Footprint Reduction Scenarios

December 2008

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How this book is organized:

The first sheet behind each tab presents the site footprint reduction scenario and comparison with the base case. The second sheet(s) shows the analysis of the footprint reduction scenario using HQ subproject level data. Original information provided by the site is shown behind the "Site Submittal" coversheet. Footprint reduction scenarios were developed at Headquarters for sites marked with an asterisk above in the table of contents.

EM Footprint Reduction Scenarios

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Small Sites							
Brookhaven	Completion of EM work	$20	107	$54	266%	$31	• Accelerates decommissioning of the High Flux Beam Reactor (HFBR) by 9 years (from 2020 to 2011) • Savings from reduced surveillance and maintenance (S&M) for High Flux Beam Reactor (HFBR) and Brookhaven Graphic Research Reactor (BGRR) (EM is not required to pay for BGRR S&M as long as HFBR is not decontaminated and decommissioned) • Also reduces costs from base operations and grants
West Valley*	Completion of cleanup	$138	922	$49	35%	$15	• Accelerates completion of cleanup by 2 years (from 2018 to 2016) and eliminates three years of surveillance and maintenance costs • Only remaining activities at site are storage, and ultimately shipment, of high level waste canisters
Moab	Acceleration of site work	$218	785	$172	79%	$32	• Site closure accelerated by 9 years • Associated surveillance and maintenance costs are reduced
NTS	Completion of site cleanup	$107	507	$72	68%	$19	• Soil remediation accelerated by 4 years • Groundwater remediation accelerated by 1 year • Program management costs reduced
Large Sites							
Savannah River	Footprint reduction/D&D (Avoids cost to fully D&D five reactors)	$1,926	10,727	$3,150 -($1,720 w/o D&D efficiency)	164%	$965 ($113 w/o D&D efficiency)	• Accelerates decontamination, decommissioning and remediation of the C, D, M, P and R Areas (and reactors) by 7 years • This case also reflected in-situ decontamination and decommissioning (ISD) of five reactors • Includes efficiencies similar to recent experience at INL on similar nuclear facility and reactor decommissioning projects • Reduces site footprint 90% from 263 square miles to 31 square miles • Avoids the cost of full decontamination and decommissioning of five reactors
Oak Ridge (Total)	ORNL, Y-12 and ETTP Footprint Reductions	$934	6,225	$722	77%	$302	• Accelerates decontamination and decommissioning for the Oak Ridge National Laboratory Central Campus, the former uranium processing facility known as Y-12, and the East Tennessee Technology Park (ETTP)
Oak Ridge (ORNL)	ORNL Central Campus Footprint Reduction	$371	2,473	$375 ($322 w/o D&D efficiency)	101%	$164 ($120 w/o D&D efficiency)	• Brings 95 Office of Science Integrated Facility Disposition Project (IFDP) facilities into EM scope earlier and accelerates demolition of Central Campus facilities by 7 years • Includes a 10% workforce efficiency improvement on additional scope • Reduces infrastructure, liquid waste processing, and surveillance and maintenance costs
Oak Ridge (Y-12)	Y-12 Footprint Reduction	$316	2,105	$229 ($183 w/o D&D efficiency)	73%	$64 ($46 w/o D&D efficiency)	• Two of the highest risk Integrated Facility Disposition Project (IFDP) buildings at Y-12 (Alpha 5 and 9206) are added earlier to existing EM scope (Alpha 4) and demolition is accelerated by 7 years • Includes a 10% workforce efficiency improvement on additional scope • Reduces infrastructure and surveillance and maintenance costs
Oak Ridge (ETTP)	ETTP Footprint Reduction	$247	1,647	$118	48%	$54	• Accelerates demolition of the K-25 and K-27 gaseous diffusion process buildings and remaining support facilities by 2 years • Reduces base operations, safeguards and security, and surveillance and maintenance
Portsmouth	Site Acceleration	$274	733	$1,596	583%	$483	• Accelerates start of Process Building decontamination and decommissioning from 2012 to 2010 and reduces duration from 22 years to 10 years • Reduces associated surveillance and maintenance costs

EM Footprint Reduction Scenarios

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Idaho	Site-wide Footprint Reduction	$221	1,473	$287	130%	$76	• Accelerates deactivation and decommissioning • Assumes a continued attainment of cost performance indicator of 1.5 ($1.5 worth of work completed for $1) • Reduces footprint by 68% from 775 acres to 247 acres by 2017 • Supports achieving all transuranic waste Settlement Agreement requirements by 2018
Richland (Total)	River Corridor and PFP Footprint Reductions	$338	2,256	$1,054	311%	$688	• Richland business case consists of two distinct cases, one for the River Corridor and one for the Plutonium Finishing Plant (PFP)
Richland (River Corridor)	River Corridor	$131	876	$822	626%	$559	• Accelerates completion of the River Corridor Project by 4 years from FY19 to FY15 • River Corridor decontamination and decommissioning excludes 300 Area facilities (Office of Science is taking responsibility for them) • Reduces site footprint 67% from 586 square miles to 75 square miles
Richland (PFP)	PFP Footprint Reductions	$207	1,381	$232	112%	$129	• Accelerates demolition of the Plutonium Finishing Plant (PFP) and remaining support facilities by 4 years from FY19 to FY15 • Capitalizes on efficiencies of currently trained plutonium-qualified and cleared workforce
Total		**$4,176**	**$23,736**	**$7,156**	**171%**	**$2,611**	

* Worker-year calculations are half of other sites due to high non-labor costs (e.g. equipment or waste shipments)

BNL

Business Case Template --
Cost Information Input (Current Year $ ($000))

Dates Start/Finish	Scope Changes in ABS	2009 +	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037
ABBs Altered by Business Case:																															
Richland PBS RL-0041																															
ABB: Nuclear Fac D&D RC Wide Services																															
Base Case Progress		$0		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance		$99,500		$5,100	$5,500	$5,700	$13,374	$27,186	$18,580	$11,186	$7,290	$3,600	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress		$0		$0	$0	$0	$0	$0	$0	$0	$0	$0																			
Adjusted Base Case Maintenance		$99,500		$5,100	$5,500	$5,700	$13,374	$27,186	$18,580	$11,186	$7,290	$3,600																			
Business Case Progress		$0																													
Business Case Maintenance		$34,100		$5,100	$5,500	$5,700	$6,900	$6,900	$3,900	$0	$0	$0																			
Business - Adj. Base Progress			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance			$0	$0	$0	$0	($8,474)	($21,286)	($15,580)	($11,186)	($7,290)	($3,600)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
ABB: River Corridor Cleanup																															
Base Case Progress		$1,939,900		$161,900	$257,000	$285,000	$289,000	$263,000	$190,400	$133,100	$103,900	$44,500	$161,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance		$838,900		$112,500	$115,100	$117,900	$123,400	$122,400	$116,000	$99,500	$85,000	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress		$2,030,944		$165,016	$163,089	$268,308	$336,188	$318,930	$240,400	$176,190	$113,900	$44,500	$161,500																		
Adjusted Base Case Maintenance		$380,871		$44,260	$33,279	$42,562	$80,760	$98,000	$98,000	$85,000	$99,500	$13,900	$0																		
Business Case Progress		$1,236,763		$223,432	$240,911	$223,411	$202,816	$184,914	$164,099	$0	$0	$0	$0																		
Business Case Maintenance		$350,900		$52,500	$55,100	$57,900	$63,500	$66,900	$66,000	$0	$0	$0	$0																		
Business - Adj. Base Progress			$0	$43,413	$57,852	($34,897)	($133,[illegible]43)	($133,986)	($78,301)	($177,190)	($113,900)	($44,500)	($161,500)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance			$0	$8,250	$21,821	$15,218	$2,740	$0	$0	($38,000)	($25,000)	($15,000)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New ABB (300 Area Retained Facilities)																															
Business - Adj. Base Progress			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New ABB (KE Remediation)																															
Base Case Progress		$0		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance		$0		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress	ost for KE & KW; no indirects	$167,725		$23,571	$62,348	$43,461	$7,827	$20,500																							
Adjusted Base Case Maintenance	Est. Indirects	$48,028		$8,250	$21,821	$15,218	$6,740																								
Business Case Progress	RC indirects and MR	$298,060		$45,923	$69,343	$35,782	$65,613	$77,750	$13,649																						
Business Case Maintenance		$0																													
Business - Adj. Base Progress			$0	$22,352	$6,997	($7,999)	$47,785	$57,250	$13,649	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance			$0	($8,250)	($21,821)	($15,218)	($2,740)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New ABB (KW Remediation)																															
Base Case Progress		$0		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance		$0		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress		$0																													
Adjusted Base Case Maintenance		$0																													
Business Case Progress		$327,666								$895	$927	$887	$54,943	$67,250	$81,493	$89,023	$30,777	$1,035	$436												
Business Case Maintenance		$0																													
Business - Adj. Base Progress			$0	$0	$0	$0	$0	$0	$0	$895	$927	$887	$54,943	$67,250	$81,493	$89,023	$30,777	$1,035	$436	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Totals		**$2,670,360**		**$309,800**	**$378,200**	**$400,200**	**$428,774**	**$432,886**	**$314,880**	**$234,290**	**$148,190**	**$63,100**	**$161,500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Adjusted Base Case Totals		**$2,710,899**		**$282,160**	**$305,094**	**$306,280**	**$419,886**	**$432,886**	**$314,880**	**$234,290**	**$148,190**	**$63,100**	**$161,500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Business Case Totals		**$2,246,508**		**$327,955**	**$370,854**	**$323,883**	**$326,029**	**$334,564**	**$236,748**	**$895**	**$927**	**$887**	**$54,943**	**$67,250**	**$81,493**	**$89,023**	**$30,777**	**$1,035**	**$436**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Investment		$400,628		$65,785	$84,850									$67,250	$81,493	$89,023	$30,777	$1,035	$436												
Gain		$868,088				$42,596	$91,832	$98,022	$78,212	$223,395	$145,263	$62,213	$126,557																		

Base Case and Business Case

SITE SUBMITTAL

Brookhaven Site
BRNL-0041 "HFBR" Acceleration Business Case

Summary
Proposal to move HFBR D&D workscope forward from 2018 – 2020 to 2009 – 2011. Accelerating this work scope and performing it concurrently with BGRR D&D work will result in $9.3 million in cost savings in the form of increased efficiencies (lower demobilization/remobilization costs) and ecomonies of scale.

Baseline; Current Site Position: (FY 2008 thru FY 2025; $158,500K Life Cycle Cost)

- Continue O&M for BRNL-0030 (from $7M - $3M per annum)
- Continue BRNL-0100 for NY State Grant for regulatory support ($150K per annum)
- Complete BRNL-0040 Reactor D&D in FY 2010 ($43.8M)
- Complete Near Term scope of BRNL-0041 CCB removal & WLA remediation in FY 2009 ($9.9M)
- Complete Out Year Baseline scope for BRNL-0041 D&D in FY 2020 ($21M - $47.5M)
- Transfer all projects (BRNL-0030, -0040, -0041, -0100) to SC in FY 2021
- Assume EM Program Funding through FY 2025 (not in Brookhaven's Baseline)
    a. Includes 5 years of Site Min-Safe funding after all EM scope has completed per agreement with SC.

Acceleration Scenario: (FY 2008 thru FY 2012; $86,100K Life Cycle Cost)

- Maintain overall Baseline funding requirement in FY 2009 in support of current Site position
- Apply an additional $21.4M of Near Term funds and complete BRNL-0041 in FY 2011
    - FY 2009 $5M
    - FY 2010 $10.7M
    - FY 2011 $5.7M
- Establish a HFBR acceleration savings of $9.3M (Out year cost $30.7M vs accelerated cost of $21.4M)
- Complete full D&D of BRNL-0040 in FY 2010 as planned, and BRNL-0041 in FY 2011
- Transfer all current EM scope to SC in FY 2012. (13 years sooner)
- Total EM Site cost avoidance of $72M, including avoided site min-safe costs. (see backup for details)

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Brookhaven National Laboratory

Calculations for Investment, Savings, and ROI %

December 2008

Brookhaven Near-Term Completion:
- Accelerates demolition of the High Flux Beam Reactor (HFBR) by 9 years (from 2020 to 2011).
- Reduces base operations, surveillance and maintenance, and grants.

Base Case		$128	$30	$8	$7	$8	$7	$7	$6	$5	$5	$12	$21	$13	$0	$0
Business Case		$73	$35	$18	$13	$8	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$54	-$4	-$11	-$5	$0	$7	$7	$6	$5	$5	$12	$21	$13	$0	$0
	Reduced Costs for Surveillance & Maintenance	$44														
	Reduced Costs for State Grants	$1														
	Escalation Savings from Accelerated Scope	$9														
Investment	**Amount Business Case exceeds Base Case**	($20)	($4)	($11)	($5)											
Gain	**Amount the Business Case is lower than Base Case**	$75					$7	$7	$6	$5	$5	$12	$21	$13		
ROI	**Savings / Investment (%)**	266%														
Estimated Additional Man Years	**Investment for 2010-2015 divided by $150,000/worker**	107														
Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.044	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839
NPV	**Savings / Discount Factor**	$31	-$4	-$10	-$5	$0	$5	$5	$4	$4	$3	$8	$13	$8	$0	$0

Brookhaven National Laboratory
Development of Business Case

Case	PBS	PBS Name	Remaining Life Cycle Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
			Current Year Dollars ($K)												
Base Case	BRNL-0030	Soil and Water Remediation	$66,407	$7,015	$6,942	$6,784	$5,875	$5,809	$5,924	$4,935	$4,458	$4,288	$4,592	$4,183	$4,602
								Soil and Water Remediation out-year costs eliminated due to earlier D&D completion							
Business Case	BRNL-0030	Soil and Water Remediation	$27,616	$7,015	$6,942	$6,784	$5,875								
Delta			$38,791	$0	$0	$0	$0	$5,809	$5,924	$4,935	$4,458	$4,288	$4,592	$4,183	$4,602
Base Case	BRNL-0040	Brookhaven Graphite Research Reactor	$26,271	$22,466	$305	$312	$319	$327	$335	$343	$351	$360	$388	$377	$386
								BGRR out-year costs eliminated due to earlier D&D completion							
Business Case	BRNL-0040	Brookhaven Graphite Research Reactor	$23,404	$22,466	$305	$312	$319								
Delta			$2,867	$0	$0	$0	$0	$327	$335	$343	$351	$360	$388	$377	$386
Base Case	BRNL-0041	High Flux Beam Reactor	$33,211	$550	$217	$222	$228	$233	$283	$244	$250	$256	$5,917	$16,239	$7,572
								HFBR D&D accelerated and compressed							
Business Case	BRNL-0041	High Flux Beam Reactor	$21,651	$4,966	$10,754	$5,703	$228								
Delta			$11,560	-$4,416	-$10,537	-$5,481	$0	$233	$283	$244	$250	$256	$6,917	$19,239	$7,572
Base Case	BRNL-0100	New York State Grant	$1,800	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
								New York State Grant out-year costs eliminated due to earlier D&D completion							
Business Case	BRNL-0100	New York State Grant	$600	$150	$150	$150	$150								
Delta			$1,200	$0	$0	$0	$0	$150	$150	$150	$150	$150	$150	$150	$150
Base Case		Total	$127,686	$30,183	$7,614	$7,468	$7,572	$6,519	$6,692	$5,672	$5,269	$5,054	$12,047	$20,949	$12,710
Business Case		Total	$73,271	$34,599	$18,101	$12,949	$7,572	$0	$0	$0	$0	$0	$0	$0	$0
Delta			$54,415	-$4,416	-$10,537	-$5,401	$0	$6,519	$6,692	$5,672	$5,269	$5,054	$12,047	$20,949	$12,710

Brookhaven Sitewide Funding Comparison for the Completion of the HFBR Project (FY2012 vs. FY2025) with a ROI of $9.3 Million

Scenario A: HFBR completion in FY 2020

				AFP	Pres. Budget + Paybacks	Five Year Plan Forecast Budget Authority				Out Year Funding (beyond the Five Year Plan) to finish current EM Projects and transfer to SC														
		Actuals thru 2007	FY07 Carryover	2008	2009	2010	2011	2012	08-12	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	08-25	LLC
BRNL-0030	Soil and Water Remediation	259878	1008	6784	7015	6942	6784	6875	34400	5809	5924	4935	4458	4288	4592	4183	4602	3550	2435	2465	2580	2580	86801	347687
BRNL-0040	Brookhaven Graphite Research Reactor	63735	19361	2246	22468	305	312	319	25650	327	335	343	351	360	388	377	386	395	405	416	425	435	30593	113689
BRNL-0041	High Flux Beam Reactor	18553	5757	3658	550	217	222	228	4875	233	283	244	258	256	6917	16239	7572	282	288	295	359	310	38403	62713
BRNL-0100	New York State Grant	3000	249	150	150	150	150	158	750	150	150	150	150	150	150	150	150	150	150	150	150	150	2700	5949
		345166	26375	12838	30183	7614	7468	7572	65675	6519	6692	5672	5209	5054	12047	20949	32710	4377	3278	3326	3514	3475	158497	530038
				$12,838,000	$30,183,000	$7,614,000	$7,468,000	$7,572,000	$65,675,000	$6,519,000	$6,692,000	$5,672,000	$5,209,000	$5,054,000	$12,047,000	$20,949,000	$12,718,000	$4,377,000	$3,278,000	$3,326,000	$3,514,000	$3,475,000	$158,497,000	$530,038,000

HFBR D&D Completion $30,728 (as recorded in current baseline)

Scenario B: HFBR completion in FY 2011

Funding Profile to finish Sitewide EM Projects in FY2022

		Actuals thru 2007	FY07 Carryover	2008	2009	2010	2011	2012	08-12	LLC	
BRNL-0030	Soil and Water Remediation	259878	1008	6784	7015	6942	6784	6875	34400	295286	
BRNL-0040	Brookhaven Graphite Research Reactor	63735	19361	2246	22468	385	312	319	25650	108746	
BRNL-0041	High Flux Beam Reactor	18553	5757	3658	4966	10754	5783	228	[redacted]	49619	
BRNL-0100	New York State Grant	3000	249	150	150	150	150	150	750	3999	
		345166	26375	12838	34599	18151	12949	7572	86109	457650	72388
				$12,838,000	$34,599,000	$18,151,000	$12,949,000	$7,572,000	$86,109,000	$457,650,000	$72,388,000

HFBR D&D Completion $21,423

PBS Cost Avoidance; FY2025 vs FY2012	
-30	52401
-40	4943
-41	13094
-100	1950
	72388

Analysis Summary	
HFBR cost to end in FY2025	38403
HFBR cost to end in FY2012	[redacted]
HFBR Funding Cost Avoidance	13094
Sitewide (all PBSs) cost to finish HFBR in FY2025	158497
Sitewide (all PBSs) cost to finish HFBR in FY2012	86109
Sitewide (all PBSs) Cost Avoidance	72388

Data Facts:

1 Figures do not include SC overhead dollars (SC is not a contributor to the above funding requirements)
2 BRNL-0030, 0040, 0041 EACs provided by BSA
3 BRNL-0030 currently in O&M (Min Safe)
4 BRNL-0040 & 0041 Baselines validated (ICE and IPR)
5 BRNL-0040 & 0041 at CD-3
6 BRNL-0030 scope (FY08 thru FY25) includes: 200K hours of BSA labor, $4.5M for space, fuel, elect, services, etc. Plus subcontractor expenses.

Project Mgmt
O&M, and monitoring of up to 16 GW treatment systems and approx 725 GW monitoring wells
Maintenance & monitoring of 3 capped landfills
Post cleanup monitoring of the Peconic River
Implement/monitor of institutional controls & surveillance of S&GW cleanup areas
Records management, regulator/stakeholder participation & communication

7 BRNL-0040 & 0041 out year S&M (Min Safe) tasks include facility environmental monitoring, structure integrity and safety, active systems and controls surveillance and maintenance.

