING TOWER	1900							304	13	42	81	1	163	$1,900,000
718	COOLING TOWER	300							47	2	7	13	0	64	$100,000
731	PROCESS WASTE PIT	500						RAD	81	4	11	22	0	107	$100,000
707TB	ADMINISTRATION	1000							163	7	23	44	0	33	$100,000
707TS	OIL STORAGE SHED	200						HAZ	38	2	5	10	0	33	$100,000
711A	EMERGENCY PUMP BUILDING	2000						HAZ	326	14	46	87	1	101	$200,000
COMPLEX 771															$326,700,000
262	DIESEL FUEL STORAGE	2100							340	15	48	91	1	102	$200,000
714	HE STORAGE BUILDING	200					X	HAZ	29	1	4	8	0	107	$100,000
715	EMERGENCY GENERATOR	800							124	5	17	33	0	138	$200,000
716	EMERGENCY GENERATOR	300							45	2	6	12	0	109	$200,000
717	MAGNETIC GAUGE BUILDING	400						RAD	66	3	9	18	0	109	$100,000
728	PROCESS WASTE PIT	100						RAD	16	1	2	4	0	107	$100,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

DRAFT

Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
770	CARPENTER SHOP	3100						RAD	499	22	70	133	1	100	$200,000
771	PU RECOVERY FACILITY	151400	X	X	X		X	HAZ	24202	1057	3384	6479	45	2231	$323,500,000
772	FLUORINE STORAGE BUILDING	1100						HAZ	182	8	25	49	0	107	$100,000
775	SEWAGE LIFT STATION	200							24	1	3	7	0	107	$100,000
790	RADIATION CALIBRATION LAB	6800						RAD	1082	47	151	290	2	220	$1,200,000
714A	HE STORAGE BUILDING	200							31	1	4	8	0	107	$100,000
714B	EMERGENCY BREATHING AIR	200							31	1	4	8	0	109	$100,000
715A	EMERGENCY GENERATOR	400							64	3	9	17	0	109	$200,000
771A	ADMINISTRATION	1600							259	11	36	69	0	33	$100,000
771B	CARPENTER SHOP	600							90	4	13	24	0	107	$200,000
771C	NUCLEAR WASTE PACKAGING	4600						HAZ	743	32	104	199	1	223	$100,000
772A	FLUORINE TANK FARM	400							64	3	9	17	0	107	$100,000
COMPLEX 776\777															$219,900,000
701	CHEMISTRY RESEARCH	5200						HAZ	827	36	116	222	2	223	$200,000
702	COOLING TOWER PUMP	900							145	6	20	39	0	107	$100,000
703	COOLING TOWER PUMP	1000							160	7	22	43	0	107	$100,000
710	STEAM VALVE HOUSE	500							86	4	12	23	0	107	$100,000
712	COOLING TOWER	2900							463	20	65	124	1	164	$1,900,000
713	COOLING TOWER	2900							463	20	65	124	1	164	$1,900,000
776	MANUFACTURING BUILDING	152200	X	X	X		X	HAZ	24330	1062	3402	6513	45	1617	$107,800,000
777	ASSEMBLY BUILDING	74800	X	X	X	X	X	HAZ	11958	522	1672	3201	22	1618	$107,800,000
COMPLEX 779															$60,900,000
727	EMERGENCY GENERATOR	400							61	3	9	16	0	109	$200,000
729	FILTER PLENUM	2800					X	RAD	454	20	63	121	1	222	$1,600,000
730	PROCESS WASTE PIT	900						RAD	144	6	20	39	0	107	$100,000
779	PLUTONIUM DEVELOPMENT	64200	X	X		X	X	HAZ	10268	448	1436	2749	19	1237	$59,100,000
COMPLEX 774															$73,300,000
774	WASTE TREATMENT PLANT	23300	X				X	HAZ	3716	162	520	995	7	1322	$70,900,000
781	COOLING TOWER	300							43	2	6	12	0	64	$100,000
782	FILTER PLENUM	6200					X	RAD	986	43	138	264	2	178	$1,600,000
783	PUMP HOUSE	500							77	3	11	21	0	107	$100,000
712A	NATURAL GAS BUILDING	100							16	1	2	4	0	64	$100,000
713A	VALVE BIT	100							16	1	2	4	0	64	$100,000
774A	CONDENSATE HOLDING TANK	400						RAD	58	3	8	16	0	66	$200,000
774B	CONDENSATE HOLDING TANK	400						RAD	58	3	8	16	0	66	$200,000
779TA	ADMINISTRATION	1700							268	12	38	72	0	33	$100,000
COMPLEX 883															$35,000,000
883	ROLLING AND FORMING FACILITY	52400		X		X	X	HAZ						714	$33,700,000
566	PROTECTIVE CLOTHING DECON	13700							1752	76	245	469	0	234	$1,200,000
569	CRATE COUNTER FACILITY	7600							974	43	136	261	0	114	$100,000
COMPLEX 865															$23,800,000
865	CASTING FACILITY	38300		X		X	X	HAZ						714	$23,600,000
827	EMERGENCY GENERATOR	400							49	2	7	13	0	109	$200,000
COMPLEX 886															$120,400,000
828	PROCESS WASTE PIT	300			X			HAZ	36	2	5	10	0	332	$100,000
863	ELECTRICAL TRANSFER	400							51	2	7	14	0	109	$100,000
866	WASTE TRANSFER	400		X		X	X	HAZ	53	2	7	14	0	109	$100,000
867	FILTER PLENUM	2800						RAD	359	16	50	96	0	180	$1,600,000
868	FILTER PLENUM	2100						RAD	273	12	38	73	0	180	$1,600,000
875	FILTER PLENUM	3900						RAD	499	22	70	34	0	180	$1,600,000
879	FILTER PLENUM	3600						RAD	465	20	65	15	0	180	$1,600,000
880	STORAGE BUILDING	800						RAD	102	4	14	27	0	107	$100,000
881	MANUFACTURING/GENERAL	255200	X	X			X	HAZ	32624	1424	4562	8734	0	747	$75,800,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

DRAFT

Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
886	NUCLEAR SAFETY FACILITY	10800							1379	60	193	369	0	475	$27,300,000
887	SEWAGE LIFT STATION	1600						HAZ	199	9	28	53	0	135	$200,000
889	EQUIPMENT DECONTAMINATION	8400	X	X		X	X	HAZ	1074	47	150	288	0	259	$6,700,000
890	COOLING TOWER	1400							174	8	24	47	0	165	$1,900,000
994	EFFLUENT MONITORING STATION	100							8	0	1	2	0	29	$100,000
865A	COOLING TOWER	500							58	3	8	15	0	64	$100,000
881F	FILTER PLENUM	8500						RAD	1083	47	151	290	0	137	$1,600,000
881G	EMERGENCY GENERATOR	1100							137	6	19	37	0	109	$200,000
COMPLEX 991															$19,800,000
984	SHIPPING CONTAINER STORAGE	29400						RAD	4699	205	657	1258	9	544	$8,800,000
985	FILTER PLEMUM	2400						RAD	382	17	53	102	1	135	$1,600,000
989	EMERGENCY GENERATOR	400						RAD	61	3	9	16	0	149	$200,000
991	PRODUCT WAREHOUSE	37900	X	X		X		HAZ	6054	264	847	1621	11	489	$3,900,000
996	STORAGE VAULTS	7200						RAD	1151	50	161	308	2	82	$1,300,000
997	STORAGE VAULTS	4100						RAD	652	28	91	175	1	82	$1,300,000
998	STORAGE VAULTS	2600						RAD	422	18	59	113	1	82	$1,300,000
999	STORAGE VAULTS	2100						RAD	339	15	47	91	1	82	$1,300,000
COMPLEX GENERAL SUPPORT BUILDINGS															$119,300,000
100	WEST GATE GUARD POST	**400**	**COMPLETED 20 JUL 1995**												**$0**
111	ADMINISTRATION	43900					X	HAZ	1403	61	0	0	0	351	$1,200,000
112	CAFETERIA	9300							297	13	0	0	0	222	$100,000
113	GUARD POST	300							10	0	0	0	0	33	$100,000
114	CAR POOL SHELTER	100							2	0	0	0	0	29	$0
115	DOE ADMINISTRATION	17000							542	24	0	0	0	192	$400,000
116	DOE ADMINISTRATION	16800							537	23	0	0	0	194	$400,000
119	PLANT SECURITY FACILITY	11200							358	16	0	0	0	192	$400,000
120	WEST ACCESS GUARD POST	600							18	1	0	0	0	109	$100,000
121	PLANT PROTECTION	6500					X	HAZ	209	9	0	0	0	220	$100,000
122	OCCUPATIONAL HEALTH	9100					X	HAZ	292	13	0	0	0	222	$100,000
123	HEALTH PHYSICS	19000	X		X	X	X	HAZ	607	26	0	0	0	379	$1,200,000
124	WASTE TREATMENT PLANT	12300					X	HAZ	393	17	0	0	0	220	$1,200,000
125	STANDARDS LABORATORY	12800					X	HAZ	410	18	0	0	0	222	$1,200,000
126	SOURCE STORAGE BUILDING	400					X		14	1	0	0	0	108	$100,000
127	EMERGENCY GENERATOR	500					X		16	1	0	0	0	107	$200,000
128	VEHICLE SHELTER	2400							78	3	0	0	0	29	$100,000
129	RAW WATER STRAINER	500							17	1	0	0	0	65	$100,000
130	ENGINEERING SUPPORT BUILDING	83900					HAZ		NOT IN SCOPE		0	0	0	227	$0
131	DOE OFFOCE BUILDING	22000							703	31	0	0	0	229	$1,200,000
133	GUARD POST FOR 130	**100**	**COMPLETED 20 JULY 1995**									**0**	**0**	**62**	**$100,000**
180	METEOROLOGY DATA COLLECTION	100							3	0	0	0	0	29	$100,000
181	METEOROLOGY TOWER WOMEN CREE	100							3	0	0	0	0	29	$100,000
203	BUFFER ZONE CATTEL & ACCESS	400							11	0	0	0	0	64	$100,000
207	INDUSTRIAL WASTE STORAGE (TA	7300					RAD		233	10	0	0	0	223	$1,700,000
218	NITRIC ACID FARM	1200							37	2	0	0	0	33	$200,000
219	SANITARY LANDFILL	1100							NOT IN SCOPE		0	0	0	5	$0
221	STORAGE TANK	14000							446	19	0	0	0	100	$1,700,000
224	CENTRAL FUEL STORAGE TANK	23800							761	33	0	0	0	100	$1,700,000
226	TANK	500							15	1	0	0	0	50	$200,000
227	TANK	300					HAZ		10	0	0	0	0	50	$200,000
229	PORTABLE IRRIGATION SYSTEM	0							0	0	0	0	0	33	$0
240	STEAM CONDENSATE HOLDING TAN	7000							225	10	0	0	0	100	$800,000
301	AIR SAMPLING STATION	100							3	0	0	0	0	29	$100,000
302	PISTOL RANGE	100							3	0	0	0	0	78	$100,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

DRAFT

Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
306	WATER SAMPLING AND MEASURING	100							3	0	0	0	0	29	$100,000
307	PISTOL RANGE	100							3	0	0	0	0	78	$100,000
331	GARAGE AND FIRE STATION	23400					X	HAZ	749	33	0	0	0	337	$1,600,000
333	PAINT SHOP	3000					X	HAZ	95	4	0	0	0	71	$200,000
334	GENERAL MAINTENANCE	39500					X	HAZ	1262	55	0	0	0	338	$1,600,000
335	FIRE TRAINING BUILDING	2100							68	3	0	0	0	152	$1,300,000
367	STORAGE SHED	200							8	0	0	0	0	33	$100,000
372	GUARD POST	400							12	1	0	0	0	62	$100,000
375	GUARD TOWER T-4	300							11	0	0	0	0	50	$100,000
376	ADMINISTRATION 371 TECH SUPP	3000							96	4	0	0	0	78	$100,000
428	PUMP HO'USE	400							12	0	0	0	0	39	$100,000
429	WASTE PIT	100							3	0	0	0	0	41	$100,000
441	PRODUCTION SUPPORT ADMIN	17700					X		565	25	0	0	0	236	$400,000
442	FILTER TEST LABORATORY	2500					X		79	3	0	0	0	180	$400,000
443	HEATING PLANT	18600	X	X			X	HAZ	595	26	0	0	0	631	$3,400,000
447	MANUFACTURING FACILITY	21500							749	33	0	0	0	337	$10,100,000
446	GUARD POST	300							10	0	0	0	0	33	$100,000
452	ENGINEERING OFFOCE	6000							192	8	0	0	0	222	$400,000
460	MANUFACTURING FACILITY	213000					X	HAZ	6808	297	0	0	0	309	$15,200,000
461	GUARD POST	300							9	0	0	0	0	33	$100,000
462	COOLING TOWER FOR 460	600							19	1	0	0	0	65	$100,000
515	ELECTRICAL SUBSTATION	400						PCB	13	1	0	0	0	48	$100,000
516	ELECTRICAL SUBSTATION	700						PCB	21	1	0	0	0	48	$100,000
517	ELECTRICAL SUBSTATION	100						PCB	3	0	0	0	0	48	$100,000
518	ELECTRICAL SUBSTATION	400						PCB	13	1	0	0	0	48	$100,000
519	ALARMS SYSTEM STORAGE	1000							33	1	0	0	0	29	$100,000
520	SWITCH GEAR BUILDING	1000							33	1	0	0	0	48	$100,000
549	CONTRACTOR STORAGE	1900							61	3	0	0	0	64	$100,000
550	GUARD TOWER T-3	300							11	0	0	0	0	66	$100,000
551	GENERAL SUPPLIES WAREHOUSE	45300					X	HAZ	1449	63	0	0	0	488	$1,200,000
552	GAS STORAGE	4200							133	6	0	0	0	64	$200,000
553	WELDING SHOP	1300					X	RAD	41	2	0	0	0	64	$100,000
554	STORAGE BUILDING	1200							38	2	0	0	0	64	$100,000
555	ELECTRICAL SUBSTAION # 2	1200							40	2	0	0	0	48	$100,000
556	METAL CUTTING BUILDING	600							20	1	0	0	0	64	$200,000
557	GUARD POST	300						RAD	10	0	0	0	0	33	$100,000
558	ELECTRICAL SUBSTATION # 4	500							16	1	0	0	0	48	$100,000
570	CRATE COUNTER SUPPORT FACILI	700							22	1	0	0	0	65	$100,000
575	ELECTRICAL SUBSTATION	1000							31	1	0	0	0	48	$100,000
661	ELECTRICAL SUBSTATION # 1	1200							37	2	0	0	0	48	$100,000
662	POWER PLANT	3300						PCB	106	5	0	0	0	78	$200,000
663	CONTRACTOR STORAGE & SHIPPIN	4400						HAZ	142	6	0	0	0	33	$200,000
666	CONTRACTOR STORAGE BUILDING	300						PCB	51	2	0	0	0	33	$200,000
667	CONTRACTOR STORAGE FACILITY	1500						HAZ	9	0	0	0	0	33	$100,000
668	DRUM CERTIFICATION BUILDING	4300							49	2	0	0	0	29	$200,000
705	COATINGS LABORATORY	4000					X	HAZ	137	6	0	0	0	100	$400,000
706	LIBRARY	7500					X		128	6	0	0	0	100	$400,000
708	COMPRESSOR BUILDING	1900					X	HAZ	238	10	0	0	0	101	$200,000
709	COOLING TOWER	57200							61	3	0	0	0	166	$1,900,000
750	PRODUCTION ENGINEERING/ADMIN	300							1827	80	0	0	0	164	$1,900,000
761	GUARD TOWER	400							11	0	0	0	0	30	$100,000
762	GUARD POST	3200							11	0	0	0	0	29	$100,000
763	SOUTH BREEZEWAY	1800							101	4	0	0	0	33	$200,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

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Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
764	PIDAS DATA COLLECTION BLDG.	1200							56	2	0	0	0	55	$200,000
765	SECONDARY ALARM CENTER	200							38	2	0	0	0	58	$200,000
773	GUARD POST	31200							6	0	0	0	0	29	$100,000
778	SERVICE BUILDING	100				X		RAD	997	44	0	0	0	236	$1,900,000
780	FLAMMABLE STORAGE	500							4	0	0	0	0	29	$100,000
784	COOLING TOWER	100							15	1	0	0	0	64	$100,000
785	COOLING TOWER	400							2	0	0	0	0	64	$100,000
786	COOLING TOWER	4500							13	1	0	0	0	64	$100,000
788	CEMENTATION PROCESS BUILDING	300	X	X	X		X	HAZ	144	6	0	0	0	137	$1,000,000
792	GUARD POST	400							9	0	0	0	0	33	$100,000
830	ISOLATED POWER SUPPLY	39900							12	1	0	0	0	29	$100,000
864	GUARD POST	900					X		28	1	0	0	0	33	$100,000
869	GAS DISTRIBUTION HOUSE	400							13	1	0	0	0	48	$100,000
882	GAS STORAGE CYLINDER SHED	100							2	0	0	0	0	29	$100,000
884	WAREHOUSE	3200							104	5	0	0	0	64	$100,000
885	PAINT AND OIL STORAGE	700		X		X	X	HAZ	23	1	0	0	0	79	$100,000
888	GUARD POST	300							9	0	0	0	0	33	$100,000
891	GROUND WATER TREATMENT	3000							96	4	0	0	0	78	$200,000
900	GUARD POST SECURITY OFFICES	**300**	**COMPLETED 20 JULY 199**						**10**	**0**	**0**	**0**	**0**	**110**	**$0**
901	GUARD TOWER T-2	100							5	0	0	0	0	40	$100,000
910	SEWAGE TREATMENT PLANT	9100					X	HAZ	290	13	0	0	0	308	$3,400,000
920	EAST ENTRANCE GUARD POST	600							18	1	0	0	0	29	$100,000
928	EMERGENCY WATER SUPPLY	1300					X		40	2	0	0	0	29	$100,000
930	EFFLUENT mONITORING sTATION	100							2	0	0	0	0	29	$200,000
931	EFFLUENT MONITORING STATION	100							2	0	0	0	0	29	$100,000
932	EFFLUENT MONITORING STATION	100							2	0	0	0	0	29	$100,000
933	EFFLUENT MONITORING STATION	100							3	0	0	0	0	29	$100,000
934	EFFLUENT MONITORING STATION	100							2	0	0	0	0	29	$100,000
952	GAS CYLINDER STORAGE	100							3	0	0	0	0	29	$100,000
960	CONTRACTOR STORAGE	3200							101	4	0	0	0	100	$100,000
965	CONTRACTOR STORAGE	600							19	1	0	0	0	29	$100,000
967	CONTRACTOR LOCKER ROOM	5000							161	7	0	0	0	100	$200,000
968	CONTRACTOR WAREHOUSE	11000							352	15	0	0	0	100	$400,000
980	CONTRACTOR STORAGE	13500							432	19	0	0	0	100	$400,000
987	SECURITY STORAGE	200							6	0	0	0	0	29	$100,000
988	TERTIARY TREATMENT	200							7	0	0	0	0	100	$100,000
990	WASTE WATER TREATMENT	400					X	HAZ	12	1	0	0	0	100	$100,000
992	SECURITY CONTROL STATION	400					X		12	1	0	0	0	101	$100,000
993	STORAGE VAULTS	1200					X		38	2	0	0	0	29	$200,000
995	SEWAGE TREATMENT FACILITY	1200							39	2	0	0	0	100	$200,000
111TA	ADMINISTRATION	2000							64	3	0	0	0	43	$100,000
112TA	EMPLOYEE STORE	2400							77	3	0	0	0	43	$100,000
112TB	ADMINISTRATION	400							13	1	0	0	0	17	$100,000
112TC	ADMINISTRATION	900							28	1	0	0	0	17	$100,000
115TA	ADMINISTRATION	6900							219	10	0	0	0	43	$100,000
115TB	ADMINISTRATION	800							24	1	0	0	0	17	$100,000
115TC	ADMINISTRATION	3000							94	4	0	0	0	43	$100,000
117T	ADMINISTRATION	15400							492	21	0	0	0	52	$300,000
119TA	ADMIN- STATEOF COLORADO	1700							55	2	0	0	0	43	$100,000
119TB	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
120TA	SECURITY BADGING TRAILER	1200							38	2	0	0	0	83	$100,000
121TA	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
122S	SHREDDER SHED	200							7	0	0	0	0	43	$100,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

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Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
123S	HAZARDOUS WASTE STORAGE	100						HAZ	3	0	0	0	0	43	$100,000
124TA	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TB	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TC	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TD	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TE	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TF	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TG	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TH	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TI	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
130TJ	ADMINISTRATION	15400							492	21	0	0	0	54	$300,000
131TA	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
215D	DOMESTIC WATER STORAGE	6800							218	10	0	0	0	115	$1,700,000
223A	ERM STORAGE FACILITY	200						HAZ	6	0	0	0	0	29	$100,000
228A	TANK	1100							35	2	0	0	0	45	$200,000
228B	TANK	1100							35	2	0	0	0	45	$200,000
231A	TANK	6200							199	9	0	0	0	102	$200,000
231B	TANK	15200							485	21	0	0	0	102	$1,700,000
308A	WASTE STORAGE TANKS	10300							329	14	0	0	0	102	$1,700,000
308B	WASTE STORAGE TANKS	10300							329	14	0	0	0	102	$1,700,000
308C	WASTE STORAGE TANKS	10300							329	14	0	0	0	102	$1,700,000
331S	STORAGE SHED	600							18	1	0	0	0	31	$100,000
331TA	FIRE DEPARTMENT STORAGE	600							18	1	0	0	0	29	$100,000
334TB	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
334TC	ADMINISTRATION	1400							46	2	0	0	0	43	$100,000
334TD	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
371TA	ADMINISTRATION	2100							66	3	0	0	0	43	$100,000
371TC	ADMINISTRATION	11400							364	16	0	0	0	22	$300,000
371TD	ADMIINISTRATION	1800							58	3	0	0	0	43	$100,000
371TE	REST ROOMS	200							8	0	0	0	0	22	$100,000
371TF	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
371TG	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
371TH	ADMINISTRATION	2500							81	4	0	0	0	43	$100,000
371TJ	RADIOGRAPHY TRAILER	1400						HAZ	46	2	0	0	0	43	$100,000
371TK	OFFICE TRAILER	1400							46	2	0	0	0	43	$100,000
372A	PERSONNEL ACCESS CONTROL	1800							58	3	0	0	0	43	$100,000
376TA	ADMINISTRATION	1300							43	2	0	0	0	43	$400,000
428TA	TOOL SHED	100							4	0	0	0	0	43	$100,000
441TA	CONSTRUCTION COORDINATION	1800						RAD	59	3	0	0	0	22	$100,000
442TA	CONSTRUCTION COORDINATION	400							14	1	0	0	0	43	$100,000
447TA	JA JONES LOCKERS	1400		X		X		HAZ	46	2	0	0	0	22	$100,000
452TB	HEALTH EFFECTS & RESEARCH	1400							44	2	0	0	0	43	$100,000
452TC	HEALTH EFFECTS & RESEARCH	1400							46	2	0	0	0	13	$100,000
452TD	HEALTH EFFECTS & RESEARCH	1400							44	2	0	0	0	47	$100,000
452TE	RESTROOMS	100							2	0	0	0	0	47	$100,000
452TF	HEALTH EFFECTS & RESEARCH	1400							44	2	0	0	0	26	$100,000
452TG	RESPIRATOR FIT AND TEST FACI	1400							44	2	0	0	0	47	$100,000
549TA	CONTRACTOR STORAGE	1900							61	3	0	0	0	47	$100,000
551TA	ADMINISTRATION	3400							107	5	0	0	0	43	$100,000
566A	PROTECTIVE CLOTHING PLENUM	500					X	RAD	17	1	0	0	0	43	$100,000
566B	CARPENTER SHOP CARGO SHED	1200							37	2	0	0	0	22	$200,000
664TA	ADMINISTRATION	4400							140	6	0	0	0	47	$100,000
690TA	ADMINISTRATION	13300							425	19	0	0	0	47	$100,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

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Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
690TB	ADMINISTRATION	4500							143	6	0	0	0	47	$100,000
690TC	ADMINISTRATION	800							24	1	0	0	0	26	$100,000
690TD	ADMINISTRATION	600							19	1	0	0	0	26	$100,000
690TE	ADMINISTRATION	1400							45	2	0	0	0	47	$100,000
690TF	ADMINISTRATION	1100							35	2	0	0	0	47	$100,000
690TG	ADMINISTRATION	1200							39	2	0	0	0	47	$100,000
690TH	ADMINISTRATION	1100							35	2	0	0	0	47	$100,000
690TI	ADMINISTRATION	1100							35	2	0	0	0	47	$100,000
690TJ	ADMINISTRATION	1100						HAZ	35	2	0	0	0	47	$100,000
690TK	ADMINISTRATION	1100						HAZ	35	2	0	0	0	47	$100,000
690TL	ADMINISTRATION	1200							38	2	0	0	0	47	$100,000
690TM	ADMINISTRATION	2400							76	3	0	0	0	47	$100,000
690TN	ADMINISTRATION	4000							128	6	0	0	0	47	$100,000
706TA	ADMINISTRATION	1700							54	2	0	0	0	43	$100,000
750P	PROPANE TANK FARM	700							21	1	0	0	0	43	$100,000
750TA	ADMINISTRATION	1400							46	2	0	0	0	43	$100,000
750TB	ADMINISTRATION	700							21	1	0	0	0	22	$100,000
750TC	ADMINISTRATION	700							21	1	0	0	0	22	$100,000
750TD	ADMINISTRATION	700							23	1	0	0	0	22	$100,000
750TE	ADMINISTRATION	200							8	0	0	0	0	22	$100,000
750TF	LOCKER ROOM	100							5	0	0	0	0	22	$100,000
750TG	BREAK ROOM	1000							31	1	0	0	0	22	$100,000
760TA	SHOWER ROOM	200							5	0	0	0	0	22	$100,000
760TB	CARPOOL SHELTER	200							5	0	0	0	0	22	$100,000
762A	PERSONNEL ACCESS CONTROL	4200							134	6	0	0	0	79	$400,000
764TA	ADMINISTRATION	1000							32	1	0	0	0	43	$100,000
764TB	ADMINISTRATION	2000							65	3	0	0	0	43	$100,000
765A	EMERGENCY PUMP BUILDING	1000							32	1	0	0	0	43	$100,000
771TA	ADMINISTRATION	1600							52	2	0	0	0	43	$100,000
771TB	ADMINISTRATION	1500							46	2	0	0	0	43	$100,000
771TC	SHOWER/LOCKER ROOM	700							22	1	0	0	0	22	$100,000
771TD	ADMINISTRATION	500							15	1	0	0	0	22	$100,000
771TE	ADMINISTRATION	800							27	1	0	0	0	22	$100,000
771TF	ADMINISTRATION	1300							43	2	0	0	0	43	$100,000
771TG	SHOWERS	1300							43	2	0	0	0	43	$100,000
771TH	ADMINISTRATION	1500							47	2	0	0	0	43	$100,000
771TI	ADMINISTRATION	300							10	0	0	0	0	22	$100,000
771TJ	ADMINISTRATION	2200							70	3	0	0	0	43	$100,000
771TK	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
771TL	RESTROOMS	400							13	1	0	0	0	22	$100,000
780A	METAL STORAGE	100							3	0	0	0	0	26	$100,000
780B	GAS BOTTLE STORAGE	100							3	0	0	0	0	26	$100,000
787A	COOLING TOWER	1000							31	1	0	0	0	66	$1,900,000
787B	COOLING TOWER	1000							31	1	0	0	0	66	$1,900,000
787C	COOLING TOWER	1000							31	1	0	0	0	66	$1,900,000
787D	COOLING TOWER	1000							31	1	0	0	0	66	$1,900,000
792A	PERSONNEL ACCESS CONTROL	1900							59	3	0	0	0	78	$400,000
881TA	ADMINISTRATION	900							30	1	0	0	0	22	$100,000
881TB	ADMINISTRATION	700							23	1	0	0	0	387	$100,000
881TC	ADMINISTRATION	500							16	1	0	0	0	387	$100,000
883TA	ADMINISTRATION	1800							58	3	0	0	0	43	$100,000
883TB	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
883TC	ADMINISTRATION	1900							61	3	0	0	0	43	$100,000

