

Initial PEP II Radioactive Waste Disposal Estimate

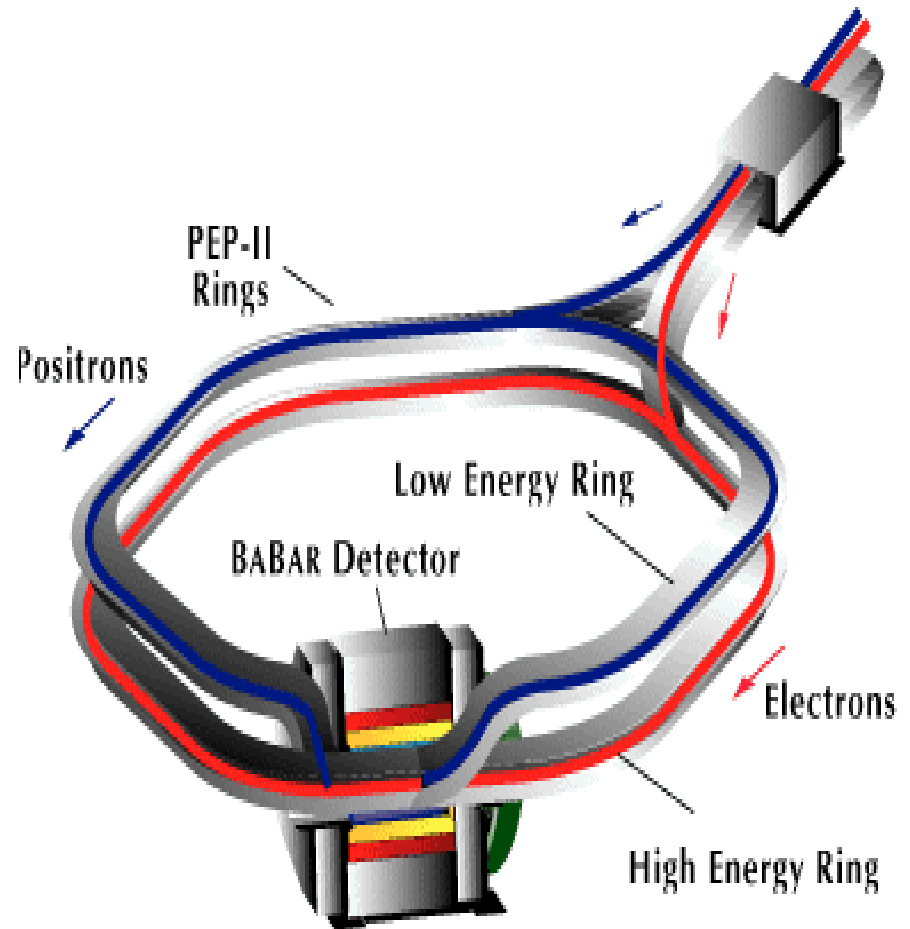
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PEP II Decommissioning and Disposal Plan

- FY09
 - Minimally operating state
- FY10- FY15
 - Component item incorporation into current and future projects
 - PEP II site sampling analysis plan
 - Complete site and component sampling and characterization
 - Official request for proposals for D & D
- FY15
 - Award D&D contracts
 - Waste processing and disposal begins

PEP II DIMENSIONS

- **Ring**
 - 7250 feet length
 - 12 feet width
 - 12 feet height
- **Injector lines**
 - 1100 feet length
 - 12 feet width
 - 12 feet height