Acceleration Assumptions: (Finish all Projects by FY 2011 and transfer to SC in FY 2012)

Scenario A: HFBR Completion in FY 2020

1 BRNL-0040 will complete D&D in FY 2010 as planned
2 BRNL-0041 will complete D&D in FY 2020 as planned
3 Xfer all EM scope to SC in FY 2021
4 EM liability ends in FY 2025

Scenario B: HFBR Completion in 2011

1 BRNL-0040 will complete D&D in FY 2020 as planned
2 BRNL-0041 D&D will start in FY 2009 & complete in FY 2011 (vs. FY 2020)
3 BRNL-0041 D&D will see a ROI of approx. $9.3M for the DOE ($30.7M - $21.4M)
4 Target Xfer of all current Brookhaven EM projects to SC in FY 2012 vs. FY 1021
5 Target EM liability ending in FY 2012 vs. FY 2025
6 Total cost avoidance for EM approx. $72M.

WV

West Valley Demonstration Project

Calculations for Investment, Savings, and ROI %

December 2008

West Valley Near-Term Completion:
- Accelerates completion of cleanup by 2 years (from 2018 to 2016) and eliminates three years of surveillance & maintenance costs
- Only remaining activities at site are storage,

Base Case		$1,686	$59	$75	$75	$75	$55	$77	$89	$87	$87	$28	$16	$9	$9	$9	$9	$9	$55	$11	$17	$12	$12	$12	$12	$13	$42	$43	$34	$13	$11	$15	$12	$12
Business Case		$1,037	$59	$97	$97	$96	$78	$191	$113	$2	$2	$11	$19	$9	$9	$9	$9	$9	$55	$11	$17	$12	$12	$12	$12	$13	$42	$43	$34	$13	$11	$15	$12	$12
Savings	**Base Case minus Business Case**	$49	$0	-$22	-$22	-$23	-$23	-$24	-$24	$85	$85	$17	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9	$0	$0	$0	$9	$0	$0	$0	$0	$0
	Reduced Costs for Surveillance & Maintenance	$36																																
	Escalation Savings from Accelerated Scope	$13																																
Investment	**Amount Business Case exceeds Base Case**	($138)		($22)	($22)	($23)	($23)	($24)	($24)																									
Gain	**Amount tha Business Case is lower than Base Case**	$197								$85	$85	$17																						
ROI	**Savings / Investment (%)**	35%																																
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	922																																
Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2000**	4.45%	1.044	1.661	1.139	1.190	1.243	1.298	1.356	1.416	1.476	1.545	1.614	1.686	1.761	1.939																		
NPV	**Savings / Discount Factor**	$15	$0	-$20	-$20	-$19	-$19	-$18	-$18	$60	$59	$11	$6	$0	$0	$0																		

Case	Site	PBS	ABB	ABB NAME	Mission Category	Cost Type	Remaining Life Cycle Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Base Case	West Valley Demonstration Project	OH-WV-0040	318	Nuclear Facility D&D-West Valley	Facility D&D	Maintenance Costs	$147,456,800	$16,800,000	$16,052,000	$16,052,800	$16,052,800	$13,800,800	$13,300,800	$12,300,000	$11,900,800	$11,900,800	$11,900,000
															Three years of associated maintenance cost eliminated when completing D&D by 2015		
Business Case	West Valley Demonstration Project	OH-WV-0040	318	Nuclear Facility D&D-West Valley	Facility D&D	Maintenance Costs	$111,756,800	$16,800,000	$16,052,000	$16,052,000	$16,052,000	$13,800,000	$13,300,000	$12,300,000	$0	$0	$0
Delta							$35,700,000	$0	$0	$0	$0	$0	$0	$0	$11,900,900	$11,900,900	$11,900,900
Base Case	West Valley Demonstration Project	OH-WV-0040	319	Nuclear Facility D&D-West Valley	Facility D&D	Progress Costs	$433,346,000	$6,191,000	$22,309,000	$22,059,800	$55,298,900	$39,329,900	$61,616,000	$74,903,000	$73,138,900	$73,299,800	$5,031,000
									Facility D&D costs from 2016 to 2018 accelerated and compressed into 2010 to 2015								
Business Case	West Valley Demonstration Project	OH-WV-0040	319	Nuclear Facility D&D-West Valley	Facility D&D	Progress Costs	$420,133,912	$6,191,000	$44,061,538	$44,312,154	$78,082,078	$62,617,571	$85,043,208	$98,275,165			
Delta							$13,212,088	$0	-$21,752,538	-$22,253,154	-$22,784,978	-$23,288,571	-$23,624,208	-$24,372,165	$73,138,000	$73,299,000	$5,031,900
Base Case	West Valley Demonstration Project	OH-WV-0013	320	RH TRU Waste	RH TRU Management	Progress Costs	$4,956,000	$1,852,000	$1,852,000	$1,956,900							
Business Case	West Valley Demonstration Project	OH-WV-0013	320	RH TRU Waste	RH TRU Waste Management & Disposition	Progress Costs	$4,956,000	$1,852,000	$1,852,000	$1,852,000							
Delta							$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	West Valley Demonstration Project	OH-WV-0013	321	CH TRU Waste	CH TRU Management	Progress Costs	$29,925,900	$6,975,900	$9,979,900	$9,373,000							
Business Case	West Valley Demonstration Project	OH-WV-0013	321	CH TRU Waste	CH TRU Management	Progress Costs	$29,925,000	$9,975,000	$9,975,000	$9,975,000	$0						
Delta							$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	West Valley Demonstration Project	OH-WV-0013	322	MLLW	MLLW Management	Progress Costs	$5,994,000	$1,998,996	$1,998,900	$1,996,000							
Business Case	West Valley Demonstration Project	OH-WV-0013	322	MLLW	MLLW Management	Progress Costs	$5,994,000	$1,998,000	$1,998,000	$1,998,000	$0	$0	$0	$0	$0	$0	$0
Delta							$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	West Valley Demonstration Project	OH-WV-0013	323	LLW	LLW Management	Progress Costs	$58,842,900	$19,914,000	$19,614,000	$18,614,000							
Business Case	West Valley Demonstration Project	OH-WV-0013	323	LLW	LLW Management	Progress Costs	$58,842,000	$19,614,000	$19,614,000	$19,614,000	$0	$0	$0	$0	$0	$0	$0
Delta							$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	West Valley Demonstration Project	OH-WV-0014	324	HLW Canister Disposition	Tank Waste Management	Progress Costs	$375,503,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,328,000
Business Case	West Valley Demonstration Project	OH-WV-0014	324	HLW Canister Disposition	Tank Waste Management	Progress Costs	$375,503,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$9,328,000
Delta							$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	West Valley Demonstration Project	OH-WV-0020	325	Safeguards & Security	Safeguards & Security	Progress Costs	$30,101,000	$1,400,000	$1,400,900	$1,400,000	$1,400,000	$1,849,000	$1,605,000	$1,843,000	$1,681,900	$1,719,900	$2,072,900
Business Case	West Valley Demonstration Project	OH-WV-0020	325	Safeguards & Security	Safeguards & Security	Progress Costs	$30,101,000	$1,400,000	$1,400,000	$1,400,000	$1,400,000	$1,849,000	$1,849,000	$1,843,000	$1,681,000	$1,719,000	$2,072,000
Delta							$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case						Total	$1,086,122,000	$50,000,000	$75,008,900	$74,750,000	$74,750,000	$54,978,000	$76,724,000	$88,646,000	$84,719,000	$86,918,000	$28,331,000
Business Case						Total	$1,067,210,012	$50,000,000	$90,752,538	$97,005,154	$97,034,978	$78,366,571	$100,848,208	$113,210,165	$1,681,000	$1,719,000	$11,400,000
Delta							$48,912,088	$0	-$21,752,538	-$22,253,154	-$22,784,978	-$23,288,571	-$23,624,208	-$24,372,165	$83,038,000	$85,199,000	$16,931,000

MAOB

Moab

Calculations for Investment, Savings, and ROI %

December 2008

Moab Acceleration Case:

- Site closure remediation accelerated by 9 years
- Associated surveillance & maintenance costs reduced
- EM long-term maintenance costs reduced

Base Case		$793,881	$23,734	$30,513	$31,307	$32,121	$32,956	$33,714	$34,489	$35,283	$36,094	$36,924	$37,774	$38,642	$39,531	$40,440	$41,371	$42,322	$43,295	$44,291	$45,310	$46,352	$47,418
Business Case		$621,751	$23,734	$30,513	$49,836	$51,076	$52,347	$53,551	$54,792	$56,043	$57,332	$58,650	$82,135	$71,751									
Savings	**Base Case minus Business Case**	$172,130	$0	$0	-$18,529	-$18,955	-$19,391	-$19,837	-$20,293	-$20,760	-$21,236	-$21,726	-$24,361	-$33,109	$39,531	$40,440	$41,371	$42,322	$43,295	$44,291	$45,310	$46,352	$47,418
	Reduced Costs for Surveillance and Maintenance	$83,986																					
	Escalation Savings from Accelerated Scope	$88,144																					
Investment	**Amount Business Case exceeds Base Case**	($218,200)			($18,529)	($18,955)	($19,391)	($19,837)	($20,293)	($20,760)	($21,238)	($21,726)	($24,361)	($33,109)									
Gain	**Amount Business Case is lower than Base Case**	$390,330													$39,531	$40,440	$41,371	$42,322	$43,295	$44,291	$45,310	$46,352	$47,418
ROI	**Savings / Investment (%)**	79%																					
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	785																					
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.000	1.044	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.814	1.688	1.761	1.839	1.921	2.006	2.096	2.189	2.286	2.388
NPV	**Savings / Discount Factor**	$31,722	$0	$0	-$16,984	-$16,635	-$16,293	-$15,958	-$15,630	-$15,308	-$14,993	-$14,685	-$15,785	-$20,513	$23,449	$22,966	$22,495	$22,032	$21,578	$21,135	$20,700	$20,274	$19,857

Moab

Development of Business Case

Current Year Dollars ($K)

Case	PBS	BB ID	ABB Name	Mission Category	Cost Type	Remaining Life Cycle Cost	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base	CBC-MOAB-0031	308	Crescent Jct Disposal Cell	Soil Remediation	Progress	$318,601,000	$2,431,000	$6,122,000	$4,042,000	$8,868,000	$15,142,000	$15,492,000	$15,847,000	$16,212,000	$16,584,000	$16,966,000	$17,367,000	$17,755,000	$16,163,000	$18,581,000	$19,009,000	$19,448,000	$18,893,000	$20,350,000	$20,819,000	$18,985,000	$18,517,000
																		Soil remediation costs from 2020 to 2028 compressed into 2010 to 2019 timeframe									
Business	CBC-MOAB-0031	308	Crescent Jct Disposal Cell	Soil Remediation	Progress	$287,345,796	$2,431,000	$6,122,000	$16,159,611	$21,395,293	$27,822,385	$28,464,834	$29,117,391	$29,787,810	$30,471,848	$31,173,269	$31,891,038	$32,623,319									
Delta						$31,255,204	$0	$0	-$12,118,611	-$12,395,293	-$12,680,385	-$12,972,834	-$13,270,391	-$13,575,616	-$13,887,848	-$14,207,269	-$14,534,038	-$14,868,319	$16,163,000	$19,581,000	$19,009,000	$19,448,000	$18,893,000	$20,350,000	$20,819,000	$18,985,000	$18,517,000
Base	CBC-MOAB-0031	308	Crescent Jct Disposal Cell	Soil Remediation	Maintenance	$14,118,000	$273,000	$462,000	$474,000	$486,000	$499,000	$511,000	$522,000	$534,000	$547,000	$559,000	$572,000	$585,000	$598,000	$612,000	$626,000	$640,000	$656,000	$670,000	$685,000	$1,071,000	$2,534,000
																		Associated soil remediation maintenance costs adjusted and reduced by closing site 9 years ahead of schedule									
Business	CBC-MOAB-0031	308	Crescent Jct Disposal Cell	Soil Remediation	Maintenance	$7,804,816	$273,000	$462,000	$474,000	$486,000	$499,000	$511,000	$522,000	$534,000	$547,000	$559,000	$872,768	$2,085,028									
Delta						$5,311,184	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	-$300,768	-$1,460,028	$598,000	$612,000	$626,000	$640,000	$656,000	$670,000	$685,000	$1,071,000	$2,534,000
Base	CBC-MOAB-0031	309	Non-Pile Remediation	Soil Remediation	Progress	$14,268,000	$356,000	$995,000	$1,178,000	$944,000	$439,000	$444,000	$453,000	$464,000	$474,000	$486,000	$497,000	$508,000	$520,000	$532,000	$544,000	$557,000	$570,000	$596,000	$596,000	$931,000	$2,204,000
																		Soil remediation costs from 2020 to 2028 compressed into 2018 to 2019 timeframe completion									
Business	CBC-MOAB-0031	309	Non-Pile Remediation	Soil Remediation	Progress	$12,777,943	$356,000	$995,000	$1,677,585	$1,455,875	$962,830	$978,855	$1,000,157	$1,023,741	$1,046,815	$1,071,785	$1,096,258	$1,121,041									
Delta						$1,490,057	$0	$0	-$499,585	-$511,875	-$522,830	-$534,855	-$547,157	-$559,741	-$572,815	-$585,785	-$599,258	-$613,041	$828,000	$532,000	$544,000	$557,000	$578,000	$582,000	$596,000	$931,000	$2,284,000
Base	CBC-MOAB-0031	218	RRM Excavation and Transport	Soil Remediation	Progress	$171,859,000	$1,000,000	$8,108,000	$11,409,000	$5,296,000	$7,369,000	$7,560,000	$7,733,000	$7,811,000	$8,063,000	$8,279,000	$8,470,000	$8,664,000	$8,864,000	$9,067,000	$9,276,000	$9,489,000	$9,708,000	$9,931,000	$18,159,000	$9,265,000	$5,132,000
																		Soil remediation costs from 2020 to 2028 compressed into 2010 to 2019 timeframe									
Business	CBC-MOAB-0031	310	RRM Excavation and Transport	Soil Remediation	Progress	$156,606,722	$1,000,000	$8,108,000	$17,321,809	$14,344,803	$13,876,926	$13,880,346	$14,206,844	$14,535,786	$14,870,158	$15,212,033	$15,562,493	$15,919,820									
Delta						$15,252,270	$0	$0	-$5,912,809	-$5,048,803	-$6,187,926	-$6,330,246	-$6,475,844	-$6,624,786	-$6,777,158	-$6,933,033	-$7,092,483	-$7,255,828	$8,864,000	$9,067,000	$9,276,000	$9,489,000	$9,708,000	$9,931,000	$19,159,000	$9,265,000	$5,132,000
Base	CBC-MOAB-0031	318	RRM Excavation and Transport	Soil Remediation	Maintenance	$223,861,000	$8,557,859	$7,233,000	$8,098,000	$8,513,000	$8,817,000	$9,515,000	$9,226,068	$8,438,068	$8,655,000	$8,877,068	$18,108,068	$18,338,000	$10,575,000	$18,818,000	$11,068,068	$11,323,009	$11,580,000	$11,849,000	$12,121,068	$14,649,000	$23,597,000
																		Associated soil remediation maintenance costs adjusted and eliminated by closing site 9 years ahead of schedule									
Business	CBC-MOAB-0031	310	RRM Excavation and Transport	Soil Remediation	Maintenance	$116,996,740	$8,557,000	$7,233,000	$8,098,000	$8,513,000	$8,817,000	$9,015,000	$9,226,000	$9,438,068	$9,655,000	$9,877,000	$11,937,862	$18,229,859									
Delta						$106,864,260	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	-$1,834,862	-$8,881,859	$10,575,000	$18,818,000	$11,068,000	$11,323,000	$11,580,000	$11,849,000	$12,121,000	$14,649,000	$23,597,000
Base	CBC-MOAB-0031	311	RRM Handling System/Infrastructure	Soil Remediation	Progress	$31,724,000	$13,628,068	$8,575,000	$5,365,000	$3,858,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business	CBC-MOAB-0031	211	RRM Handling System/Infrastructure	Soil Remediation	Progress	$31,724,000	$13,628,000	$8,575,000	$5,365,000	$3,858,000	$0	$0	$0	$0	$0	$0	$0	$0									
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Current Year Dollars ($K)

Case	PBS	BB ID	ABB Name	Mission Category	Cost Type	Remaining Life Cycle Cost	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base	CBC-MOAB-0031	312	Groundwater Remediation	Groundwater Remediation	Progress	$16,323,000	$372,000	$615,000	$636,000	$630,000	$565,000	$578,000	$592,000	$605,000	$619,000	$633,000	$648,000	$662,000	$678,000	$693,000	$709,000	$725,000	$742,000	$760,000	$777,000	$1,213,000	$2,671,000
																			EM long-term maintenance cost eliminated by closing site 9 years ahead of schedule								
Business	CBC-MOAB-0031	312	Groundwater Remediation	Groundwater Remediation	Progress	$7,155,000	$372,000	$615,000	$636,000	$630,000	$565,000	$578,000	$592,000	$605,000	$619,000	$633,000	$648,000	$662,000									
Delta						$9,168,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$678,000	$693,000	$709,000	$725,000	$742,000	$760,000	$777,000	$1,213,000	$2,671,000
Base	CBC-MOAB-0031	312	Groundwater Remediation	Groundwater Remediation	Maintenance	$3,139,000	$61,000	$103,000	$105,000	$108,000	$111,000	$114,000	$118,000	$118,000	$122,000	$124,000	$127,000	$130,000	$133,000	$136,000	$139,000	$142,000	$146,000	$149,000	$153,000	$238,000	$563,000
																			EM long-term maintenance cost eliminated by closing site 9 years ahead of schedule								
Business	CBC-MOAB-0031	312	Groundwater Remediation	Groundwater Remediation	Maintenance	$1,340,000	$61,000	$108,000	$105,000	$108,000	$111,000	$114,000	$118,000	$118,000	$122,000	$124,000	$127,000	$130,000									
Delta						$1,709,000	$6	$0	$0	$0	$0	$0	$0	$6	$0	$0	$0	$0	$133,000	$133,000	$139,000	$142,000	$148,000	$149,000	$153,000	$238,000	$563,000
Base Case		Total				$793,881,000	$23,734,000	$36,513,000	$31,307,000	$32,121,000	$32,956,000	$33,714,000	$34,489,000	$35,283,000	$36,094,000	$36,924,000	$37,774,000	$38,642,000	$39,531,000	$40,448,000	$41,371,000	$42,322,000	$43,296,000	$44,291,000	$45,310,000	$46,352,000	$47,418,000
Business Case		Total				$621,751,917	$23,734,000	$36,513,000	$49,836,004	$51,076,172	$52,347,141	$53,691,137	$54,782,391	$55,043,139	$57,391,622	$59,649,087	$53,135,457	$71,769,887	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta						$172,129,983	$0	$0	-$18,529,004	-$14,955,172	-$18,391,141	-$19,837,137	-$20,293,391	-$20,760,139	-$21,237,622	-$21,726,087	-$24,361,457	-$33,108,887	$39,531,000	$40,448,000	$41,371,000	$42,322,000	$42,295,000	$44,291,000	$45,310,000	$46,352,000	$47,415,000

NTS

Nevada Test Site

Calculations for Investment, Savings, and ROI %

December 2008

Nevada Test Site Acceleration Case:

- Soil remediation accelerated by 4 years
- Groundwater remediation accelerated 1 year
- Program management costs reduced

Base Case		$1,616,352	$102,761	$80,248	$83,104	$83,694	$83,394	$84,212	$84,630	$86,771	$87,247	$87,247	$78,381	$86,209	$80,033	$86,269	$67,177	$62,263	$63,717	$59,828	$80,273	$88,894
Business Case		$1,544,086	$102,806	$84,740	$97,858	$95,656	$97,961	$96,577	$95,914	$97,934	$76,207	$70,039	$67,532	$53,659	$53,064	$68,589	$72,366	$68,260	$74,788	$63,688	$72,915	$33,534
Savings	**Base Case minus Business Case**	$72,266	-$45	-$4,492	-$14,754	-$11,962	-$14,567	-$12,365	-$11,284	-$11,163	$11,040	$17,208	$10,849	$32,550	$26,969	$17,680	-$5,189	-$5,997	-$11,071	-$3,860	$7,358	$55,360
	Reduced Costs for Program Management	$39,961																				
	Escalation Savings from Accelerated Scope	$32,304																				
Investment	**Amount Business Case exceeds Base Case**	($106,748)	($45)	($4,492)	($14,754)	($11,962)	($14,567)	($12,365)	($11,284)	($11,163)							($5,189)	($5,997)	($11,071)	($3,860)		
Gain	**Amount Business Case is lower than Base Case**	$179,014									$11,040	$17,208	$10,849	$32,550	$26,969	$17,680					$7,358	$55,360
ROI	**Savings / Investment (%)**	68%																				
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	507																				
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.000	1.044	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839	1.921	2.006	2.096	2.189	2.286
NPV	**Savings / Discount Factor**	$19,448	-$45	-$4,301	-$13,524	-$10,498	-$12,239	-$9,947	-$8,690	-$8,231	$7,794	$11,631	$7,020	$20,167	$15,998	$10,041	-$2,822	-$3,122	-$5,518	-$1,842	$3,361	$24,214