EXHIBIT 3.1 FACILITY ATTRIBUTES

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Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
883TD	RESTROOM	200							6	0	0	0	0	22	$100,000
886TA	ADMINISTRATION	2000							63	3	0	0	0	43	$100,000
886TB	ADMINISTRATION	5200							165	7	0	0	0	43	$100,000
886TC	ADMINISTRATION	2200							72	3	0	0	0	43	$100,000
888A	ELECTRICAL SUBSTATION	400							12	1	0	0	0	22	$100,000
889TA	LOCKER ROOM	500							17	1	0	0	0	26	$100,000
891A	GROUNDWATER TREATMENT TANK	1800							59	3	0	0	0	43	$200,000
891B	GROUNDWATER TREATMENT TANK	1800							59	3	0	0	0	43	$200,000
891C	GROUNDWATER TREATMENT TANK	1800							59	3	0	0	0	43	$200,000
891TA	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TB	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TC	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TD	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TE	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TF	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TG	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TH	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TI	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TJ	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TK	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TL	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TM	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TN	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TO	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TP	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TQ	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
891TR	ADMINISTRATION	600							19	1	0	0	0	22	$100,000
893TA	ADMINISTRATION	17100							546	24	0	0	0	64	$300,000
893TB	ADMINISTRATION	16500							528	23	0	0	0	64	$300,000
900TA	SURGACE WATER TREATMENT	400							12	1	0	0	0	22	$100,000
900TB	SURFACE WATER TREATMENT	400							12	1	0	0	0	22	$100,000
900TC	SURFACE WATER TREATMENT	400							12	1	0	0	0	22	$100,000
900TD	SURGACE WATER TREATMENT	600							19	1	0	0	0	22	$100,000
902PAD	SLUDGE STORAGE	200							7	0	0	0	0	22	$100,000
903D	LIQUID DUMPING STATION	400							14	1	0	0	0	22	$100,000
903PAD	CONTAMINATION BARRIER	147700						RAD	4762	306	0	0	0	185	$1,700,000
903T	AIR SAMPLING	200							7	0	0	0	0	22	$100,000
903TA	LABORATORY TRAILER	500							15	1	0	0	0	22	$100,000
904P	PROPANE TANK FARM	1000							32	1	0	0	0	23	$200,000
904PAD	STORAGE	500							15	1	0	0	0	22	$100,000
904TA	BREAK TRAILER	600							19	1	0	0	0	22	$100,000
904TB	PONDCRETE BREAK TRAILER	700							23	1	0	0	0	22	$100,000
905PAD	FIELD OPERATIONS YARD	400							13	1	0	0	0	23	$100,000
952TA	BREAKTRAILER	200							7	0	0	0	0	22	$100,000
974TA	TREATMENT UNIT	100							4	0	0	0	0	23	$100,000
990A	WASTE WATER TREATMENT	200							6	0	0	0	0	22	$100,000
PADCP	PA DECON PAD	200							7	0	0	0	0	22	$100,000
RCRA1	STORAGE UNIT	200							6	0	0	0	0	23	$100,000
RCRA10	STORAGE UNIT	200							6	0	0	0	0	23	$100,000
RCRA15	STORAGE UNIT	200							6	0	0	0	0	23	$100,000
SANALL	SANITARY SEWER SYSTEM	150000							4795	209	0	0	0	379	$8,900,000
T-201	GROUNDWATER TANK	5400							171	7	0	0	0	108	$200,000
T-202	GROUNDWATER TANK	5400							171	7	0	0	0	108	$200,000

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EXHIBIT 3.1 FACILITY ATTRIBUTES

Building #	Activity Description and Function	Square Footage	CONTAMIANTS Pu	U	Am	Be	Asb	Other	Sanitary Waste (mt)	Hazardous Waste (mt)	Low Level Waste (mt)	LL-Mixed Waste (mt)	TRU Waste (mt)	Duration	Cost
T-203	GROUNDWATER TANK	5400							171	7	0	0	0	72	$200,000
T-204	GROUNDWATER TANK	5400							171	7	0	0	0	72	$200,000
T-205	GROUNDWATER TANK	5400							171	7	0	0	0	72	$200,000
T-206	GROUNDWATER TANK	5400							171	7	0	0	0	72	$200,000
T-207	GROUNDWATER TANK	5400							171	7	0	0	0	72	$200,000
TENT 01	STORAGE TENT	9000							1151	50	161	308	0	104	$1,000,000
TENT 02	PONDCRETE STORAGE TENT	9000							1151	50	161	308	0	104	$1,000,000
TENT 03	PONDCRETE STORAGE TENT	10000							1279	56	179	342	0	104	$1,000,000
TENT 04	PONDCRETE STORAGE TENT	10800							1381	60	193	370	0	104	$1,000,000
TENT 05	PONDCRETE STORAGE TENT	10800							1381	60	193	370	0	104	$1,000,000
TENT 06	PONDCRETE STORAGE TENT	21600							2762	121	386	739	0	135	$1,000,000
TENT 07	STORAGE TENT	16200							2071	90	290	555	0	49	$1,000,000
TENT 08	STORAGE TENT	16200							2071	90	290	555	0	49	$1,000,000
TENT 09	PONDCRETE STORAGE TENT	16200							2071	90	290	555	0	49	$1,000,000
TENT 10	PONDCRETE STORAGE TENT	16200					RAD		2071	90	290	555	0	49	$1,000,000
TENT 11	PONDCRETE STORAGE TENT	16200							2071	90	290	555	0	49	$1,000,000
TENT 12	PONDCRETE STORAGE TENT	16200							2071	90	290	555	0	49	$1,000,000
		0													
	TOTAL	0													$1,500,000,000

3.1.3 Feasible Alternative

To meet these objectives, a feasible decommissioning option would be a combination of dismantlement and entombment. Dismantlement includes removal of residual nuclear materials, including decontamination of both radiological and hazardous constituents as appropriate; removal of equipment; and demolition of building structures. Entombment involves placing low-level waste (LLW) in basements of existing structures, filling the voids, and covering with an engineered cap. This option is predicated upon the establishment of areas within the protected area and the industrial area where decommissioning waste will remain in an entombed condition.

Building structures above grade within the protected area will be either demolished and used as rubble, or left standing (within the height constraints of a cap over the protected area as discussed in Task 4). The decision to demolish will depend on building location, height, and structure robustness. Building structures outside the protected area will be removed, dismantled/demolished, rubblized, and used as fill within an engineered cap.

3.1.4. Key Cost and Schedule Features

Exhibit 3.1 summarizes preliminary cost and schedule information for decommissioning Site facilities. These facilities have been scheduled based on the following: availability, risk reduction, regulatory requirements, cost, and waste generation. All surplus facilities can be decommissioned within 8 years. The average number of buildings decommissioned per year would be 54 and the maximum number of buildings decommissioned in any one year would be 71 (year one of the program). It is recognized that considerable time is required to mobilize during the first year. The high number of facilities in year one represents many of the easier projects, including trailers and small sheds. A significant uncertainty also exists in the decommissioning schedule estimates, and additional planning must be conducted. However, completion of decommissioning by the end of FY2003 is believed feasible. Exhibit 3.2 shows a summary schedule indicating the number of buildings completed each year for the 8-year Decommissioning Program. Also shown are Site layout drawings displaying building demolition per year (Exhibit 3.3).

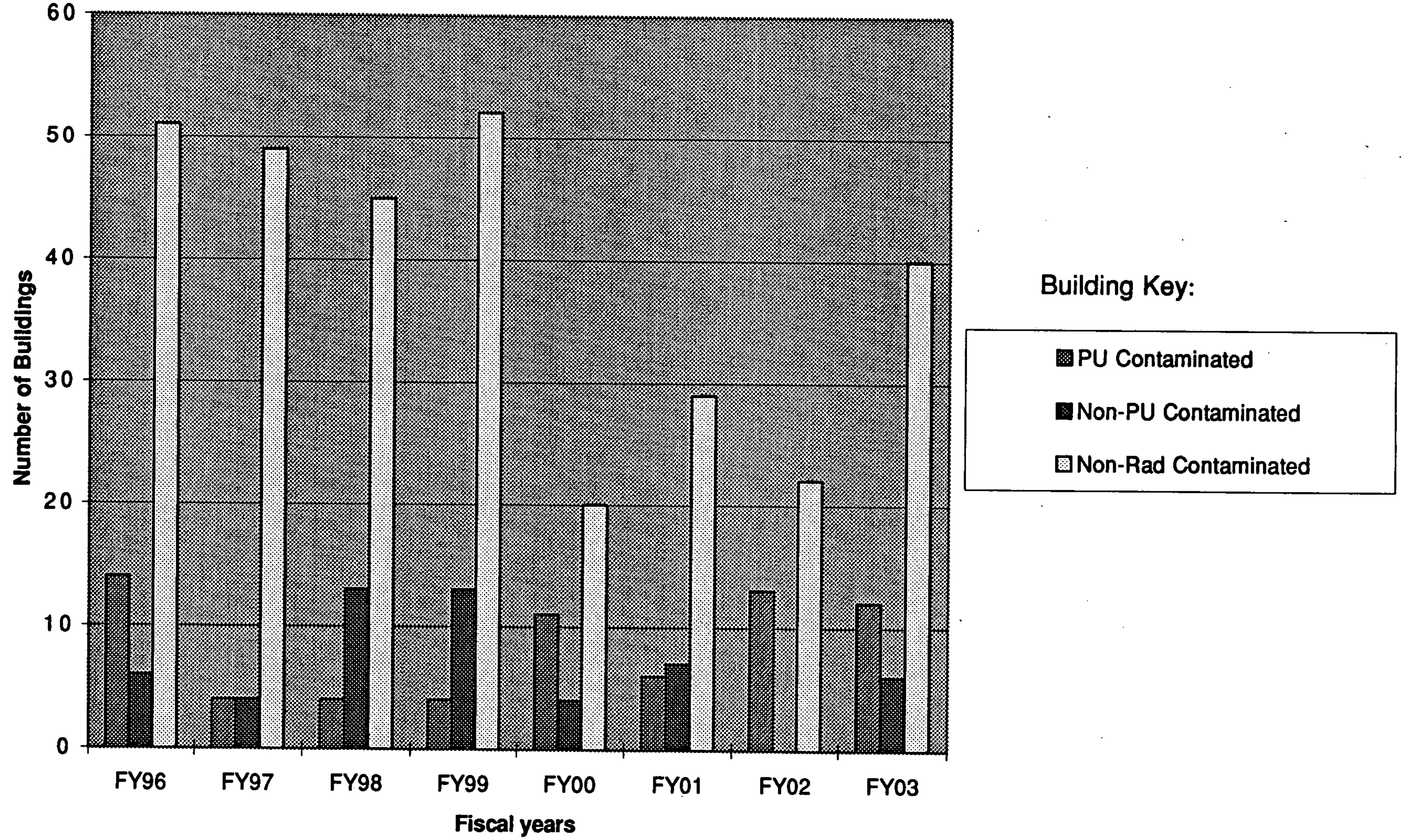
The decommissioning labor effort is estimated to be 10,500 person-years. The peak labor demand is approximately 1680 full-time equivalents (FTEs) in year 2002. Upon completion of the decommissioning task, there will be no operations and maintenance costs associated with the decommissioned facilities.

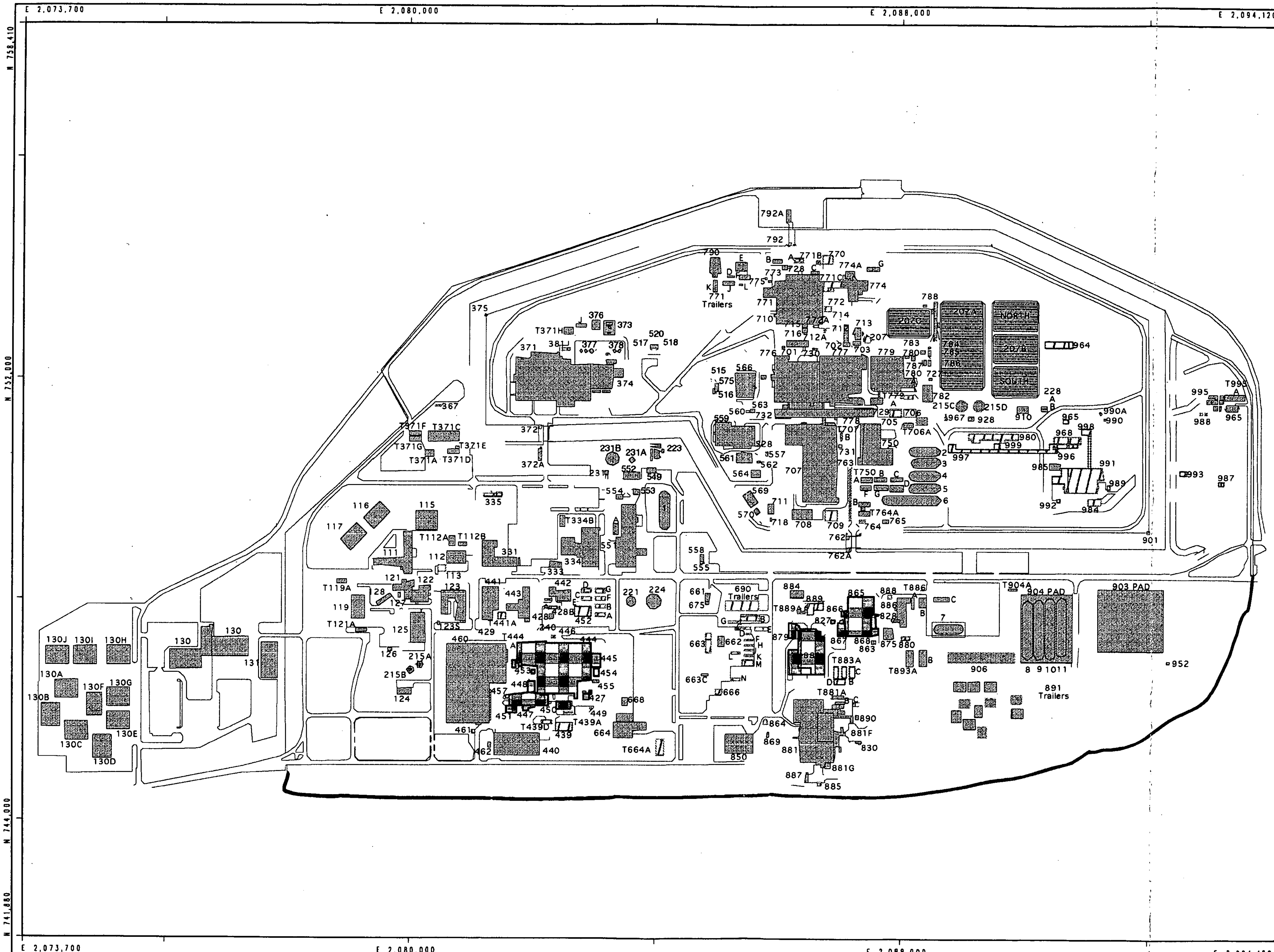
The estimated costs of decommissioning the facilities ranges from $1.0 billion to $2.0 billion (1995 dollars).

3.2 KEY ISSUES TO BE ADDRESSED

The following are key issues that must be addressed as part of this task.

Exhibit 3.2 - Decommissioning Finishes by Year





Facility Decommissioning Map Year 1

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr.,
EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

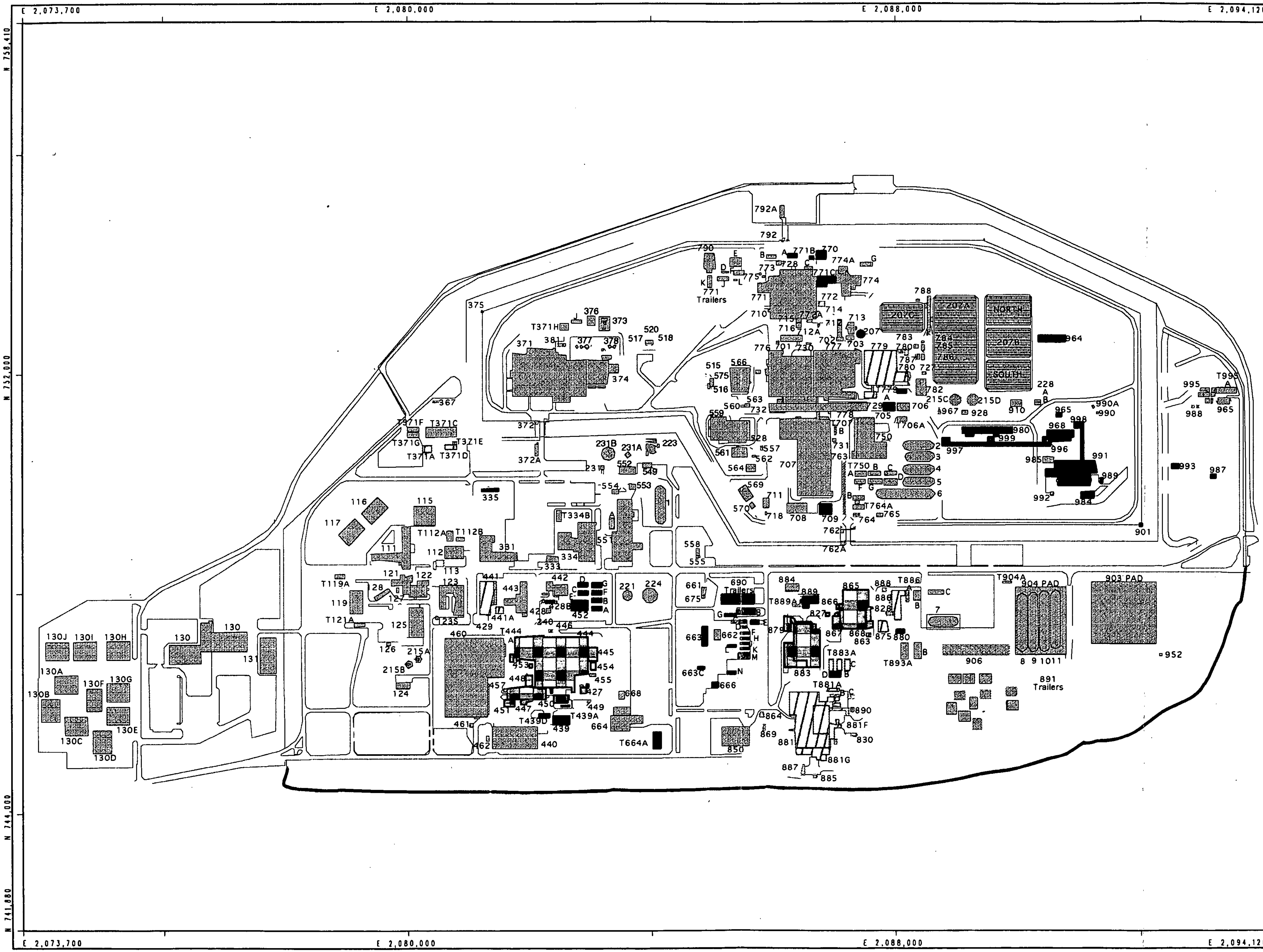
Scale = 1 : 19500
1 inch represents 1625 feet
0 2600

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility
July 26, 1995



Facility Decommissioning Map Year 2

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

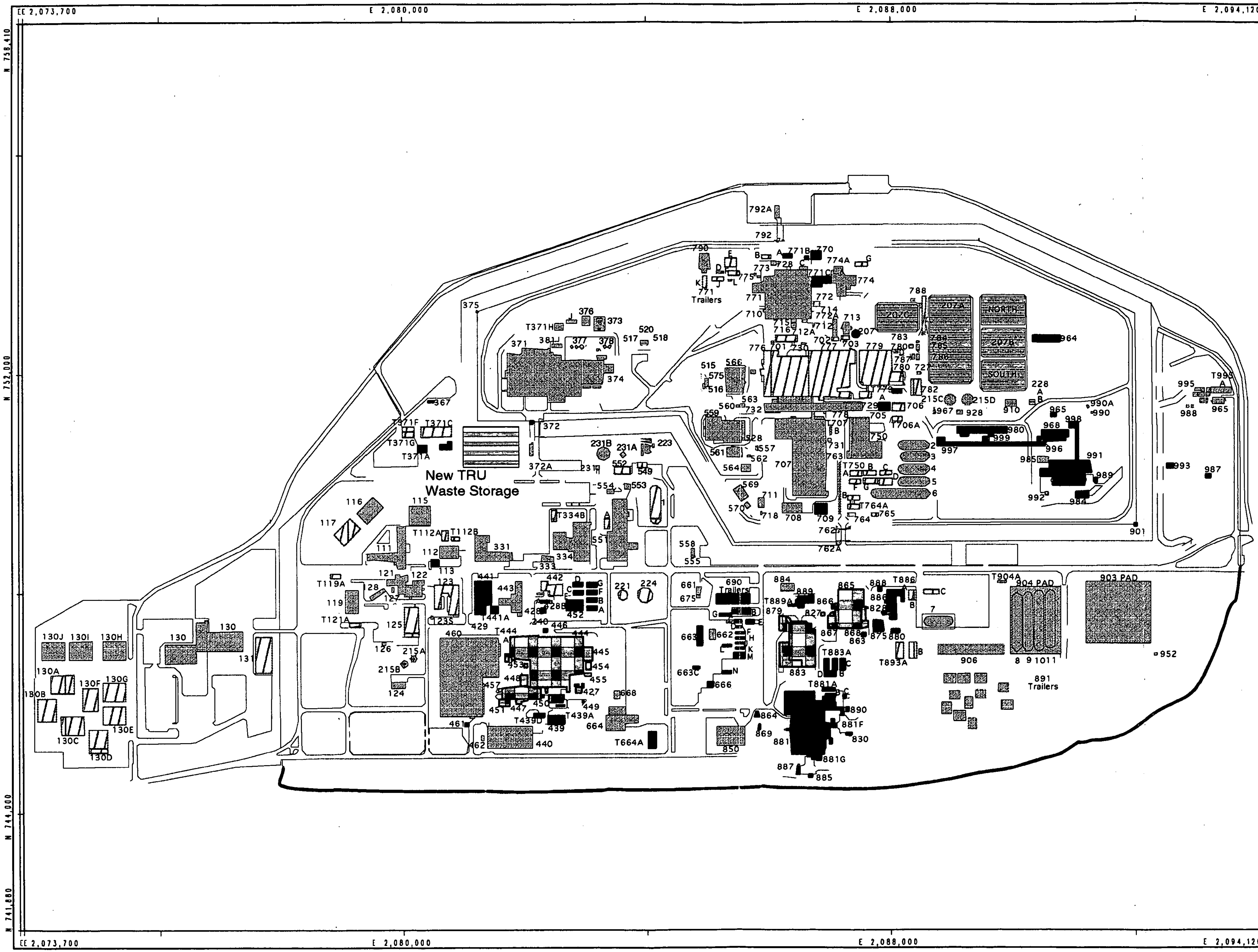
Scale = 1 : 19500
1 inch represents 1625 feet
0 2600

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility July 26, 1995



Facility Decommissioning Map Year 3

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- New Construction
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

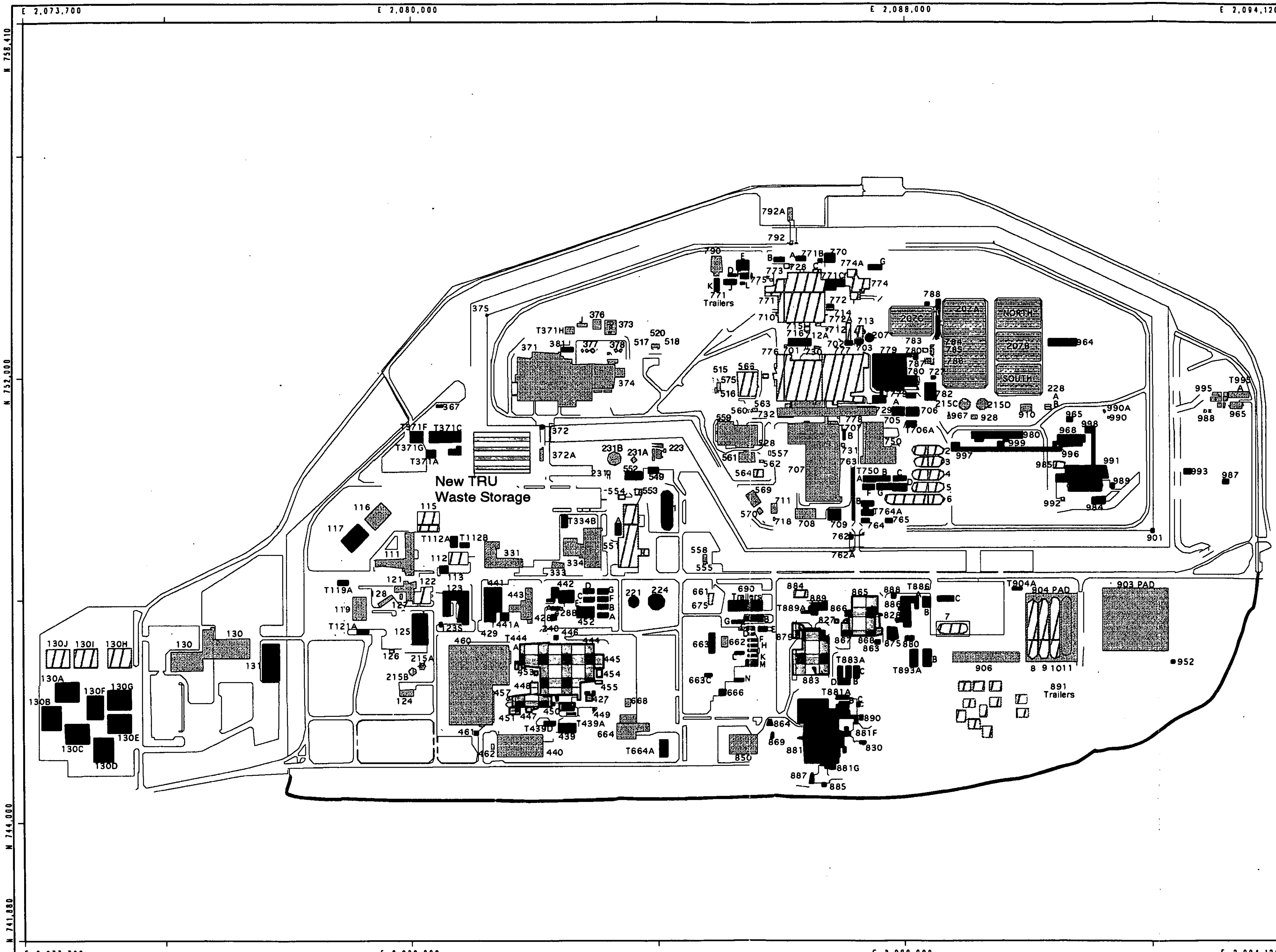
Scale = 1 : 19500
1 inch represents 1625 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility
July 28, 1995



