Table 2-12. Comparison of Alternative Waste Management Strategies

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
Preliminary capital cost (million $)	EWS[a]	$2	$169	$1,241	$174
	NDF[b]	$15	$112-619, plus cost of pretreatment.	$720-3,578, plus cost of pretreatment.	$160-658, plus cost of pretreatment.
	DBPW[c]	$0-Seepage basin discharge	$0-Seepage basin discharge	$0-Direct discharge $7.5-Evaporation[g]	$125-Moderator detritiation (4 reactors)[f] $0-Seepage basin discharge
Estimated 20-year operating cost (million $)	EWS	[d]	[d]	[d]	[d]
	NDF	$86, plus cost of cleanup and damages from accidents.	$51-258	$370-2,398	$73-273
	DBPW	$0	$0	$0-Direct discharge. $18-Evaporation (3 reactors)[g].	$124-Moderator detritiation (4 reactors)[f]. $0-Seepage basin discharge.
Closure/Retrieval	NDF	-	$19-31	Cost of retrieval, treatment, and disposal after storage.	$37-48 plus cost of treatment and disposal after storage.
Postclosure maintenance and monitoring (million $)	EWS	$51	$38	$37	$38
	NDF	Cost of waste management eventually required.	$27-81	-	$52-67
	DBPW	-	-	-	-
Total cost (million $)	All[e]	$154, plus cost of cleanup and damages from accidents and cost of waste management eventually required.	$428-1,184, plus cost of pretreatment[h].	$2,368-7,280, plus cost of pretreatment and cost of retrieval, treatment, and disposal after storage[h].	$545-1,496, plus cost of pretreatment and cost of treatment and disposal after storage[h].
Site dedication	EWS	Dedication of currently inactive sites required if groundwater constituents exceeded regulatory limits and sites could not be returned to public use.	Existing waste sites and contaminated areas that could not be returned to public use after a 100-year institutional period period would become dedicated sites.	No site dedication (except outfall delta at TNX) is expected because waste and contaminated soil would be be removed to the extent practical.	Sites from which waste would be removed could be returned to public use after 100-year control period; sites from which waste would not be removed would be

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TE

TC

Table 2-12. Comparison of Alternative Waste Management Strategies (continued)

TE

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
					dedicated for waste management purposes if they could not be returned to public use.
	NDF	Indefinite period of waste storage; site dedication would be required as long as wastes remained in the storage facility or if site were to become contaminated by accidental release.	Site dedication would require up to 400 acres, plus buffer zones around the facilities. These areas are 0.2 percent of total SRP natural area.	Site dedication not required. Sites used for storage would be returned to a natural condition or reclaimed for other nonrestricted uses.	Disposal facilities would be dedicated for waste management purposes. Up to 400 acres, plus buffer zones, would be required. Sites for the retrieval storage portion available for other use after wastes are removed to permanent facilities.
	DBPW	Seepage and containment basins would be dedicated as needed.	Same.	Site dedication not needed; seepage basins for discharge would eventually be eliminated under either *modification*. *Closure and* remedial actions, as required, would return these areas to public use after the 100-year control period.	Seepage and containment basins would be dedicated as needed.
Groundwater	EWS	Hazardous and radionuclide constituents might exceed applicable standards or guidelines in water-table aquifers at certain sites, but offsite groundwater quality would be protected.	Closure and groundwater remedial actions as required would reduce contaminant concentrations to acceptable standards. Groundwater drawdown effects would be localized and transitory. Observation of these effects would be performed. Observation of these effects would be performed.	Removal of hazardous and radioactive wastes from all sites, closure, and remedial actions as required would reduce contaminant concentrations to acceptable standards. Groundwater drawdown effects would be localized and transitory. Observation of these effects would be performed.	Removal of hazardous and radioactive wastes from selected sites, closure, and remedial actions as required would reduce contaminant concentrations to acceptable standards. Groundwater drawdown effects would be localized and transitory.