Nevada Test Site

Development of Business Case

Current Year Dollars ($)

Case	PBS	ABB	ABB NAME	Mission Category	Cost Type	Remaining Life Cycle Cost	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Base	VL-NV-0030	452	EM Program Management	Site Infrastructure/ Support	Progress	$241,337,900	$15,799,900	$10,857,900	$10,289,000	$10,767,000	$11,615,996	$11,268,900	$11,527,900	$12,106,900	$12,053,000	$12,341,996	$12,624,000	$12,915,900	$13,584,996	$13,518,996	$13,827,600	$14,145,600	$14,470,000	$9,468,000	$9,281,600	$9,495,000
Reduction in near-term and out-year program management costs anticipated, along with elimination of costs in 2026 and 2027																										
Business	VL-NV-0030	452	EM Program Management	Site Infrastructure/Support/ Program Management	Progress	$139,885,414	$15,799,000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	$0	$0
	Delta					$102,451,586	$6	$1,527,900	$744,410	$1,003,931	$1,064,851	$2,782,213	$2,846,039	$3,225,377	$2,978,123	$3,081,957	$4,795,088	$7,755,612	$8,330,886	$8,881,457	$9,702,416	$9,944,799	$10,156,316	$5,055,102	$9,281,996	$9,495,996
Base	VL-NV-0030	453	Industrial CASs	Soil Remediation	Progress	$54,320,000	$21,391,000	$14,119,900	$8,726,000	$9,996,900	$4,394,000	$6	$8	$9	$9	$9	$9	$8	$9	$9	$9	$9	$9	$9	$8	$0
Soil Remediation costs distributed over greater time period to accommodate acceleration of other soil remediation activities																										
Business	VL-NV-0030	453	Industrial CASs	Soil Remediation	Progress	$77,898,014	$21,391,000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Delta					-$23,579,014	$0	$4,456,000	-$1,229,836	-$4,187,141	-$11,092,217	-$10,867,897	-$659,923	$6	$6	$8	$0	$0	$0	$6	$0	$0	$9	$0	$0	$9
Base	VL-NV-0030	454	Soils CASs	Soil Remediation	Progress	$161,252,900	$2,676,600	$1,495,600	$8,663,900	$5,975,600	$7,765,900	$9,611,900	$13,156,000	$12,664,900	$22,560,000	$27,600,600	$9,381,000	$15,785,900	$17,428,600	$23,749,600	$8,124,000	$0	$9	$9	$9	$0
Soil Remediation accelerated 4 years and compressed																										
Business	VL-NV-0030	454	Soils CASs	Soil Remediation	Progress	$142,546,204	$2,676,600	$3,711,000	$4,347,688	$12,680,792	$10,381,800	$9,325,823	$24,068,714	$28,918,954	$18,803,828	$9,466,869	$7,867,195	$0	$0	$0	$0	$2	$2	$0	$0	$0
	Delta					$36,705,796	$0	-$2,216,000	$1,815,312	-$6,785,792	-$2,616,600	-$314,823	-$16,912,714	-$27,252,954	$4,056,071	$16,143,431	$523,865	$15,705,996	$17,428,996	$23,749,000	$6,124,600	$0	$0	$9	$9	$0
Base	VL-NV-0030	455	UGTA CASs	Groundwater Remediation	Progress	$552,737,000	$21,281,000	$29,736,900	$32,871,600	$35,408,600	$35,700,000	$39,515,000	$34,989,900	$35,451,996	$26,489,600	$20,571,900	$30,030,900	$29,535,000	$20,426,000	$19,734,996	$17,264,900	$17,491,996	$17,917,900	$18,812,900	$23,151,000	$45,865,000
Groundwater Remediation accelerated and compressed																										
Business	VL-NV-0030	455	UGTA CASs	Groundwater Remediation	Progress	$598,005,851	$21,281,000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	$0
	Delta					-$45,268,851	$0	-$6,262,000	-$16,183,888	-$2,673,483	-$1,922,996	-$3,964,256	-$2,556,995	$12,864,855	$4,005,454	-$5,017,619	$5,529,879	$9,996,173	$1,216,548	-$14,750,217	-$21,815,898	-$16,941,501	-$21,228,636	-$6,615,021	-$1,923,248	$45,865,996
Base	VL-NV-0080	453	Operate LLW Disposal Facility	LLW Management	Progress	$507,916,600	$20,170,000	$21,489,900	$21,779,000	$23,291,900	$21,900,600	$21,740,000	$22,241,900	$22,752,600	$23,276,900	$23,811,000	$24,358,000	$24,916,900	$25,492,900	$20,878,000	$26,678,600	$27,291,600	$27,919,000	$28,561,000	$44,276,900	$29,890,000
Business	VL-NV-0080	453	Operate Waste Disposal Facility-Nevada	Low-Level Waste (LLW) Management & Disposition	Progress	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Delta					$0	$0	$6	$9	$6	$0	$0	$0	$9	$9	$6	$0	$0	$0	$0	$9	$0	$9	$6	$0	$0
Base	VL-NV-0100	457	Nevada Community and Regulatory Support	Stakeholder Support	Maintenance	$86,896,900	$2,544,900	$2,586,600	$2,558,000	$2,562,900	$2,620,900	$2,678,000	$2,737,000	$2,796,600	$2,860,000	$2,864,600	$2,968,000	$3,055,600	$3,123,000	$2,162,996	$3,264,600	$3,336,000	$3,411,000	$2,487,900	$3,565,600	$3,644,600
Business	VL-NV-0100	457	Nevada Community and Regulatory Support	Stakeholder Support	Maintenance	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Delta					$6	$6	$0	$0	$6	$9	$0	$0	$9	$0	$6	$0	$0	$0	$0	$0	$9	$0	$6	$0	$0
Base	VL-NV-0013	517	LLW Disposition	CH TRU Management	Progress	$18,900,900	$18,900,000	$0	$9	$8	$9	$9	$9	$0	$0	$0	$0	$6	$9	$0	$0	$9	$9	$9	$0	$0
Difference in 2008 due to rounding of estimate																										
Business	VL-NV-0013	517	TRU Waste Disposition	CH TRU Waste Management & Disposition	Progress	[illegible]	[illegible]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Delta					-$45,996	-$45,000	$6	$0	$6	$9	$9	$0	$9	$6	$0	$0	$0	$0	$6	$6	$0	$0	$6	$6	$0
Base Case			Total			$1,616,352,600	$102,781,900	$80,248,000	$86,104,996	$83,694,900	$83,394,000	$84,212,600	$84,630,600	$86,771,900	$87,247,000	$97,247,600	$76,381,996	$86,209,600	$86,033,600	$86,269,600	$67,177,900	$62,263,600	$63,717,000	$86,626,600	$89,273,000	$88,894,000
Business Case			Total			$1,544,086,383	$102,736,000	$84,740,000	$37,856,015	$85,666,484	$67,969,962	$66,578,764	$66,913,689	$87,653,722	$75,207,362	$70,038,836	$57,532,267	$53,668,214	$53,003,986	$66,586,769	$72,365,462	$66,289,792	$74,767,514	$83,867,919	$72,916,248	$88,894,000
	Delta					$72,265,717	-$45,996	-$4,492,996	-$14,754,616	-$11,962,484	-$14,566,962	-$12,364,704	-$11,283,593	-$11,182,722	$11,039,648	$17,208,370	$10,846,833	$32,548,700	$26,866,440	$17,680,248	-$5,188,482	-$5,996,702	-$11,070,514	-$3,859,613	$7,357,752	$55,380,000

SR

Savannah River Site

Calculations for Investment, Savings, and ROI %

D ber 2008

Savannah River Footprint Reduction:

- Accelerates completion of C, D, M, P and R areas (and reactors) by 7 years
- Reduces site footprint 90% from 263 square miles to 31 square miles
- Avoids the cost of fully D&D of five reactors ($100M per reactor)
- Includes savings from D&D efficiencies (CPI of 1.5), reducing required investment and increasing savings

Base Case		$8,689,562	$0	$1,743	$1,789	$1,848	$1,895	$1,910	$174,437	$288,873	$347,929	$420,795	$426,532	$425,798	$444,571	$322,041	$360,425	$465,199	$601,853	$756,240	$483,044	$303,779	$450,317	$812,483	$452,593	$418,762	$186,096	$171,518	$153,011	$138,287	$75,646
Business Case		$5,539,899	$120,360	$205,267	$261,083	$303,943	$311,658	$351,796	$358,876	$227,801	$185,457	$102,750	$94,984	$20,824	$63,658	$41,991	$47,321	$34,102	$227,659	$439,312	$541,731	$418,123	$367,881	$398,436	$478,087	$0	$0	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$3,149,663	-$120,360	-$203,524	-$259,294	-$302,097	-$309,763	-$349,886	-$184,438	$61,172	$242,472	$318,045	$331,548	$405,774	$381,513	$280,050	$313,104	$431,097	$374,294	$316,928	-$58,687	-$112,344	$82,436	$414,057	-$25,494	$418,762	$186,096	$171,518	$153,011	$138,287	$75,646
	Full reactor D&D avoidance	$500,000																													
	Savings from Efficiencies from Accelerated D&D Scope	$1,719,842																													
	Reduced Costs for Surveillance and Maintenance	$101,400																													
	Escalation Savings from Accelerated Scope	$828,821																													
Investment	**Amount Business Case outside Base Case**	($1,925,887)	($120,360)	($203,524)	($259,294)	($302,097)	($309,763)	($349,886)	($184,438)												($58,687)	($112,344)			($25,494)						
Gain	**Amount Business Case is lower than Base Case**	$6,075,750								$61,172	$242,472	$318,045	$331,548	$405,774	$381,513	$280,050	$313,104	$431,097	$374,294	$316,928			$82,436	$414,057		$418,762	$186,096	$171,518	$153,011	$138,287	$75,646
ROI	**Savings / Investment (%)**	164%																													
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	16.727																													
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.044	1.091	1.139	1.190	1.243	1.298	1.356	1.415	1.478	1.545	1.614	1.686	1.761	1.836	1.921	2.006	2.099	2.189	2.286	2.388	2.494	2.605	2.721	2.842	2.968	3.101	3.238	3.383	3.533
NPV	**Savings / Discount Factor**	$964,765	-$115,234	-$186,558	-$227,556	-$253,829	-$249,185	-$268,475	-$138,001	$43,188	$163,688	$205,814	$205,415	$240,895	$285,308	$152,271	$162,993	$214,956	$178,604	$144,769	-$25,669	-$47,046	$33,651	$158,939	-$9,369	$147,323	$62,661	$55,316	$47,248	$40,883	$21,411

Savannah River
Business Case

Description	Remaining Life Cycle Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2020	2029	2030	2031
1. Initial Business Case Current Dollars ($000)																								
Full Acceleration Business Case Developed by Savannah River	$7,259,341	$120,360	$205,267	$261,083	$303,943	$311,658	$351,796	$358,876	$316,599	$196,298	$195,680	$190,051	$117,276	$83,058	$143,770	$151,441	$140,617	$336,623	$550,763	$655,765	$532,780	$487,221	$520,521	$727,873
Converted entire profile to constant 2008 dollars																								
2. Convert Initial Business Case to Constant 2008 Dollars ($000)																								
Escalation Rate	2.30%																							
Escalation Factor		1.023	1.046529	1.070599	1.095223	1.120413	1.146183	1.172545	1.199513	1.227102	1.255325	1.284198	1.313734	1.34395	1.374861	1.406483	1.436832	1.471925	1.50578	1.540413	1.575842	1.612086	1.649164	1.687095
Full Acceleration Business Case Converted to Constant 2008 Dollars	$5,322,730	$117,654	$196,141	$243,866	$277,517	$276,163	$308,926	$306,086	$263,940	$159,969	$155,880	$147,992	$89,271	$61,801	$104,571	$107,674	$97,730	$228,696	$365,779	$425,707	$338,092	$302,230	$315,627	$431,436
Converted Current Year Dollars to Constant 2008 Dollars																								
3. Apply CPI of 1.5 to D&D Activities Constant 2008 Dollars ($000)																								
D&D Constant Dollars Based on ABB Data for PBS 40, Facility D&D	$3,553,370	$2,048	$2,039	$16,162	$16,398	$2,096	$50,215	$128,330	$166,582	$163,589	$237,675	$227,540	$148,012	$78,936	$74,706	$103,637	$196,043	$256,240	$356,616	$210,151	$84,659	$200,614	$414,008	$196,454
Estimated D&D savings due to CPI																								
		CPI Factor	1.5																					
Savings Due to D&D Efficiencies (Constant Dollars)	$1,184,457	$0	$0	$0	$0	$0	$0	$0	$74,029	$74,029	$74,029	$74,029	$74,029	$0	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$148,057
Converted Savings in Constant Year 2008 Dollars to Current Year Dollars																								
4. Re-escalate to Current Dollars ($000)																								
Savings Due to D&D Efficiencies (Current Dollars)	$1,719,642	$0	$0	$0	$0	$0	$0	$0	$88,798	$90,841	$92,930	$95,067	$97,254	$0	$101,779	$104,120	$106,515	$108,964	$111,471	$114,034	$116,657	$119,340	$122,085	$249,786
Reduced costs by estimated savings due to D&D efficiencies																								
5. Final Business Case with D&D Efficiency Current Dollars ($000)																								
Full Acceleration Business Case Developed by Savannah River with CPI of 1.5 applied to facility D&D activities per SRS ABB submittal	$5,539,699	$120,360	$205,267	$261,083	$303,943	$311,658	$351,796	$358,876	$227,801	$105,457	$102,750	$94,984	$20,024	$83,058	$41,991	$47,321	$34,102	$227,659	$439,312	$541,731	$416,123	$367,881	$368,436	$478,987

Savannah River Site

Calculations for Investment, Savings, and ROI %

D ber 2008

Savannah River Footprint Reduction:

- Accelerates completion of C, D, M, P and R areas (and reactors) by 7 years
- Reduces site footprint 90% from 263 square miles to 31 square miles
- Avoids the cost of fully D&D of five reactors ($100M per reactor)
- Includes savings from D&D efficiencies (CPI of 1.5), reducing required investment and increasing savings

Base Case		$8,689,562	$0	$1,743	$1,789	$1,846	$1,895	$1,910	$174,437	$288,973	$347,929	$420,795	$426,532	$425,788	$444,671	$322,041	$366,425	$465,199	$601,953	$756,240	$483,044	$303,779	$450,317	$812,493	$452,693	$418,702	$186,096	$171,518	$163,011	$138,287	$75,646
Business Case		$5,539,699	$120,360	$205,267	$281,083	$303,943	$311,658	$351,793	$358,878	$227,801	$185,457	$182,750	$94,984	$20,024	$83,058	$41,891	$47,321	$34,102	$227,659	$438,312	$541,731	$418,123	$367,881	$393,436	$478,087	$0	$0	$0	$0	$0	$0
Savings	Base Case minus Business Case	$3,149,863	-$120,360	-$203,524	-$259,294	-$302,097	-$309,763	-$349,886	-$184,439	$61,172	$242,472	$318,045	$331,548	$405,774	$361,513	$280,050	$313,104	$431,097	$374,294	$316,928	-$58,687	-$112,344	$82,438	$414,057	-$25,494	$418,702	$186,096	$171,518	$163,011	$138,287	$75,646
	Full reactor D&D avoidance	$500,000																													
	Savings from Efficiencies from Accelerated D&D Scope	$1,718,842																													
	Reduced Costs for Surveillance and Maintenance	$161,400																													
	Escalation Savings from Accelerated Scope	$828,621																													
Investment	Amount Business Case exceeds Base Case	($1,925,697)	($120,360)	($203,524)	($259,294)	($302,097)	($309,763)	($349,886)	($184,439)												($58,687)	($112,344)			($25,494)						
Gain	Amount Business Case is lower than Base Case	$5,075,750								$61,172	$242,472	$318,045	$331,548	$405,774	$361,513	$280,050	$313,104	$431,087	$374,294	$316,928			$82,438	$414,057		$418,762	$186,096	$171,518	$153,611	$138,287	$75,646
ROI	Savings / Investment (%)	164%																													
Estimated Additional Man-Years	Investment for 2010-2015 divided by $150,000/worker	18,727																													
Annual Discount Factors	Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008	4.45%	1.044	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839	1.921	2.008	2.096	2.189	2.286	2.388	2.494	2.865	2.721	2.842	2.968	3.101	3.238	3.383	3.533
NPV	Savings / Discount Factor	$964,785	-$115,234	-$186,558	-$227,558	-$253,829	-$249,185	-$269,475	-$138,001	$43,188	$183,888	$205,814	$205,415	$240,895	$205,388	$152,271	$162,893	$214,659	$178,604	$144,786	-$25,869	-$47,846	$33,051	$158,939	-$8,369	$147,323	$62,691	$55,318	$47,248	$46,883	$21,411

Savannah River

Business Case

Description	Remaining Life Cycle Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1. Initial Business Case Current Dollars ($000)																								
Full Acceleration Business Case Developed by Savannah River	$7,259,341	$120,360	$205,267	$261,083	$303,943	$311,658	$351,796	$358,876	$316,599	$196,298	$195,680	$190,051	$117,278	$83,058	$143,770	$151,441	$140,817	$336,623	$550,783	$655,765	$532,780	$487,221	$520,521	$727,873
Converted entire profile to constant 2008 dollars																								
2. Convert Initial Business Case to Constant 2008 Dollars ($000)																								
Escalation Rate	2.30%																							
Escalation Factor		1.023	1.046529	1.070599	1.095223	1.120413	1.146183	1.172545	1.199513	1.227102	1.255325	1.284198	1.313734	1.34395	1.374861	1.406483	1.438832	1.471925	1.50578	1.540413	1.575842	1.612086	1.649164	1.687095
Full Acceleration Business Case Converted to Constant 2008 Dollars	$5,322,730	$117,654	$196,141	$243,866	$277,517	$278,163	$306,928	$306,066	$263,940	$159,969	$155,880	$147,992	$89,271	$61,801	$104,571	$107,674	$97,730	$228,696	$365,779	$425,707	$338,082	$302,230	$315,627	$431,436
Converted Current Year Dollars to Constant 2008 Dollars																								
3. Apply CPI of 1.5 to D&D Activities Constant 2008 Dollars ($000)																								
D&D Constant Dollars Based on ABB Data for PBS 40, Facility D&D	$3,553,370	$2,048	$2,039	$16,162	$18,398	$2,096	$50,215	$128,330	$166,582	$183,589	$237,875	$227,540	$148,012	$78,936	$74,706	$103,637	$196,043	$258,240	$356,816	$210,151	$84,659	$200,814	$414,008	$196,454
Estimated D&D savings due to CPI																								
		CPI Factor	1.5																					
Savings Due to D&D Efficiencies (Constant Dollars)	$1,184,457	$0	$0	$0	$0	$0	$0	$0	$74,029	$74,029	$74,029	$74,029	$74,029	$0	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$74,029	$148,057
Converted Savings in Constant Year 2008 Dollars to Current Year Dollars																								
4. Re-escalate to Current Dollars ($000)																								
Savings Due to D&D Efficiencies (Current Dollars)	$1,719,842	$0	$0	$0	$0	$0	$0	$0	$88,798	$90,841	$92,930	$95,067	$97,254	$0	$101,779	$104,120	$106,515	$108,964	$111,471	$114,034	$116,657	$119,340	$122,085	$249,786
Reduced costs by estimated savings due to D&D efficiencies																								
5. Final Business Case with D&D Efficiency Current Dollars ($000)																								
Full Acceleration Business Case Developed by Savannah River with CPI of 1.5 applied to facility D&D activities per DOE/ABB submittal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SITE SUBMITTAL

Business Case

Implementing the Area Completion Strategy to Facilitate Risk and Cost Reductions at SRS

Department of Energy

June 2008

EXECUTIVE SUMMARY

A Savannah River (SR) Operations Office Business Case regarding environmental cleanup is discussed. Included is a discussion of the highly effective Area Completion (Scenario 1) Strategy that is being implemented to significantly reduce risk to human health and the environment and project cost. Also discussed is Scenario 2, an opportunity to expedite reduction of the SRS footprint between FY09 and FY15 by accelerating Scenario 1 (Area Completion) which will result in significant project cost avoidance and accelerated risk reduction.