Facility Decommissioning Map Year 4

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- New Construction
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr.,
EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by
USGS - (date unknown)

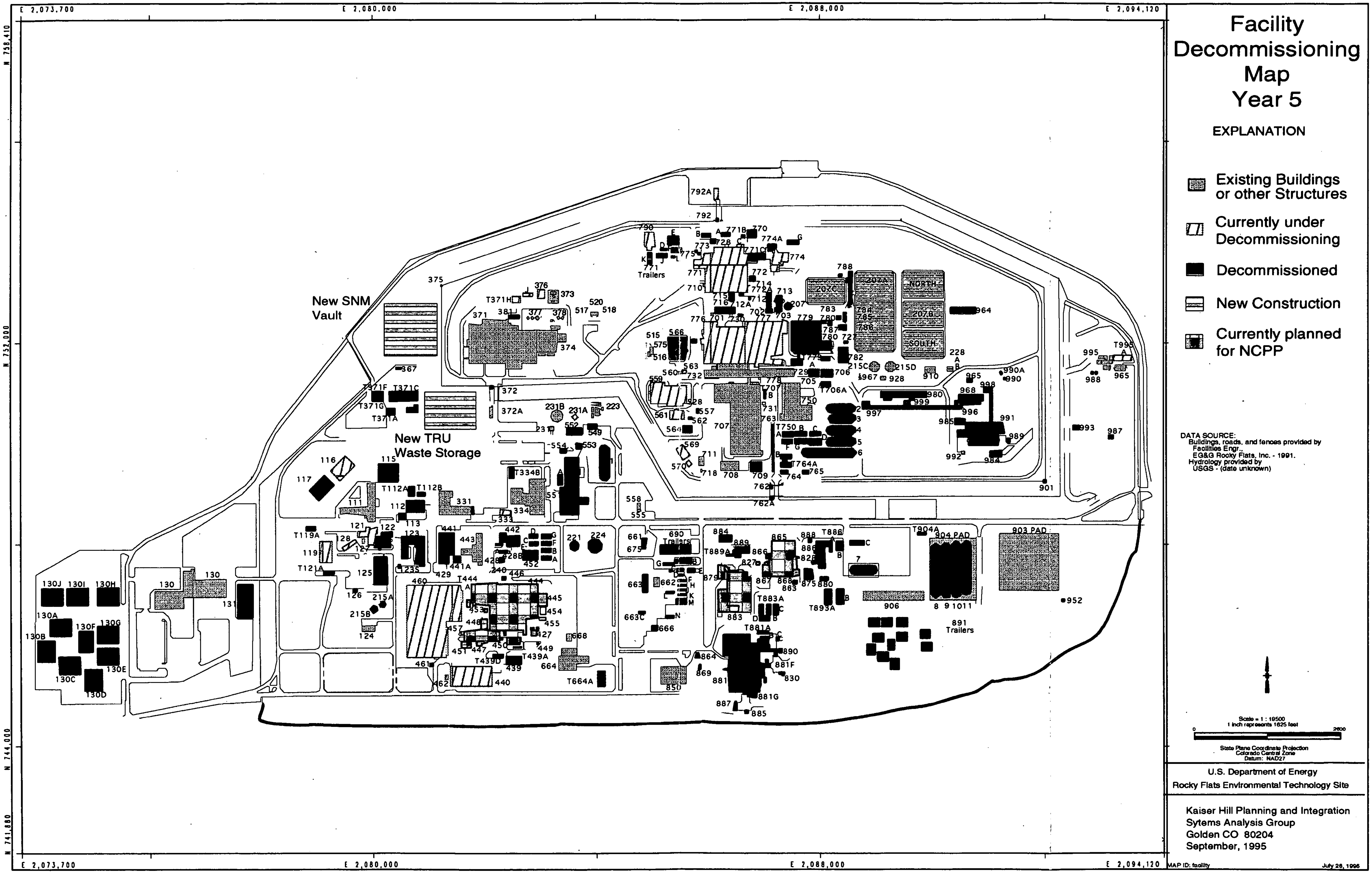
Scale = 1 : 19500
1 inch represents 1625 feet
0 2600

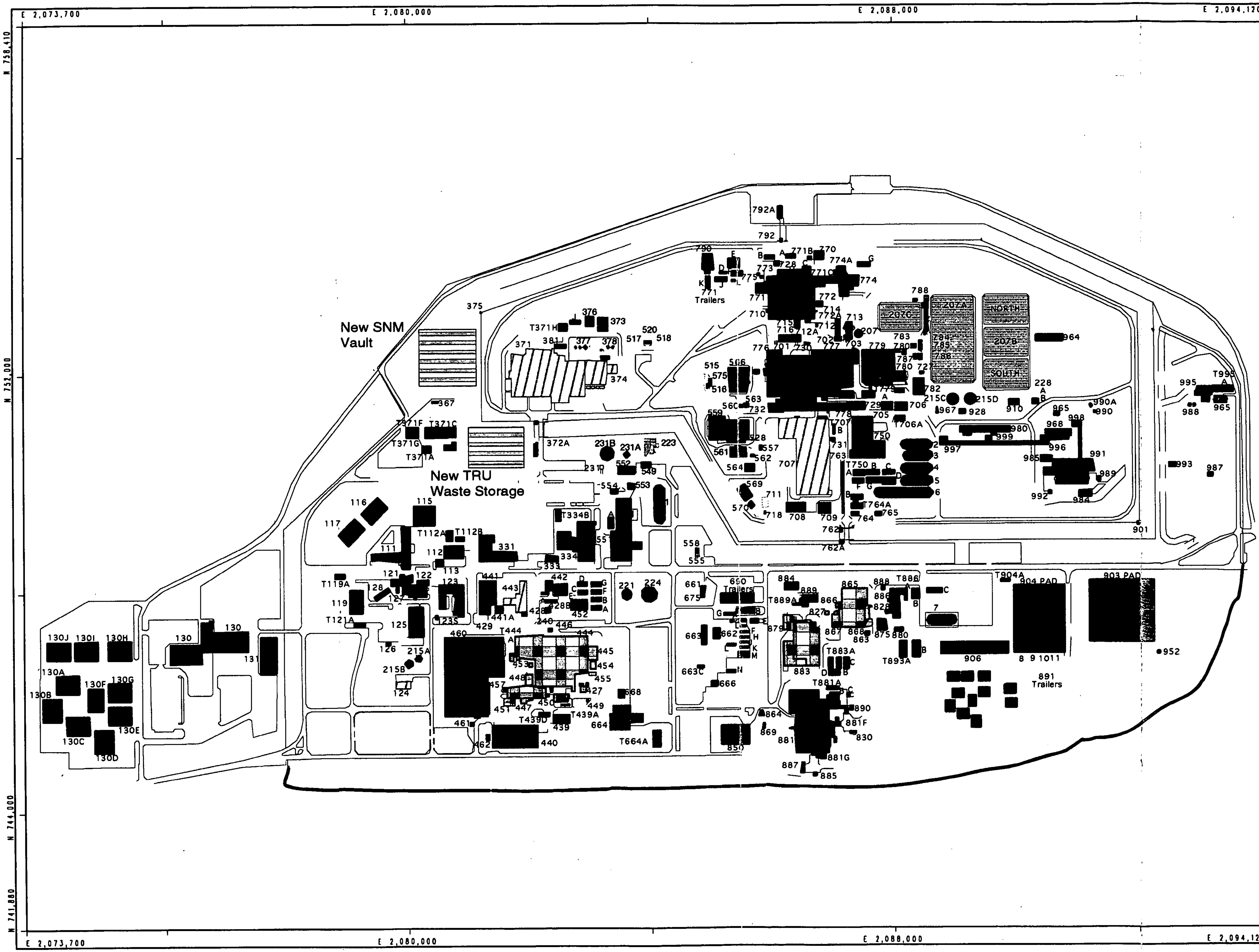
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility July 26, 1995


Facility Decommissioning Map Year 5
EXPLANATION
Existing Buildings or other Structures
Currently under Decommissioning
Decommissioned
New Construction
Currently planned for NCPP
DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)
Scale = 1 : 19500
1 inch represents 1625 feet
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27
U.S. Department of Energy
Rocky Flats Environmental Technology Site
Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995
MAP ID: facility
July 26, 1995
New SNM Vault
New TRU Waste Storage
E 2,073,700
E 2,080,000
E 2,088,000
E 2,094,120
N 758,410
N 752,000
N 744,000
N 741,880



Facility Decommissioning Map Year 8

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- New Construction
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 19500
1 inch represents 1625 feet

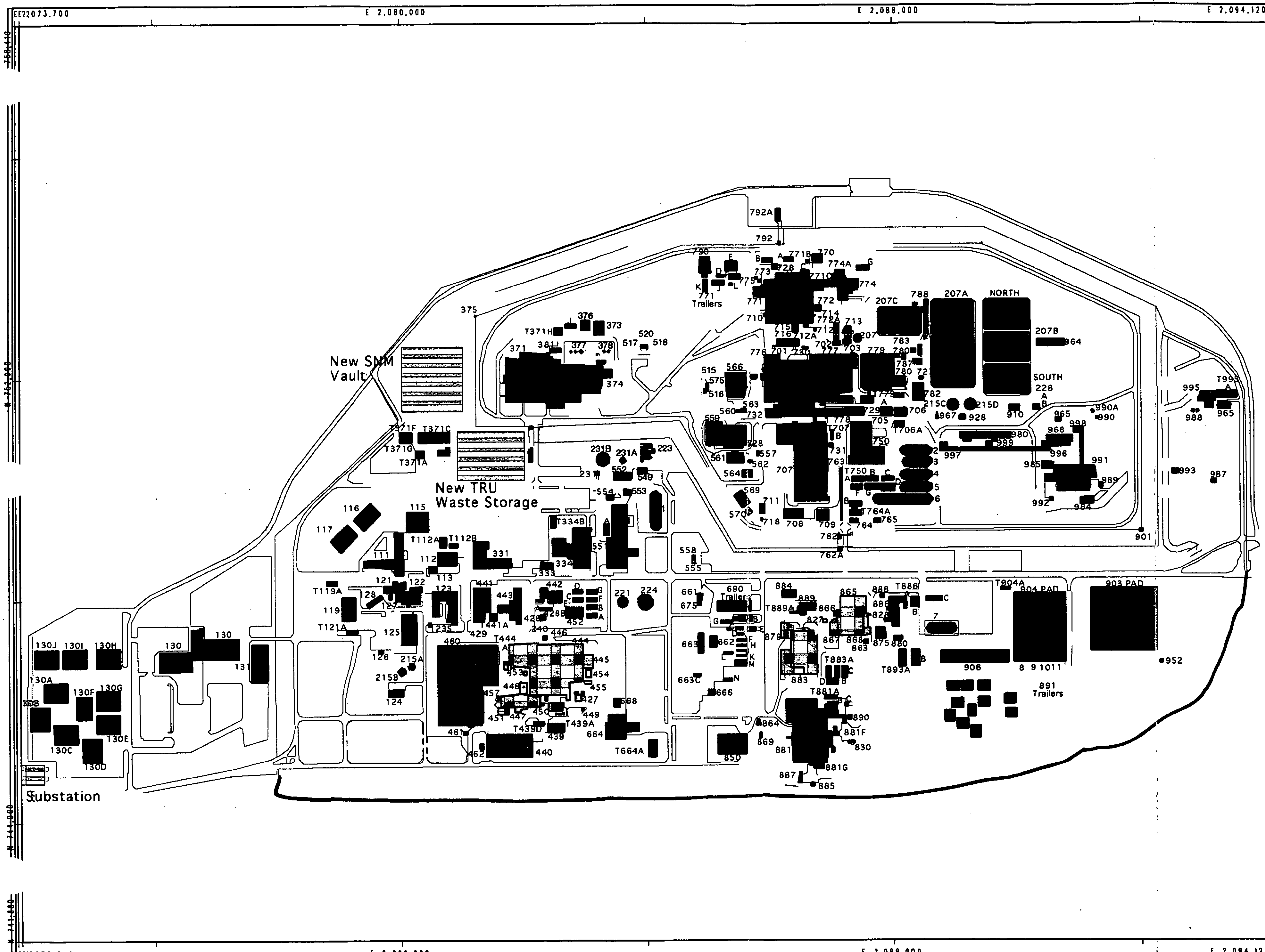
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility

July 26, 1996



Facility Decommissioning Map Year 9

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- New Construction
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

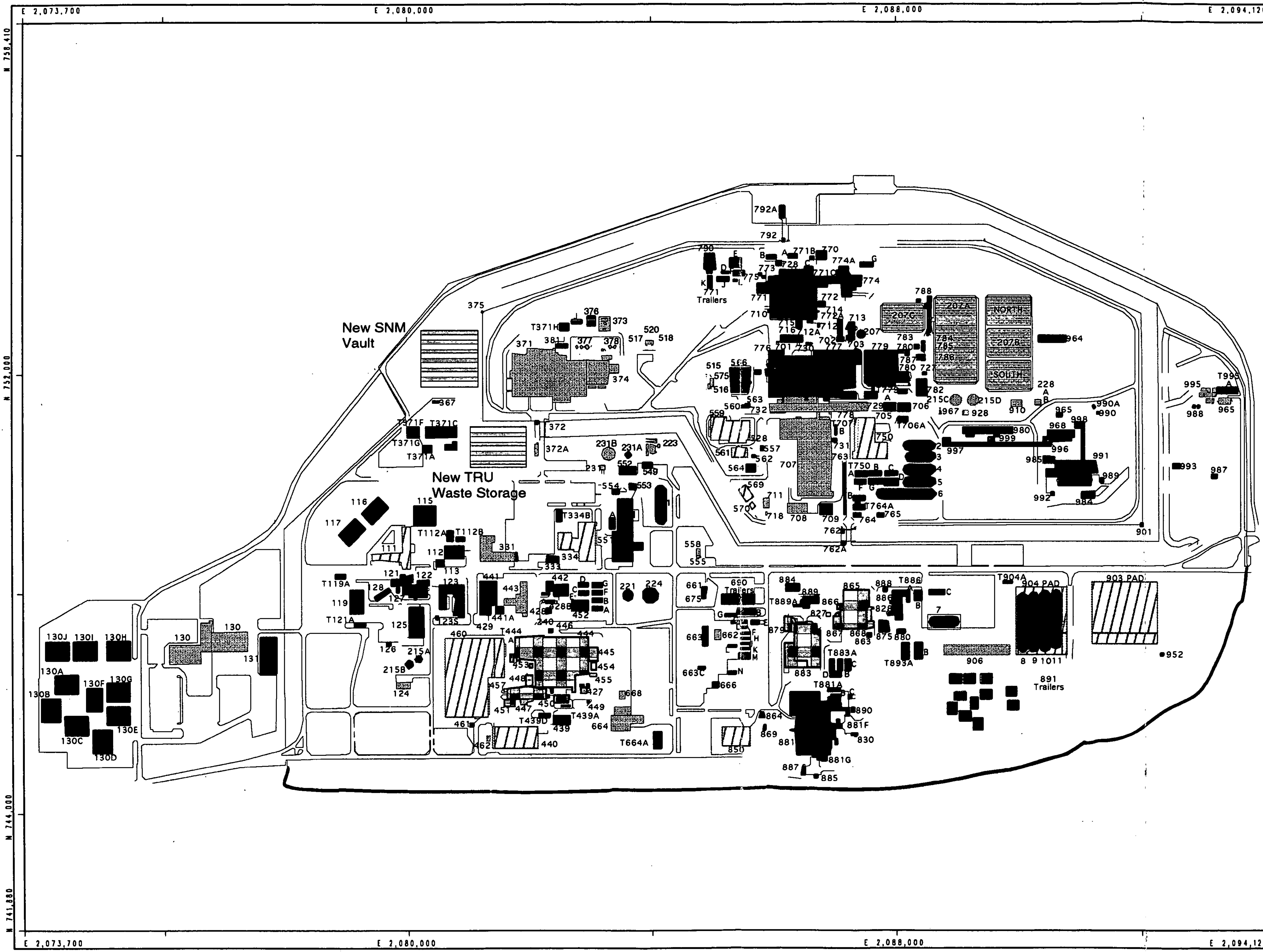
Scale = 1 : 19500
1 inch represents 1625 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility
July 26, 1995



Facility Decommissioning Map Year 6

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- New Construction
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

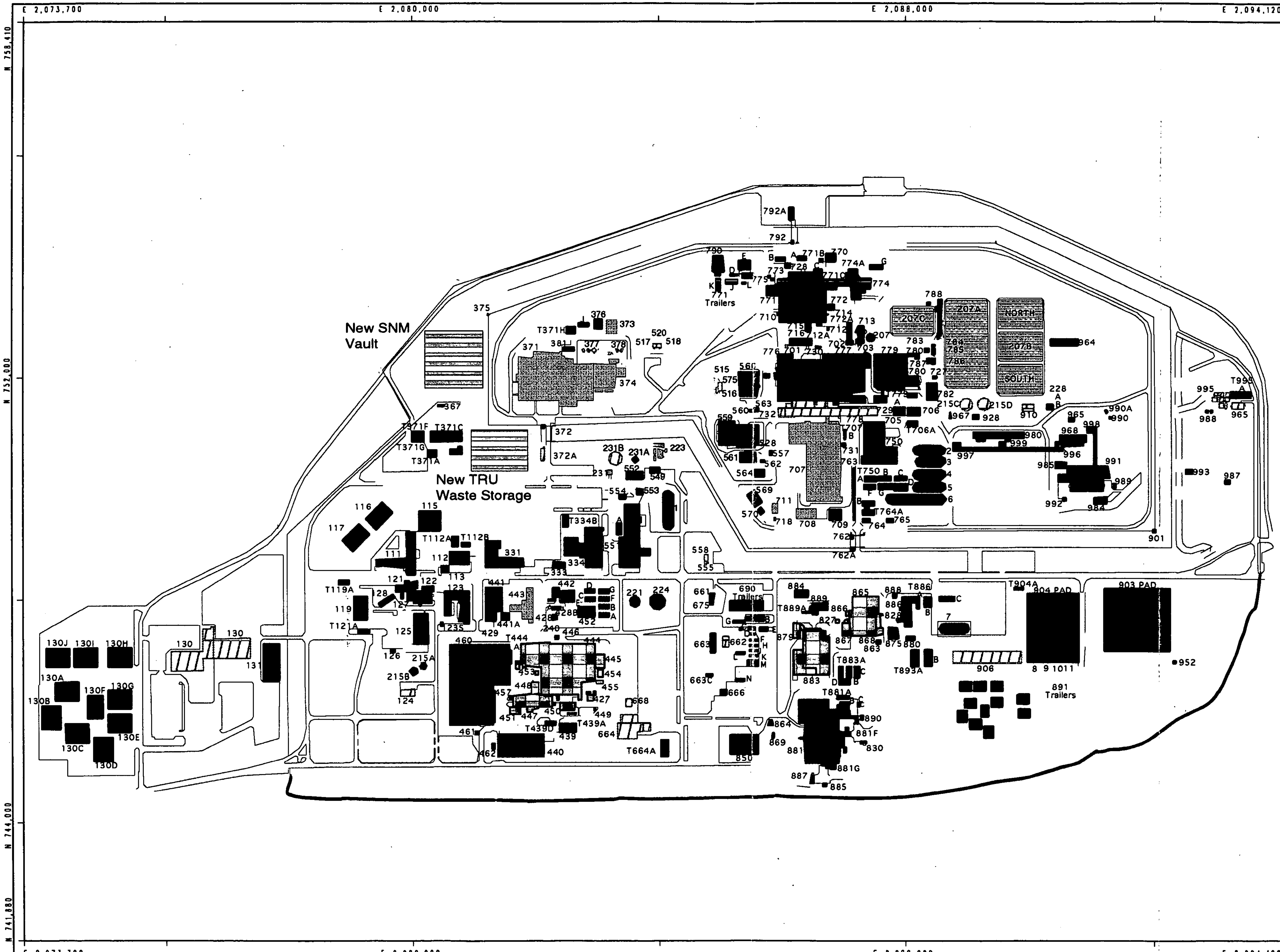
Scale = 1 : 19500
1 inch represents 1625 feet
0 2600

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility July 26, 1995



Facility Decommissioning Map Year 7

EXPLANATION

- Existing Buildings or other Structures
- Currently under Decommissioning
- Decommissioned
- New Construction
- Currently planned for NCPP

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr.,
EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 19500
1 inch represents 1625 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Kaiser Hill Planning and Integration
Sytems Analysis Group
Golden CO 80204
September, 1995

MAP ID: facility
July 26, 1995

- Decommissioning activities would generate 24,000 m^3 of LLW, 2900 m^3 of TRU, 1000 m^3 of hazardous waste, 500 m^3 of mixed waste, and 2000 m^3 of other regulated waste that must be disposed of at on-site and/or off the site repositories. In addition, 166,000 m^3 of construction debris will be generated. These waste volumes are conservatively based on dismantlement and removal. It is recognized that actual disposal volume could greatly be reduced by using the feasible option. If foundations, rubble, and demolition waste are left under the cap, the volumes for disposal under Task 2 would be reduced by perhaps 30 percent to 50 percent.

- The current method for transitioning of facilities and obtaining funding to support projects through transition, deactivation, and decommissioning within the DOE Environment Management system is cumbersome and unclearly defined. This process must be eliminated or streamlined for decommissioning to succeed within the estimated cost and schedule.

- Decommissioning waste should be defined as remediation waste, which would not be required to meet Land Disposal Restriction (LDR) waste standards.

- Only DOE Orders that are essential for accomplishing the decommissioning activities safely should be required.

- A reasonable and timely methodology for determining acceptable contamination levels should be approved for material left in foundations, underground, and building structures covered by the cap.

- Facilities or portions of facilities need to be available for facility decommissioning with sufficient time to execute the designated approach (i.e., nuclear materials and waste must first be stabilized and removed, personnel relocated, etc.).

- Suitable waste handling facilities are required to either process or store waste generated by decommissioning activities without impacting the decommissioning schedule. Waste processing, handling, and storage costs are included as part of the Waste Management Task (Task 2).

- A commercial approach to project management should be implemented whereby the decommissioning project manager has the ultimate responsibility and authority to conduct day-to-day project operations (e.g., an isolated project site).

- Approval is needed from DOE, Environmental Protection Agency (EPA), and Colorado Department of Public Health and Environment (CDPHE) for on-site low-level radioactive waste, mixed waste Corrective Action Management Unit (CAMU), and Toxic Substances Control Act (TSCA) waste disposal.

- The decommissioning program is planned to be conducted in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a non-time-critical removal action or to less-restrictive administrative requirements than are currently in place at the Site to meet the objectives of the decommissioning task.

- Approval of the facility decommissioning program plan by DOE, CDPHE, EPA, and stakeholders should suffice as the work authorization to conduct all decommissioning operations. Individual decommissioning work packages and lower-tier documents, which are based on a facility decommissioning program plan, should be approved by established project management procedures and not be subjected to external review.

- An improved approach to facility characterization should be implemented. Data quality objectives should be limited to that necessary to determine
  a) worker protection requirements,
  b) waste volume estimates for purposes of developing cost estimates,
  c) characterization as Transuranic (TRU) or LLW (currently <100 nCi/gram), and
  d) hazardous constituents.

3.3 TASK DESCRIPTION

3.3.1 Introduction

This task is to decommission the more than 425 Site facilities. Based on operational history, this includes 68 facilities associated with the seven major plutonium buildings (Group 1), 53 facilities associated with uranium production operations and waste storage (Group 2), and more than 308 additional general support buildings (Group 3) which are radiologically clean. Many of these facilities were used to conduct production operations while others were ancillary facilities used for storage, administration, and support services.

3.3.2 Purpose

The purpose is to safely and efficiently decommission these facilities as quickly as possible. This will require a combination of options based upon individual facility complexity and hazards. Trailers, industrial structures, and administrative facilities may be simply moved off the site for reuse or demolished as fill material. Additionally, excess equipment from these facilities may be removed off the site or dispositioned as waste. The contaminated facilities may be decontaminated, dismantled, demolished, and/or entombed to provide for the most effective minimization of the risks associated with these facilities. This project is planned to be conducted as a commercial decommissioning project. Therefore the terminology used in the subsequent options analysis is that typical of commercial industry practices.

It is important to note that the decommissioning task includes the defined elements of deactivation and decommissioning. Deactivation includes the removal of equipment, tooling and, chemicals and the de-energizing or stabilization of electrical systems, piping systems, and equipment to prepare the facility for dismantlement or entombment. Decontamination may be used with each decommissioning option to remove radiological and hazardous constituent contamination to provide for the most effective dismantlement or demolition. The final disposition of the facilities will likely include a combination of dismantlement, demolition, entombment, and removal of the facilities and equipment, that total process being referred to as Decommissioning.

The approach considered for decommissioning the Site facilities includes the following requirements.

- For each facility, the applicable decommissioning options will be evaluated to specify the scope and sequence of decommissioning activities (e.g., characterization, engineering, decontamination, equipment removal, structural dismantlement, excavation, grouting, waste sorting and packaging, final survey, etc.).

- For the option which is chosen for each facility, the labor, waste generation rates, cost, and schedule will be developed. An initial evaluation of a feasible option has been completed.

- A facility decommissioning program plan (FDPP) for the Site would be developed, including risk assessments which could act as the work authorization basis for conducting facility decommissioning activities. The facility decommissioning program would be managed and executed in accordance with the FDPP.

- As part of the FDPP, decommissioning activities would be prioritized to develop the most feasible schedule and level resource requirements. The FDPP would require updating to reflect actual experience, and resource requirements would be re-estimated annually.

- A facility-specific decommissioning project plan would be developed before each project is initiated.

- For each project plan, decommissioning activities shown in the Exhibit 3.4 might be performed.

3.4 OPTIONS ANALYSIS

3.4.1 Options Description

The four principal decommissioning options that were considered are described below. Combinations of these options are being considered for each facility.

1.) Continue with current action: Work as outlined in the BEMR would continue. This is a 70-year project estimated to cost approximately $10 billion.