PEPII DIMENSIONS II

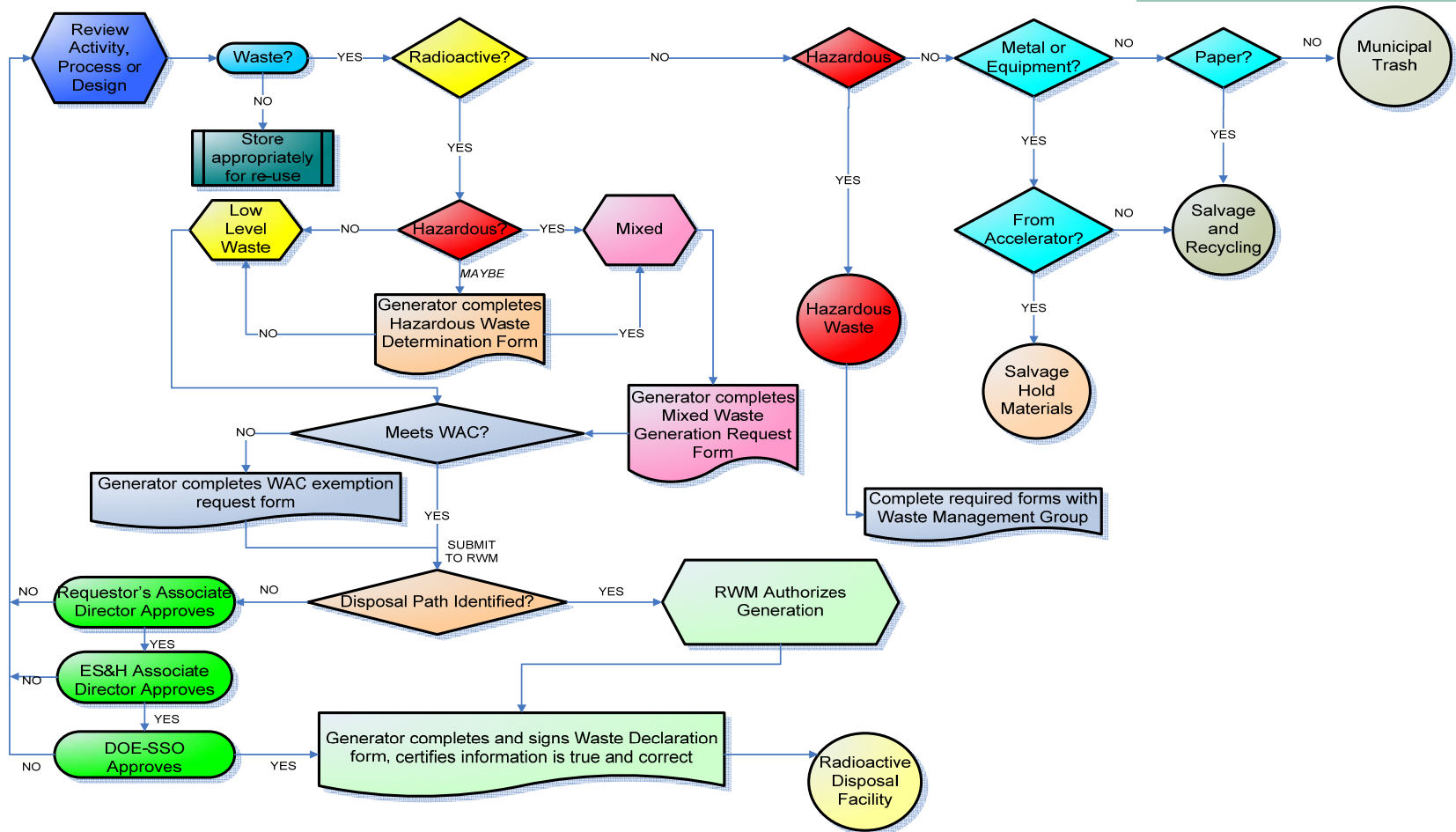
■ Potentially activated concrete and soil areas

Area Location	Length (ft)	Width (ft)	Depth (ft)	Sides
IR 2 Area (1)	50	10	2	4
IR 2 Area (2)	50	10	2	4
IR 4 Collimator	50	10	2	4
IR 6 Collimator	50	10	2	4
IR 8 LER Dump	100	10	6	4
IR 10 HER Dump	100	10	6	4
IR 12 Collimator	50	10	2	4

ASSUMPTIONS

- D&D will meet EPA and Stanford University requirements
- D&D will follow DOE guidelines
- Conducted in accordance with current SLAC protocols
- Decommissioning Contractor will support waste packaging and loading operations

Radioactive Waste Paper Flow/Authorization



REQUIREMENTS

■ Pre – Decommissioning

- Approved Sampling Analysis Plan (SAP), characterization, release criteria, and clean up levels.
- MSDS or analytical results for all radioactive painted items to prove paint is non-hazardous
- Tunnel concrete and soil from ceiling, walls and floor are sampled and characterized according to the SAP.