Challenge

The SR validated baseline does not support the soil and groundwater cleanup schedule contained in the Federal Facility Agreement (FFA) and will significantly decelerate the cleanup progress and momentum achieved to date (358 of 515 waste units have been completed). Further:

- Ongoing site missions prevents environmental cleanup project from addressing the highest risk areas (e.g., F/H Tank Farms) until the outyears
- Environmental cleanup project needs to demonstrate near term results to ensure that resources and funding remain available
- Greatest opportunity to show near term progress is through Area Completion Strategy implementation
- Validated baseline constrains Area Completion funding which places active projects on standby, prevents the initiation of new work until FY2015, and prevents Federal Facility Agreement Area Completion enforceable milestones from being met

Background

Implementation of the Area Completion Strategy has enhanced the SR ability to meet regulatory commitments and achieve risk reduction.

- Met over 2,025 FFA milestones in a row since 1993
- Eliminated risk closest to the Savannah River at T-Area – the first Area Completion
- Achieved final cleanup at the Old Radioactive Waste Burial Ground – the highest priority SRS waste unit
- Implemented early actions to accelerate M-Area Completion (Second Area Completion)

However, baseline target funding stops all environmental cleanup progress.

Action/Result

This Business Case presents two scenarios to maintain, at a minimum (Scenario 1), and accelerate environmental cleanup progress (Scenario 2).

	Scenario 1 – Compliant Area Completion	Scenario 2 – Accelerated Area Completion for Footprint Reduction
Foot Print Reduction achieved by 2015	65%	90%
Area Completions achieved by 2015	4	6
Cost avoidance in lifecycle as compared to SR validated baseline ($8,180M for PBS 30)	$1,500M	$1,800M
Accelerates program completion as compared to SR validated baseline (2038)	7 years	7 years

Discussion

DOE-SR, EPA-Region 4 and SCDHEC entered into a Memorandum of Agreement (MOA) in July 2003 to support accelerated cleanup of the SRS. The primary goal of the MOA was to use an "Area Completion" approach to streamline the soil and groundwater cleanup approach (integrating facility decommissioning) and re-sequence the cleanup work that was yet to be undertaken. The Area Completion Strategy addresses entire industrial areas of the SRS – soils from contaminated waste units along with facilities that may have contaminated the surrounding soils – as a consolidated area and completion of each area will be documented in a Record of Decision that is issued for each industrial area. Implementation of the Area Completion Strategy was initiated in FY2003 with T-Area, and there are currently 4 (M, P, R, and D) additional areas underway.

Implementing the Area Completion Strategy resulted in significant project cost avoidance in FY07. Facility decommissioning and environmental cleanup work were sequenced and conducted in such a manner to maximize resource utilization and realize cost efficiencies. Integrated regulatory documentation was developed to expedite regulatory reviews and negotiations and eliminate rework and redundancy. Addressing an entire industrial area at a single time allows remedial decisions to be made earlier, with less conservatism and on a larger scale than when small parcels of contamination are addressed individually and other contamination areas remain to be addressed at some time in the future. In FY07, through Area Completion, nearly half of the annual regulatory milestones and regulatory documents were eliminated. Additionally, schedules were accelerated by 50%.

To further support the Area Completion Strategy, in FY08, DOE aligned D&D (associated with Area Completion) and soil and groundwater activities into a single project, PBS-0030. This consolidation allows DOE increased flexibility in baseline and funds management throughout the cycle, from budget and planning activities to execution of the scope.

Baseline

The current validated baseline, 2008 PEP, supports Area Completion Project (ACP) (PBS-30 [Soil and Water Remediation] and PBS-40 [Nuclear Facilities D&D]) completion by FY2038. The total cost of the 2008 PEP baseline is $8,180M. However, only severely limited funding is provided in the near term (FY2009 through FY2014) for ACP S&M activities. Execution of the 2008 PEP places active projects on standby, prevents the initiation of new work until FY2015, and prevents FFA enforceable milestones and RCRA Permit commitments from being met.

Two scenarios for implementation of the Area Completion Strategy are evaluated in this Business Case. The first scenario (Compliant Area Completion) supports attainment of enforceable regulatory milestones and commitments. The second scenario (Accelerated Area Completion for Footprint Reduction) examines the use of the Area Completion Strategy to achieve accelerated footprint reduction at SRS.

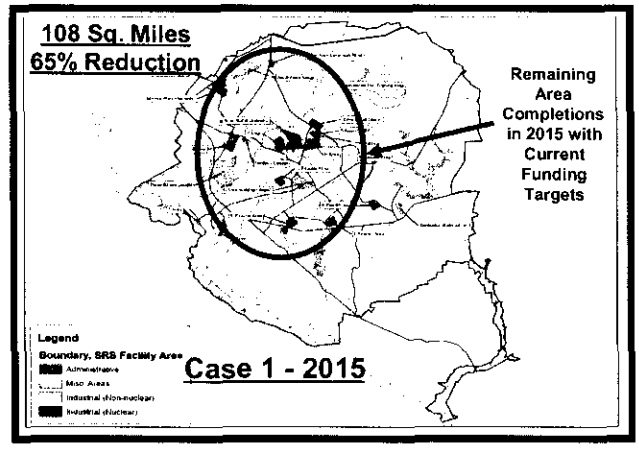
Scenario 1 - Compliant Area Completion

Scenario 1 is a proposal that meets all of the FFA and RCRA permit conditions. The starting point for the development of the cost estimate for this scenario was the 2008 PEP. The schedule for Areas C, D, M, P, and R were then adjusted to meet the required regulatory dates. The cost profile for this scenario is provided in Table A1. The total to-go lifecycle cost for PBS-30 in Scenario 1 is $7,534M.

Advantages:

- **Implementing the Area Completion Strategy enables the Department to meet regulatory milestones and commitments and avoids a likely dispute with the regulators (and possible fines and penalties for missed milestones and commitments) and avoids negatively impacting efforts with the regulators on tank closures, high level waste processing, and consolidation of special nuclear materials.** The State of South Carolina has a high value for the risk reduction efforts at SRS related to removing or rendering immobile the various waste streams (e.g. HLW, SNF, MOX) at SRS because they view these waste streams as having the potential to negatively impact the environment and surrounding communities. They place an equally high value on the Area Completion Strategy because it focuses on contaminants that either have a high potential for release or have been released to the environment. They view these potential and real releases as a high priority because they represent a current threat to the groundwater and surface water. Therefore, they have the highest probability to impact communities off-site in the near-term.

- **Implementation reduces the site footprint by an additional 50% over the baseline by FY2015.** In this scenario, significant progress is made in completing areas and the active portion of the site is reduced from the current 85% to 35%. This is accomplished by completing the remediation work in M, P, R, and D Areas.



- **Implementation of the Area Completion Strategy has demonstrated significant economic advantages.** Prior to FY2005, the remediation of areas at SRS was implemented on a waste unit by waste unit basis. This process of evaluating and remediating small waste sites within an area did not allow for economies of scale for characterization or cleanup. Also some practical remedial alternatives are precluded due to the limited nature of the evaluation. For example, at T-Area several waste units containing uranium contamination were grouped together and the remedial solution was consolidation of the waste from these units under an on-site cap. Implementation of the Area Completion Strategy at T-Area resulted in a cost avoidance of approximately $37M over the traditional approach. Similarly, $645M in cost avoidance could be realized through the remainder of the project.

- **Implementation reduces the risks to the remediation project by $400M to $800M**. The Area Completion Strategy allows for an integrated review of all potential sources in an area. This comprehensive look at an area enables a different suite of remedies to be evaluated in contrast to individual remedies for individual waste units. One of the larger risks within the project is the risk of not being able to close the hardened facilities in-situ. Continued work on the Area Completion Strategy reduces the probability of these types of risks as has been initially supported by the CAB and regulators.

The following assumptions were used in developing Scenario 1:

- D&D and soil and groundwater remediation scope will be sequenced in order to support the Area Completion Strategy as defined and agreed to by EPA and SCDHEC, through the 2003 Memorandum of Agreement and FFA Appendix E, "Long-Term Projections," for FY 2008.
- New groundwater remediation activities will be deferred until contaminant source control is achieved, consistent with the 2003 MOA and FY 2008 Appendix E.
- Hardened facilities (such as reactor buildings and separations facilities) will undergo in-situ decommissioning.
- The budget provided for FY2009 through FY2014 has been increased to perform Area Completion scope required to support regulatory requirements.
- Waste from D&D and cleanup activities within an industrial area may be left within the area if hardened facilities exist to protectively manage the waste.
- Operational activities will be completed or modified to allow Area Completion activities to proceed.
- Historical considerations will not impact Area Completion activities and schedules.
- C-Area Administrative facilities (705-C, 705-1C, 705-3C, 707-C) will not be required to be decommissioned for Area Completion.
- This plan does not include the costs to construct new facilities or perform major renovations to relocate people or services and assumes that facilities can be excessed to support the schedule.
- With the exception of SREL and SRNL designated facilities which have already been removed from the EM D&D scope, all other structures are decommissioned.
- No contractor management reserve (funded contingency) is included.

Benefits:

The benefits from Scenario 1 can be divided into 4 categories.

(1) Benefits gained from implementation of the Area Completion Strategy that could be lost if there is an extended suspension of work
(2) Cost avoidance associated with accelerating the Area Completion work
(3) Footprint reduction
(4) Minimizing overall project risks by continued implementation of the Area Completion Strategy

Category 1. Benefits Gained from Implementation of the Area Completion Strategy:
The Area Completion Strategy produced efficiencies when a change was made from addressing one small geographic area at a time to a large industrial area.

Comparison:

- Milestone Reductions – Reduced from 127 in FY04 to 63 in FY07
- Documents Reductions – Reduced from 1,449 in FY04 to 684 in FY07
- Staffing Reductions – Reduced from 745 in FY04 to 226 in FY07

Category 2. Cost Avoidance Associated with Accelerating the Area Completion Work
A comparison of FY08 PEP costs (2038 completion) vs. the Scenario 1 cost profile (2032 completion) indicate that the overall base line costs will be reduced by an estimated $645M. This cost avoidance is primarily due to reductions in fixed project costs due to the overall acceleration of the schedule for the remediation effort. Additionally, this effort will reduce the overall site lifecycle costs by an estimated $900 when the cost avoidance for S&M is included.

Table 1. Scenario 1 Cost

	Scenario 1 (Total $K)	Cumulative (Total $K)
FY09	89,210	
FY10	177,861	
FY11	156,444	
FY12	155,326	
FY13	157,746	
FY14	219,169	
FY15	265,602	1,221,358
FY16+	6,313,563	7,534,921
Total	7,534,921	

Category 3. Footprint Reduction for 2015
Scenario 1 provides sufficient funding to achieve a 65% footprint reduction by the year 2015.

Category 4. Minimizing Project Risks
The following project risks directly related to an extended remediation schedule were identified in PBS-SR-0030 Soils and Groundwater Project Risk Management Plan with respect to the baseline.

Risk	Description	Min Impact ($K)	Most Likely Impact ($K)	Max Impact ($K)
1	Minimal assessment and remedial actions of the Integrator Operable Units consistent with baseline	26,000	80,000	170,000
2	No additional waste units or groundwater plumes outside those previously identified	2,800	9,800	14,000
3	Regulators continue to allow Monitored Natural Attenuation and passive technologies as assumed in the baseline	2,000	60,000	160,000
4	Remedial action durations consistent with baseline assumptions	5,750	11,500	26,500
5	There are no delays in D&D project execution	25,000	30,000	60,000
6	In-situ decommissioning is acceptable as final End-Point for hardened facilities	400,000	500,000	800,000
7	D&D costs, including waste disposal, are consistent with baseline estimates	44,000	88,000	175,000
8	D&D Funding delays	50,000	100,000	200,000
	Totals	555,550	879,300	1,605,500

The above data indicates that the minimum impact that these risk pose is $555,550K, the most likely impact is $879,300K, and the maximum impact is $1,605,500K. The single largest risk in this list is related to an in-situ decommissioning end-point for the hardened facilities. The regulators are supporting the in-situ decommissioning end-point. However, delaying remediation due to insufficient funding jeopardizes the momentum attained for support of in-situ decommissioning due to:

- Strained regulatory relationships
- The possibility of regressing to the one waste unit at a time approach instead of a continuation of the Area Completion Strategy
- Loss of continuity with the current regulator and CAB decision makers

Overall, funding Scenario 1 is estimated to mitigate at least $400,000K to $800,000K in project risk.

Scenario 2 - Accelerated Area Completion for Footprint Reduction

Scenario 2 represents an effort to expedite the SRS footprint between FY2009 and FY2015 by accelerating Area Completion which will result in significant cost avoidance and accelerated risk reduction. An additional investment would be needed above the cost of Scenario 1 which would result in a significant dividend.

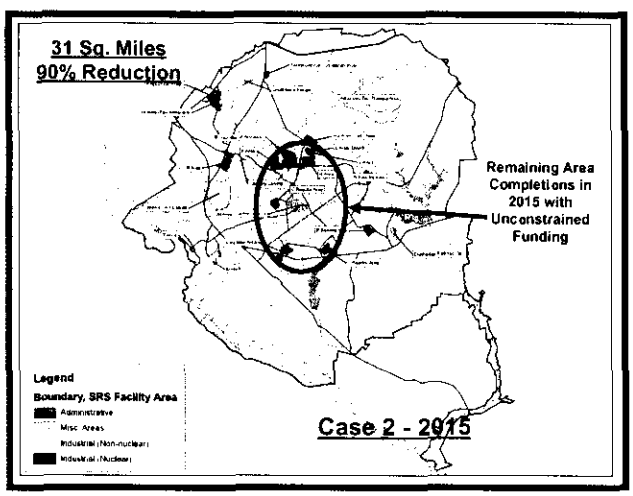
Advantages:

- **Implementing the Area Completion Strategy to accelerate footprint reduction achieves all of the benefits in Scenario 1.**

- **There are additional financial benefits from accelerated footprint reduction.** The additional financial benefits are due to three factors. First, acceleration of the projects capitalizes on the current relationship with the regulators to achieve in-situ remedies on the hardened facilities. Current estimates indicated that up to $200M per hardened facility can be saved by an in-situ remedy or $600M for three facilities in the 6-year window. Second, acceleration of the work reduces projects inflation cost. Third, the accelerated footprint reduction will reduce future S&M costs (estimated savings of $1.88B).

- **The Area Completion Strategy facilitates other uses of SRS.** For example, the Army expressed interest in using reactors and the D-Area Powerhouse for training. Accelerating reactor D&D will enable the expedient use of these facilities to support the Army's national security mission. This potential future use highlights the fact that the remediation of areas can turn SRS into a national resource for future missions.

- **Implementation reduces the site footprint by an additional 75% over the baseline by 2015.** In this scenario, significant progress is made in completing areas and the active portion of the site footprint is reduced from the current 85% to 10%. This is accomplished by accelerating the completion of the remediation work in C, D, M, P and R Areas.



The following assumptions were used in developing Scenario 2:

- Unconstrained funding will be available to execute all footprint reduction workscope [D&D (approximately 200 facilities)] and remedial activities (100 waste units).
- SRS Mission Needs (ongoing operation) constrains the availability of all facilities to be decommissioned.

- Soil and groundwater remediation and D&D activities will be integrated and performed concurrently within an area.
- Early (Final) Actions will be performed to facilitate simultaneous completion of D&D and SGCP activities in an area.
- Footprint reduction is based on surface/subsurface operable unit completions and excludes ongoing groundwater and IOU activities.
- Waste units and facilities associated with SRNL will be excluded from the FFA due to ongoing operation and will not preclude A-Area Completion.
- Groundwater OUs can be remediated prior to Area Completions.
- Waste units (i.e., discharge canals) within the IOU will be remediated to facilitate risk reduction, but will not contribute to footprint reduction.
- Regulatory support is available to support Footprint Reduction.
- Area Completion activities were scheduled to support an accelerated Area Completion objective without regard to funding constraints.

Benefits:

The benefits from Scenario 2 can be divided into 2 categories.
(1) Project cost avoidance associated with accelerating the Area Completion work
(2) Footprint reduction.

Category 1. Cost Avoidance Associated with Accelerating the Area Completion Work
A comparison of FY08 PEP costs (2038 completion) vs. the Scenario 2 cost profile (2032 completion) indicate that the overall base line costs will be reduced by an estimated $921M. This cost avoidance is primarily due to reductions in fixed project costs due to the overall acceleration of the schedule for the remediation effort. Additionally, this effort will reduce the overall site lifecycle costs by an estimated $900 when the cost avoidance for S&M is included.

Category 2. Footprint Reduction for 2015
Scenario 2 provides sufficient funding to achieve a 90% footprint reduction by the year 2015.

Table B1. Scenario 2 Cost

	Scenario 2 (Total $K)	Cumulative (Total $K)
FY09	120,360	
FY10	205,267	
FY11	261,083	
FY12	303,943	
FY13	311,658	
FY14	351,796	
FY15	358,876	1,912,984
FY16+	5,346,357	7,259,341
Total	7,259,341	

Summary

The validated baseline does not provide sufficient funding to meet enforceable FFA milestones and RCRA Permit commitments.

Scenario 1 could achieve a $645M cost savings and complete the project 7 years earlier as compared to the SR validated baseline. Scenario 1 also supports meeting all FFA milestones and RCRA commitments. In addition, Scenario 1 could also achieve a $900M cost avoidance by eliminating other S&M savings across the site.

Scenario 2 could achieve a $921M cost savings and complete the project 7 years earlier as compared to the SR validated baseline. Scenario 2 also supports meeting all FFA milestones and RCRA commitments. In addition, Scenario 2 could also achieve a $900M cost avoidance by eliminating other S&M savings across the site.