EXAMPLE OF A CONTAMINATED FACILITY DECOMMISSIONING PROCESS

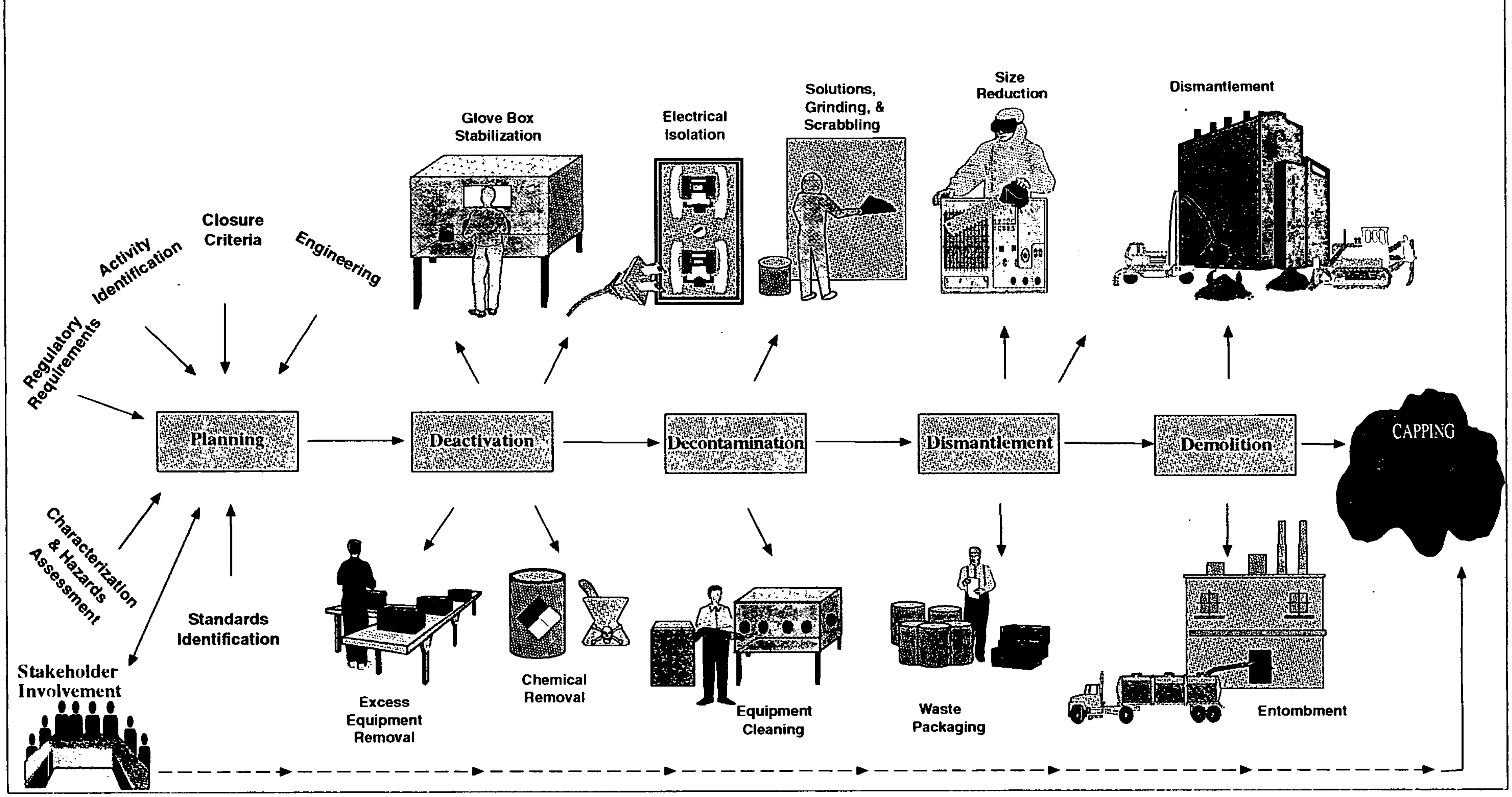


Exhibit 3.4

2.) Safe Storage (SAFSTOR): This option leaves the facility in place with surveillance required. Loose contamination would be removed, personnel barriers would be provided, and protective systems would remain operational. The facility would not be available for other uses. Eventually, the building would require dismantlement.

3.) Dismantlement (DECON): The facility would be totally dismantled with contamination removed to allow for unrestricted use.

4) In-Place Stabilization (ENTOMB): The facility would be encased, covered, or removed to an entombed location. Contamination would be fixed, physical barriers provided, and surveillance required in perpetuity. The site would have restricted use.

3.4.2 Criteria By Which Options Were Evaluated

- Cost to complete project for the given option
- Long-term operation and maintenance (O&M) costs
- Schedule duration
- Feasibility to complete activities (e.g.., technology, waste, regulatory)
- Risk associated with conducting activities

The table below shows the result of this assessment. A feasible decommissioning option is ENTOMB. Another feasible option is DECON. It was also recognized that using one option for all the Site was not practical nor desirable. Rather, it was concluded that several features of the DECON and ENTOMB options should be used to decommission some facilities. It was also recognized that options could be more specifically defined to consider the differences in degree of effort required to dismantle plutonium, uranium, and uncontaminated facilities.

DECOMMISSIONING OPTIONS ANALYSIS TABLE

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Total
Current Action Baseline	+	-	-	0	-	2-
SAFSTOR	0	0	-	+	0	0
DECON	-	+	0	-	+	0
ENTOMB	0	+	+	-	+	2+

TASK 4

TASK 4: INTERIM CLOSURE

4.1 SUMMARY

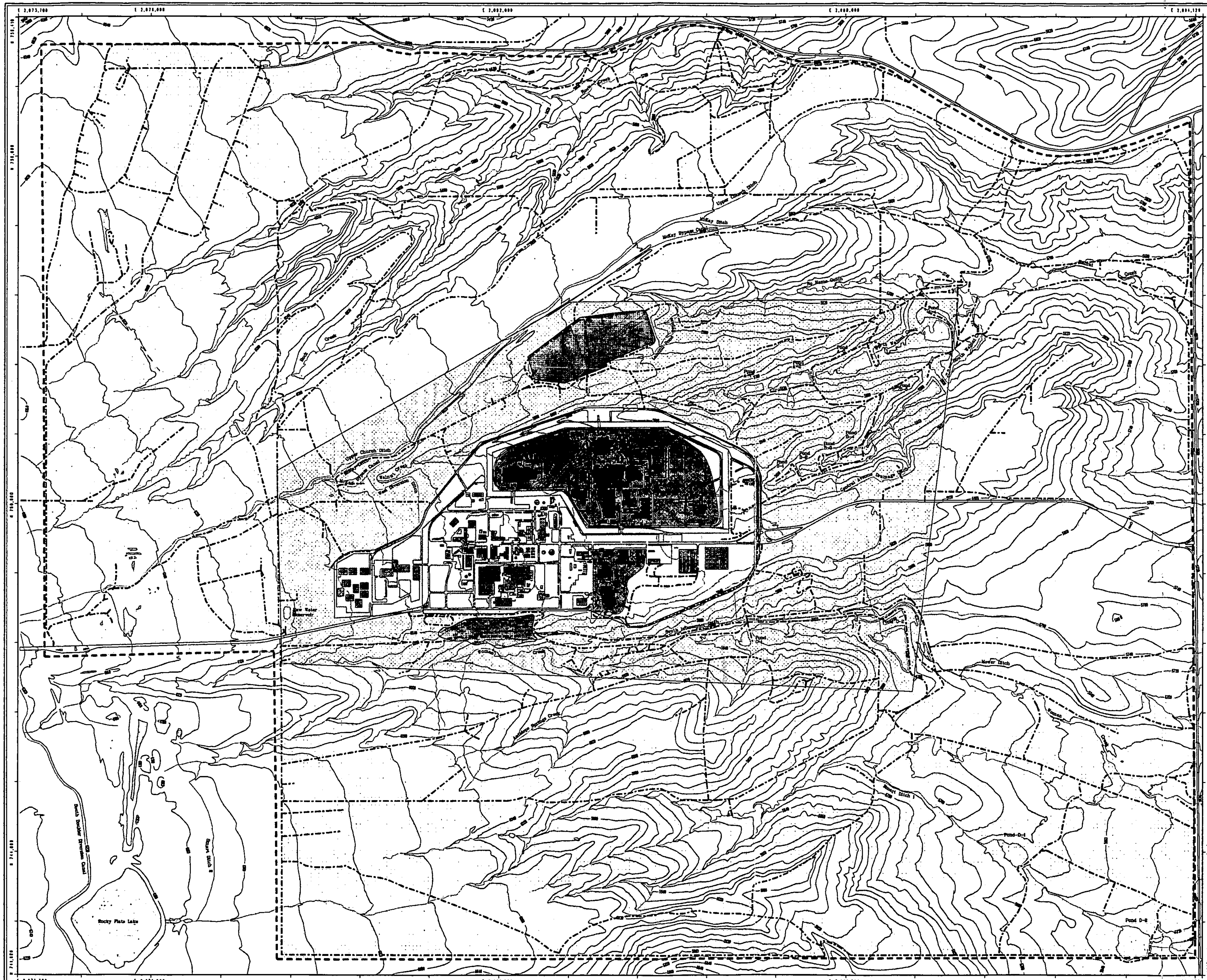
The desired interim and final closure state is to have all waste and material removed from the Rocky Flats Environmental Technology Site (Site) and to have the Site closure risk meet the 10^{-6} residential standard while protecting worker; public, and ecological health in the process. No ultimate land use was assumed in this analysis although the potential uses would be the same as for any of the other uncontaminated open space tracts currently adjoining the Site. However, the cost estimate to achieve this desired complete residential-capable closure is estimated to be over $5 billion dollars and would require excavation of all areas on-site believed to be contaminated as well as off-site treatment and disposal of this material. This would require approximately 85,000 truckloads of contaminated material to be transported on the highways.

The objective of this task is to balance the desired closure scenario of meeting a 10^{-6} residential standard as described above with a feasible alternative that is technically viable, cost effective, and acceptable to stakeholders.

The core elements of a feasible alternative are described below (see Exhibits 4.1 and 4.2).

- The outer 5,000 acres of buffer zone would support unrestricted use, including open space.
- An inner 1,000 acres of buffer zone would meet standards for use as unoccupied open space.
- An industrial area (300 acres) meeting criteria for future commercial, office or industrial use.
- Closed landfills (existing landfill, Corrective Action Management Unit [CAMU] and Low Level [LL], Low Level Mixed Waste [LLMW] landfills of 200 acres) meeting open space criteria but with institutional prohibitions against excavation.
- Groundwater controlled to surface water standards with upgradient diversion and passive reactive barriers.
- Ponds operated as flow-through systems with monitoring controls for surface water.

Conceptual View of Interim Closure
Exhibit 4.1



EXPLANATION

- OUTER BUFFER ZONE (4958.7 Acres)
- INNER BUFFER ZONE (1026.8 Acres)
- CLOSED LANDFILLS (53.1 Acres)
- INDUSTRIAL AREA (316.7 Acres)
- CAP (129.9 Acres)

Standard Map Features

- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 19640
1 inch represents approximately 1636.66 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: ***Draft***   September 29, 1995

/home/e512690/projects/kaber-hill/closure.aml

EXHIBIT 4.2
SUMMARY OF INTERIM CLOSURE WITH MOST FEASIBLE ALTERNATIVE

Activity	Description	Start Schedule	Stop Schedule	Program Cost ($M)	O&M Staffing	O&M Cost ($K)
High-Rank IHSSs	IHSSs that have the highest ranking based on the IHSS prioritization. They will be remediated.	Ongoing	September 00	170 to 200	.5	100
Low-Rank IHSSs	IHSSs that were ranked the lowest based on the IHSS prioritization. They will undergo No Action/No Further Action (NA/NFA) justification.	October 95	September 00	12 to 15	0	0
Medium-Rank IHSSs	IHSSs that had a moderate ranking based on the IHSS prioritization. These sites will be remediated or go through NA/NFA justification.	October 95	September 00	0	0	0
Existing Landfills	Existing landfills at the site (OU5 and OU7). OU7 will be closed and OU5 will be excavated and placed in the waste management facility.	October 96	April 98	25 to 30	1 to 1.5	200 to 500
Groundwater	Contaminated groundwater at the site above Preliminary Remediation Goals (PRGs). A reactive barrier will be used to passively treat the groundwater.	April 96	September 00	25 to 35	1 to 1.5	200 to 500
Surface Water	Surface water flowing through the site. A flow-through system will be used to manage the surface water before it is released/discharged?	April 96	April 97	8 to 10	2 to 3	400 to 800
Final Cover	A final cover will be placed over the 800 area and protected area (PA) when decommissioning and IHSS remediation are complete. Will be supplemented with an upstream groundwater diversion system.	October 98 (800 area) April 01	September 99 (800 area) September 03	80 to 100	2 to 3	400 to 1000
TOTAL		Ongoing	September 03	320 to 390	7 to 10	1500 to 3000

Notes:
1. All costs are above baseline, which supplies basic infrastructure but includes direct infrastructure costs for the activity.

Such a feasible alternative could be achieved when the waste management facilities (existing landfills, CAMU, and LL/LLMW landfills) have been closed, all high and medium Individual Hazardous Substance Sites (IHSSs) have been remediated if necessary, and groundwater and surface water controls are operational. At that time, in conjunction with the other tasks, the Site would consist of a few buildings with a consolidated mound of waste and decommissioning materials under a cap.

A Resource Conservation and Recovery Act (RCRA) cap would be placed over the materials in the protected area (PA) and the new waste management facilities (if they were placed in the PA) to prevent contact and inhibit contaminant migration. This cap is estimated to be 110 acres in size and would include a drainage layer, an impermeable layer, and a 3- to 4-foot soil cover. The material for the cover would be mined from the western portion of the Site. In addition, a second cap would be placed over the 800 area after facility decommissioning has been completed. This cap would be of similar construction over an area of approximately 20 acres.

This alternative would also include

- Installing a groundwater diversion system upgradient of the Industrial Area.
- Excavating and disposing of 200,000 cubic meters of material from the most heavily contaminated areas on site (e.g. 903 pad and lip area).
- Treating 160,000 cubic meters of this excavated material.
- Placing 2,100,000 cubic meters of clean soil mined from the western portion of the site for the final cap.
- Installing 5,000 feet of reactive barriers for groundwater protection (average 25 ft depth).

This alternative was chosen to be protective of human health and the environment and is estimated to cost $250 to 320 million.

4.2 KEY ISSUES TO BE ADDRESSED

Key issues to be addressed in the subsequent steps of the Accelerated Site Action Plan (ASAP) include the following:

- More economical methods of achieving the end uses described (e.g., a groundwater diversion system, cap, etc.)

- Better development of the no action and residential standard alternatives and logical variations that may affect the feasible alternative(s).

- Identification and description of key public, technical, and policy choices inherent in alternative development.

- Stakeholder willingness to accept an interim source control/containment for contaminated media versus a greenfield strategy (i.e., remediating the site to 10^{-6} standards).

- Engineering evaluation of the final cover to ensure that it is sufficient to protect human health and the environment.

- Is source control of IHSS by removal and treatment sufficient to allow effective use of the reactive barriers for groundwater treatment?

- On-site disposal and the CAMU concept is accepted by stakeholders so treatment of remediation wastes do not have to meet Land Disposal Restriction (LDR) standards prior to disposal.

- Revision of the current surface water discharge limits to allow for flow-through discharge of surface water.

- Mining the western portion of the Site will need to provide sufficient quantities of quality material to construct major portions of the cap(s).

- An evaluation will need to be conducted to determine if present "off the shelf" technologies are sufficient to remediate all IHSSs that will be encountered (e.g., IHSS 108, uranium metal in trench)

The assumptions that drive the main cost, scope, and schedule of the feasible alternative include the following:

- The cleanup standard required to achieve residential, open space, and industrial closure requirements can be attained with the current feasible option

- The cost, risk, and availability of off-site disposal, on-site disposal, and available treatment technologies will be determined.

- The cost, risk, availability, and design of closure cover and subsurface barrier material will be determined.

- The quantity estimates for material to be remediated and area to be capped are appropriate.

- The final disposition of buildings on-site will be determined.

- The Environmental Risk IHSS prioritization and No Action (NA)/No Further Action (NFA) Decision Criteria documentation has been approved by the regulatory agencies.

4.3 TASK DESCRIPTIONS

4.3.1 Introduction

Past RFETS operations generated nonhazardous, hazardous, radioactive, and mixed radioactive waste streams. Over the past 40+ years, common practices such as on-site waste storage and disposal and incidental spills and releases led to contamination of soils, buildings, and groundwater at the Site. Due to this contamination, the RFETS was placed on the National Priorities List (NPL) for cleanup in 1989. Approximately 173 IHSS have been identified for cleanup. IHSSs are defined as individual locations where solid wastes, hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents may have been disposed or released to the environment irrespective of whether the unit was intended for the management of these materials.

This task identifies and evaluates options for achieving interim closure at the Site. This includes closure of existing landfills, IHSSs, and addressing groundwater contamination and surface water management. In addition, this task presents an approach for safe final closure of the Site once interim closure has been achieved and decommissioning of the Site has occurred. This task closely integrates activities with other components of the ASAP, such as facility decommissioning, waste management, and special nuclear materials consolidation/storage.

4.3.2 Purpose

The purpose of this task is to determine the recommended approach to achieve interim and final closure of the Site. Interim closure is necessary to place the Site in a state that is both protective of human health and the environment and prevents further releases of hazardous substances to the environment.

4.3.3 Description of Tasks and Subtasks

Significant factors that impact interim closure include cleanup standards and IHSS prioritization. In areas of the Site where cleanup is warranted, all relevant cleanup standards will be considered. These standards include risk-based values (i.e., risk based preliminary remediation goals [PRGs]), Applicable or Relevant and Appropriate Requirements (ARARs), and DOE orders (where appropriate). Some of these standards are specific to an environmental medium (soil, surface water, etc.). DOE Rocky Flats Field Office (DOE/RFFO) has developed site-specific risk-based PRGs for use at the Site. These PRGs are based on potential adverse effects to humans and were derived based on Environmental Protection Agency (EPA) guidance.

To support interim closure around the ASAP configuration, a screening method to prioritize the IHSSs for potential actions was developed and implemented (*Final Implementation Plan for the FY95 Performance Measure: Environmental Risk Prioritization,* RMRS, August 4, 1995). This method results in a risk prioritization score based on comparison of contaminant levels to PRGs, evaluation of mobility of contaminants, potential for future release, and use of professional judgement to interpret the first three components.

To achieve interim closure, seven subtasks were defined as follows.

1. ***High-Ranked IHSSs:*** This subtask addresses the IHSSs that have a high ranking based on an Environmental Risk Prioritization scheme. High-ranking sites generally have high levels of

contamination and contain the source of that contamination. Based on the IHSS prioritization there are currently 15 IHSSs that are ranked the highest according to risk. These sites are shown in Exhibit 4.3. There are additional IHSSs, Potential Incident of Concern (PICs), Potential Area of Concern (PACs), Under Building Contamination (UBCs), and newly identified sites that have not been adequately characterized. Once information is obtained, additional IHSSs could be added to the high-rank category. For the purposes of this analysis, it is assumed that an additional 10 to 15 IHSSs could be added.

2. ***Low-Ranked IHSSs:*** This subtask addresses the IHSSs that have the lowest ranking based on the Environmental Risk Prioritization scheme. Low-ranking sites have no significant levels of contamination or have already been remediated. Based on the IHSS prioritization, there are approximately 130 IHSSs that have the lowest priority. This number includes IHSSs, PICs, PACs, and UBCs.

3. ***Medium-Ranked IHSSs:*** This subtask addresses the IHSSs that had a medium ranking based on the Environmental Risk Prioritization scheme. Medium-ranking sites generally have low levels of contaminants. Based on the IHSS prioritization there are approximately 10 IHSSs that have a medium ranking. These sites are shown in Exhibit 4.4.

   There are additional IHSSs, PICs, PACs, UBCs, and newly identified sites that have not been adequately characterized and once information is obtained additional IHSSs could be added to this category. For the purposes of this analysis, it is assumed that an additional 20 to 30 IHSSs could be added.

4. ***Existing Landfills:*** This subtask addresses the IHSSs that are existing landfills. There are currently two IHSSs that are existing landfills. They include Operable Unit (OU) 7 (IHSS 114) and OU 5 (IHSS 115). These sites are shown in Exhibit 4.5. In addition, as part of the ASAP, new waste management facilities will be constructed to handle hazardous waste, LLW, LLMW, and decommissioning waste. These landfills will be closed with the final cover for the Site. A discussion of these alternatives is provided in Task 2, Waste Management.

5. ***Contaminated Groundwater:*** This subtask addresses management of contaminated groundwater at the Site. The groundwater contamination is the result of historical waste disposal practices, spills, and leaks at several locations throughout the Site. Groundwater generally flows from west to east and is contaminated primarily with volatile organic compounds (VOCs). These compounds are typically more mobile than other contaminants and are detected in groundwater at concentrations significantly above PRGs at the Site. Metals and radionuclides are not addressed in this discussion, since analyses of these compounds indicate that, in general, concentrations in Site groundwater are equivalent to background levels in groundwater.

6. ***Surface Water:*** This subtask addresses management of surface water flowing through and off of the Site. Surface water is currently allowed to collect in the pond system, sampled, and then released

in a batch style. This system is effective, but difficulty is encountered when large storm events occur and the retention system is already at or near capacity. Therefore, as a part of the overall ASAP strategy, surface water management is being examined for other possible options.

7. ***Final Cover:*** This subtask addresses the final cover (i.e., a cap) that will be placed on-site after interim closure and decommissioning has been accomplished.

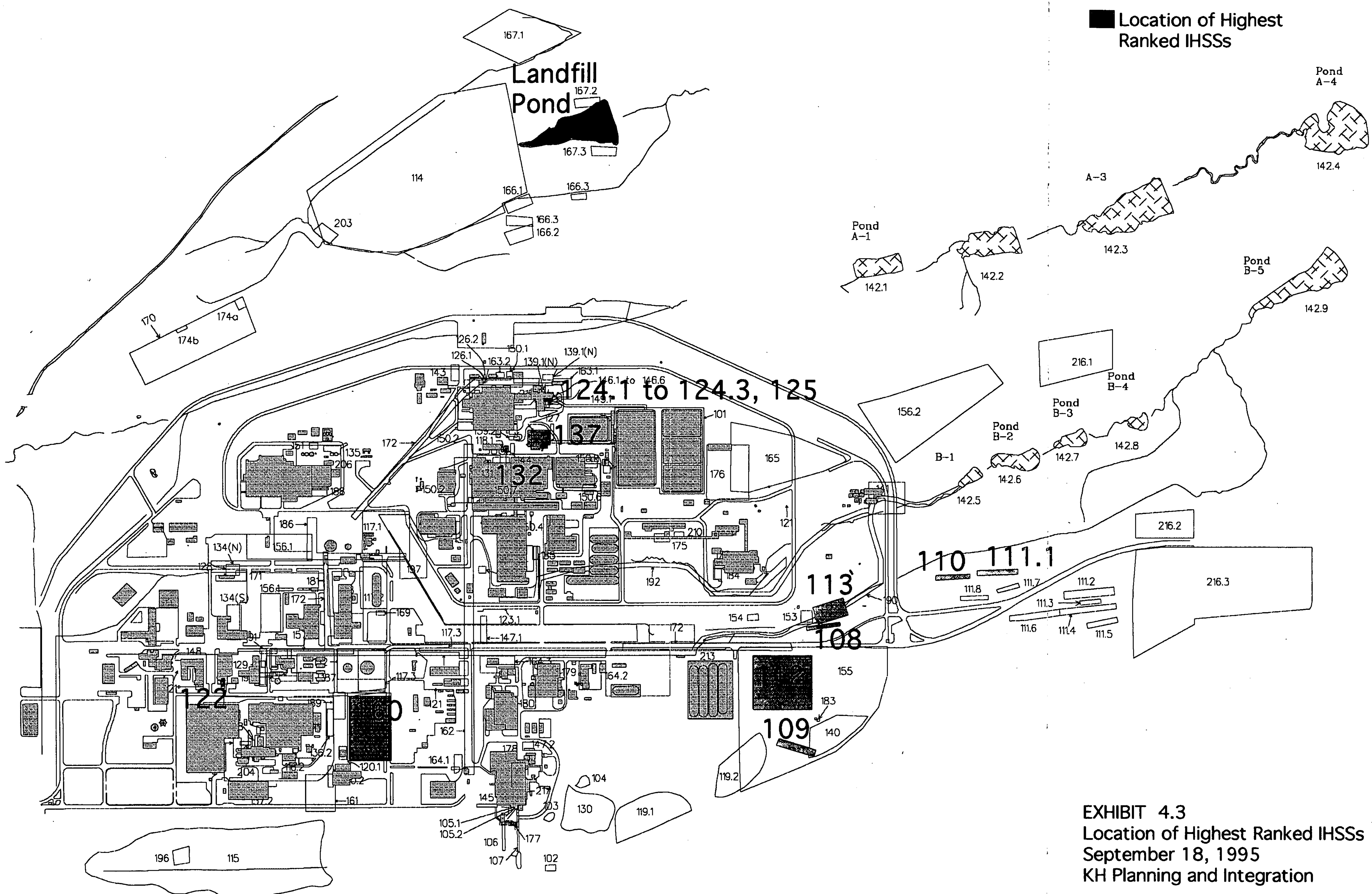


EXHIBIT 4.3
Location of Highest Ranked IHSSs
September 18, 1995
KH Planning and Integration

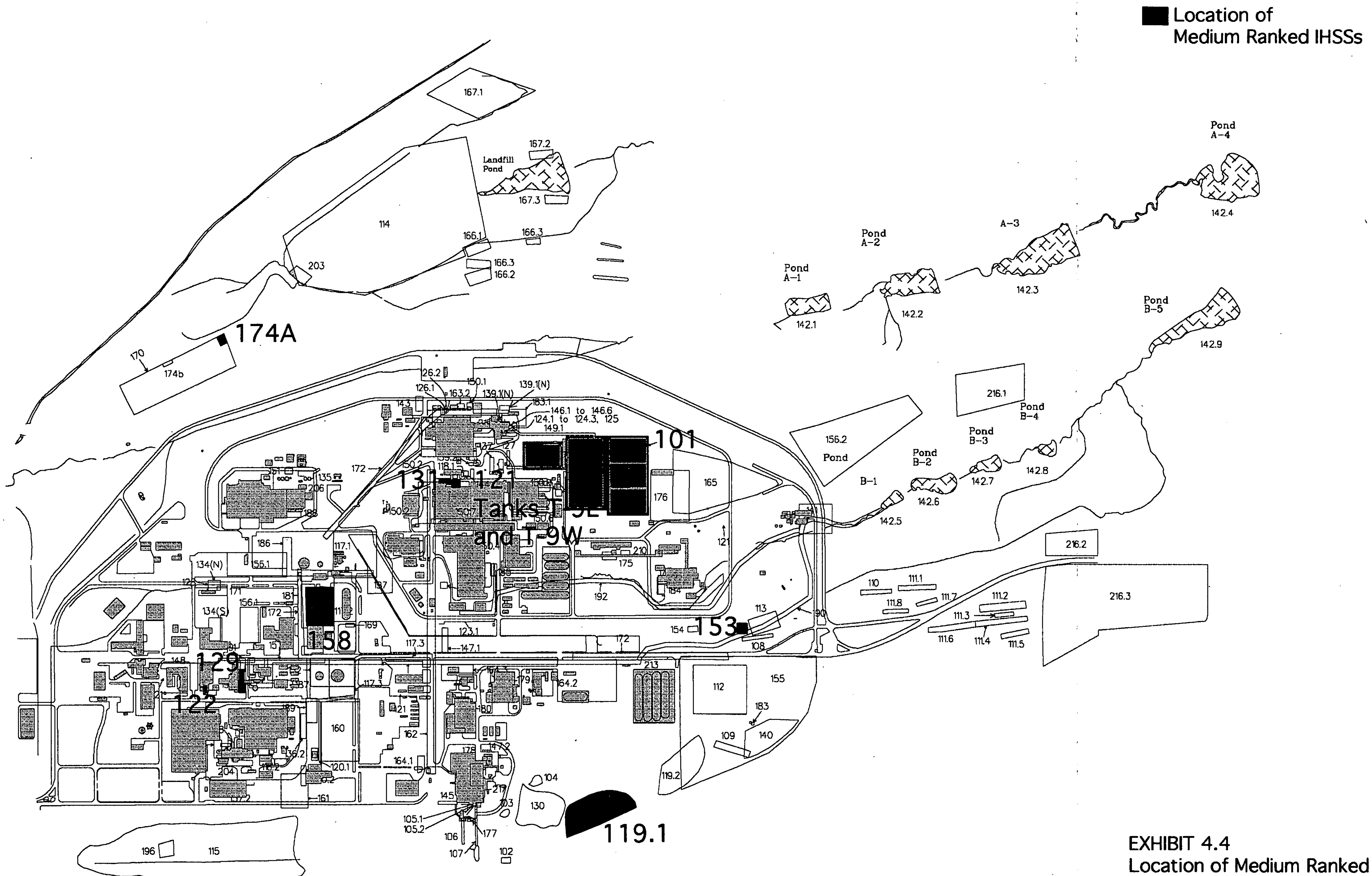


EXHIBIT 4.4
Location of Medium Ranked IHSSs
September 18, 1995
KH Planning and Integration