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Table 2-12. Comparison of Alternative Waste Management Strategies (continued)

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
	NDF	Wide range of short-term impacts possible.	New aboveground and belowground disposal facilities would be designed to meet applicable EPA or DOE standards or guidelines (essentially zero release or ALARA). No adverse groundwater effects expected.	Retrievable storage facilities would be designed with zero release or ALARA features to detect and contain spills and leaks. No adverse groundwater effects expected.	All new disposal and storage facilities would be designed for essentially zero or ALARA releases. No adverse groundwater effects expected.
	DBPW	Existing discharge to groundwater and effects would continue.	Same.	Either direct discharge to onsite streams or evaporation would eliminate added impact on groundwater.	Existing discharges to groundwater and effects would continue or, with detritiation, be reduced by about a factor of 2 on the average over the 26-year study period (1987-2012).
Surface water	EWS	Four Mile Creek expected to show elevated concentrations of nitrate and tritium.	Some improvement in surface-water quality as a result of closure and remedial actions.	Improvement in surface-water quality as a result of waste removal, closure, and remedial actions.	Same.
	NDF	Surface streams could be affected by accidental releases of stored wastes.	No significant impacts expected.	Same.	Same.
	DBPW	Existing surface water effects from groundwater outcrops at onsite streams would continue.	Same.	The direct discharge alternative would increase surface-water tritium concentrations due to loss of decay period; the evaporation alternative would decrease surface-water tritium concentrations.	Existing surface water effects from groundwater outcrops at onsite streams would continue.
Health effects	EWS	Adverse health effects are predicted to occur to a hypothetically maximally exposed individual onsite after a 100-year period of institutional control.	No significant increase in health effects with implementation of closure and groundwater remedial actions.	No significant increase in health effects, but occupational exposure would be high at all sites with waste removal closure and remedial actions.	No significant increase in health effects with waste removal at selected sites and closure and remedial actions.

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Table 2-12. Comparison of Alternative Waste Management Strategies (continued)

TE

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
	NDF	Health effects would result from accidental releases of hazardous chemicals or radionuclides from stored wastes. Level of risk has wide range.	The essentially zero or ALARA release design would prevent radionuclide and hazardous chemical health effects.	Same.	Same.
	DBPW	No significant health effects from continued discharge to seepage basins.	Same.	Health effects not expected to change significantly.	No significant health effects from continued discharge to seepage basins.
Aquatic ecology	EWS	Offsite ecosystems would not be significantly affected. Onsite ecosystems would continue to function with minor impacts.	Closure and groundwater remedial actions as required would reduce potential impacts.	Removal of wastes from all sites to secure disposal facilities and closure and groundwater remedial actions as required would reduce potential impacts.	Removal of wastes at selected sites, closure and remedial actions as required would reduce potential impacts.
	NDF	A range of short-term aquatic impacts possible under the accidental release scenarios.	No impacts expected.	No impacts expected.	No impacts expected.
	DBPW	Minor aquatic impacts would continue under continued discharge to seepage basins.	Same.	No impacts expected.	Minor aquatic impacts would continue under continued or reduced discharge to seepage basins.
Terrestrial ecology	EWS	Offsite terrestrial ecology would be protected. Onsite natural succession would continue. Open sites might cause some floral and faunal impacts.	Direct exposures to open waste sites and groundwater associated impacts would be eliminated as a result of closure and remedial action as required. Use of borrow pits would create minor short-term impacts.	Direct exposures and groundwater-associated impacts would be eliminated as a result of waste removal closure and remedial actions as required. Large backfill requirements would increase potential impacts at borrow pits.	Terrestrial impacts due to direct exposure to open waste sites and groundwater-associated impacts would be eliminated as a result of waste removal at selected sites and closure and remedial actions as required. Use of borrow pits for backfill in closure actions would create minor short-term impacts.