PBS 30 Life Cyle Cost Savings

Year	Baseline FY08 PEP (Total $k)	Scenario 1 (Total $k)	Investment (+) or Savings (-) vs. Baseline FY08 PEP
FY09	0	89,210	89,210
FY10	1,743	177,861	176,118
FY11	1,789	156,444	154,655
FY12	1,846	155,326	153,480
FY13	1,895	157,746	155,851
FY14	1,910	219,169	217,259
FY15	124,437	265,602	141,165
FY16	238,973	285,239	46,266
FY17	297,929	332,396	34,467
FY18	370,795	366,222	(4,573)
FY19	376,532	306,613	(69,919)
FY20	375,798	119,574	(256,224)
FY21	394,571	139,289	(255,282)
FY22	272,041	194,659	(77,382)
FY23	310,425	158,082	(152,343)
FY24	415,199	348,664	(66,535)
FY25	601,953	564,135	(37,818)
FY26	756,240	724,918	(31,322)
FY27	483,044	479,091	(3,953)
FY28	303,779	285,651	(18,128)
FY29	450,317	466,872	16,555
FY30	812,493	805,842	(6,651)
FY31	452,593	387,387	(65,206)
FY32	418,702	293,919	(124,783)
FY33	186,096	36,685	(149,411)
FY34	171,518	16,705	(154,813)
FY35	153,011	1,620	(151,391)
FY36	138,287		(138,287)
FY37	75,646		(75,646)
FY38			0
	8,189,562	7,534,921	(654,641)

SRS PBS 30 Savings Summary from FY08 PEP Baseline

PBS 30 Life Cyle Cost Savings

Year	Baseline FY08 PEP (Total $k)	Scenario 2 (Total $k)	Investment (+) or Savings (-) vs. Baseline FY08 PEP
FY09	0	120,360	120,360
FY10	1,743	205,267	203,524
FY11	1,789	261,083	259,294
FY12	1,846	303,943	302,097
FY13	1,895	311,658	309,763
FY14	1,910	351,796	349,886
FY15	124,437	358,876	234,439
FY16	238,973	316,599	77,626
FY17	297,929	196,298	(101,631)
FY18	370,795	195,680	(175,115)
FY19	376,532	190,051	(186,481)
FY20	375,798	117,278	(258,520)
FY21	394,571	83,058	(311,513)
FY22	272,041	143,770	(128,271)
FY23	310,425	151,441	(158,984)
FY24	415,199	140,617	(274,582)
FY25	601,953	336,623	(265,330)
FY26	756,240	550,783	(205,457)
FY27	483,044	655,765	172,721
FY28	303,779	532,780	229,001
FY29	450,317	487,221	36,904
FY30	812,493	520,521	(291,972)
FY31	452,593	727,873	275,280
FY32	418,702		(418,702)
FY33	186,096		(186,096)
FY34	171,518		(171,518)
FY35	153,011		(153,011)
FY36	138,287		(138,287)
FY37	75,646		(75,646)
FY38			0
	8,189,562	7,259,341	(930,221)

SRS PBS 30 Savings Summary from FY08 PEP Baseline

EXECUTIVE SUMMARY

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The SR validated baseline does not support the soil and groundwater cleanup schedule contained in the Federal Facility Agreement (FFA) and will significantly decelerate the cleanup progress and momentum achieved to date (358 of 515 waste units have been completed). Further:

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	Scenario 1 – Compliant Area Completion	Scenario 2 – Accelerated Area Completion for Footprint Reduction
Foot Print Reduction achieved by 2015	65%	90%
Area Completions achieved by 2015	4	6
Cost avoidance in lifecycle as compared to SR validated baseline ($8,180M for PBS 30)	$1,500M	$1,800M
Accelerates program completion as compared to SR validated baseline (2038)	7 years	7 years

Discussion

DOE-SR, EPA-Region 4 and SCDHEC entered into a Memorandum of Agreement (MOA) in July 2003 to support accelerated cleanup of the SRS. The primary goal of the MOA was to use an "Area Completion" approach to streamline the soil and groundwater cleanup approach (integrating facility decommissioning) and re-sequence the cleanup work that was yet to be undertaken. The Area Completion Strategy addresses entire industrial areas of the SRS – soils from contaminated waste units along with facilities that may have contaminated the surrounding soils – as a consolidated area and completion of each area will be documented in a Record of Decision that is issued for each industrial area. Implementation of the Area Completion Strategy was initiated in FY2003 with T-Area, and there are currently 4 (M, P, R, and D) additional areas underway.

Implementing the Area Completion Strategy resulted in significant project cost avoidance in FY07. Facility decommissioning and environmental cleanup work were sequenced and conducted in such a manner to maximize resource utilization and realize cost efficiencies. Integrated regulatory documentation was developed to expedite regulatory reviews and negotiations and eliminate rework and redundancy. Addressing an entire industrial area at a single time allows remedial decisions to be made earlier, with less conservatism and on a larger scale than when small parcels of contamination are addressed individually and other contamination areas remain to be addressed at some time in the future. In FY07, through Area Completion, nearly half of the annual regulatory milestones and regulatory documents were eliminated. Additionally, schedules were accelerated by 50%.

To further support the Area Completion Strategy, in FY08, DOE aligned D&D (associated with Area Completion) and soil and groundwater activities into a single project, PBS-0030. This consolidation allows DOE increased flexibility in baseline and funds management throughout the cycle, from budget and planning activities to execution of the scope.

Baseline

The current validated baseline, 2008 PEP, supports Area Completion Project (ACP) (PBS-30 [Soil and Water Remediation] and PBS-40 [Nuclear Facilities D&D]) completion by FY2038. The total cost of the 2008 PEP baseline is $8,180M. However, only severely limited funding is provided in the near term (FY2009 through FY2014) for ACP S&M activities. Execution of the 2008 PEP places active projects on standby, prevents the initiation of new work until FY2015, and prevents FFA enforceable milestones and RCRA Permit commitments from being met.

Two scenarios for implementation of the Area Completion Strategy are evaluated in this Business Case. The first scenario (Compliant Area Completion) supports attainment of enforceable regulatory milestones and commitments. The second scenario (Accelerated Area Completion for Footprint Reduction) examines the use of the Area Completion Strategy to achieve accelerated footprint reduction at SRS.

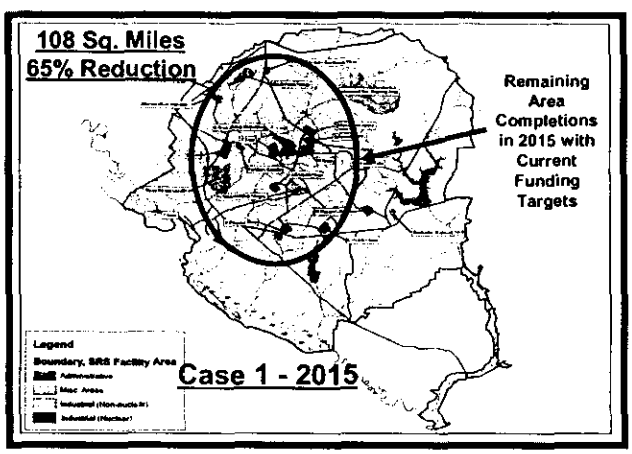
Scenario 1 - Compliant Area Completion

Scenario 1 is a proposal that meets all of the FFA and RCRA permit conditions. The starting point for the development of the cost estimate for this scenario was the 2008 PEP. The schedule for Areas C, D, M, P, and R were then adjusted to meet the required regulatory dates. The cost profile for this scenario is provided in Table A1. The total to-go lifecycle cost for PBS-30 in Scenario 1 is $7,534M.

Advantages:

- **Implementing the Area Completion Strategy enables the Department to meet regulatory milestones and commitments and avoids a likely dispute with the regulators (and possible fines and penalties for missed milestones and commitments) and avoids negatively impacting efforts with the regulators on tank closures, high level waste processing, and consolidation of special nuclear materials.** The State of South Carolina has a high value for the risk reduction efforts at SRS related to removing or rendering immobile the various waste streams (e.g. HLW, SNF, MOX) at SRS because they view these waste streams as having the potential to negatively impact the environment and surrounding communities. They place an equally high value on the Area Completion Strategy because it focuses on contaminants that either have a high potential for release or have been released to the environment. They view these potential and real releases as a high priority because they represent a current threat to the groundwater and surface water. Therefore, they have the highest probability to impact communities off-site in the near-term.

- **Implementation reduces the site footprint by an additional 50% over the baseline by FY2015.** In this scenario, significant progress is made in completing areas and the active portion of the site is reduced from the current 85% to 35%. This is accomplished by completing the remediation work in M, P, R, and D Areas.



- **Implementation of the Area Completion Strategy has demonstrated significant economic advantages.** Prior to FY2005, the remediation of areas at SRS was implemented on a waste unit by waste unit basis. This process of evaluating and remediating small waste sites within an area did not allow for economies of scale for characterization or cleanup. Also some practical remedial alternatives are precluded due to the limited nature of the evaluation. For example, at T-Area several waste units containing uranium contamination were grouped together and the remedial solution was consolidation of the waste from these units under an on-site cap. Implementation of the Area Completion Strategy at T-Area resulted in a cost avoidance of approximately $37M over the traditional approach. Similarly, $645M in cost avoidance could be realized through the remainder of the project.

- **Implementation reduces the risks to the remediation project by $400M to $800M.** The Area Completion Strategy allows for an integrated review of all potential sources in an area. This comprehensive look at an area enables a different suite of remedies to be evaluated in contrast to individual remedies for individual waste units. One of the larger risks within the project is the risk of not being able to close the hardened facilities in-situ. Continued work on the Area Completion Strategy reduces the probability of these types of risks as has been initially supported by the CAB and regulators.

The following assumptions were used in developing Scenario 1:

- D&D and soil and groundwater remediation scope will be sequenced in order to support the Area Completion Strategy as defined and agreed to by EPA and SCDHEC, through the 2003 Memorandum of Agreement and FFA Appendix E, "Long-Term Projections," for FY 2008.
- New groundwater remediation activities will be deferred until contaminant source control is achieved, consistent with the 2003 MOA and FY 2008 Appendix E.
- Hardened facilities (such as reactor buildings and separations facilities) will undergo in-situ decommissioning.
- The budget provided for FY2009 through FY2014 has been increased to perform Area Completion scope required to support regulatory requirements.
- Waste from D&D and cleanup activities within an industrial area may be left within the area if hardened facilities exist to protectively manage the waste.
- Operational activities will be completed or modified to allow Area Completion activities to proceed.
- Historical considerations will not impact Area Completion activities and schedules.
- C-Area Administrative facilities (705-C, 705-1C, 705-3C, 707-C) will not be required to be decommissioned for Area Completion.
- This plan does not include the costs to construct new facilities or perform major renovations to relocate people or services and assumes that facilities can be excessed to support the schedule.
- With the exception of SREL and SRNL designated facilities which have already been removed from the EM D&D scope, all other structures are decommissioned.
- No contractor management reserve (funded contingency) is included.

Benefits:

The benefits from Scenario 1 can be divided into 4 categories.

(1) Benefits gained from implementation of the Area Completion Strategy that could be lost if there is an extended suspension of work
(2) Cost avoidance associated with accelerating the Area Completion work
(3) Footprint reduction
(4) Minimizing overall project risks by continued implementation of the Area Completion Strategy

Category 1. Benefits Gained from Implementation of the Area Completion Strategy:
The Area Completion Strategy produced efficiencies when a change was made from addressing one small geographic area at a time to a large industrial area.

Comparison:

- Milestone Reductions – Reduced from 127 in FY04 to 63 in FY07
- Documents Reductions – Reduced from 1,449 in FY04 to 684 in FY07
- Staffing Reductions – Reduced from 745 in FY04 to 226 in FY07

Category 2. Cost Avoidance Associated with Accelerating the Area Completion Work
A comparison of FY08 PEP costs (2038 completion) vs. the Scenario 1 cost profile (2032 completion) indicate that the overall base line costs will be reduced by an estimated $645M. This cost avoidance is primarily due to reductions in fixed project costs due to the overall acceleration of the schedule for the remediation effort. Additionally, this effort will reduce the overall site lifecycle costs by an estimated $900 when the cost avoidance for S&M is included.

Table 1. Scenario 1 Cost

	Scenario 1 (Total $K)	Cumulative (Total $K)
FY09	89,210	
FY10	177,861	
FY11	156,444	
FY12	155,326	
FY13	157,746	
FY14	219,169	
FY15	265,602	1,221,358
FY16+	6,313,563	7,534,921
Total	7,534,921	

Category 3. Footprint Reduction for 2015
Scenario 1 provides sufficient funding to achieve a 65% footprint reduction by the year 2015.

Category 4. Minimizing Project Risks
The following project risks directly related to an extended remediation schedule were identified in PBS-SR-0030 Soils and Groundwater Project Risk Management Plan with respect to the baseline.

Risk	Description	Min Impact ($K)	Most Likely Impact ($K)	Max Impact ($K)
1	Minimal assessment and remedial actions of the Integrator Operable Units consistent with baseline	26,000	80,000	170,000
2	No additional waste units or groundwater plumes outside those previously identified	2,800	9,800	14,000
3	Regulators continue to allow Monitored Natural Attenuation and passive technologies as assumed in the baseline	2,000	60,000	160,000
4	Remedial action durations consistent with baseline assumptions	5,750	11,500	26,500
5	There are no delays in D&D project execution	25,000	30,000	60,000
6	In-situ decommissioning is acceptable as final End-Point for hardened facilities	400,000	500,000	800,000
7	D&D costs, including waste disposal, are consistent with baseline estimates	44,000	88,000	175,000
8	D&D Funding delays	50,000	100,000	200,000
	Totals	555,550	879,300	1,605,500

The above data indicates that the minimum impact that these risk pose is $555,550K, the most likely impact is $879,300K, and the maximum impact is $1,605,500K. The single largest risk in this list is related to an in-situ decommissioning end-point for the hardened facilities. The regulators are supporting the in-situ decommissioning end-point. However, delaying remediation due to insufficient funding jeopardizes the momentum attained for support of in-situ decommissioning due to:

- Strained regulatory relationships
- The possibility of regressing to the one waste unit at a time approach instead of a continuation of the Area Completion Strategy
- Loss of continuity with the current regulator and CAB decision makers

Overall, funding Scenario 1 is estimated to mitigate at least $400,000K to $800,000K in project risk.

Scenario 2 - Accelerated Area Completion for Footprint Reduction

Scenario 2 represents an effort to expedite the SRS footprint between FY2009 and FY2015 by accelerating Area Completion which will result in significant cost avoidance and accelerated risk reduction. An additional investment would be needed above the cost of Scenario 1 which would result in a significant dividend.

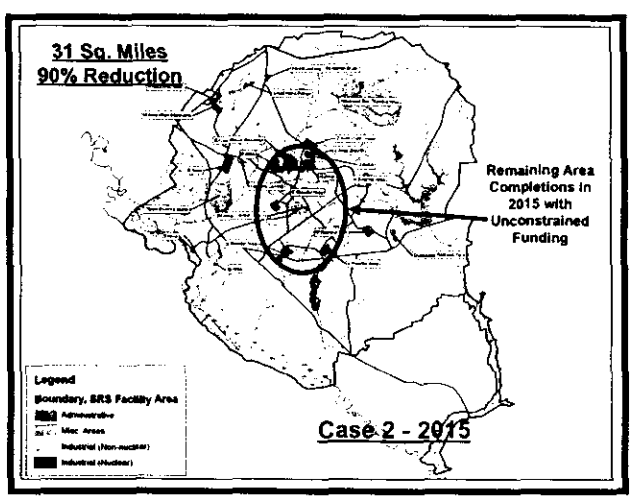
Advantages:

- **Implementing the Area Completion Strategy to accelerate footprint reduction achieves all of the benefits in Scenario 1.**

- **There are additional financial benefits from accelerated footprint reduction.** The additional financial benefits are due to three factors. First, acceleration of the projects capitalizes on the current relationship with the regulators to achieve in-situ remedies on the hardened facilities. Current estimates indicated that up to $200M per hardened facility can be saved by an in-situ remedy or $600M for three facilities in the 6-year window. Second, acceleration of the work reduces projects inflation cost. Third, the accelerated footprint reduction will reduce future S&M costs (estimated savings of $1.88B).

- **The Area Completion Strategy facilitates other uses of SRS.** For example, the Army expressed interest in using reactors and the D-Area Powerhouse for training. Accelerating reactor D&D will enable the expedient use of these facilities to support the Army's national security mission. This potential future use highlights the fact that the remediation of areas can turn SRS into a national resource for future missions.

- **Implementation reduces the site footprint by an additional 75% over the baseline by 2015.** In this scenario, significant progress is made in completing areas and the active portion of the site footprint is reduced from the current 85% to 10%. This is accomplished by accelerating the completion of the remediation work in C, D, M, P and R Areas.



The following assumptions were used in developing Scenario 2:

- Unconstrained funding will be available to execute all footprint reduction workscope [D&D (approximately 200 facilities)] and remedial activities (100 waste units).
- SRS Mission Needs (ongoing operation) constrains the availability of all facilities to be decommissioned.

- Soil and groundwater remediation and D&D activities will be integrated and performed concurrently within an area.
- Early (Final) Actions will be performed to facilitate simultaneous completion of D&D and SGCP activities in an area.
- Footprint reduction is based on surface/subsurface operable unit completions and excludes ongoing groundwater and IOU activities.
- Waste units and facilities associated with SRNL will be excluded from the FFA due to ongoing operation and will not preclude A-Area Completion.
- Groundwater OUs can be remediated prior to Area Completions.
- Waste units (i.e., discharge canals) within the IOU will be remediated to facilitate risk reduction, but will not contribute to footprint reduction.
- Regulatory support is available to support Footprint Reduction.
- Area Completion activities were scheduled to support an accelerated Area Completion objective without regard to funding constraints.

Benefits:

The benefits from Scenario 2 can be divided into 2 categories.

(1) Project cost avoidance associated with accelerating the Area Completion work
(2) Footprint reduction.

Category 1. Cost Avoidance Associated with Accelerating the Area Completion Work
A comparison of FY08 PEP costs (2038 completion) vs. the Scenario 2 cost profile (2032 completion) indicate that the overall base line costs will be reduced by an estimated $921M. This cost avoidance is primarily due to reductions in fixed project costs due to the overall acceleration of the schedule for the remediation effort. Additionally, this effort will reduce the overall site lifecycle costs by an estimated $900 when the cost avoidance for S&M is included.

Category 2. Footprint Reduction for 2015
Scenario 2 provides sufficient funding to achieve a 90% footprint reduction by the year 2015.

Table B1. Scenario 2 Cost

	Scenario 2 (Total $K)	Cumulative (Total $K)
FY09	120,360	
FY10	205,267	
FY11	261,083	
FY12	303,943	
FY13	311,658	
FY14	351,796	
FY15	358,876	1,912,984
FY16+	5,346,357	7,259,341
Total	7,259,341	

Summary

The validated baseline does not provide sufficient funding to meet enforceable FFA milestones and RCRA Permit commitments.

Scenario 1 could achieve a $645M cost savings and complete the project 7 years earlier as compared to the SR validated baseline. Scenario 1 also supports meeting all FFA milestones and RCRA commitments. In addition, Scenario 1 could also achieve a $900M cost avoidance by eliminating other S&M savings across the site.

Scenario 2 could achieve a $921M cost savings and complete the project 7 years earlier as compared to the SR validated baseline. Scenario 2 also supports meeting all FFA milestones and RCRA commitments. In addition, Scenario 2 could also achieve a $900M cost avoidance by eliminating other S&M savings across the site.