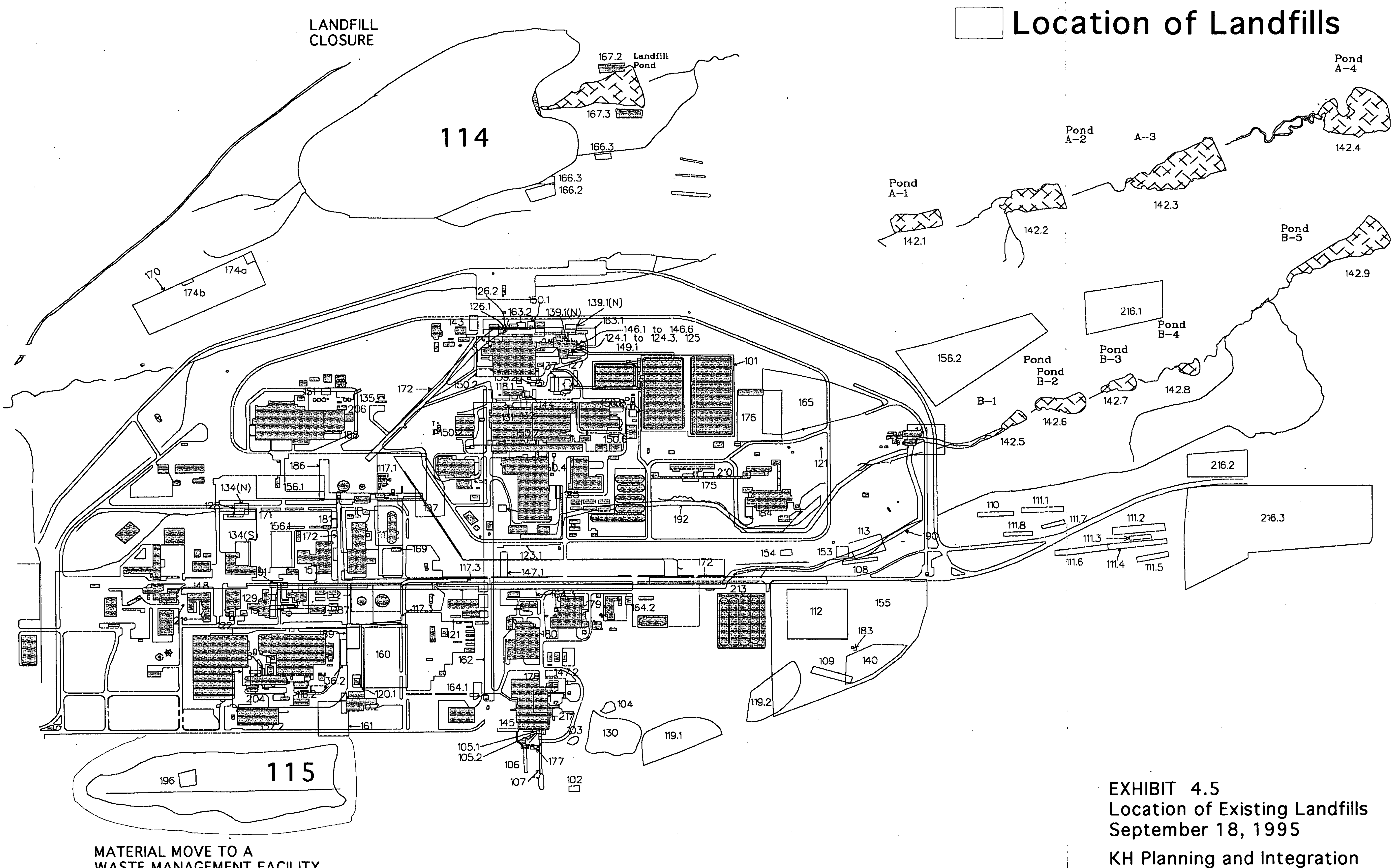


EXHIBIT 4.5
Location of Existing Landfills
September 18, 1995
KH Planning and Integration

The following section presents an analysis of the options evaluated to determine the recommended approach.

4.4 OPTIONS ANALYSIS

This section presents the options for the feasible alternative that were evaluated, an option analysis, and the selected option for each of the subtasks presented above.

4.4.1 High-Ranking IHSSs

Options Description
Three options were evaluated for achieving closure of the high-ranking IHSSs and are described below.

Option 1 - No Action. This option entails leaving the high-ranking IHSSs in place and not taking any corrective action at the sites. Long-term monitoring would be conducted to determine if there is risk to human health and the environment.

Option 2 - In Situ Treatment. This option entails conducting corrective action of the high risk IHSSs in place using technologies such as vitrification, in situ bioremediation, or soil vapor extraction. After successful application of the in situ technology, the IHSSs would be closed in place.

Option 3 - Ex Situ Treatment. This option includes excavation of hot spot or source areas followed by treatment if necessary and final disposal in an on-site waste management facility or off-site disposal. Some of the treatment technologies that could be used include low temperature thermal desorption, bioremediation, or stabilization. Since, most likely, there would be contamination remaining, such as radiological or metal contaminants, the treated material would be transported off-site for final disposal or placed in an on-site waste management facility. The final disposition of this material is discussed in more detail in Task 2, Waste Management.

Parameters/Criteria by which Options were Evaluated
The three options discussed above and all subsequent options were evaluated using the following criteria.

- **ASAP Cost** - The cost to implement the option

- **Post ASAP Operation & Maintenance (O&M) Cost** - The cost for operating and maintaining the option after implementation

- **Schedule** - Ability of the option to be implemented with the schedule constraint of 2003 and without impacting other tasks

- **Feasibility** - Is the option implementable and effective?

- **Risk** - Is the option acceptable to Regulators and Stakeholders?

HIGH-RANKING IHSSs OPTIONS

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Score
1. No Action	+	-	+	+	-	1+
2. In Situ Treatment	0	-	0	+	0	0
3. Ex Situ Treatment	0	0	0	+	+	2+

Based on the evaluation presented above, Option 3 is favored due to feasibility and risk criteria. Option 3 will allow better control of the treatment technology and disposal of the residual materials. In addition, ex situ treatment reduces the overall contaminated area of the Site.

4.4.2 Low-Ranking IHSSs

Options Description

Two options were evaluated for achieving interim closure of the lowest-ranking IHSSs and are described below.

Option 1 - No Action. This option entails leaving the low-ranking IHSSs in place and not taking any corrective action at the sites. Long-term monitoring would be conducted to determine if there are impacts to human health and the environment.

Option 2 - NA/NFA Decision Criteria. This option uses the No Action/No Further Action Decision Criteria. No action or no further action can be justified for an IHSS if one of the following criteria is met:

- If a previous removal action has removed a contaminant source from an IHSS.
- If a contaminant source has been removed from an IHSS through natural attenuation processes.
- If historical release information/data indicate that any concentrations remaining in an IHSS does not exceed background.
- If historical release information/data indicate no release occurred.
- If detailed evaluation of data from the IHSS indicates that there is acceptable risk.

If one of the above criteria is not met, then appropriate remedial actions will be implemented.

Parameters/Criteria by which Options were Evaluated
The same criteria presented above for High-Ranking IHSSs were used.

LOW-RANKING IHSSs OPTIONS

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Score
1. No Action	+	-	+	+	-	1+
2. NA/NFA Decision Criteria	0	+	0	+	+	3+

Based on the evaluation presented above, Option 2 is favored due to feasibility, risk, and post ASAP O&M cost. Many of the locations identified as IHSSs (or PACs, UBCs, or PICs) will not require any remediation and will be candidates for NA/NFA. In addition other locations that have undergone remediation will need to go through this process.

4.4.3 Medium-Ranked IHSSs

Description of Options
Two options were evaluated for achieving interim closure of the medium-ranked IHSSs and are described below.

Option 1 - No Action. This option entails leaving the medium-ranked IHSSs in place and not taking any corrective action at these sites. Long-term monitoring would be conducted to determine if there are potential impacts to human health and the environment.

Option 2 -Management/Closure of Medium-Ranked IHSSs. This option incorporates the feasible options from both the low- and high-ranked IHSS categories. This option uses the No Action/No Further Action Decision Criteria. The first step is to evaluate the data from the IHSS and determine if a no action or no further action can be justified using the NA/NFA criteria.

If the criteria cannot be met, then either a minimal amount of additional data will need to be collected to make the determination for NA/NFA or small-scale cleanup will be required. If remediation is required it will most likely include source removal, treatment, and final disposal. This was discussed in more detail in the High-Ranking IHSS section. Alternatively, institutional controls may be adequate to address minor contamination at a specific location.

Parameters/Criteria by which Options were Evaluated
The same criteria presented above for High-Ranking IHSSs were used.

MEDIUM-RANKED IHSSs OPTIONS

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Score
1. No Action	+	-	+	+	-	1+
2. Management/Closure	0	0	0	+	+	2+

Based on the evaluation presented above, Option 2 is favored due to the feasibility and risk criteria. This option is straightforward and the mechanisms would already be in place (i.e., NFA/NFA Decision Criteria and treatment/disposal scheme). In addition the contaminated area could be reduced further.

4.4.4 Existing and New Landfills

Description of Options
Three options were evaluated for achieving interim closure of existing landfills and are described below.

Option 1 - No Action. This option entails leaving the landfills intact with no final closure. Long-term monitoring would be conducted to determine if there is risk to human health and the environment.

Option 2 -Excavation/Treatment/Disposal. This option entails excavating and treating the material in the existing landfills, followed by disposal of the material on or off-site. Treatment of the materials may or may not be necessary, depending on contaminant levels. If necessary, treatment technologies could include solidification or low-temperature thermal desorption.

Option 3 -Closure in Place. This option includes closing the landfills with a cap. A cap would be designed to stabilize the hazardous materials and prevent exposures to workers and the public. In addition limited monitoring may be required to evaluate the effectiveness of the cap. This monitoring may be incorporated into the sitewide monitoring program once interim closure has been achieved.

Parameters/Criteria by which Options were Evaluated
The same criteria presented above for High-Ranking IHSSs were used.

EXISTING AND NEW LANDFILLS OPTIONS

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Score
1. No Action	+	-	+	+	-	1+
2. Excav/Trtmt/Disposal	0	0	0	+	+	2+
3. Closure in Place	0	0	0	+	+	2+

Based on the evaluation presented above, a combination of Options 2 and 3 is favored due to the feasibility and risk parameters. Both options will prevent exposure and further contaminant migration. OU 7 would undergo closure in place with a RCRA cap and OU5 would be excavated, treated if necessary, and disposed on or off-site. This would further reduce the contaminated area at the Site. The new landfills that may be constructed would be closed in place.

4.4.5 Groundwater

Description of Options

Three options were evaluated to manage groundwater and are described below.

Option 1- No Action. This option would allow contaminated groundwater to continue to migrate and leave the remediation to natural processes. This would include attenuation of contaminants through their dispersion and natural degradation of the contaminants over time.

Option 2 - Pump and Treat. This option would use traditional pump-and-treat technologies to remediate contaminated groundwater. This is an active approach that pumps contaminated groundwater to the surface, where it is then treated either on or off-site.

Option 3 - Reactive Barriers. This is a group of passive technologies that is emplaced at or near the leading edge of contamination perpendicular to the direction of groundwater flow (in the saturated zone, typically in a trench). Contaminated groundwater is then allowed to flow through reactive media where the VOCs are subsequently degraded.

Parameters/Criteria by which Options were Evaluated

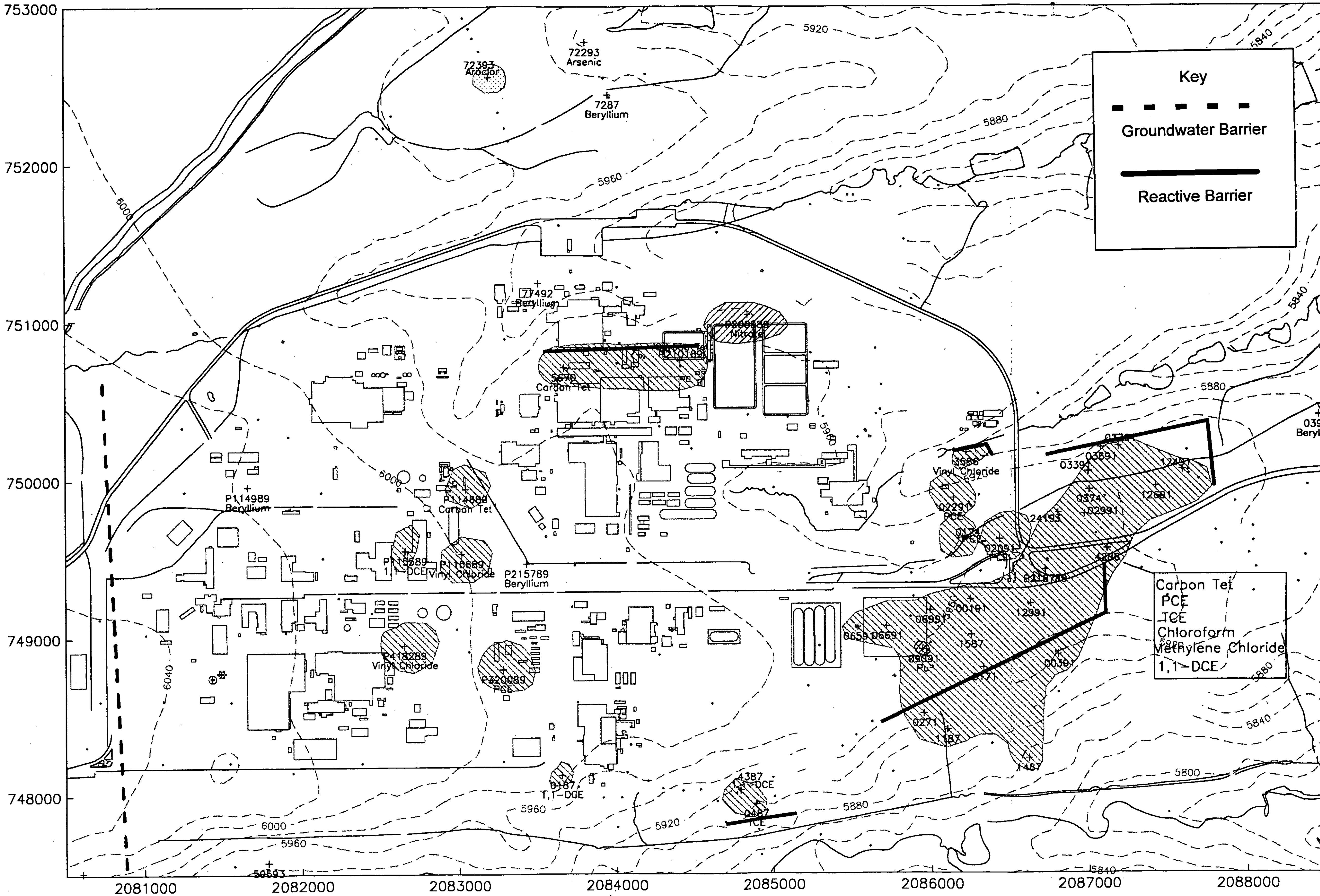
The same criteria presented above for High-Ranking IHSSs were used.

GROUNDWATER OPTIONS

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Score
1. No Action	+	-	+	+	-	1+
2. Pump and Treat	-	0	0	+	+	1+
3. Reactive Barriers	0	0	0	+	+	2+

Based on the evaluation presented above, Option 3 is favored due to the feasibility and risk criteria. A conceptual figure of this option is presented in Exhibit 4.6. This group of technologies was selected because it has many of the desirable attributes to treat the contaminated groundwater at the Site such as effective passive technology, cost effective, low or no maintenance, and can function under a cap.

EXHIBIT 4.6 Schematic Placement of Groundwater Diversion and Reactive Barriers
(DRAFT)



4.4.6 Surface Water

Description of Options
Three options were evaluated for managing surface water and are described below.

Option 1 - No Action. This option would cease any transferring or sampling of water prior to release.

Option 2 - Batch System Operation. This option would continue the status quo operation of the surface water system, sampling, and release.

Option 3 - Flow-Through System. A flow-through system would allow for surface water to pass through the retention areas in a continual fashion.

Parameters/Criteria by which Options were Evaluated
The same criteria presented above for High-Ranking IHSSs were used.

SURFACE WATER OPTIONS

Option	ASAP Cost	Post ASAP O&M Cost	Schedule	Feasibility	Risk	Score
1. No Action	+	-	+	+	-	1+
2. Batch System Operation	0	-	0	+	+	1+
3. Flow Through System	0	0	0	+	+	2+

Based on the evaluation presented above, Option 3 is favored due to cost feasibility and risk criteria. This system would minimize the amount of water currently being transferred and allow for better surface water control during storm events.

4.4.7 Final Closure of the Site

The following is a brief description of how the Site would look after implementation of interim closure in conjunction with the other ASAP tasks as described using the feasible alternatives. During completion of the remediation activities and the Site decommissioning, the remediation wastes and decommissioning debris would be moved to appropriate locations primarily on the north side of the plant for disposal. Subsequently, any new waste management facilities would be appropriately closed and the basic area consisting of the PA and the 800 area would be covered with a RCRA cap. This would minimize the contaminated footprint for the Site and allow for future retrievability for the waste emplaced under the cap, if required.

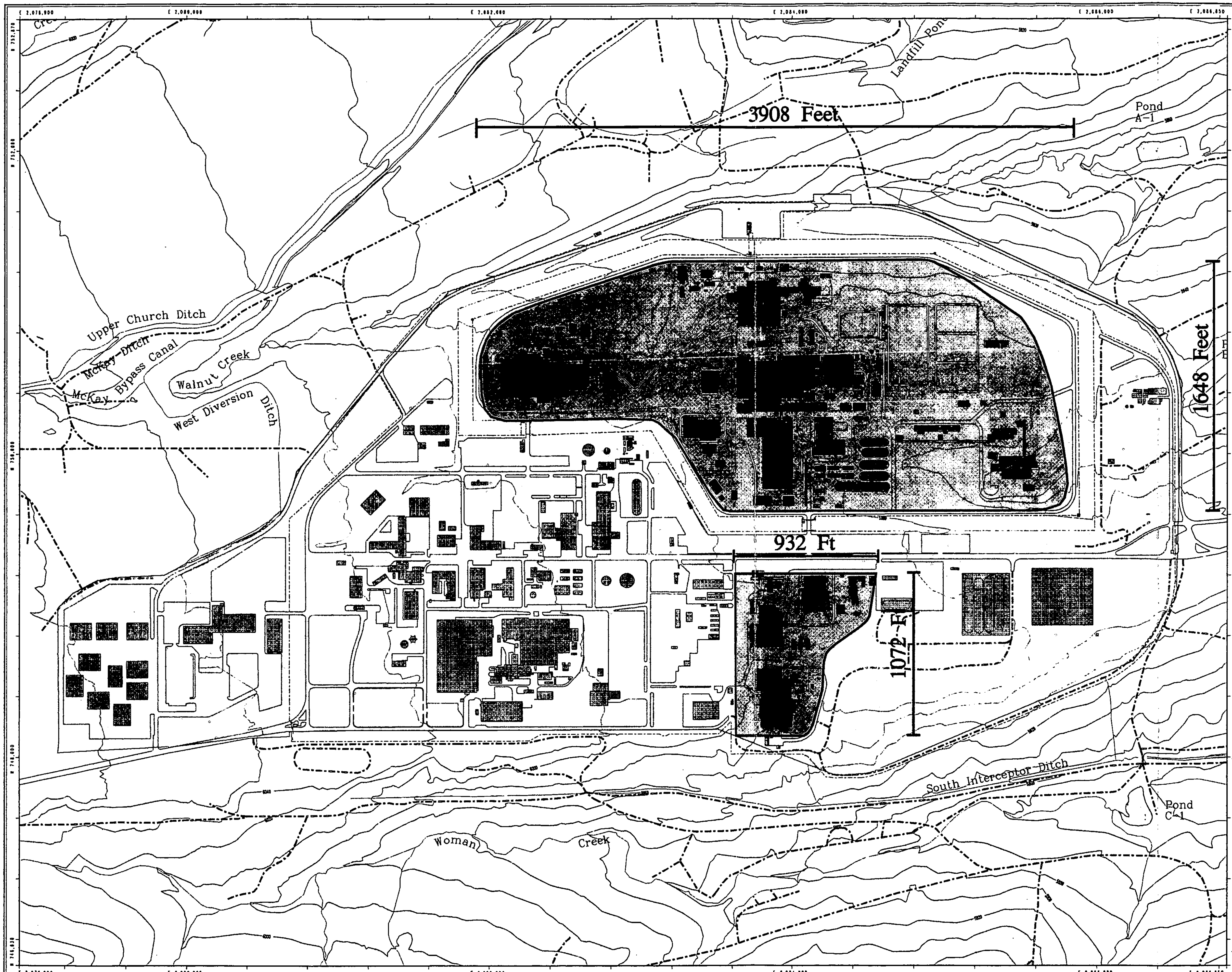
The cap size over the PA is estimated to be 110 acres and over the 800 area is estimated to be 20 acres. These caps include a drainage layer, an impermeable layer, and a 3- to 4-foot soil cover. A plan view and typical cross sectional view of the covers are shown in Exhibits 4.7 and 4.8, respectively. The material for the covers would be mined from the western portion of the Site. In addition, a groundwater diversion system would be placed upgradient of the Industrial Area. The preliminary estimated cost for the caps is approximately $ 80M to $100M.

The general fill/interim cover, low permeability soil, and vegetative layer could be mined from the western portion of the Site to reduce material and transportation costs. After the area is mined, it could be used as a small lake to supplement an open space concept.

Due to the size of the PA cap, 2 years would be required for construction. This would most likely be a phased approach because Buildings 707 and 371 would not be decommissioned until the end of 2002. Prior to this much of the grading/compaction/interim cover could be conducted in the surrounding area. After decommissioning of Buildings 707 and 371, the area would be covered and compacted. The subsequent layers of the cap could then be emplaced. The 110-acre cap can be placed as soon as this area has been decommissioned.

The capped areas could then be used for open space/day use; however, excavation and structures would be prohibited because these activities would compromise the integrity of the cap. The remainder of the IA could be used either as a commercial/industrial area or covered with topsoil and converted to open space/day use.

Plan View of Final Cover
Exhibit 4.7



EXPLANATION

Area to undergo Decommissioning

Area to be Capped

Standard Map Features

Buildings or other structures

Lakes and ponds

Streams, ditches, or other drainage features

Fences

Contours (20' Intervals)

Paved roads

Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

N

Scale = 1 : 7410
1 inch represents approximately 617.5 feet

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: ***Draft*** September 29, 1995

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TASK 5

TASK 5: SITE INFRASTRUCTURE

5.1 SUMMARY

The desired end state would be to have no DOE weapons-related activities or infrastructure remaining on-site after a short period of time. However, recognizing the probability of the need to store plutonium and waste on-site for a substantial period of time, a feasible alternative was developed to pursue this objective. A cornerstone in developing the feasible alternative is to recognize two conflicting facts. First, the site is relatively remote from most public or commercial infrastructure and services, but secondly, the more these services are held captive on Site, the more they tend to perpetuate each other.

The cost of infrastructure support is viewed as a key potential safety issue for the future downwind stakeholders. The lower the safe operating cost of the facility, the greater the opportunity to secure long-term funding. This is a problematic issue at the current time. Another important feature of the use of commercially available services will be the development of a services infrastructure which could serve other commercial or industrial users of the site (e.g., National Conversion Pilot Project). Considering these benefits, the approach to site infrastructure assumed that all services that could be provided by off-site entities should be. As this study continues, the relative cost impacts of on-site vs. off-site will be more fully evaluated. This will include the fully loaded cost impacts, such as how many employees trigger the need for a cafeteria, laundry, motor pool, and such services. Because of the historical cost of on-site services, priority will be given to keeping the site population below these threshold levels. These threshold levels will also be used to determine when site services can be discontinued.

The summary of the Site Infrastructure strategy, schedule, and cost is shown in Exhibit 5.1. The summary cost profile is as follows:

Item	Cost
Infrastructure conversion	$70 M
Infrastructure on-site labor operations	$8 M/year
Infrastructure services, utilities, and supplies	$4 M/year

EXHIBIT 5.1 CONFIGURATION OF INFRASTRUCTURE SYSTEMS WITH MOST FEASIBLE ALTERNATIVE

System	Disposition	Start Schedule	End Schedule	Conv Cost (M)	O&M Staffing	O&M Cost (M)
UTILITIES						
Water - fire drinking, process	Connect to municipal system Booster pumps and at-grade storage for fire water	Oct-96	Sep-98	$7.00	0	$0.000
Sewage	New sewer lines and new small, zero-discharge lagoon system	Oct-01	Sep 02	$4.00	0	$0.010
Process waste water	None	Oct -01	Sep-02	$0.00	0	$0.000
Electricity	Dual source direct to building by PSCo with standby power as part of building pkg	Oct-98	Sep-99	$2.00	0	$0.000
Gas	Direct to building by PSCo	Oct-98	Sep-99	$2.00	0	$0.000
Fuel oil	None	Oct-96	Sep-97	$0.00	0	$0.000
Steam	None or produced in building	Oct -01	Sep-02	$0.00	0	$0.000
Nitrogen	No production on-site	Oct-01	Sep-02	$0.00	0	$0.000
Telephone	Commercial office system	Oct-98	Sep-99	$0.00	0	$0.000
Computer	Client/server system	Oct-98	Sep-99	$0.00	0	$0.100
Radio-pager	Commercial system	Oct-98	Sep-99	$0.50	0	$0.100
LS/DW	Building specific with control in EOC	Oct-01	Sep-02	$0.50	0	$0.100
SERVICES						
Fire	Contract with local fire district	Jan-02	Dec-03	$0.00	0	$0.100
Industrial Security	On-site forces				50	$7.500
Medical	Contract with local medical institution	Jan-96	Oct-96	$0.00	0	$0.500
Emergency Preparedness	Communications center (small-scale EOC) collateral duties by on-site personnel			$0.00	1	$0.100
Food service	None			$0.00	0	$0.000
Road maint	Main connector turned over to county Local roads and parking by commercial contractor as needed	Jan-99	Oct-99	$0.00	0	$0.100
Snow removal	Commercial contractor for parking lots Turn main road between gates over to county	Jan-99	Oct-99	$0.00	0	$0.100
Process maintenance	By on-site staff with specialty contractors as current	Jan-99	Oct-99	$0.00	0	$0.500
Vehicles	Assume no more than 15 vehicles with commercial maintenance through GSA			$0.00	0	$0.100
Shipping/Rec Trucking	Commercial operations using building shipping/receiving area	Jan-98	Oct-98	$0.00	0	$0.400
Custodial	Contract w/janitorial service	Jan-99	Oct-99	$0.00	0	$0.200
PU&D Activities	Use local Federal Center	Jan-03	Oct-03	$0.00	0	$0.100
Analytical Labs	Use off the site lab sources	Jan-97	Oct-97	$0.00	0	$0.200
Laundry, Filter/ respirator test	Discontinue services when Pu is in storage and buildings are decontaminated		Dec-95	$0.00	0	$0.000
TECHNICAL SERVICES						
Engineering and Construction Mgmt	Contract with A/E firm	Mar-96	Sep-96	$0.00	0	$0.000
Rad Control	Contract off the site	Oct-96	Oct-97	$0.00	0	$0.100
Health & Safety	Subcontractors provide own services with minimal oversight	Oct-01	Oct-02	$0.00	1	$0.200

EXHIBIT 5.1 CONFIGURATION OF INFRASTRUCTURE SYSTEMS WITH MOST FEASIBLE ALTERNATIVE (contd)

PERSONNEL SPACE MANAGEMENT						
Off-site offices	**Lease off the site offices for approximately 2500** **Lease off the site offices for 350 after FY2003 (requires one full-time building manager)**	**Jan-96** **Jan-96**	**Sep-03**	**$51.00**	**0** **1**	**$1.100** **$0.100**
Relocations	**2500 first year, then 300 relocations/year (requires one facility planner in after 2003)**	**Jan-96**	**Sep-03**	**$1.00**	**1**	**$0.100**
Shuttle service	**Contracted service for 2 vans from site to off the site facility**	**Jan-96**	**Sep-03**	**$2.00**	**0**	**$0.100**
TOTAL				**$70.00**	**53**	**$12.00**

5.2 KEY ISSUES TO BE ADDRESSED

The key issues to be resolved in the next step of the ASAP study include the following:

- The availability of off the site utilities and services
- Relative options and benefits of off the site vs. on-site services
- Refinement of the appropriate infrastructure, especially for emergency and security services for the plutonium and waste storage facilities including bench-marking comparable public and private sector facilities elsewhere
- Delineating those services that pose an acute risk to the public health and safety if not delivered in a short-time horizon or continuous fashion
- Timing for initiation of a change in services
- Refinement of cost and labor estimates
- Desirability of locating part or all administrative and technical support off the site (e.g., Interlocken) to reduce on-site requirements (eliminate Buildings 130 and 131) and noting that this support would still be physically closer to the plutonium and waste storage facilities than at other large DOE sites (e.g., Hanford, Savannah River, INEL, and Oak Ridge)
- Design of the Pu storage facility with respect to built-in delays for adversary attack, built-in Central Alarm Station, security guard facilities, Personnel Protective Equipment requirements, etc.
- Role of the Collective Bargaining Agreement
- Trigger levels for discontinuing services

- Evaluation of capital improvements line item infrastructure projects to determine scope reduction

- Evaluation of personnel required on-site

5.3 TASK DESCRIPTION

5.3.1 Introduction

This task is to evaluate the activities necessary to support the infrastructure and systems required for the RFETS Accelerated Site Action Project (ASAP). Minimal site infrastructure (utilities, site support services and technical services) is expected to support one plutonium (Pu) storage facility, necessary waste facilities, employment level of fewer than 300 and related activities in the ASAP. With demolition of most facilities on-site and an environmental cap over the entire Protected Area, it would not be fiscally responsible to maintain or upgrade the deteriorating infrastructure for the reduced requirements of the ASAP. Consolidation of Pu and waste on-site and related activities would require minimal utilities and services. Although more buildings may be left (or constructed) on-site for economic conversion or other final end state use, the revised infrastructure would support only the structures required for remaining RFETS activities. This would be accomplished by using commercial utilities as much as possible, and, except for security, by using private contractors or other government agencies for the services required.