REQUIREMENTS II

■ Decommission

- Radiological characterization of waste beam line components and supports is performed as the items are removed, prior to packaging.
- All mixed wastes must be shipped within 90-days of generation.
- All personnel performing packaging and shipping functions shall possess appropriate Certified DOT training.

REQUIREMENTS III

■ Post Decommission

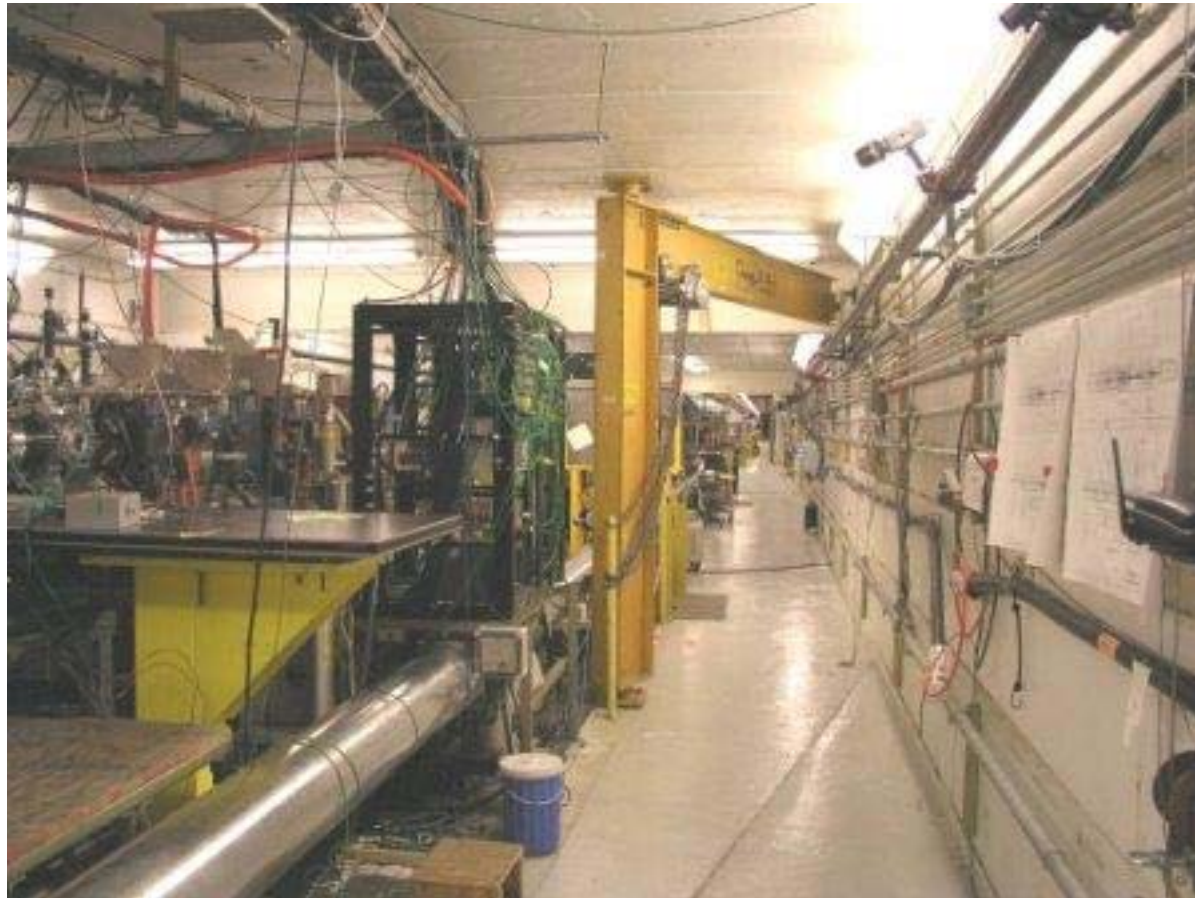
- Clean up levels verified and documented.
- Continue shipping mixed wastes within 90-days of generation.
- Ship radioactive waste within one year of generation.
- All personnel performing packaging and shipping functions shall possess appropriate Certified DOT training.