PBS 30 Life Cyle Cost Savings

Year	Baseline FY08 PEP (Total $k)	Scenario 1 (Total $k)	Investment (+) or Savings (-) vs. Baseline FY08 PEP
FY09	0	89,210	89,210
FY10	1,743	177,861	176,118
FY11	1,789	156,444	154,655
FY12	1,846	155,326	153,480
FY13	1,895	157,746	155,851
FY14	1,910	219,169	217,259
FY15	124,437	265,602	141,165
FY16	238,973	285,239	46,266
FY17	297,929	332,396	34,467
FY18	370,795	366,222	(4,573)
FY19	376,532	306,613	(69,919)
FY20	375,798	119,574	(256,224)
FY21	394,571	139,289	(255,282)
FY22	272,041	194,659	(77,382)
FY23	310,425	158,082	(152,343)
FY24	415,199	348,664	(66,535)
FY25	601,953	564,135	(37,818)
FY26	756,240	724,918	(31,322)
FY27	483,044	479,091	(3,953)
FY28	303,779	285,651	(18,128)
FY29	450,317	466,872	16,555
FY30	812,493	805,842	(6,651)
FY31	452,593	387,387	(65,206)
FY32	418,702	293,919	(124,783)
FY33	186,096	36,685	(149,411)
FY34	171,518	16,705	(154,813)
FY35	153,011	1,620	(151,391)
FY36	138,287		(138,287)
FY37	75,646		(75,646)
FY38			0
	8,189,562	7,534,921	(654,641)

SRS PBS 30 Savings Summary from FY08 PEP Baseline

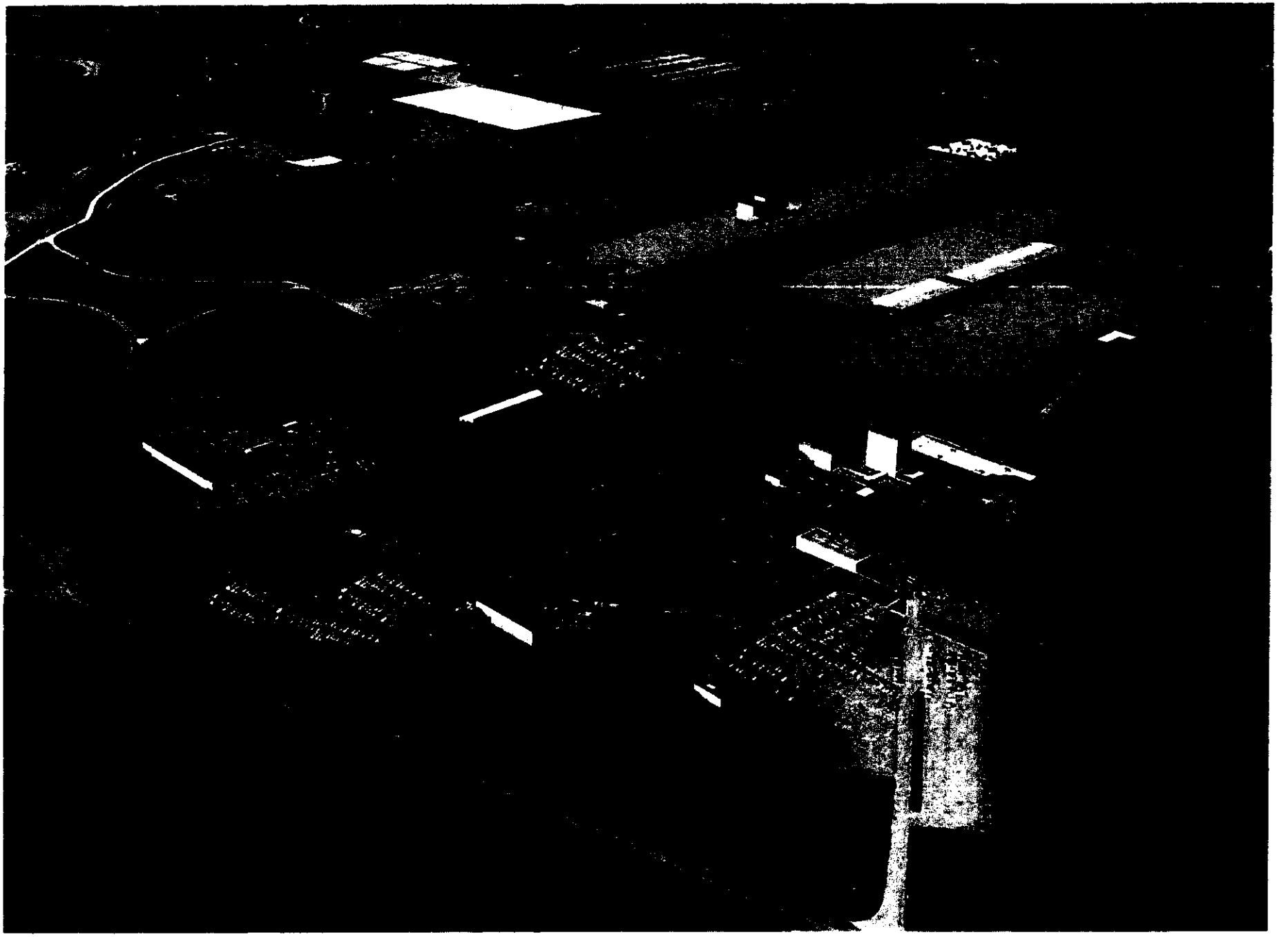
PBS 30 Life Cyle Cost Savings

Year	Baseline FY08 PEP (Total $k)	Scenario 2 (Total $k)	Investment (+) or Savings (-) vs. Baseline FY08 PEP
FY09	0	120,360	120,360
FY10	1,743	205,267	203,524
FY11	1,789	261,083	259,294
FY12	1,846	303,943	302,097
FY13	1,895	311,658	309,763
FY14	1,910	351,796	349,886
FY15	124,437	358,876	234,439
FY16	238,973	316,599	77,626
FY17	297,929	196,298	(101,631)
FY18	370,795	195,680	(175,115)
FY19	376,532	190,051	(186,481)
FY20	375,798	117,278	(258,520)
FY21	394,571	83,058	(311,513)
FY22	272,041	143,770	(128,271)
FY23	310,425	151,441	(158,984)
FY24	415,199	140,617	(274,582)
FY25	601,953	336,623	(265,330)
FY26	756,240	550,783	(205,457)
FY27	483,044	655,765	172,721
FY28	303,779	532,780	229,001
FY29	450,317	487,221	36,904
FY30	812,493	520,521	(291,972)
FY31	452,593	727,873	275,280
FY32	418,702		(418,702)
FY33	186,096		(186,096)
FY34	171,518		(171,518)
FY35	153,011		(153,011)
FY36	138,287		(138,287)
FY37	75,646		(75,646)
FY38			0
	8,189,562	7,259,341	(930,221)

SRS PBS 30 Savings Summary from FY08 PEP Baseline

OR

ETTP Complete - 2015



Oak Ridge Footprint Reduction Proposal

Site: Y-12

Current Footprint and Schedule

This footprint reduction proposal addresses the highest risk buildings (Alpha 4, Alpha 5 and 9206) at Y-12. These buildings were built in the 1940's as part of the Manhattan project. They are located in the heart of the Y-12 plant. They pose the greatest risk to the work force and the environment at Y-12 and are a primary contributor to offsite releases of mercury. The deteriorating condition of the Alpha 5 building and the standing water that is accumulating in its basement is a major concern and must be addressed.

Alpha 4 contains 510K square feet and is currently owned by EM. It has been deactivated and is ready for demolition. Demolition is scheduled to run from FY12 through FY16 in the certified baseline which was constrained to current funding targets.

Alpha 5 contains 614K square feet and is not currently owned by EM. Significant effort will be required to stabilize this building, including removal of all material and equipment currently in the building, as well as, the contaminated water that has accumulated in the basement, before demolition can begin.

Building 9206 contains 58K square feet and is not currently owned by EM. It can be demolished by FY15.

Issue:

The certified baseline only addresses the facilities at Y-12 that are currently owned by EM. In order to address the highest risk facilities at Y-12, two major facilities not currently owned by EM need to be demolished. These facilities would not be demolished until FY22 given the current funding profiles.

Therefore, additional funding is needed to address the highest risk facilities first at Y-12.

Proposed Footprint and Schedule:

Two major, high risk facilities at Y-12 can be demolished and the facility with the greatest risk can be stabilized by FY15 with an additional investment of $362 million over the next six years.

A picture of the current main plant area of Y-12 is attached, as well as, a picture of what the area will look like after this footprint reduction initiative.

Funding Requirements:

Y-12 (PBS 41)	Dollars in millions FY10	FY11	FY12	FY13	FY14	FY15
Current FY10 budget request			14	18	22	27
Footprint Reduction request	50	54	68	72	77	122
Overbaseline request	50	54	54	54	55	95

Benefits:

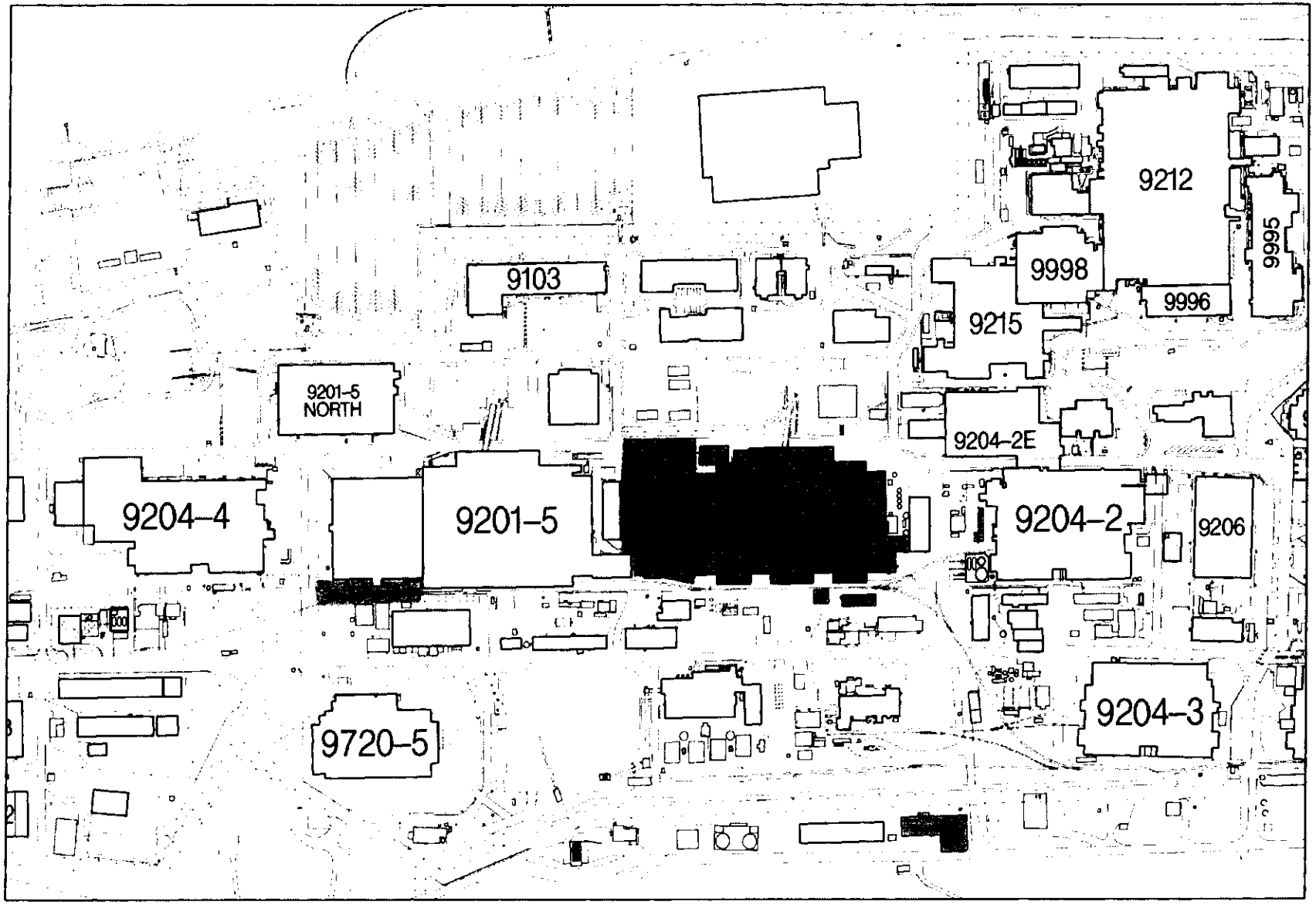
Mortgage Reduction: This footprint reduction proposal will accelerate the demolition of facilities by seven years achieving savings of $183 million by reducing infrastructure and surveillance and maintenance costs at the site and cost escalation.

Risk Reduction: Reduces the footprint of contaminated facilities that are rapidly deteriorating, thereby, reducing the increasing risk of release and damage to the environment and ongoing Y12 mission operations. More than 4,000 workers carry out their daily activities within three thousand feet of the buildings addressed in this proposal.

Return on Investment:

Investment: $362 million
Net savings: $183 million
Return on Investment: 38% (on net present value of investment and savings)
Annual return on investment: 6%

Y-12


9212
9995
9998
9996
9103
9215
9201-5
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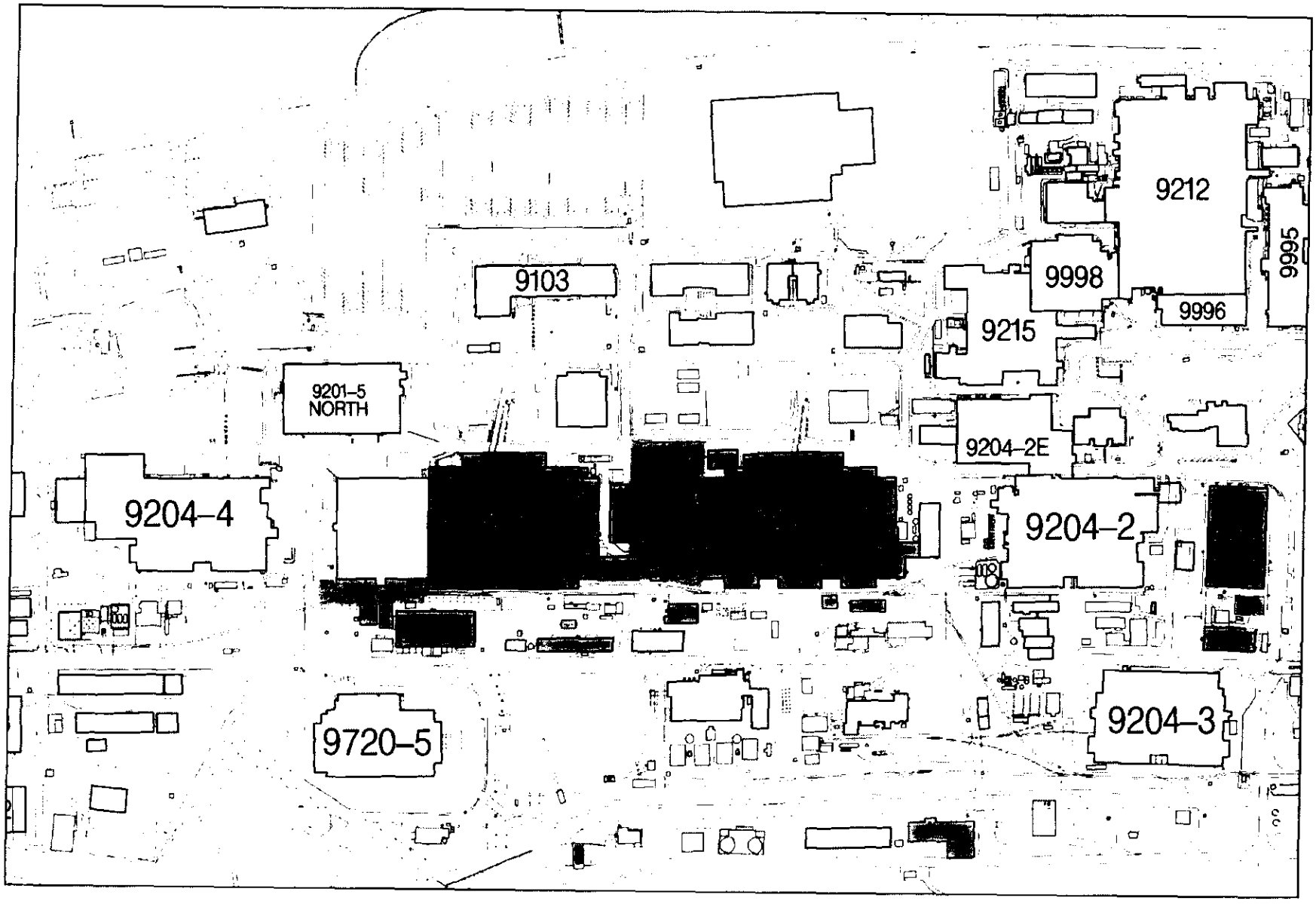
9720-5
9204-3

Y-12 Completions - 2015



Oak Ridge Footprint Reduction Proposal

Site: ORNL Central Campus Area

Current Footprint and Schedule

This footprint reduction proposal addresses a 4 block area covering 100 acres in the heart of the main campus area of ORNL. This area was initially constructed in the 1940's as part of the Manhattan project. The recent modernization activities at ORNL border both sides of this area. Many of the facilities in this area contain reactors, hot cells and laboratories that have radiological contamination.

This area currently has 177 facilities containing 634K square feet that require decontamination and decommissioning. Approximately 240K cubic yards of soil and sediments contain contamination (primary contaminant is Cs and Sr) that will need to be addressed under CERCLA. In addition, 50K linear feet of inactive underground pipelines need to be grouted.

Limited progress has been made to-date on the cleanup of the central campus area of ORNL because of higher priority work. Only 28 facilities (easy, less contaminated) containing 65K square feet have been demolished. Approximately 40 underground storage tanks and 4 surface impoundments have been grouted in place and over 900 cubic yards of contaminated soils have been removed from the Tank W-1a area.

Therefore, most of the cleanup that is required by the interim Record of Decision in the ORNL Central Campus area remains. It has become a high priority because of the deteriorating condition of the buildings which affect worker safety, the risk of damage posed to the environment and the ongoing ORNL modernization.

Issue:

EM is responsible for all the soil and groundwater remediation in the Central Campus area of ORNL. The cleanup of the Central Campus area is complete by FY16 in the current certified baseline, which was constrained to current funding targets. However, the certified baseline only addresses the facilities in the Central Campus area that are currently owned by EM, which are 45% of the all the facilities in this area. In order to complete the soil and groundwater remediation the remaining 55% of the facilities not currently owned by EM need to be demolished. These facilities would not be demolished until FY22 given the current funding profiles.

Therefore, additional funding is needed to demolish all the facilities in the Central Campus area that will not have an ongoing mission by FY15 to facilitate the soil and groundwater remediation.

Proposed Footprint and Schedule:

Over 80% of the cleanup of the Central Campus area of ORNL can be completed by FY15 for an additional investment of $411 million over the next six years. A few essential buildings with ongoing operations will remain that will eventually require decontamination and decommissioning, along with the remediation of the underlying soils.

A picture of the current Central Campus area is attached, as well as, a picture of what the Central Campus area will look like after this footprint reduction initiative.

Funding Requirements:

	Dollars in millions					
ORNL Central Campus (PBS 42)	FY10	FY11	FY12	FY13	FY14	FY15
Current FY10 budget request	13	21	79	75	53	35
Footprint Reduction request	63	91	144	146	136	107
Overbaseline request	50	70	65	71	83	72

Benefits:

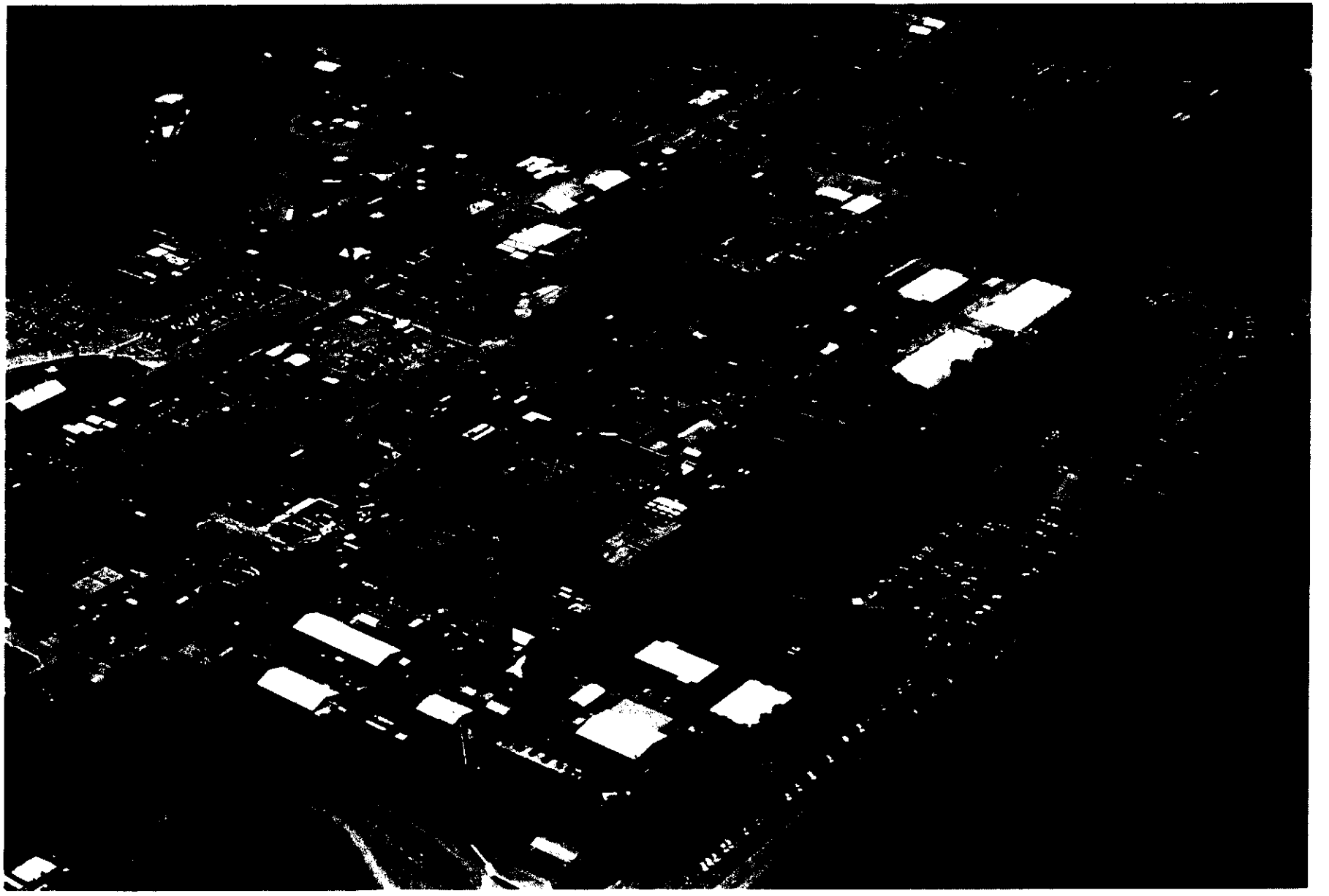
Mortgage Reduction: This footprint reduction proposal will accelerate the demolition of facilities by seven years achieving savings of $318 million by reducing infrastructure and surveillance and maintenance costs at the site and cost escalation.