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Table 2-12. Comparison of Alternative Waste Management Strategies (continued)

TE

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
	NDF	A range of short-term terrestrial impacts possible assuming accidental releases of present and future wastes stored.	New belowground and aboveground disposal facilities would require clearing and development of land. No contaminant-related impacts expected.	Construction of retrievable storage sites would require clearing and development of land. No contaminant-related impacts expected.	Combination modifications would require clearing and development of land. No contaminant-related impacts expected, due to zero release or ALARA design features.
	DBPW	No significant impacts.	No significant impacts.	Minor impacts to terrestrial ecosystems could result from liquid releases to onsite streams through direct discharge.	No significant impacts.
Habitats/wetlands	EWS	Previously disturbed habitats would be impacted further. Some recovery of habitat could occur at inactive sites. Minor wetlands impacts from some sites could continue.	Short-term habitat disruption could occur at borrow pit areas. Some sites could require erosion control measures during closure.	Same.	Same.
	NDF	Accidental releases of hazardous chemicals and radionuclides could have short-term impacts on wetlands and habitat.	Loss of habitat of up to 400 acres, or 0.2 percent of total SRP natural area.	Same.	Same.
	DBPW	No significant impacts.	No significant impacts.	Increased liquid releases through direct discharge could have minor impacts on existing habitat and wetlands.	No significant impacts.
Endangered species	EWS	No impacts.	No impacts.	No impacts.	No impacts.

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Table 2-12. Comparison of Alternative Waste Management Strategies (continued)

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
	NDF	No impacts.	No impacts.	No impacts.	No impacts.
	DBPW	No impacts.	No impacts.	No impacts.	No impacts.
Archaeological and historic sites	EWS	No impacts.	No impacts expected from remedial and closure action.	Same.	Same.
	NDF	No impacts.	One candidate site would require additional archaeological survey.	Same.	Same.
	DBPW	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.
Socioeconomics	EWS	No impacts.	No impacts.	No impacts.	No impacts.
	NDF	No impacts.	No impacts.	No impacts.	No impacts.
	DBPW	No impacts.	No impacts.	No impacts.	No impacts.
Noise	EWS	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.
	NDF	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.
	DBPW	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.
Accidents/occupational risks	EWS	Waste transport disposal at unpermitted and storage sites includes risks of fires, spills, leaks, and exposure of onsite workers.	Accidents are related to transportation of backfill and capping materials for closure modifications. No wastes would be transported.	Waste removal and transport to retrievable storage sites by vehicle includes risks of fires, spills, leaks, and exposure of onsite workers. Significant worker exposures possible.	Waste removal and transport to storage and disposal sites by vehicle includes risks of fires, spills, leaks, and exposure of onsite workers.
	NDF	Waste transport to storage facilities includes risks of fires, spills, leaks, and exposure of onsite facility workers.	Accidents involving spills, leaks, and fires could occur during handling.	High-integrity containers, spill recovery, and other secure provisions would reduce impacts from accidents.	Same.

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Table 2-12. Comparison of Alternative Waste Management Strategies (continued) TE

Impact		No action	Dedication	Elimination	Combination (preferred alternative)
	DBPW	No significant occupational risks.	Same.	Same.	Same.

[a]EWS = existing waste sites.
[b]NDF = new disposal/storage facilities.
[c]DBPW = disassembly-basin purge water.
[d]No operating costs for existing waste sites; the only costs would be for maintenance and monitoring.
[e]All = ESW + NDF + DBPW.
[f]Life cycle costs for detritiation are $187 million (3 reactors for 20 years of operation/26 year study period).
[g]Life cycle costs for evaporation are $31 million (3 reactors for 20 years of operation).
[h]The higher cost range of the Combination strategy relative to the Dedication strategy is largely due to the moderator detritiation alternative for disassembly-basin purge water and to the removal and disposal of wastes at selected existing waste sites under the Combination strategy. TC