Radioactive Waste Volume

■ Determination Basis

- FFTB preservation model
 - Soil expansion ratio
 - Twice the volume of components than at FFTB (site specific knowledge)
 - Re-use and salvage hold items also in 2X proportionality

EQUIPMENT DENSITY FFTB



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EQUIPMENT DENSITY PEP II



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FFTB EXPERIENCE - CABLES



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PROPORTIONAL ESTIMATES

■ EQUIPMENT VOLUME

- Low Level Waste (components/support structure)
 - 103,675 cubic feet
- Low Level Mixed Waste
 - 8,967 cubic feet

MORATORIUM & SUSPENSION METALS

■ EXCLUDED

- Status change may affect volume of materials handled as waste
- Affects future storage management decisions
 - Limited on site storage locations

PROPORTIONAL ESTIMATES

■ CONCRETE & SOIL VOLUME

- Low Level Waste (areas identified on slide 4)
 - 136,000 cubic feet

Area Location	Length (ft)	Width (ft)	Depth (ft)	Sides
IR 2 Area (1)	50	10	2	4
IR 2 Area (2)	50	10	2	4
IR 4 Collimator	50	10	2	4
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FFTB SUCCESS

- 17,874 cuft
- 92 Lift Liners
- 34 Truckloads
- 3 WEEKS



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PERSONNEL TIME

■ Determination Basis

- **FFTB personnel needs and LLNL legacy waste project personnel usage**
 - Process mixed waste out within 90-days of generation
 - Process radioactive waste as generated for 12 months
 - 100% personnel effort allocated to project.
 - Waste packaging and loading support provided by D&D contractor.
- **54,080 hrs of coordinators/professionals**
- **110,240 hrs of technicians**

LOGISTICS

- **Determination Basis**

- **15 yrs Experience**

- **Containers**

- Lift Liners (used at FFTB – soil/concrete)
 - Custom Wraps (currently using for oversize items)
 - Standard waste boxes (Type A – higher dose rate items)

- **Transport**

- Trucking

COSTS

■ **Determination Basis**

- Pricing calculation performed using FY07 dollars
- Personnel costs calculated using current contractor pricing quotes.
- Radioactive waste disposal costs calculated using current DOE contract pricing for disposal at EnergySolutions.
 - Current contracts expire soon and no new terms are known
- Container and transportation costs also calculated using current pricing quotes.

ESTIMATE EXCLUSIONS

- **Personnel, Costs, and time associated with:**
 - Site characterization as required by EPA, DOE D&D guidance
 - Dismantling, removal of components, demolition and excavation
 - Management of currently unidentified waste items without a path for disposal or requiring special handling, such as:
 - Lead encased sources
 - Reactive mixed wastes
 - Management of Hold Materials
 - Management of Hazardous Wastes

ESTIMATE TOTAL

ITEM	QUANTITY	COST
SHIPPING COORDINATOR	54,080 hrs	\$7.8 M
TECHNICIAN	110,240 hrs	\$10.6 M
LOW LEVEL WASTE DISPOSAL	239,675 ft ³	\$8.25 M *
MIXED WASTE DISPOSAL	8,967 ft ³	\$3.1 M*
TRANSPORTATION	530 trucks	\$ 4.24 M
PACKAGING	1010 units	\$ 2.2 M
TOTAL		\$ 36.19 M

ASTERISK ITEMS

- **Disposal costs could increase by a factor of 10 based on the following:**
 - waste characterization shows additional mixed waste volumes
 - Site characterization shows activation under greater area of tunnel
 - waste minimization efforts are not used

FUTHER EVALUATION

- Obtain cost estimates for Sampling analysis plan development.
- Obtain cost estimates for site sampling and characterization.
- Develop cost estimate for Hazardous Waste management based on results of site characterization.
- Develop cost estimate for storing Hold materials on site.