Risk Reduction: Reduces the footprint of contaminated facilities that are rapidly deteriorating, thereby, reducing the increasing risk of release and damage to the environment and ongoing ONRL mission operations. More than 2500 workers carry out their daily activities within three thousand feet of the Central Campus area.

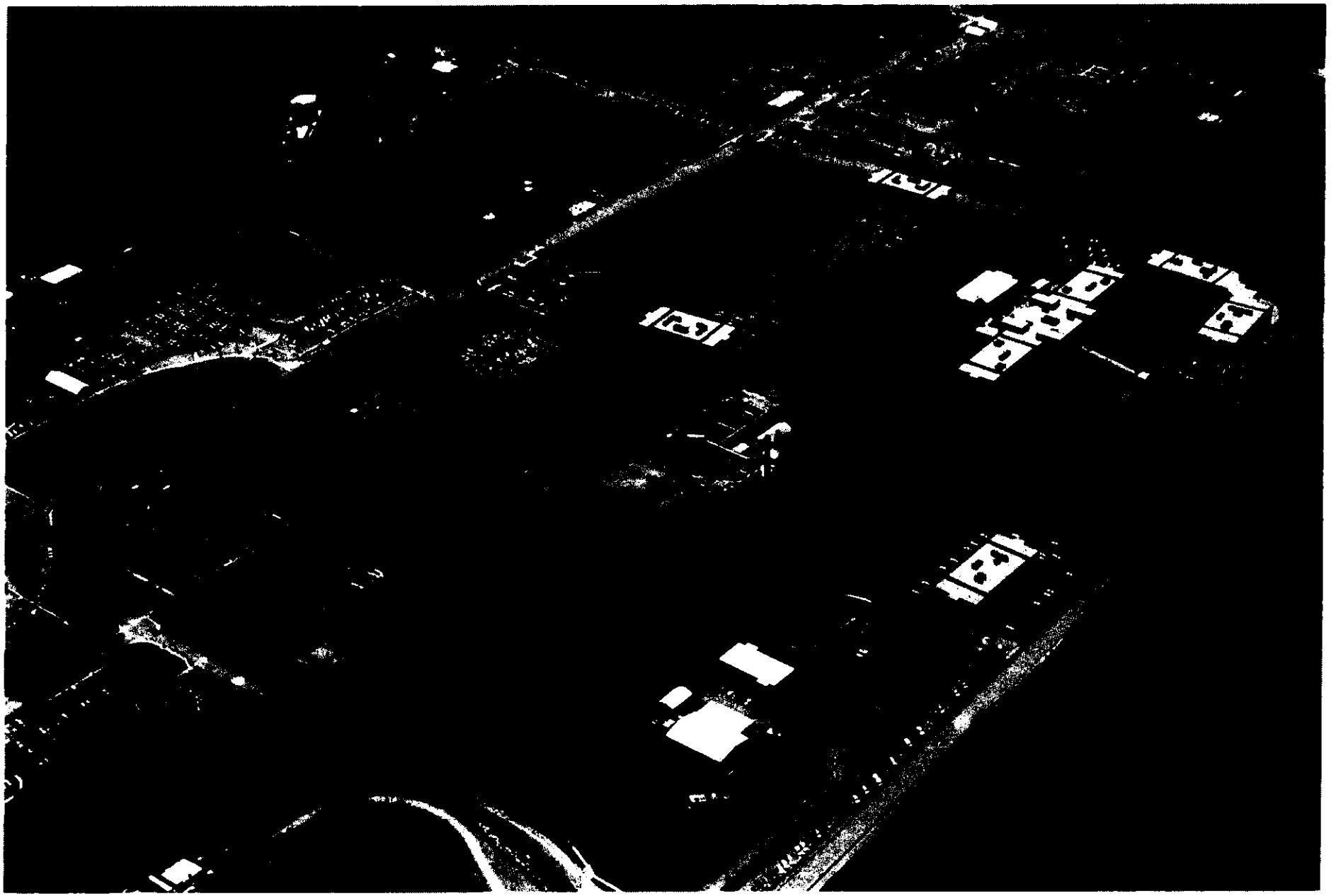
Return on Investment:

Investment: $411 million
Net savings: $318 million
Return on Investment: 65% (on net present value of investment and savings)
Annual return on investment: 11%

ORNL Central Campus



ORNL Central Campus – 80% Complete 2015



Y-12 Accelerated Closure

Before Footprint Reduction

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Scope in the EM baseline D&D	0	0	14	18	22	27	8	1						90
Scope to be added D&D							64	69	69	69	69	69	53	462
NNSA S&M							11	11	11	11	11	10	9	74
Scope not in the EM baseline	0	8	0	0	0	0	75	69	80	80	80	79	82	535
Current funding requirement	0	0	14	18	22	27	83	81	80	80	80	79	82	626
Converted to Dollars $	$ -	$ -	$ 14,000,000	$ 18,000,000	$ 22,000,000	$ 27,000,000	$ 83,000,000	$ 81,000,000	$ 80,000,000	$ 80,000,000	$ 80,000,000	$ 79,000,000	$ 82,000,000	$ 626,000,000

Efficiency Savings (Assumed 10%)
46.2

After Footprint Reduction (No NNSA costs in the After Footprint Reduction)

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Scope in the EM baseline	14	18	22	21	18									[illegible]
Scope not in the EM baseline	38	38	46	51	59	122								[illegible]
Footprint reduction request	52	54	68	72	77	122								[illegible]
Converted to Dollars $	$ 52,000,000	$ 54,000,000	$ 68,000,000	$ 72,000,000	$ 77,000,000	$ 122,000,000								$ [illegible]
Efficiency Savings (10%)	-7.7	-7.7	-7.7	-7.7	-7.7	-7.7								-46.2
Footprint reduction request (if incorporate efficiency Savings of 10%)	44.3	46.3	60.3	64.3	69.3	114.3								[illegible]
Converted to Dollars $	$ 44,300,000.00	$ 46,300,000.00	$ 60,300,000.00	$ 64,300,000.00	$ 69,300,000.00	$ 114,300,000.00								$ [illegible]

Analysis

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Investment = Footprint reduction request minus Current Funding Requirement	50	54	54	64	55	95								362
Savings														183
Savings (if incorporate Efficiency Savings of 10%)														229.2
Investment - Net Present Value	50	53	52	60	50	85								340
Savings - Net Present Value														143
ROI = Savings (NPV) / Investment (NPV)														42%
Escalation factor	1	1.023	1.046529	1.070569167	1.095222948	1.120413076	1.146162576	1.172544776	1.199513305	1.227102112	1.25532546	1.284197946		

Savings		
Escalation of 482 work (which was based on 4% escalation)	109	109
Reduced Costs S&M	74	74
Efficiencies	0	46.2
Total	183	229.2

Note: There are some costs expected for NNSA to reroute the fence (not included in estimate at this point)

Alan thinks could gain minimally 10 to 20% if had to estimate efficiency savings, but difficult to calculate (no historical savings to point to)

Notes: This file is the Oak Ridge Footprint Reduction Submittal. EM-32 notes from conversations with Oak Ridge and EM-32's analyses regarding the submittal are within the boxes with green, solid borders.

Calculations for Net Present Value (NPV)

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Base Case	$ -	$ -	$ 14,000,000	$ 18,000,000	$ 22,000,000	$ 27,000,000	$ 83,000,000	$ 81,000,000	$ 80,000,000	$ 80,000,000	$ 80,000,000	$ 79,000,000	$ 82,000,000	$ 626,000,000
Business Case (Without 10% Efficiency)	$ 50,000,000.00	$ 54,000,000.80	$ 68,000,000.80	$ 72,000,000.00	$ 77,000,000.90	$ 122,000,000.80	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 443,000,800
Business Case (With 10% Efficiency)	$ 42,300,000.00	$ 48,300,900.80	$ 68,300,800.80	$ 64,300,000.80	$ 69,300,000.90	$ 114,300,800.90	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 396,800,800
NPV Discount Rate (Current $)	4.45%													
Discount Factor	1.090944737	1.1394732	1.1901604	1.2431023	1.2983992	1.3591559	1.4164818	1.4794912	1.5453034	1.6140431	1.6858406	1.7608316	1.8391586	
NPV (Base Case - Business Case w/o 10%)	$ (45,831,835.74)	$ (47,390,316.04)	$ (45,372,834.81)	$ (43,439,706.35)	$ (42,359,852.00)	$ (70,050,641.19)	$ 58,595,880.68	$ 54,748,551.91	$ 51,769,769.22	$ 48,564,970.63	$ 47,454,071.19	$ 44,865,158.45	$ 33,711,061.53	$ 45,264,774
NPV (Base Case - Business Case with 10%)	$ (38,773,733.04)	$ (45,632,816.58)	$ (35,902,318.74)	$ (37,245,528.00)	$ (38,429,472.77)	$ (64,373,126.05)	$ 58,595,880.68	$ 54,748,551.91	$ 51,769,769.22	$ 48,564,970.63	$ 47,454,071.10	$ 44,865,150.45	$ 33,711,061.53	$ 84,352,474
	(50,800,800.00)	(54,000,000.80)	(54,000,000.00)	(54,000,000.90)	(55,800,000.06)	(95,000,900.06)	83,000,000.80	91,000,000.80	80,000,000.00	80,800,800.00	68,000,800.00	79,000,800.00	62,800,000.00	

ORNL Cental Campus accelerated closure

Before Footprint Reduction

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Scope in the EM baseline D&D	13.0	21.0	79.0	75.0	53.0	36.0	18.0	1.0	-	-	-	-	-	296.0
EM-32 Notes:														
ADDs	13.2	18.4	53.7	40.0	59.4	39.3	25.4	1.0						248.4
													Difference	47.6

Scope to be added D&D	Alan indicated that this is scope not in the current baseline. It is part of IFDP CD-1 package submitted to HQ and will be in baseline						32.0	76.0	85.0	90.0	104.0	92.0	31.0	526.0
Old less new waste operations	Alan said this only shows the net savings from the old vs. new... cost of old is $2M/year, and after footprint reduction is $2M/year						15.0	16.0	17.0	18.0	18.0	18.0	20.0	123.0
Old Treatment Costs (Balance - $2M/yr)							2.3	2.3	2.4	2.5	2.6	2.6	2.6	17.2
SC S&M							14.0	13.0	11.0	9.0	7.0	3.0	1.0	58.0
Scope not in the EM baseline	-	-	-	-	-	-	83.3	107.3	113.4	119.5	131.6	116.6	54.6	736.2
Current funding requirement (Scope in the EM baseline and scope not in the EM baseline)	13.0	21.0	79.0	75.0	53.0	36.0	192.3	198.3	113.4	119.5	131.6	116.6	54.6	1,022.2
Converted to Dollars $	13,000,000	21,000,000	79,000,000	75,000,000	53,000,000	36,000,000	192,292,385	198,345,090	113,399,027	119,464,204	131,510,651	116,568,398	54,627,469	1,022,197,201

Efficiency Savings (Assumed 10%) 52.6

After Footprint Reduction

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Scope in the EM baseline	21.0	30.0	86.0	89.0	66.0	54.0								296.0
Scope not in the EM baseline	42.0	51.5	59.0	77.0	78.0	68.0	Alan indicated this includes the cost to build new process waste treatment option and D&D old (new?) generic soil treatment facility as a separate project							526.0
Scope not in the EM baseline (Balance - $2M/Yr SC Old Tank Costs)	2.0	2.0	5.1	2.1	2.2	2.2								15.7
Footprint reduction request	65.0	85.0	145.1	148.1	146.2	124.2								818.7
Converted to Dollars $	65,000,000.0	85,000,000.0	145,000,000.0	148,141,198.9	146,190,445.9	124,240,828.2								808,711,528.4
10% Efficiency	(6.5)	(8.5)	(8.5)	(8.5)	(8.5)	(8.5)								(52.6)
Footprint reduction request (with efficiencies)	58.2	84.2	137.5	139.5	139.6	115.7								646.5
Converted to Dollars $	58,500,000.0	84,240,000.0	137,293,058.0	139,341,198.9	139,390,445.9	115,440,828.2								646,911,528.4

Current Funding Requirement minus Footprint reduction request (with efficiencies) 375.3

Analysis

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Investment = Footprint reduction request minus Current Funding Requirement	52.0	72.0	67.1	73.1	46.2	74.2								423.7
Investment minus Scope in the EM Baseline D&D	39.0	51.0	(11.9)	(1.9)	32.2	39.2	(18.9)	(1.0)						
Savings														322.5
Investment - Net Present Value	52.0	70.4	64.1	68.3	77.8	66.3								398.9
Savings - Net Present Value														206.8
ROI = Savings (NPV) / Investment (NPV)														0.5

Scope to be added D&D (Converted to Constant Year Dollars)	--						46.4	84.6	89.2	73.3	62.6	71.6	23.6	430.0
Scope not in the EM baseline (Converted to Constant Year Dollars)	42.0	59.6	56.4	71.9	62.2	56.2								366.3

Scope to be added D&D minus Scope 137 minus Scope to be added D&D	42.5 74.0

escalation factor	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	
($2M/yr escalated)	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.6	2.6	

	Facilities	Sq Feet	
Owned by EM	82.0	212K	Done in 2015 instead of 2010
Not owned by EM	95.0	422K	Done in 2018 instead of 2022

Savings - Includes savings for Hot liquid operations ($12M), Balance S&M ($6M), Accelerated D&D Scope ($127)	
Reduced Costs for Office of Science S&M	58.0
Efficiencies from Accelerated D&D Scope	52.6
Escalation Savings from Accelerated D&D Scope	137.0 --
Operation Savings from New Liquid Waste System	127.3 --
Total	375.3

Alan indicated that savings -- from 526 (Scope to be added D&D) to 362 (Scope not in the EM baseline)-- is purely due to escalation

Footprint Reduction	646.9
Base Case	375.3
Total	1,022.2

Notes: This file is the Oak Ridge Footprint Reduction Submittal. EM-32 notes from conversations with Oak Ridge and EM-32's analyses regarding the submittal are within the boxes with green, solid borders.

Calculations for Net Present Value (NPV)

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Base Case	$ 13,000,000	$ 21,000,000	$ 79,000,000	$ 75,000,000	$ 53,000,000	$ 36,000,000	$ 192,292,385	$ 198,345,090	$ 113,399,027	$ 119,464,204	$ 131,510,651	$ 116,568,398	$ 54,627,469	$ 1,022,197,201
Business Case (Without 10% Efficiency)	$ 65,000,000.00	$ 93,648,000.00	$ 149,093,058.00	$ 148,141,198.33	$ 139,198,445.90	$ 198,240,828.15	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 699,711,528
Business Case (With 10% Efficiency)	$ 58,200,000.00	$ 84,248,000.00	$ 137,293,058.00	$ 139,341,198.33	$ 129,390,445.90	$ 190,440,828.15	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 646,911,528

NPV Discount Rate (Current) $1 4.45%

Discount Factor	1.090944737	1.1394732	1.1901604	1.2431023	1.2983962	1.3561559	1.4164816	1.4794612	1.5453034	1.6140431	1.6858406	1.7608319	1.8391589

NPV (Base Case - Business Case w/o 10%)	$(47,565,100.17)	$ (63,227,491.56)	$ (56,373,121.54)	$ (58,657,632.00)	$ (65,611,003.37)	$ (54,743,575.27)	$ 72,215,797.87	$73,561,318.02	$ 73,383,017.97	$ 74,009,531.55	$ 78,000,947.38	$ 65,200,753.82	$ 29,702,418.98	$ 120,282,731
NPV (Base Case - Business Case with 10%)	$(30,200,708.00)	$ (55,504,504.77)	$ (40,079,160.31)	$ (31,758,569.07)	$ (58,834,327.00)	$ (48,254,646.98)	$ 72,215,797.97	$73,231,318.02	$ 73,383,017.97	$ 74,009,391.55	$ 78,000,957.38	$ 65,200,753.82	$ 29,702,418.98	$ 143,821,551

Oak Ridge

Calculations for Investment, Savings, and ROI %

December 2008

Oak Ridge Footprint Reduction:
- Accelerates D&D for Central Campus, Y-12 and ETTP
- Demolishes all EM, SC and NNSA excess facilities for over 4 million square feet

Base Case		$2,764	$181	$188	$168	$172	$205	$315	$427	$190	$193	$199	$212	$196	$117
Business Case		$2,042	$320	$332	$329	$342	$375	$346	$0	$0	$0	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$722	-$139	-$144	-$160	-$170	-$170	-$31	$427	$190	$183	$199	$212	$196	$117
	Reduced Costs for Surveillance & Maintenance	$199													
	Reduced Costs for Safeguards & Security	$17													
	Savings from Efficiencies from Accelerated D&D Scope	$99													
	Operation Savings from New Liquid Waste System	$128													
	Escalation Savings from Accelerated Scope	$280													
Investment	**Sum of the investment for each case**	($934)	($139)	($144)	($160)	($170)	($170)	($153)							
Gain	**Sum of the amount that each Business Case is lower than its respective Base Case**	$1,856						$122	$427	$160	$193	$199	$212	$196	$117
ROI	**Savings / Investment (%)**	77%													
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	6,225													
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.091	1.139	1.190	1.243	1.298	1.356	1.418	1.479	1.545	1.814	1.686	1.761	1.839
NPV	**Savings / Discount Factor**	$302	-$127	-$126	-$134	-$139	-$131	-$23	$302	$129	$125	$124	$125	$111	$63

Oak Ridge - ETTP

Calculations for Investment, Savings, and ROI %

December 2008

ETTP Footprint Reduction:
- Accelerates demolition of the K-25 and K-27 buildings and remaining support facilities by 2 years.
- Reduces base operations, safeguards & security, and surveillance & maintenance.