5.3.2 Purpose

The Infrastructure Task Team (ITT) was formed to evaluate the infrastructure requirements of the ASAP. This team, consisting of technical experts from the site including the Department of Energy and contractors, was further divided into four sub-task teams: Site Utilities, Site Support Services, Technical Services, and Personnel Space Management.

After analyzing all components of the site infrastructure and carefully reviewing the alternatives, the ITT is considering using public sources where available, contracting services as much as possible, and providing minimal support on-site. The ITT based its recommendations upon worker and public safety, regulatory requirements, feasibility, and cost effectiveness.

All recommendations are dependent upon the preferred recommendations of each of the other task teams, notably the schedule for building demolition and locations selected for the new Pu and waste storage facilities.

5.4 OPTIONS ANALYSIS

This section presents the options for the feasible alternative that were evaluated, an option analysis, and the selected option for each of the subtasks described above.

5.4.1 Site Utilities

Site utilities provide products necessary for the day-to-day operation of buildings in accomplishment of the defined mission.

The following options were considered for all Site Utilities:

1. Retain existing systems status quo
2. Privatize existing on-site utilities
3. Utilize public or private utility sources
4. Install smaller self-contained systems
5. Deactivate and remove utility systems

The following table shows the evaluation of the options.

SITE UTILITIES OPTIONS

OPTION	IMPLEMENTATION COST	OPERATIONAL COST	SCHED	RISK	FEASIBILITY	SCORE
Retain existing systems	+	-	-	0	0	-
Privatize existing systems	-	+	+	-	+	+
Utilize public/private sources	-	0	+	+	+	+
Install self-contained systems	-	+	+	+	+	+
Deactivate and remove systems	0	+	+	-	-	0

Exhibit 5.2 discusses option advantages and disadvantages.

EXHIBIT 5.2
RECOMMENDATIONS FOR SITE UTILITIES

Systems	Options	Advantages	Disadvantages	Rec
Water Fire water Electric Natural gas Telephone Paging	Retain as is	Minimal front-end cost	Continued aging and deterioration Maintenance costs continue to increase Capital expenditures to upgrade for long-term use Must retain staff to operate and maintain	
	Privatize	Substantial long-term and maintenance cost savings	Finding private entity to assume operation Potential high front-end costs to upgrade systems to current standards	
	Use public/private sources	Substantial long-term and maintenance cost savings Supports ASAP objective	Willingness of local municipality to provide water Cost to reconfigure and/or install new lines	X
	Install small self-contained systems	Long-term operations and maintenance cost savings	Some continued cost for maintenance Cost to install new systems	

EXHIBIT 5.2
RECOMMENDATIONS FOR SITE UTILITIES (contd)

Systems	Options	Advantages	Disadvantages	Rec
Sewage plant	Retain as is	Minimal front-end cost	Continued aging and deterioration Maintenance costs continue to increase Must retain staff to operate and maintain Capital expenditure to upgrade for long-term use Continued permitting requirement Large asset for small capacity need	
	Use public/private sources	Substantial long-term operations and maintenance cost savings	Willingness of local municipality to accept sewage Cost to reconfigure and/or install new sewer lines or septic tank collection system	
	Construct sewage lagoon w/effluent discharge	Long-term operations and maintenance cost savings	Significant cost for construction Continued permitting and monitoring requirement Some continued staffing to operate	
	Construct sewage lagoon w/ no effluent discharge	Long-term operations and maintenance cost savings No monitoring or permit required	Significant front-end cost to construct Some continued operating staff and costs	X
Steam plant Nitrogen plant Radio system Fuel oil tanks	Retain as is	Minimal front-end cost	Continued cost of maintenance and operations Does not support ASAP objective	
Plant air Health physics vacuum	Privatize	Substantial long-term operations maintenance cost savings	Inflexibility of increased staffing Substantial capital cost	
LS/DW System Filter test fac Raw water	Use public/private sources	Substantial long-term operations maintenance cost savings	Inflexibility of increased staffing Substantial capital cost	
system Process waste	Deactivate/remove	Long-term operations and maintenance cost savings	No service for future	X

Existing utility systems are all old, deteriorating, and costly to maintain. These systems are oversized and not cost effective to operate at the expected staffing levels required at ASAP. The listed options were evaluated for each system. Selection criteria of operating cost, serviceability, risk, and feasibility were considered for each of the following systems.

1. WATER. Use of public or private water sources is the most favorable method for the *water treatment, distribution system* and *fire water system*. If a local municipality such as Westminster, Arvada or Broomfield cannot supply water, the team is considering installing self-contained water treatment units in the remaining buildings. The existing *raw water supply system* from Ralston Reservoir could be reconfigured or new wells could be drilled to supply these self-contained systems. This would allow demolition of the water treatment facility (Building 124), the water tower and storage tanks. Booster pumps could be installed in the remaining buildings to provide water pressure for the suppression system if necessary.

2. SEWER. For small remote sites that are beyond practical pipeline connection to a municipal sewage treatment plant, the two most common methods for sewage treatment are (1) septic tank collection systems with associated pumping and trucking of the sewage to a treatment plant and (2) constructing small-scale sewage collection/digestion lagoons similar to the system currently in operation at Building 060. The team considers installing smaller-scale on-site lagoons next to the remaining facilities more feasible because these would most likely be more cost effective to operate than frequent pumping, transport and off the site treatment.

3. STEAM. The team recommends installing individual natural gas-fired heating systems for heating the remaining buildings (as is common practice for small sites and groups of buildings) to replace the *steam plant* (Building 443) and *steam distribution system*, which would not be cost effective for the minimal needs of remaining buildings.

4. ELECTRICITY. The common method of obtaining electricity is using public sources. The existing RFETS *electrical distribution system* could be reconfigured to provide electricity from the new substation (679/680) to the remaining buildings and then turned over to PSCo. This new substation, to be built on Central Avenue, will provide the dual electrical feed required for the new storage facility. The PSCo 115 KV ring buss located north of the site would remain in place to provide primary and alternate power sources for the plutonium facilities. The remainder of the RFETS electrical substations and distribution system would be closed and removed.

5. GAS. The majority of the *natural gas system* would no longer be used in the ASAP. PSCo already supplies natural gas to RFETS at a main header near Building 850. The existing natural gas distribution system would be reconfigured to supply natural gas to the remaining buildings with the remainder of the system closed and removed. The reconfigured gas lines would be turned over to PSCo.

6. NITROGEN. When Special Nuclear Material (SNM) is stabilized, nitrogen will no longer be required for inert atmospheres, so the *nitrogen plant* could be closed and removed.

7. FUEL. The *bulk fuel oil storage tanks* (Building T443F) supply fuel for the steam plant that would not be retained in the ASAP. These tanks could be closed and removed prior to the demolition of the steam plant by establishing a contract to keep the new above-ground day tanks full.

8. COMMUNICATIONS. The existing *telephone and paging system* would not be used to capacity in the ASAP and would not be cost effective to own, operate and maintain. The team recommends readily available public and private communication services.

9. RADIO. With significant reduction of security and emergency response forces projected for the ASAP, the existing *radio systems* would not be used to capacity and would not be cost effective to operate and maintain. A much smaller self-contained radio system could be purchased and installed in the remaining buildings.

10. FILTER TEST. The *filter test facility* located in Building 442 is required only as long as the Pu process buildings are operating. Once they are closed, the filter test facility requirements would be significantly reduced; however, the facility does support the rest of the DOE complex. The system could initially be relocated to one of the Pu buildings such as Building 707 (to allow earlier demolition of Building 442) and then relocated to another DOE site for continued DOE complex support including the minimal requirements at RFETS.

11. OTHERS. *Plant air, health physics vacuum and Life Safety/Disaster Warning (LS/DW) systems* are essentially self-contained inside buildings scheduled for demolition. The systems remain until the buildings are removed. The LS/DW system should be retained until a small public address system can be installed in the remaining buildings.

The buildings identified to remain or to be constructed in the ASAP would have their own heating systems. A new water line must be installed from a local municipality or wells drilled to provide potable water to remaining buildings. This water line would provide the ability of the Site to support private industrialization at the discretion of land use authorization.

5.4.2 Site Support Services

Site Support Services also considered five options:

1. Retain services on site but downsize and consolidate them to meet diminished requirements.
2. Privatize to local contractors or small businesses.
3. Utilize public sources such as municipal services.
4. Utilize a combination of small on-site forces for initial responses with contracts for backup support from the local communities as necessary.
5. Discontinue service.

The options are evaluated against the criteria in the following.

SITE SUPPORT SERVICES OPTIONS

OPTION	IMPLEMENTATION COST	OPERATIONAL COST	SCHEDULE	RISK	FEASIBILITY	SCORE
Continue w/on-site forces	0	-	0	+	+	0
Privatize to local contractors	0	+	0	-	+	+
Utilize public sources	0	+	0	0	+	+
Comb of on-site and off the site force	0	0	0	0	+	+
Discontinue services	0	+	0	-	-	-

Exhibit 5.3 discusses option advantages and disadvantages.

EXHIBIT 5.3
RECOMMENDATIONS FOR THE SITE SUPPORT SERVICES

Systems	Options	Advantages	Disadvantages
Security Emergency Fire Medical	Continue w/on-site forces (status quo)	Quicker response Economical if big workload and reasonable or no union contract Regs require security for SNM	On-site wages higher than contractors
EOC Maintenance Laundry Respirator Test Cafeteria	Contract w/private companies	Least expensive w/small number of buildings and small workload No special skills required Good application for SBE/SDBE	Slower response times Possible union backlash and political pressure
Shipping/Rec Trucking/Garage Roads/Walks	Utilize public services	Established well-trained resources	Not available for all services
repair Snow Removal Custodial Filter Test Metrology	Combination of on-site forces w/ back-up by off the site forces	Quicker initial response	On-site forces may not have adequate workload to make them economical
Property Disp Laboratories	Discontinue service	No operating cost	No services

Site support services are presently structured to support an operating site that must treat and move nuclear materials and clean up the site safely. At ASAP, those activities would no longer be required, and site support services could be reduced or eliminated. Reduced services would not require a contractor work force. Only required services such as security and initial emergency response would be provided by the contractor and then at a reduced level. The remaining services are recommended to be provided by local contractors or other public agencies or eliminated if unnecessary. Five options were considered based primarily on operating cost and secondarily risk and feasibility for the following services.

1. SECURITY. *Physical security and classification security* would consist of a small on-site force sufficient to safeguard remaining SNM and classified material. Even though the cost is high, security must remain on-site due to the risk associated with remaining SNM and classified material. The location of RFETS makes it virtually impossible for an off the site force to comply with DOE orders for a timely response to a security threat.

2. EMERGENCY SERVICES. Since the Pu is not pyrophoric and is stabilized during the ASAP, thereby reducing the risk, reliance on municipal *fire protection* would be less expensive. Security guards and other workers would be trained as Emergency Medical Technician (EMTs) for initial response to on-site medical emergencies. An on-site *medical* staff would not be required with EMTs in place. The proximity of Avista Hospital allows for rapid medical aid at a reduced cost and "Flight for Life" is still available for emergencies beyond the abilities of the EMTs.

On-site personnel would be trained to staff the *Emergency Operations Center* (EOC) as is done now. They could also provide *Emergency Preparedness* services as collateral duties.

3. LOGISTICS. Facility personnel would perform shipping and receiving and each facility would have its own dock.

4. OTHERS. Off the site private contractors would provide required services for *maintenance, metrology, laboratory analysis, custodial service, road repair, snow removal, and trucking while other government agencies could provide, property disposal and vehicle leasing and repair.* Many contractors in the area can provide intermittent services such as laboratory analysis, snow removal, weed control, and trucking services much more economically than a constant on-site force. In the ASAP, the workload would not be sufficient in these areas to justify a constant on-site force. Many companies also specialize in custodial services and could adjust their workload and schedules to provide the required service.

Services such as *respirator testing* and *laundry could* be discontinued once the Pu is placed in the storage facility, and the *cafeteria services* would be discontinued in the ASAP.

5.4.3 Technical Services

Technical Services are required services unique to the facilities and materials found on-site. The programmatic technical infrastructure team considered three options:

1) Retain the technical infrastructure (status quo) but downsize as the service infrastructure is downsized. This represents the highest-cost option.

2) Turn over the technical infrastructure to subcontractors on a graduated basis, with oversight by the Integrated Management Contractor (IMC), as the service infrastructure is downsized.

3) Turn over the technical infrastructure, without continued oversight, as the service infrastructure is downsized. This option assumes that the federal, state and local regulations and policing agencies can adequately be applied to the limited site operations.

The following table summarizes the options analysis.

TECHNICAL SERVICES OPTIONS

OPTION	IMPLEMENTATION COST	OPERATIONAL COST	SCHEDULE	RISK	FEASIBILITY	SCORE
Retain services status quo	0	-	0	0	0	-
Subcontract with oversight	0	-	0	+	0	-
Subcontract with no oversight	0	+	0	-	0	0

Exhibit 5.4 discusses option advantages and disadvantages.

EXHIBIT 5.4
RECOMMENDATIONS FOR TECHNICAL SERVICES

Options	Advantages	Disadvantages	Rec
Retain services with IMC	Established system Significant retained knowledge	High cost of service personnel	
Subcontract services with oversight	Ensures control over subcontractor operations	Cost of oversight personnel	
Subcontract services with no oversight	Low cost Low liability (Subcontractor assumes liability)	Contractor responsible for regulatory compliance No retained knowledge of operations	X

The level of *radiological control* required is heavily dependent upon the final Pu storage configuration. Assuming the Pu within the storage facility does not require continued manual surveillance or attention, i.e., the facility has automated radiation monitoring instrumentation and controls, radiological control may be eliminated. However, if the future Pu storage configuration requires periodic attention, a radiological control program that includes a level of radiation control technicians, health physics instrumentation, dosimetry, radiological engineering, etc., would be needed. Even in this case, radiological control could be provided by subcontractors as stated in the third option.

Federal law requires certain programs, such as OSHA *compliance* and *chemical and hazardous materials control*. In the event the technical infrastructure is provided by subcontractors, compliance with these programs would be ensured by the subcontractor. If the IMC maintains oversight of the technical infrastructure, a small group would be required to ensure subcontractor compliance with the federal laws. This oversight group would provide the compliance assurance (auditing) and policing required to meet the federal laws.

Nearly all aspects of the remaining programs and services included within the technical infrastructure would not be required to support the ASAP. These programs and services, such as *asbestos control, quality assurance, NCR reporting, procedure development, root cause analysis, conduct of engineering, drawing release, criticality safety* and *training programs* would be gradually turned over to subcontractors and then eliminated as the regulations which required them ceased to apply.

The feasible approach is to turn over the technical infrastructure to subcontractors without continuous oversight. With this option, technical expertise would be required on-site to ensure that the subcontractors are providing the contracted services. This technical expertise could reside within a single individual who would act as the IMC representative for technical services as well as the technical contact for procurement. Policing and oversight functions required to ensure compliance with federal, state and local laws and regulations would be handled among the individual contractors and the regulatory agencies. This option would yield the lowest cost yet maintain an acceptable level of risk and management control.

5.4.4 Personnel Space Management

Personnel Space Management is the provision of appropriate office space for personnel retained on-site. It will include relocation of the retained workforce and assignment of offices for additional workers required for the ASAP.

This sub-task team has also added four assumptions:

1) Facility decommissioning activities will exceed the rate at which the plant population is reduced.

2) A peak period of site activity will create an increase in (de)construction and associated personnel and a minimal increase in administrative support personnel before achieving the projected workforce of 300 persons is achieved.

3) Interlocken will be the only off the site facility with an existing lease.

4) DOE personnel will be relocated off the site.

The Personnel Space Management task team explored four options:

1) Relocate identified workforce functions and personnel to an off the site leased facility (within close proximity to RFETS) to provide space for personnel displaced from the facility decommissioning areas. This option would use the decommissioning schedule to plan the movement of personnel to alternate locations as activities progress.

2) Allow personnel to work from home.

3) Construct additional temporary structures on-site to house displaced personnel as decommissioning activities progress.

4) Use current on-site administrative office space made available by the restructuring of the workforce through voluntary and involuntary separations as each building is demolished.

The table below summarizes results of the options analysis.

PERSONNEL SPACE MANAGEMENT OPTIONS

OPTION	INFRASTRUCTURE COST	OPERATIONAL COST	SCHEDULE	RISK	FEASIBILITY	SCORE
Lease off the site facility	-	-	+	0	+	+
Utilize home offices	+	+	+	-	+	+
Construct new facilities	-	-	-	0	-	-
Use existing facilities	+	+	-	0	-	0

Exhibit 5.5 discusses option advantages and disadvantages.

EXHIBIT 5.5
RECOMMENDATIONS FOR PERSONNEL SPACE MANAGEMENT

Options	Advantages	Disadvantages	Rec
Relocate personnel to off the site leased facilities	Less impact to activities Reduction in multiple moves Creates space for decommissioning activities Assists in reducing infrastructure	Cost of off the site leases Transportation costs	X
Relocate personnel to home offices	Assists in reducing infrastructure More flexibility Increased morale Reduced air pollution Less travel time	Immediate availability of certain site resources Less personal interaction with other employees Logistics issues	X
Use current site facilities	No additional off the site lease costs Close proximity to site resources	More difficult and costly to reduce infrastructure Site population unlikely to decrease at same rate as building demolition No extra space to house personnel displaced by decommissioning activities Possible negative impact on activities	
Construct additional facilities on-site	No off the site leases Reduces personnel transportation and travel costs Close proximity to site resources	Requires additional infrastructure Difficult to identify potential sites Cost to construct facilities	

A space management plan incorporating a combination of the first two options would be developed in close coordination with the facility decommissioning plan proposed in Task #4 so that all employees have appropriate office space. This plan would include the identification of administrative and technical support functions able to operate from leased off the site and home offices.

The use of off the site offices and home offices (in addition to available on-site facilities) would reduce the potential for personnel space issues to impede the demolition schedule. Based on previous RFETS experience, some functions can be performed from an off the site location, so those persons could work from a leased facility or home office. The use of off the site facilities would reduce the number of moves required to keep personnel away from demolition areas and retain the highest level of worker productivity. A contracted company could provide shuttle service between the site and the off the site leased facility, as currently used at Hanford, to minimize worker impact.

Criteria would be established by which to evaluate all administrative support functions for their need to be retained on-site. An established team of personnel experts would complete the evaluations and make determinations. The identified administrative support functions would then be relocated to a leased facility or home office.

Each subcontractor would be responsible for providing offices for its personnel. Subcontractors would be allowed to erect temporary trailers and portable toilets, etc., as needed for (de)construction and other short-term direct support activities or use existing trailers (e.g., T130 complex).

Off the site space could be leased for approximately 2500 employees (current number of salaried employees at RFETS) during implementation of this project to accommodate identified administrative and technical support functions. Space would be set aside on-site and off the site for use as a temporary staging area of personnel for incoming and displaced workers. Trailers will continue to be vacated in preparation for demolition according to the priority list and schedule. Additional off the site office space may need to be added during the peak years of demolition.

The annual cost of leasing space for 2500 employees (based on current leases) would be $7.8 million. A contracted shuttle service between the site and off the site facility (two vans and drivers) would cost approximately $200,000/year. Relocations of personnel would average $200,000 per year (500 moves at $400 each, based on historical figures), which assumes an employment increase through the year 2000 and a subsequent decrease to the 300 employee level after Phase II of the ASAP is complete.

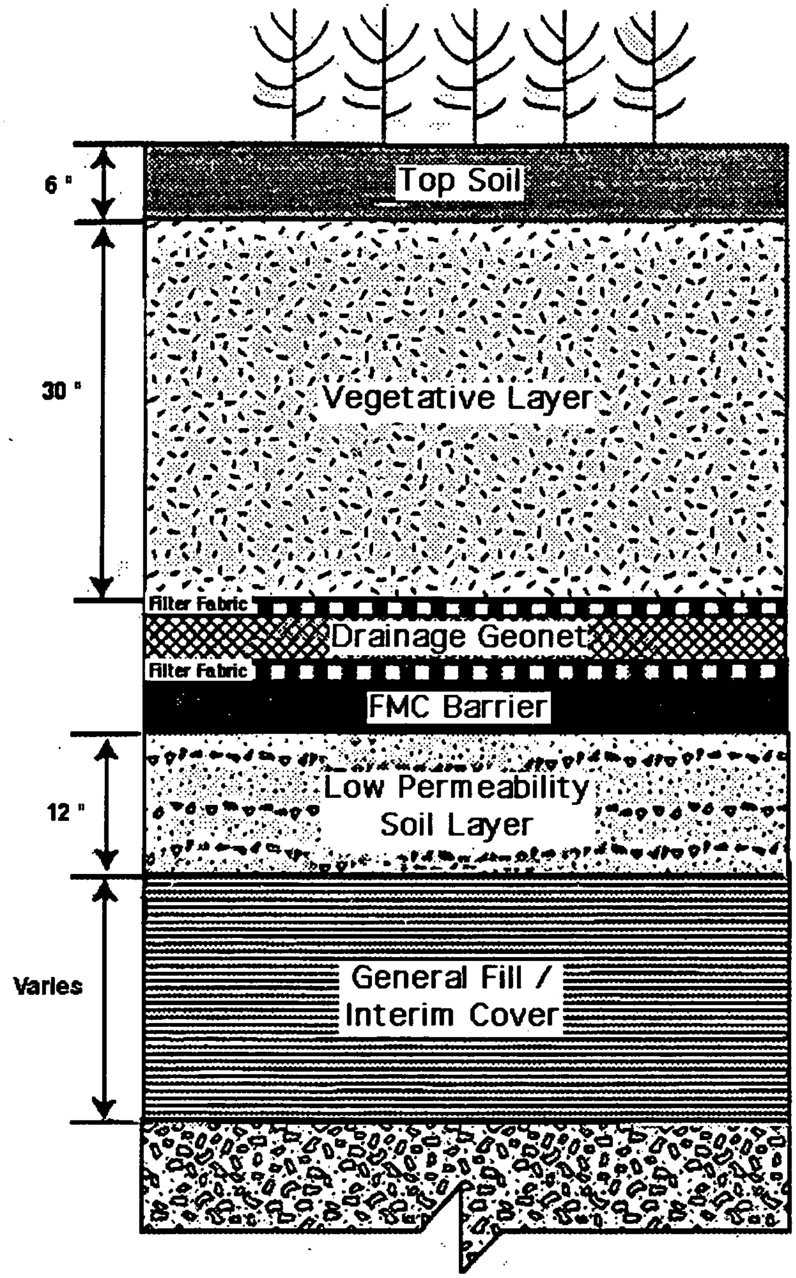


Exhibit 4.8
Conceptual Cross
Sectional View
of Final Cover

TASK 6

TASK 6: IMPLEMENTATION

The purpose of this task is to address cross-cutting implementation issues. This task differs from the other technical tasks in that it is focused primarily on non-technical aspects of the Accelerated Site Action Project (ASAP). In a project as complex as the ASAP, non-technical issues must be addressed, or a sound technical approach may not be sufficient to ensure successful implementation. Issues such as logistics, funding and stakeholder concerns may become barriers unless addressed early in the planning process.

The ASAP Preliminary Project Plan to be completed as part of the December 30, 1995, Kaiser-Hill deliverable to DOE, will expand upon the issues addressed in the subsequent sections with emphasis in the following areas:

- Major systems integration including the decision-making logic for arriving at the preferred alternative for achieving the ASAP and the technical work logic for implementing the preferred alternative.

- The details of projectizing the site including the contracting strategy and incentives, the funding strategy for the FY98 budget submittal, and the Authorization Basis Program.

6.1 PROJECT LOGICS

Three levels of logic overlay each other in the ASAP: Institutional Logic, Decision-making logic, and Technical Work Logic.

6.1.1 Institutional Logic

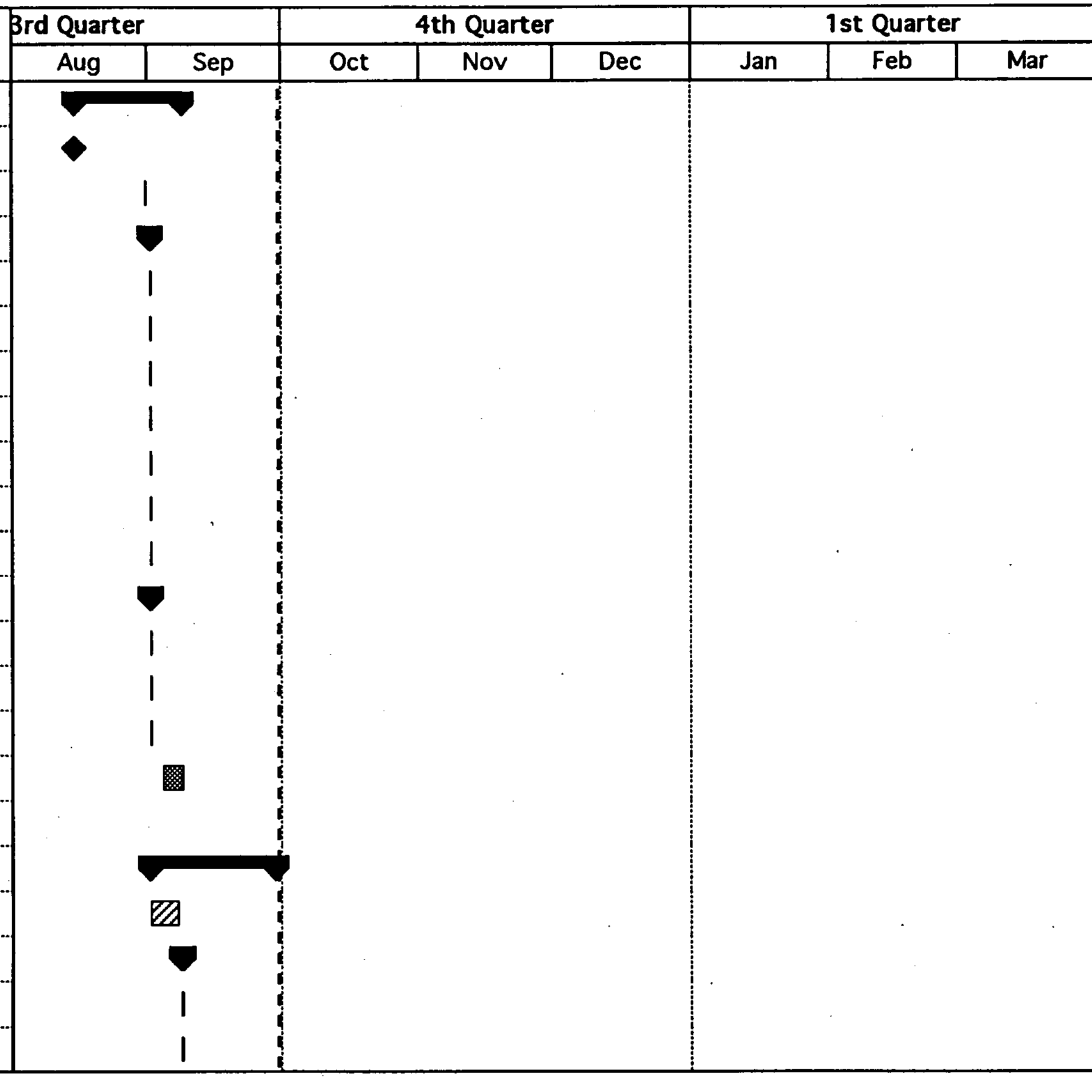
The upper tier logic is the Institutional Logic. It is the logic associated with planning, communicating, and obtaining approval for the project. The schedule which reflects this Institutional Logic is shown in Exhibit 6.1.

The process started with a proposed ASAP vision which led to this preliminary feasibility analysis. Following this, principals from DOE, EPA, CDPHE and relevant stakeholder groups need to agree that the proposed site vision is acceptable and that the ASAP concept represents the path forward. Once the path forward is agreed upon, analysis developed with stakeholder input will lead to a preferred alternative and a preliminary project plan. This analysis and preliminary plan will be submitted to DOE by December 30, 1995. If approved, this analysis and plan will serve as the basis for the FY98 budget submittal. In parallel the FY96 and FY97 work baselines will be modified to align them with the ASAP.

ACCELERATED SITE ACTION PROJECT

Institutional Logic Schedule

ID	Name
1	PROJECT WORK PLAN
2	Propose Interim End State Project
3	Develop Draft Work Plan
4	Obtain Feedback on Feasibility
5	Brief DOE HQ
6	Brief Stakeholders
7	Brief DNFSB
8	Brief EPA/CDPHE
9	Brief Representatives
10	Brief Governor
11	Brief Informed Insiders
12	Form Project Team
13	Assign Project Manager
14	Assign Task Managers
15	Assign DOE Counterparts
16	Issue Project Schedule
17	
18	PHASE 1 PLAN - FEASIBILITY STUDY
19	Outline Study Contents
20	Establish Project Logic Paths
21	Technical Work Logic
22	Decision Making Logic



Project: ASAP
Date: 9/30/95

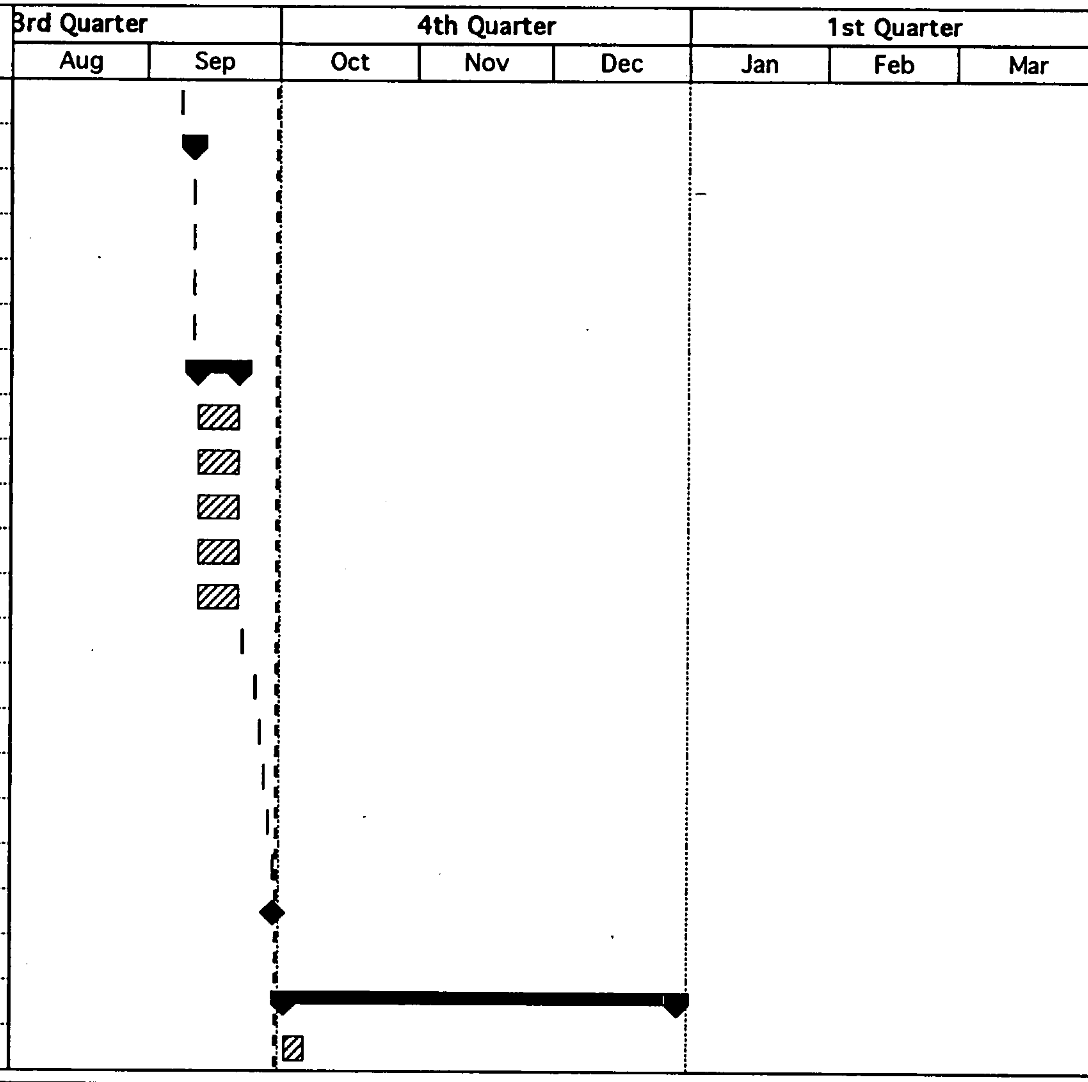
Critical · Noncritical · Progress · Milestone · Summary · Rolled Up

Exhibit 6.1

ACCELERATED SITE ACTION PROJECT

Institutional Logic Schedule

ID	Name
23	Institutional Logic
24	Define Requirements Package
25	Self-Imposed Constraints
26	Political Assumptions
27	Technical Assumptions
28	Objectives
29	Conduct Technical Feasibility Analysis
30	Task 1, SMN
31	Task 2, Waste Management
32	Task 3, Decomissioning
33	Task 4, ER Closure
34	Task 5, Infrastructure
35	Integrate and Consolidate Task Inputs
36	Issue Rev. 0 Draft Feasibility Study
37	Review and Comment on Draft Study
38	Revise Draft Feasibility Study
39	Issue Rev. 1 Draft Feasibility Study
40	Approve Rev. 1 Draft Feasibiliy Study
41	Submitt Rev. 1 Draft Feas. Study to DOE
42	
43	PHASE 2 PLAN - IMPLEMENTATION PLAN
44	Outline Implementation Plan Contents



Project: ASAP
Date: 9/30/95

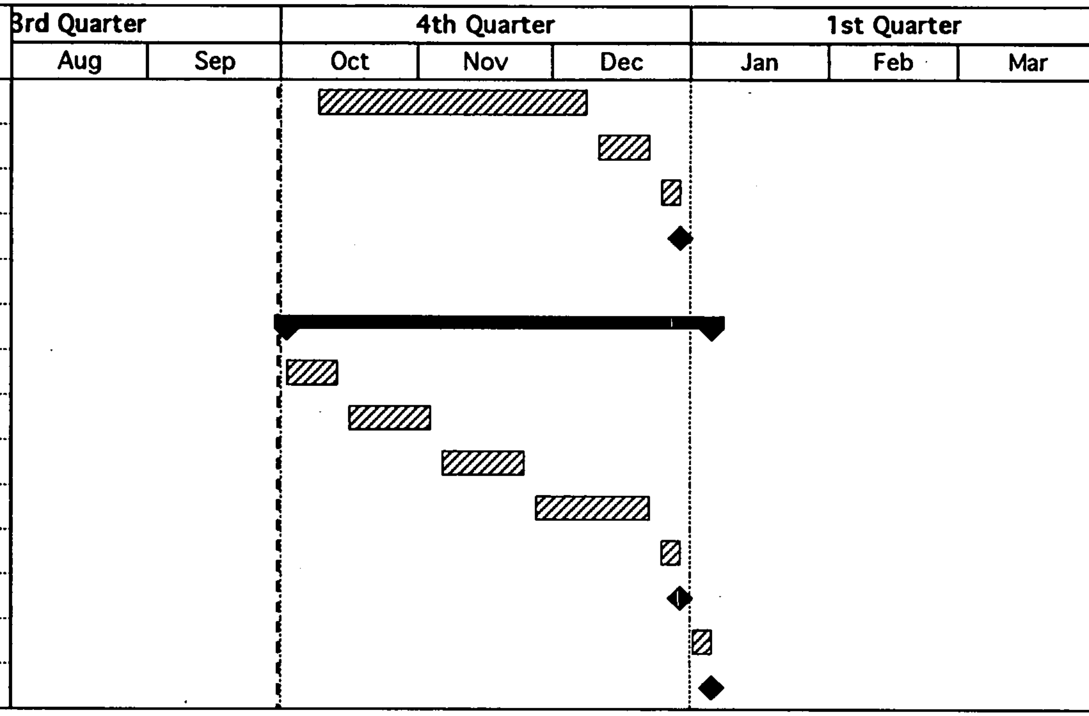
Critical — Progress — Summary
Noncritical — Milestone — Rolled Up

Exhibit 6.1

ACCELERATED SITE ACTION PROJECT

Institutional Logic Schedule

ID	Name
45	Prepare Draft Implementation Plan
46	Review and Comment on Draft Plan
47	Revise Draft Plan
48	Approve Implementation Plan
49	
50	PHASE 2 PLAN - PRELIMINARY PROJECT PLAN
51	Establish Technical Baseline
52	Develop Technical Alternatives
53	Define Performance Objectives
54	Conduct Options Analysis
55	Preferred Options Prepared
56	Issue Project Plan To DOE
57	DOE Review Project Plan
58	DOE Approve Project Plan



Project: ASAP
Date: 9/30/95

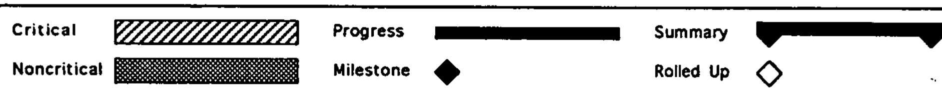


Exhibit 6.1

6.1.2 Decision-Making Logic

The decision-making logic is the process by which a number of key decisions will be made. The decision-making logic will be laid out in the ASAP preliminary Project Implementation Plan. It will include decision milestones, contingency options, and alternative paths when fundamental decisions are delayed or differ drastically from the assumed outcomes. Once the preferred alternative is determined, a detailed technical work logic will be prepared as described below.

6.1.3 Technical Work Logic

The technical work logic is the precursor to detailed technical work schedules, cash flow projections, key resource allocations, and a detailed procurement strategy. The technical work logic will establish a logical process by which the technical tasks should be accomplished and integrated with each other to achieve optimal results. As an example, the preliminary technical work logic for a significant piece of the ASAP, the Facility Use and Decommissioning Sequence, is shown as Exhibits 6.2 and 6.3.

Following Exhibit 6.3 is the preliminary top level overall ASAP technical work schedule, Exhibit 6.4.

Exhibit 6.2 Summary Facility Use/Decommissioning Logic

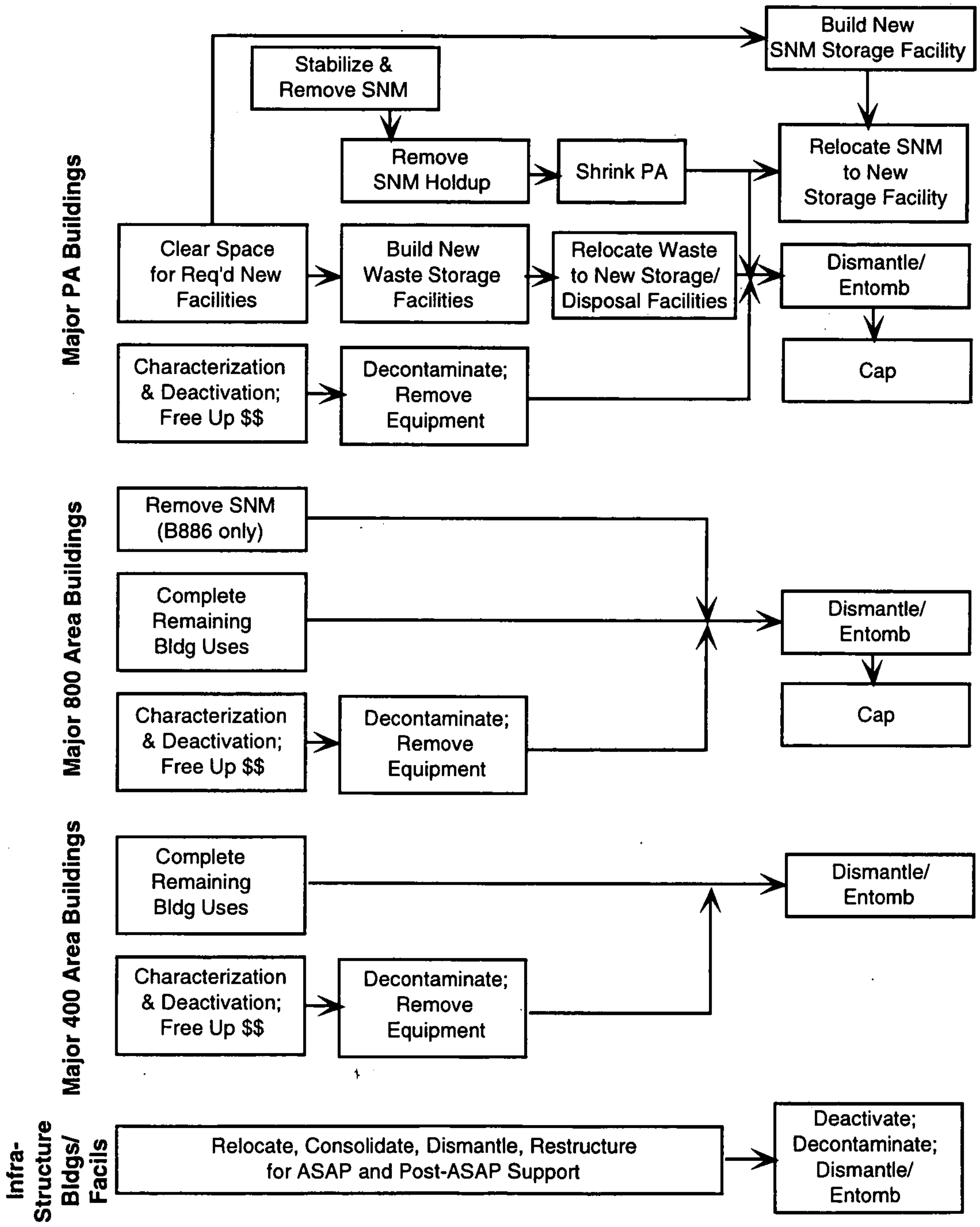
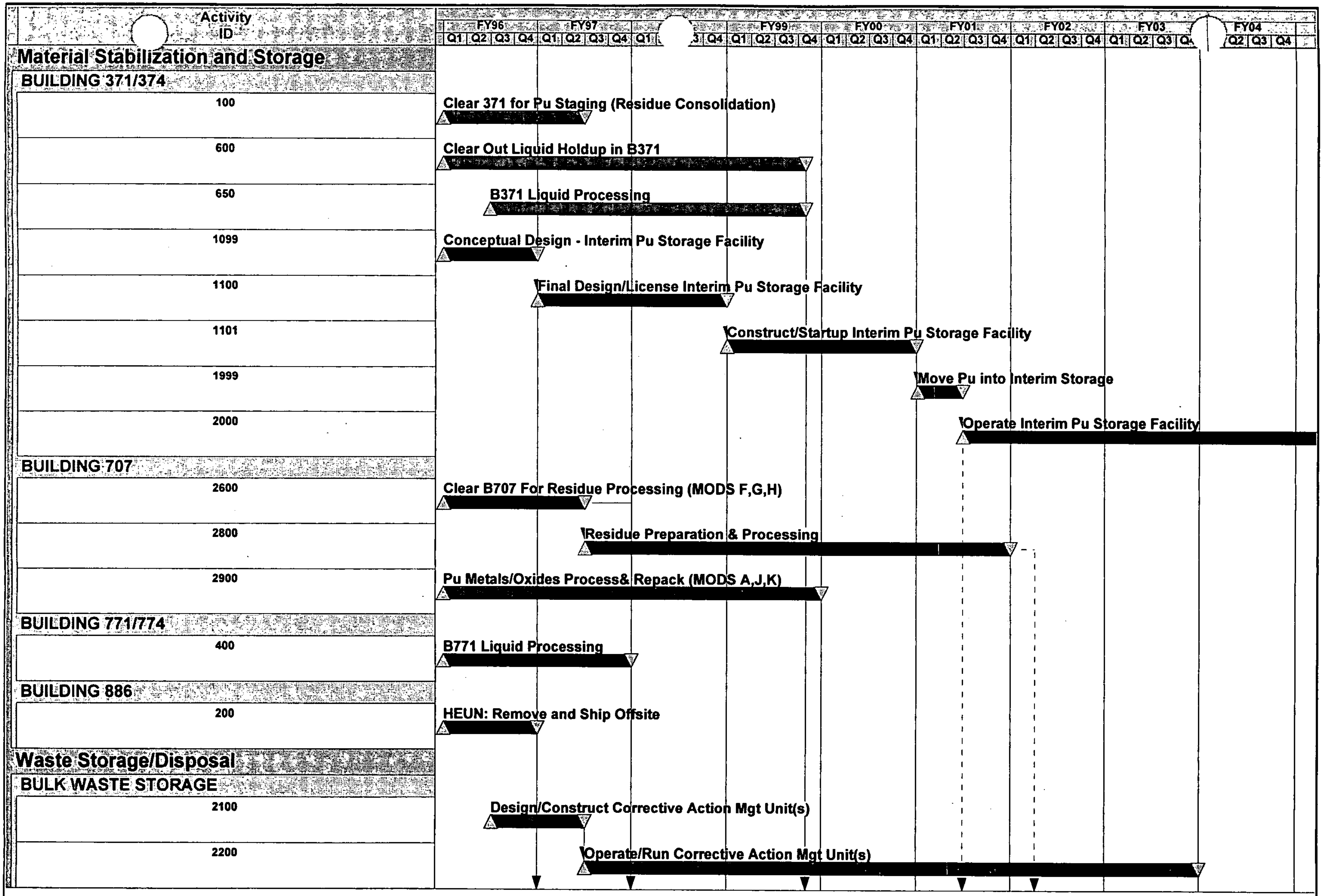


Exhibit 6.3 Facility Interdependencies

Impact of this → On this ↓	Pu Consolidation and Stabilization,	Waste Management	Facility Decommissioning	Interim Closure	Site Infrastructure
Pu Consolidation and Stabilization	Need lab support for stabilization. Pu stored in one building must be stabilized in another. Need offsite shipping capability Support from ancillary facilities, such as cooling towers, necessary.	Need add'l space; plan add'l TRU waste storage in existing facilities to clear way for decommissioning others.	Need access to space for decommissioning. Need to shut down systems, utilities.		
Waste Management	Processing generates additional waste. Waste may need treatment. Need waste out to clear space for consolidation & processing.	Waste generated, assayed, certified, and stored in separate buildings. Shipped from another.	Decommissioning generates additional waste, requiring additional storage space.	IHSS remediation can generate additional waste, requiring additional storage space.	PA boundary will make removal of waste slow. Infrastructure decommissioning can generate additional waste.
Facility Decommissioning	Delayed access to major facilities.	Delayed access to major facilities. Immediate need for additional TRU storage space may impact decommissioning in selected areas.	Some facilities may need removal to allow access for structural decommissioning of others.	Potential IHSS remediation conflict with decommissioning in some facilities -- especially old process waste lines & tanks.	Structures in way of decommissioning some buildings. Infrastructure needed to support decommissioning. PA boundary will make access for decommissioning slow. PA boundary will make moving waste/debris out slow. PA boundary will require higher clearances for decommissioning crews.
Interim Closure	Could delay IHSS closure access.	Must complete use of waste facilities before cap.	Could delay IHSS closure access. Must complete decommissioning before cap.		Structures in way of IHSS access.
Site Infrastructure	Systems & utilities needed while buildings operational could impact restructuring. Support for new facility needed.	Systems & utilities needed while buildings operational could impact restructuring. Support for new facilities needed.	Schedule for decommissioning will impact ability to remove utility service. Some utilities needed even after deactivation.		



Project Start	02OCT95
Project Finish	02JAN06
Data Date	02OCT95
Plot Date	30SEP95

Early Bar
Progress Bar
Critical Activity

ASAP

Sheet 1 of 4

Rocky Flats Environmental Technology Site
Accelerated Site Action Project

Revision 0: 30 Sept 1995

Date	Revision	Checked	Approved

Activity ID	Activity
2300	Conceptual Design LLW Disposal Cell
2301	Final Design/License LLW Disposal Cell
2400	Construct/Startup LLW Disposal Cell
2500	Operate LLW Disposal Cell
CONTAINERIZED WASTE STORAGE	
1102	Conceptual Design - TRU Waste Storage Facility
1200	Final Design/License TRU Waste Storage Fac
1201	Construct/Startup TRU Waste Storage Facility
1300	Operate TRU Waste Storage Facility
1301	Transfer to New TRU Waste Storage Facility
1302	Consolidate TRU to B460/B440
1303	Clear B440/460 for TRU Waste Storage
3400	Shipments to WIPP
Deactivate,Decontaminate,Decommission,De	
BUILDING 371/374	
1800	B371/374 Released Deactivation & Decontamination
1900	B371 Storage Vault, Rm 3206 Decomm & Demolish
400 AREA BUILDINGS	
800	400 Complex and Non-Contaminated Bldgs D4
3102	Demolish B440/460
BUILDING 559 ANALYTICAL LAB	

Timeline: FY96 – FY04 (Q1 Q2 Q3 Q4 per fiscal year)

Project Start	02OCT95
Project Finish	02JAN06
Data Date	02OCT95
Plot Date	30SEP95

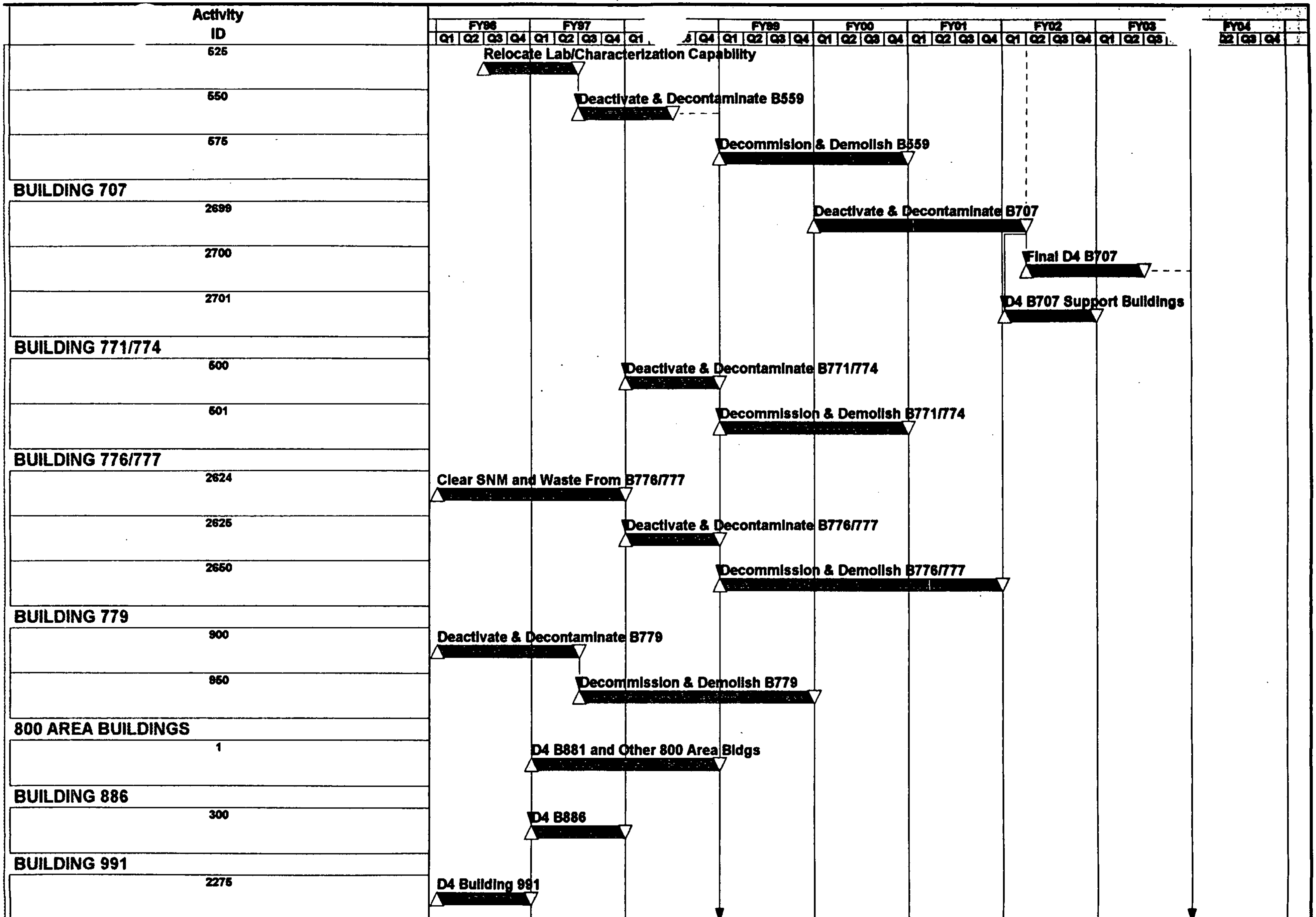
Early Bar
Progress Bar
Critical Activity

ASAP

Sheet 2 of 4

Rocky Flats Environmental Technology Site
Accelerated Site Action Project

Revision 0: 30 Sept 1995			
Date	Revision	Checked	Approved



Project Start	02OCT95
Project Finish	02JAN06
Data Date	02OCT95
Plot Date	30SEP95

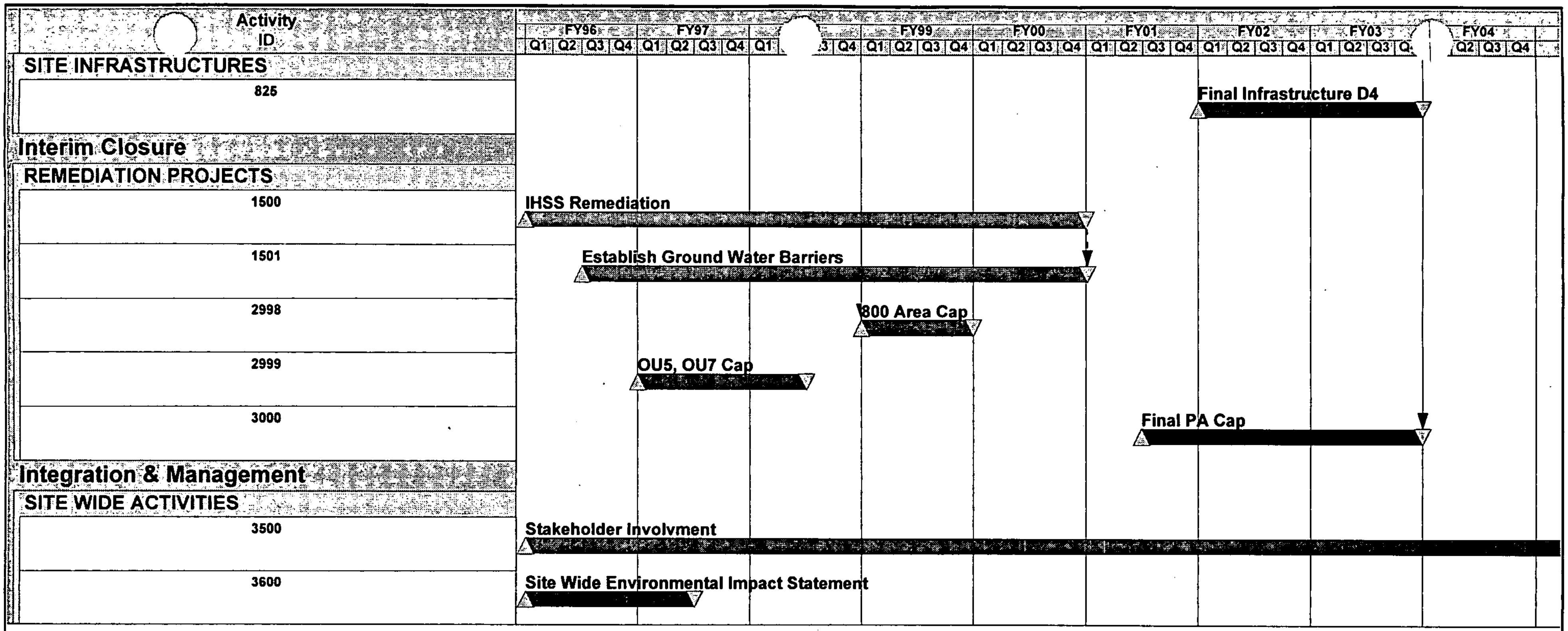
Early Bar
Progress Bar
Critical Activity

ASAP

Sheet 3 of 4

Rocky Flats Environmental Technology Site
Accelerated Site Action Project

Date	Revision	Checked	Approved
	Revision 0: 30 Sept 1995		



Project Start	02OCT95
Project Finish	02JAN06
Data Date	02OCT95
Plot Date	30SEP95

Early Bar
Progress Bar
Critical Activity

ASAP

Sheet 4 of 4

Rocky Flats Environmental Technology Site
Accelerated Site Action Project

Revision 0: 30 Sept 1995

Date	Revision	Checked	Approved

6.2 CASH FLOW PROFILE

The concept of ASAP is bold and unconventional in the DOE environment, but it appears feasible if it is adequately supported. The need for technically valid and defensible cash flow data are essential to achieving fiscal support. Although the project requires large upfront cash flow, which complicates funding issues, this initial expense will preclude much larger out-year expenses. The cash flow profile of the feasible option (shown in Exhibits 6.5 and 6.6) was developed with the following assumptions:

- Cleanup standards will be established for all methods of closure and represent flexible, risk-based methodologies.
- Process standards will be established that facilitate activity-based authorization bases for the conduct of work. The short-term nature of the majority of operations and the risks associated with not proceeding are recognized when determining the overall risks posed by certain activities.
- Current regulatory milestones and other commitments, such as the cleanup agreement currently under negotiation and DNFSB 94-1, can be adjusted to align with an agreed-upon vision for the Site.

Exhibit 6.5 ASAP Cost Profiles

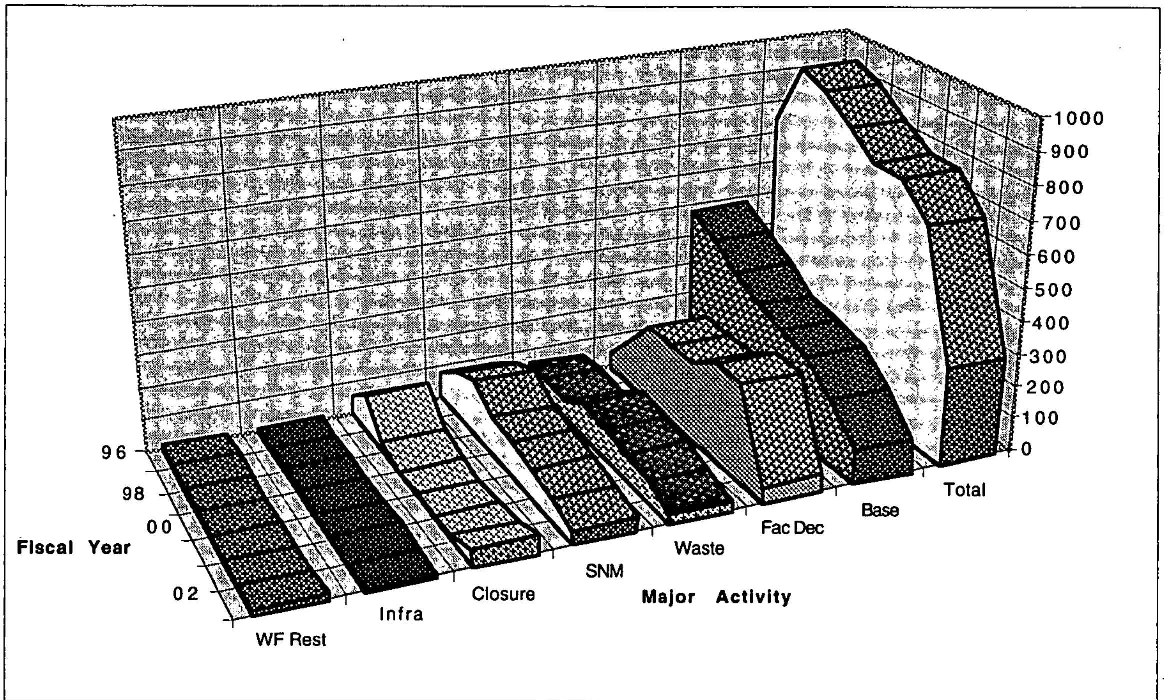


Exhibit 6.6 Cash Flows ($M)

FY	WF Rest	Infra	Closure	SNM	Waste	Fac Dec	Base	Total
96	10	5	40	118	30	50	480	733
97	15	5	70	199	65	100	430	884
98	10	10	70	172	80	250	375	967
99	10	15	70	142	110	225	325	947
00	5	15	50	115	90	300	300	875
01	5	10	10	67	75	325	275	767
02	10	5	25	11	60	275	200	586
03	20	5	55	11	25	50	100	266
Subtotal	85	70	390	835	535	1625	2485	6025

6.3 THE "FIRST LOOK" APPROACH

The "First Look" approach to managing the site assumes that the DOE/Contractor Team assumes responsibility for an abandoned site and is faced with the existing facilities and equipment and their associated risks, but with no staff or programs in place. It addresses how the project would be managed given no constraints other than doing the job safely and efficiently. Several questions are posed below which lead to possible paradigm shifts which could occur under this approach. This concept is fundamental to the ASAP premise that the site must be managed like a project. The questions below deal with issues which are fundamental to the success of such an approach. Answers are presented in the sections which follow.

- What work authorization programs maximize the completion of work while ensuring safety?
- What is the best way to appropriate, apportion and allot funds from Congress to the field?
- What skill mix and labor agreement best support the project?
- What form and scope should a regulatory agreement take to most effectively catalyze accelerated site stabilization and closure?
- What ongoing external actions must be integrated into the ASAP approach to ensure success?
- What is the optimum contract vehicle to motivate the contractor and maximize government return on the project investment?

6.3.1 Authorization Bases

A work authorization basis program would be developed which has the following attributes as its foundation.

- Protective measures recognize real risks to workers and the public.
- The risks of not proceeding expeditiously are weighed against the risks of proceeding before protective measures are fully in place.
- Repetitive tasks may be performed under standardized work authorization processes.
- The duration of a work task is linked with the probability of an accident occurring in order to recognize that these are not 40-year life-cycle hazards.
- Hazards analyses are conducted with a consistent, realistic methodology and accepted by regulators as being necessary and sufficient.

Currently at Rocky Flats there is an ongoing effort to achieve a significantly enhanced Authorization Basis Program. A process improvement team has been working on this issue for several months. The results of this work will be completed shortly.

6.3.2 Funding

The Current Funding Process

The current federal funding process is highly restrictive and precludes the most efficient use of government funds at the site. For example, capital and expense funds cannot be mixed. Capital appropriations can take up to 10 years to work their way through the system. Congress appropriates funds on an annual basis with no guarantee that, once started, a project will be funded to completion. Funds are further restricted by internal DOE fences known as Budget and Reporting (B&R) codes, so that environmental restoration funds, for example, cannot be used for waste management or plutonium stabilization. Finally, once funds are appropriated for a fiscal year, it is extremely difficult to reprogram them or to obtain supplemental funding.

The Ideal Funding Process

Ideally, project funding would be guaranteed for the life of the project. The use of funds would be unrestricted, and the field would be able to determine when and how to obligate funds based on the flow of work and priorities. It would be recognized by the appropriators that a "peak and taper" funding profile is actually much more efficient over the life cycle of a project than a flat profile. To support ASAP, changes must be made in this area. Restrictions within DOE's control will be easiest to modify. For example, a single source of funds could be used for the whole project. DOE/HQ could make this happen as it did at Fernald, which is funded by only one B&R code, EW-20, and managed by one office, the office of the Deputy Assistant Secretary For Environmental Restoration.

Fiscal Years 1996 and 1997

The project will require funding at a greater level than that currently planned during the next several fiscal years. Budget for FY96 and FY97 budgets are already far advanced, and any changes in these years will be difficult.

During FY96 and FY97, the Site must focus on reducing operating costs and conducting tangible risk reduction activities in order to build trust and credibility with decision makers in DOE Headquarters and Congress. This credibility is essential to achieving extra funding in the first several years of the project. During FY96 and the FY97 budget preparation cycle, the Site must implement as many of the ASAP objectives as possible within the constraints of the budget appropriation.

6.3.3 Ideal Workforce Size, Skills Mix, and Motivation

It is likely that if a contractor came to an abandoned Rocky Flats today and could hire a workforce of his/her choice, the skills mix would be different from that found at the Site today. It would probably resemble a construction site more than an operating site. On a construction site, the workforce is normally built from the bottom up, maximizing the percentage of hourly workers actually performing work and keeping overhead to a minimum. Workers would be hired and laid off from the Union Hall as needs change. Only those workers who are already trained in their jobs would be hired, and the cost of maintaining qualifications would not normally be borne by the contractor. Infrastructure would be minimized, and as much work as possible would be contracted out. A solid, fair collective bargaining agreement would be put in place that protects both workers ' and contractor rights and minimizes unproductive work rules. The entire workforce, hourly and salaried, would participate in an incentive program designed to reward everyone who contributes to the success of the team. A labor plan would be in place that predicts, as much as possible, how the workforce size would peak and then decline until project completion. When the project is completed, workers would be laid off or reassigned to the next project at a different location. This arrangement would allow workers to look to the future and line up new work when the project ends. The end of the project is not a sudden surprise but a goal everyone works toward.

Significant funding will be required for the life of the project to ensure compliance with the provisions of the Workforce Restructuring Plan (Section 3161 [Department of Energy Defense Nuclear Facilities Workforce Restructuring Plan] of the National Defense Authorization Act of Fiscal Year 1993.) Reducing the Site workforce from over 5,000 workers to 350 (Exhibit 6.7) or fewer workers would incur Section 3161 costs averaging $30,000 per individual. This totals about $135 million.

For ASAP to succeed, the Site workforce, both hourly and salaried, must be engaged in a manner that maximizes employee contributions to success. The ASAP involves a major change in the way work at the Site is conducted. The Site must rapidly change from an ongoing operations mentality to a closure project mentality and streamline the way it does business. An approach will be developed and implemented to explain ASAP to the workforce to seek workforce input to the plans and then to rally the Site around the project as a new mission.

Exhibit 6.7 Workforce Profile

FY	1996	1997	1998	1999	2000	2001	2002	2003	2004
FTEs	4700	5800	6800	6700	6500	6400	5400	2600	350

6.3.4 Rocky Flats Cleanup Agreement

Negotiations have been under way for the past year to develop a cleanup agreement to replace the existing Interagency Agreement (IAG). The signatories to the new agreement will be the DOE, EPA, CDPHE, and possibly Kaiser-Hill. The objective is to craft an agreement that contains a number of new or revised features:

- Broader Scope
  - Cover more of site activities, e.g., SNM risk reduction
  - Incorporate changes that support accelerated actions
  - Integrate other regulatory issues and agreements, e.g., the Site Treatment Plan required by the Federal Facilities Compliance Act

- Focus on Action vs. Process
  - Designate single regulator responsible for all Site activities
  - Designate single points of contact both for Site and regulators
  - Reduce redundant process requirements of multiple environmental laws

- Streamlined Execution
  - Reduce number of documents and decisions, tighter process
  - Streamline reporting and monitoring and coordinate across statutes
  - Use binding arbitration for quick and final dispute resolution
  - Increase flexibility to adapt to changing conditions

- Stakeholder Participation Focused at Strategic Level

6.3.5 Integration of Other Related Activities

The ASAP assumes agreement with several major policy conditions, such as the continued on-site storage of plutonium and waste; it involves numerous other issues that are being addressed by various agencies, boards, regulatory entities, and ad hoc groups. Clearly, these ongoing and planned activities must be integrated and harmonized to successfully pursue the ASAP concept. A brief discussion of some of the major examples follows.

National Environmental Policy Act (NEPA)

NEPA is primarily intended to ensure that adequate consideration of environmental issues is given to significant federal actions and that the public has an opportunity to comment. At Rocky Flats, a Sitewide Environmental Impact Statement (SWEIS) prepared according to NEPA guidelines has been used since 1979 as the primary document to satisfy NEPA requirements. Activities that were within the bounding situation analyzed for the Site' s operations were then considered to have satisfied NEPA requirements. The change in Site mission from weapons production to environmental cleanup created a need to update the SWEIS. Scoping hearings have been held and draft alternatives were prepared for the ongoing SWEIS analysis. At this time the SWEIS anticipates activities similar to those described in the ASAP, although the ASAP' s compression of time frames is a potential issue. Activities such as major decommissioning of facilities were previously planned for occurring outside the 10-year analysis window for the SWEIS as it is currently defined. Aligning the SWEIS with the ASAP will require that the additional SWEIS alternatives address the accelerated actions and decommissioning schedules anticipated in ASAP.

Defense Nuclear Facilities Safety Board (DNFSB)

The DNFSB is a congressionally appointed technical review board. DNFSB Recommendations 94-1 and 94-3 deal specifically with the stabilization and storage of SNM at Rocky Flats, including uranium and plutonium liquids, metals, alloys, residues, and compounds. The ASAP has been designed to use the underlying themes of these two recommendations as the foundation for the nuclear materials path forward.

Recommendation 94-3 requires Rocky Flats to analyze options for safe, consolidated storage of plutonium on-site. The analysis, which will be completed by late November 1995, will consider four options:

- Upgrade Building 371;
- Build a new plutonium storage facility on-site;
- Build or modify a storage facility off the site; and
- Design and build an improved storage container that could withstand building collapse.

The DNFSB has been briefed on ASAP and the progress on implementing 94-1 and 94-3.

Low-Level and Low-Level Mixed Waste Storage/Disposal Facility

The Site has provided several briefings and public presentations on a proposed low-level and low-level mixed waste storage/disposal facility since July 1995 to provide information and to solicit input on project specifics such as design, location and potential alternatives. These briefings have included sessions with the Citizens Advisory Board and its Site-Wide Issues Subcommittee, the Rocky Flats Local Impacts Initiative, local elected officials and attendees of the Site's September public information meeting. Input during these briefings, along with applicable recommendations from the Site-Wide Issues Subcommittee's policy on waste management expected in late 1995, will be taken into account in the development of the proposed decision document for the facility. The proposed decision document is scheduled for public review and comment in January 1996.

Future Site Use Working Group

Following a year of research and deliberations, a group of local stakeholderS, the Future Site Use Working Group, adopted future site use recommendations for submittal to DOE in June 1995. The areas on which the group reached agreement include.

- Protecting health and safety of the public and workers;
- Cleaning up to average background level for Colorado, through research, technology and use of skilled work force;
- Retaining current buffer area primarily as managed open space;
- Retaining core as industrial area for cleanup and environmental technology;
- Considering future uses in the context of three phases of cleanup; and
- Protecting or acquiring property rights, including surface minerals, gas, and oil easements and water rights.

The ASAP concept is generally consistent with the recommendations of the Future Site Use Working Group. The recommendations report states that, "Areas in the industrial area not impacted by contamination and clean up activities may be considered for adjunct environmental technology activities."

DOE's Rocky Flats Field Office is currently preparing a Future Use Vision Document, which responds to and builds on the recommendations of the Future Site Use Working Group. A draft of the vision document will be prepared in November 1995, drawing heavily on the ASAP concept, and finalized by March 1996.

Citizen Advisory Board (CAB) Papers and Recommendations

The Rocky Flats Citizens Advisory Board is currently developing a variety of papers and recommendations on issues impacted by the ASAP concept. A plutonium paper, developed by the CAB's Plutonium and Special Nuclear Materials Committee, is designed to provide CAB members with a framework for obtaining information and making decisions and recommendations concerning the "big picture" issues of plutonium disposition. A waste management policy, which is being developed by the Site-Wide Issues Committee, is expected to be available in late 1995. Additionally, the Alternative Use Planning Committee has developed a recommendation for DOE on mortgage reduction. This timely input, as well as ongoing work with the CAB, will play an important role in the development of a credible and acceptable ASAP preferred alternative.

6.3.6 Contracting Incentives

The "First Look" approach suggests a different fee structure, more in line with commercial construction. For example, the contractor could be paid on progress, say at 30%, 60%, 90%, and completion. The base fee could be paid for project delivery within +/- 10% of the baseline cost and/or schedule. If the final project cost is at least 10% below the agreed-upon baseline cost, the fee could be increased to base fee plus 20% as a positive incentive. If the final project cost comes in more than 10% above the baseline, the fee could be reduced to the baseline fee minus 20%. Similar incentives for early and late finish could be included.

6.4 STAKEHOLDER INFORMATION AND INVOLVEMENT

6.4.1 Overview

Effective public involvement will play a definitive role in the success of ASAP. It is clear stakeholders, both internal and external, must be involved in the process at the inception of this initiative and throughout its implementation.

6.4.2 Objectives

This ASAP concept represents a variety of major activities to be conducted over an eight-year period and proposes to deliver, at the end of that period, a safe and stable site that looks and functions vastly differently from the current site. The concept essentially treats closure of the site as a comprehensive project, with a transformed site in 2003 as its deliverable. One essential component to the success of this project is political and institutional alignment to ensure that adequate resources are provided over the life of the project and that barriers are removed to allow this accomplishment.

Stakeholder buy-in will be a necessary element of political and institutional alignment. Therefore, this plan is designed to meet the following objectives:

- Involve interested stakeholders early in the process of developing the interim end state concept to determine the broad desirability of the concept and its key elements.

- Following general agreement on the overall concept, involve interested stakeholders in determining the concept's key elements, exploring and analyzing options and defining an end product that is acceptable and consistent with community plans for the site.

- Inform and provide opportunities for involvement to the broader public.

- In partnership with stakeholders, develop a project plan that has the community support necessary for funding decisions.

6.4.3 Key Policy Assumptions

Achieving stakeholder agreement and support for the ASAP concept will require agreement with several key policy assumptions concerning on-site storage of plutonium and waste, site regulation and cleanup, and the retention of buildings for future reuse. Discussion of some policy assumptions has already begun within the stakeholder community. Thoughtful and informed consideration of all policy assumptions will need to take place over the next few months to support an early 1996 decision regarding whether to move forward with implementation of ASAP.

6.4.4 Decision-Making Framework and Timeline

ASAP seeks to involve stakeholders in the project in its conceptualization. The site is asking stakeholders to join with it in pursuing an accelerated safe interim state. Once the concept is agreed upon, stakeholders will continue to be involved in the design and implementation of specific activities.

Stakeholder involvement will comprise two general stages — Stage I (October 1995 - January 1996) will address the conceptual "what" questions; Stage II (early 1996 onward) will address the "how" questions. The following guiding principles must be understood by the site and its stakeholders at the onset of public involvement in this project.

- The ASAP concept is a work in progress.
- Stakeholder agreement on the broad desirability of the concept and its key elements will require additional information.
- Stakeholder agreement on the concept (Stage I) does not presume agreement on the specifics (Stage II).
- The ASAP will lead to an interim end state that preserves a number of options for the final end state.

The ability to move forward with the project will depend largely upon the site's ability to secure a funding commitment for the duration of the eight-year effort. Because planning for the FY97 and FY98 budget priorities is occurring in January 1996, the site needs general agreement from stakeholders and DOE/HQ regarding the broad desirability of the concept within the next few months if it is to move forward with the project.

Assuming Stage I culminates (early 1996) in a decision to move forward with the project, Stage II will involve achieving a consensus on the details of the preferred alternative, e.g., achieving safe plutonium storage; waste storage; building deactivation, decontamination, decommissioning and, where appropriate, demolition; environmental cleanup; and elimination of unnecessary support infrastructure. Stakeholder involvement in specific project decisions and plans will occur throughout the life of the project.

6.4.5 Stakeholder Involvement Strategies

Because of the broad impact of the ASAP concept, a wide variety of external stakeholders will be involved in its development and implementation. As described below, the involvement strategies will vary among groups due to differing levels of interest and differing areas of influence. Several information and involvement tools and opportunities, however, will be available to all stakeholders. These include public meetings, fact sheets, the draft ASAP feasibility analysis, supporting technical documents, one-on-one briefings upon request, speakers bureau presentations, site tours and a database to capture and track stakeholder comments and concerns for response by the site. Pending additional funding for Stage II of the project, information on ASAP could also be made available through a short video program, an exhibit for display in public locations, an interactive multi-media presentation accessible via computer, and a World Wide Web Home Page.

Between now and January 1996, stakeholder involvement will primarily comprise the following activities:

- Discussions about the concept with key stakeholders, including elected officials, citizens and interest groups, and regulators.
- Discussion and recommendation development by committees and boards of existing citizens groups with public and employee representation.
- Stakeholder participation with specific task teams to further examine options and refine the concept and any associated plans.
- Participation in Rocky Flats Stakeholder Summit II, tentatively scheduled for January 1996, to set priorities for the site.

Stage II public information and involvement activities will be further defined during Stage I based on stakeholder input regarding level of interest in Stage II implementation.

DOE Headquarters

DOE Headquarters will play a major role in the funding and oversight of the ASAP concept. In addition, Headquarters-driven DOE orders, policies, standards and requirements that affect a number of the project areas will have to be taken into consideration throughout Stage II development of specific project plans. In some cases, orders, policies, standards, and requirements may need to be waived, modified or eliminated where reasonable to accommodate site-specific activities in support of concept implementation.

Employees See Section 6.3.3

State Elected Officials

State elected officials, primarily the governor, the lieutenant governor, and the state's congressional representatives, will play a critical role in the site's efforts to obtain support and funding for implementation of the ASAP concept. Buy-in from this stakeholder group is essential to secure the level of funding needed to accomplish the site stabilization and cleanup activities envisioned over the next eight years.

The site has held preliminary discussions with elected officials and staff and will continue to do so as appropriate to provide officials with the types and levels of information needed for input and decisions about the concept. Staff will be invited to participate in concept development and implementation on behalf of the elected officials.

Local Elected Officials

Local elected officials are keenly interested in any site activities and operations that could potentially impact the health, safety, and quality of life of the communities they represent. Therefore, early and frequent contact with city and county officials and their staffs will be offered to address questions and to solicit input concerning the ASAP concept and its implementation.

The Site Communications staff will work with neighboring cities and counties to determine how each would prefer to be informed and involved and how often.

Public Interest and Citizens Groups

Public interest and citizens groups will have a very active role in the ASAP. Members and staff of the Citizens Advisory Board and the Rocky Flats Local Impacts Initiative have already begun to participate in the development of ASAP, and these stakeholders, as well as others from groups such as the Rocky Flats Cleanup Commission and Environmental Information Network, will be invited and encouraged to join with the various task teams in development of the concept over the next few months. Additionally, recommendations and guidance offered by the Citizens Advisory Board and the Rocky Flats Local Impacts Initiative will help in the development of a publicly acceptable ASAP vision for the Site.

General Public

The general public, for the purposes of this plan, is defined as citizens who may have an interest in receiving information about the site but who do not want to participate actively in site decisions. A wide variety of information resources will be available to the general public.

Regulators See Section 6.3.4

News Media

Because of their daily access to hundreds of thousands of Denver area citizens, the news media can be instrumental in providing information to the general public about the interim end state concept. Some local news coverage has already resulted from public presentations of the initial concept, and more coverage will be solicited as the concept develops. Editorial board briefings, interviews, site tours, and news releases will be offered to local and national news media as a means of publicizing plans, ideas, and decisions concerning the interim end state project. During Stage II of the project, news media will be invited to witness and to photograph and videotape landmark events, such as the demolition of excess buildings. The site will also maintain photographs and videotapes of significant events to provide to news media as needed.

Defense Nuclear Facilities Safety Board See Section 6.3.5