Base Case		$1,116	$168	$167	$76	$79	$130	$253	$242	$1	$0	$0	$0	$0	$0
Business Case		$998	$221	$201	$131	$138	$176	$131	$0	$0	$0	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$118	-$53	-$34	-$55	-$59	-$46	$122	$242	$1	$0	$0	$0	$0	$0
	Reduced Costs for Surveillance & Maintenance	$67													
	Reduced Costs for Safeguards & Security	$17													
	Escalation Savings from Accelerated Scope	$34													
Investment	**Amount Business Case exceeds Base Case**	($247)	($53)	($34)	($55)	($59)	($46)								
Gain	**Amount the Business Case is lower than Base Case**	$365						$122	$242	$1					
ROI	**Savings / Investment (%)**	**48%**													
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	**1,647**													
Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	**4.45%**	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839
NPV	**Savings / Discount Factor**	$54	-$49	-$30	-$46	-$47	-$35	$90	$171	$1	$0	$0	$0	$0	$0

Oak Ridge - Y-12

Calculations for Investment, Savings, and ROI %

December 2008

Y-12 Footprint Reduction:
- Two of the highest risk IFDP buildings at Y-12 (Alpha 5 and 9206) are added earlier to existing EM scope (Alpha 4) and demolition is accelerated by 7 years
- Includes a 10% workforce efficiency improvement on additional scope
- Reduces infrastructure and surveillance & maintenance costs

Base Case		$626	$0	$0	$14	$18	$22	$27	$83	$81	$80	$80	$80	$79	$62
Business Case		$397	$42	$46	$60	$64	$69	$114	$0	$0	$0	$0	$0	$0	$0
Savings	**Savings = Base Case minus Business Case**	$229	-$42	-$46	-$46	-$46	-$47	-$87	$63	$81	$80	$80	$80	$79	$62
	Reduced Costs for Surveillance & Maintenance	$74													
	Efficiencies from Accelerated D&D Scope	$46													
	Escalation Savings from Accelerated Scope	$109													
Investment	**Amount Business Case exceeds Base Case**	($316)	($42)	($46)	($46)	($46)	($47)	($87)							
Gain	**Amount the Business Case is lower than Base Case**	$545							$83	$81	$80	$80	$80	$79	$62

ROI	**Savings / Investment (%)**	**73%**
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	**2,105**

Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	**4.45%**	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839
NPV	**Savings / Discount Factor**	$84	-$39	-$41	-$39	-$37	-$36	-$64	$59	$55	$52	$50	$47	$45	$34

Oak Ridge - Central Campus

Calculations for Investment, Savings, and ROI %

December 2008

Central Campus Footprint Reduction:
- Brings 95 Office of Science IFDP facilities into EM scope earlier and accelerates demolition of Central Campus facilities by 7 years
- Includes a 10% workforce efficiency improvement on additional scope
- Reduces infrastructure, liquid waste processing, and surveillance & maintenance costs

Base Case		$1,022	$13	$21	$79	$75	$53	$35	$102	$108	$113	$119	$132	$117	$55
Business Case		$647	$56	$84	$137	$139	$129	$100	$0	$0	$0	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$375	-$43	-$63	-$58	-$64	-$78	-$65	$102	$108	$113	$119	$132	$117	$55
	Reduced Costs for Surveillance & Maintenance	$58													
	Efficiencies from Accelerated D&D Scope	$53													
	Operation Savings from New Liquid Waste System	$128													
	Escalation Savings from Accelerated Scope	$137													
Investment	**Amount Business Case exceeds Base Case**	($371)	($43)	($63)	($58)	($64)	($76)	($65)							
Gain	**Amount the Business Case is lower than Base Case**	$746							$102	$108	$113	$119	$132	$117	$55
ROI	**Savings / investment (%)**	**101%**													
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	**2,473**													
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	**4.45%**	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839
NPV	**Discounted Savings = Savings / Annual Discount Factor**	$164	-$40	-$56	-$49	-$52	-$59	-$48	$72	$73	$73	$74	$78	$66	$30

Oak Ridge

Development of Business Case

Case	Geographic Area	Description	Remaining Life Cycle Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
			Current Year Dollars ($000)													
Y-12 INVESTMENT OPPORTUNITY																
Base Case	Y-12	Includes scope in EM baseline, D&D costs for Y-12 and NNSA costs for S&M	$628	$0	$0	$14	$18	$22	$27	$83	$81	$80	$80	$80	$79	$62
						Accelerated and compressed activities from 2012 to 2022 into 2010 to 2015 and 10% efficiency applied to D&D activities										
Business Case	#REF!	Includes scope in EM baseline, D&D costs for Y-12 and NNSA costs for S&M	$397	$42	$46	$60	$64	$69	$114	$0	$0	$0	$0	$0	$0	$0
Delta			-$229	$42	$46	$46	$46	$47	$87	-$83	-$81	-$80	-$80	-$80	-$79	
CENTRAL CAMPUS INVESTMENT OPPORTUNITY																
Base Case	ORNL Central Campus	Includes scope in EM baseline, D&D portion of IFDP CD-1 package, waste operations using existing system and S&M costs for Office of Science	$1,022	$13	$21	$79	$75	$53	$35	$102	$108	$113	$119	$132	$117	$55
						Accelerated and compressed activities from 2016 to 2022 into 2010 to 2015 and 10% efficiency applied to D&D activities										
Business Case	ORNL Central Ca	Includes scope in EM baseline, D&D portion of IFDP CD-1 package, waste operations using new system and S&M costs for Office of Science	$647	$56	$84	$137	$139	$129	$100	$0	$0	$0	$0	$0	$0	$0
Delta			-$375	$43	$63	$58	$64	$78	$65	-$102	-$108	-$113	-$119	-$132	-$117	-$55
ETTP INVESTMENT OPPORTUNITY																
Base Case	ETTP	Includes scope in EM baseline	$1,116	$168	$167	$78	$79	$130	$253	$242	$1	$0	$0	$0	$0	$0
						Accelerated and compressed activities from 2016 and 2017 into 2010 to 2015										
Business Case	ETTP	Includes scope in EM baseline	$996	$221	$201	$131	$139	$176	$131	$0	$0	$0	$0	$0	$0	$0
Delta			-$119	$53	$34	$55	$59	$46	-$122	-$242	-$1	$0	$0	$0	$0	$0

SITE SUBMITTAL

Oak Ridge Footprint Reduction Proposal

Site: ETTP

Current Footprint and Schedule

ETTP was built to enrich uranium for defense programs. Production operations ceased at ETTP in the mid-eighties. Approximately 2200 acres (1400 within the fenced main plant area and 800 outside the fence) contain potential contamination that will be addressed under CERCLA. The site contains 160 release sites that require remediation and 500 facilities, including 125 major facilities, that require decontamination and decommissioning.

A little over half of the facilities have been decommissioned and half of the release sites have been remediated. In addition, about half of the $3 billion of the estimated life cycle costs for this site have been expended.

While significant progress has been made on the cleanup of ETTP, a lot of work remains ($1.5 billion worth) to meet CERCLA requirements and honor our regulatory commitments.

The highest priority at the site is the decommissioning and decontamination of the K-25 and K-27 gaseous diffusion process buildings due to the deteriorating condition of the buildings which affect worker safety and pose a risk of damage to the environment. A lot of work remains to finish the D&D of the remaining facilities and to remediate all the burial grounds and contaminated soils to mitigate the contamination from plumes migrating off-site. A final Site-Wide Record of Decision will be required to address all groundwater, surface water, sediments, ecological and long-term stewardship concerns at the site.

The current certified baseline which was constrained to current funding targets has the final Site-Wide ROD completed in FY17. K-25 is demolished and K-27 is ready for demolition by FY12. K-27 and all remaining facilities are demolished by FY16 and all soil and groundwater remediation is completed by FY16.

Issue:

The current funding targets do not provide adequate funding to address the cleanup at ORNL and Y12 and complete ETTP any earlier than FY17. Once the K-25 building is demolished the highest worker and environmental risks reside at ORNL and Y12. The certified baseline reflects an increase in funding at ORNL and Y12 over the next five years to reflect this shift in risks. Therefore, additional funding is needed to accelerate the footprint reduction at ETTP and reduce the mortgage at ETTP.

Proposed Footprint and Schedule:

ETTP can be completed by FY15, two years earlier than the certified baseline, for an additional investment of $202 million over the next five years.

A map depicting the work remaining at ETTP in FY15 under the current baseline is attached. A map showing the completion of ETTP in FY15 is also attached. The difference in these two maps represents the footprint reduction that will be accelerated by two years.

Funding Requirements:

	Dollars in millions				
ETTP (PBS 40)	FY10	FY11	FY12	FY13	FY14
Current FY10 budget request	168	167	77	74	108
Footprint Reduction request	221	201	132	123	119
Overbaseline request	53	34	55	49	11

Benefits:

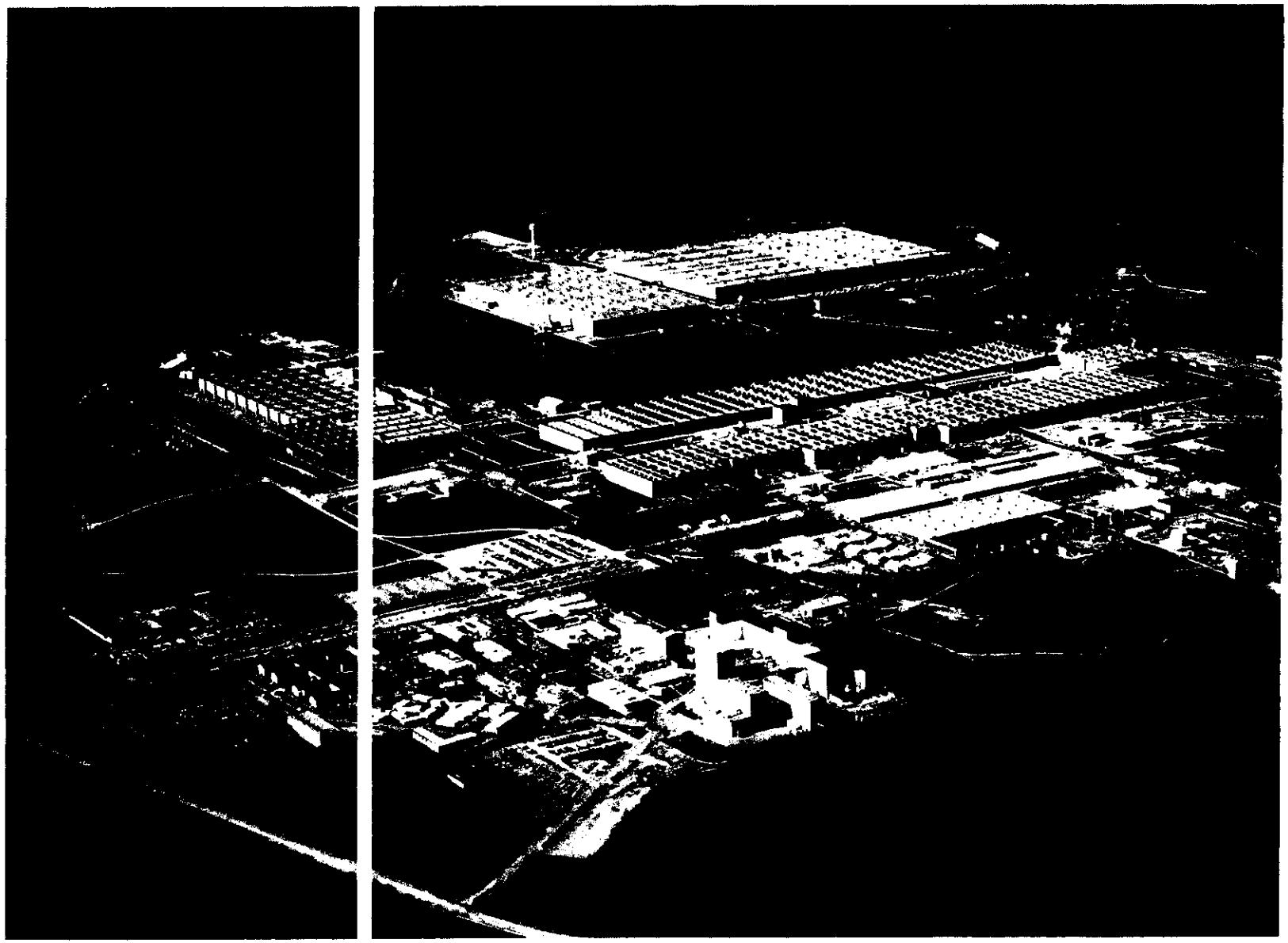
Mortgage Reduction: Two year acceleration of schedule achieves savings of $118 million by reducing the base operations, infrastructure, safeguard and security, and surveillance and maintenance costs at the site.

Risk Reduction: Completes CERCLA required cleanup, reduces DOE's footprint and achieves desired end-state as commercial industrial part two years ahead of schedule.

Return on Investment:

Investment: $202 million
Net savings: $118 million
Return on Investment: 54% (on net present value of investment and savings)
Annual return on investment: 11%

ETTP



PORTS

Portsmouth

Calculations for Investment, Savings, and ROI %

December 2008

Portsmouth Acceleration Case:

- Accelerates start of Process Building D&D from 2012 to 2010
- Reduces duration of Process Building O&D from 22 years to 10 years
- Reduces associated surveillance and maintenance costs

Base Case		$7,434,139	$305,726	$268,828	$302,661	$277,460	$278,451	$279,880	$286,695	$293,643	$300,759	$204,662	$266,648	$214,802	$220,530	$225,902	$231,351	$236,987	$242,759	$248,672	$318,481	$335,315	$232,120	$200,538	$192,576	$197,211	$201,925	$207,491	$113,071	$41,504	$73,820	$88,600	$91,151	$114,585	$133,136	$95,671	$87,178	$48,616	$40,218
Business Case		35,867,763	$305,726	$268,828	$341,468	$316,853	$285,520	$286,316	$280,223	$302,051	$311,278	$235,456	$253,940	$265,097	$238,715	$235,616	$156,993	$168,758	$174,377	$173,064	$232,661	$249,468	$141,225	$189,042	$84,092	$75,851	$15,661	$15,468	$15,851	$16,189	$16,594	$20,776	$25,172	$42,049	$60,482	$31,976	$38,525	$16,725	$20,218
Savings	**Base Case minus Business Case**	$1,566,376	$0	$0	-$38,807	-$39,194	-$17,068	-$6,438	$6,472	-$8,408	-$10,518	-$30,795	-$44,294	-$50,294	-$18,185	-$9,714	$74,359	$67,229	$68,382	$75,608	$78,310	$85,848	$90,895	$92,489	$189,484	$121,360	$186,834	$192,025	$97,221	$25,315	$57,026	$67,824	$65,979	$72,535	$72,854	$63,694	$50,653	$28,891	$20,000
	Reduced Costs for Surveillance and Maintenance	$864,740																																						
	Escalation Savings from Accelerated Scope	$731,636																																						
Investment	**Amount Business Case exceeds Base Case**	($273,717)			($38,807)	($39,194)	($17,068)	($6,438)		($8,408)	($10,518)	($30,795)	($44,294)	($50,294)	($18,185)	($9,714)																								
Gain	**Amount Business Case is lower than Base Case**	$1,870,092							$6,472								$74,359	$67,229	$68,382	$75,608	$78,310	$85,848	$90,895	$92,489	$189,484	$121,360	$186,834	$192,025	$97,221	$25,315	$57,026	$67,824	$65,979	$72,535	$72,854	$63,694	$50,653	$28,891	$20,000
ROI	**Savings / investment (%)**	583%																																						
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $160,000/worker**	733																																						
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.000	1.044	1.661	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839	1.921	2.068	2.096	2.188	2.288	2.388	2.484	2.695	2.721	2.842	2.968	3.101	3.238	3.383	3.563	3.690	3.854	4.026	4.205	4.392	4.587	4.791
NPV	**Savings / Discount Factor**	$482,789	$0	$0	-$35,572	-$34,366	-$14,341	-$5,178	$4,985	-$6,200	-$7,426	-$20,914	-$28,664	-$31,186	-$10,787	-$5,517	$40,431	$34,997	$34,082	$36,678	$35,778	$37,549	$38,064	$37,085	$41,842	$44,661	$85,739	$84,688	$31,358	$7,817	$16,859	$19,186	$17,880	$19,819	$18,647	$15,148	$11,533	$6,298	$4,174

Portsmouth

Development of Business Case

Current Year Dollars ($K)

Case	PBS	PBS Name	ADS	ADS Name	Cost Type	Remaining Life Cycle Cost	2008	2009	2010	2011	2012	2013	2014	2015
Base Case	PO-0011	Site Infrastructure/Support/Program Management	156	Surveillance & Maintenance PO-0011	Maintenance Costs	$2,369	$1,218	$1,166	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	Site Infrastructure/Support/Program Management	156	Surveillance & Maintenance PO-0011	Maintenance Costs	$2,369	$1,218	$1,166	$0	$0	$0	$0	$0	$0
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011	Excess Nuclear Material Management & Disposition	159	Nuclear Material Dispositioning	Progress Costs	$43,779	$19,373	$15,466	$8,940	$0	$0	$0	$0	$0
Business Case	PO-0011	Excess Nuclear Material Management & Disposition	159	Nuclear Material Dispositioning	Progress Costs	$43,779	$19,373	$15,466	$8,940	$0	$0	$0	$0	$0
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011	Excess Nuclear Material Management & Disposition	160	Nuclear Material Dispositioning	Maintenance Costs	$3,150	$2,182	$1,003	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	Excess Nuclear Material Management & Disposition	160	Nuclear Material Dispositioning	Maintenance Costs	$3,185	$2,182	$1,003	$0	$0	$0	$0	$0	$0
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011X	Excess Nuclear Material Management $ Disposition	183	DUF6 Operations & Cylinder Management	Progress Costs	$1,272,557	$55,620	$23,445	$46,332	$46,974	$48,146	$49,352	$50,586	$51,801
Business Case	PO-0011X	Excess Nuclear Material Management & Disposition	183	DUF6 Operations & Cylinder Management	Progress Costs	$1,272,057	$55,620	$23,445	$46,332	$46,974	$48,146	$49,352	$50,586	$51,801
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0013	Low-Level Waste (LLW) Management & Disposition	162	Waste Management Activities	Progress Costs	$150,787	$44,166	$51,615	$58,000	$26,000	$0	$0	$0	$0
Business Case	PO-0013	Low-Level Waste (LLW) Management & Disposition	162	Waste Management Activities	Progress Costs	$150,787	$44,166	$51,615	$58,000	$26,000	$0	$0	$0	$0
Case						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0013	Low-Level Waste (LLW) Management & Disposition	162	Waste Management Activities	Maintenance Costs	$488	$472	$16	$0	$0	$0	$0	$0	$0
Business Case	PO-0013	Low-Level Waste (LLW) Management & Disposition	162	Waste Management Activities	Maintenance Costs	$488	$472	$16	$0	$0	$0	$0	$0	$0
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0020	Safeguards & Security	163	Safeguards & Security	Maintenance Costs	$657,122	$13,967	$15,259	$17,509	$15,979	$16,412	$16,022	$17,245	$17,675
Business Case	PO-0020	Safeguards & Security	163	Safeguards & Security	Maintenance Costs	$657,122	$13,967	$15,259	$17,509	$15,979	$16,412	$16,022	$17,245	$17,675
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Site Infrastructure/Support/Program Management	164	Surveillance & Maintenance/Infrastructure PO-0040	Maintenance Costs	$1,994,550	$122,746	$123,026	$93,230	$96,430	$99,619	$71,496	$73,211	$74,966
Business Case	PO-0040	Site Infrastructure/Support/Program Management	164	Surveillance & Maintenance/Infrastructure PO-0040	Maintenance Costs	$1,597,432	$122,746	$123,026	$93,230	$96,430	$99,619	$71,496	$73,211	$74,966
Delta						$397,114	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Low-Level Waste (LLW) Management & Disposition	165	Waste Disposal Cell	Progress Costs	$776,424	$10,999	$31,466	$13,737	$15,057	$24,776	$24,179	$20,803	$23,841
Business Case	PO-0040	Low-Level Waste (LLW) Management & Disposition	165	Waste Disposal Cell	Progress Costs	$450,306	$10,999	$31,466	$13,737	$15,057	$24,776	$24,179	$20,803	$23,841
Delta						$326,118	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Low-Level Waste (LLW) Management & Disposition	165	Waste Disposal Cell	Maintenance Costs	$58,146	$15,648	$8,486	$0	$0	$0	$0	$0	$0
Business Case	PO-0040	Low-Level Waste (LLW) Management & Disposition	165	Waste Disposal Cell	Maintenance Costs	$58,146	$15,648	$8,486	$0	$0	$0	$0	$0	$0
Case						$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Facility D&D	166	D&D Balance of Plant (A1 and A2)	Progress Costs	$147,487	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0040	Facility D&D	166	D&D Balance of Plant (A1 and A2)	Progress Costs	$108,741	$0	$0	$0	$0	$0	$0	$0	$0

Case	PBS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011X	$53,147	$58,475	$55,837	$57,233	$58,664	$60,131	$61,634	$63,175	$64,764	$66,373	$123,706	$144,115	$36,306	$0	$0
Business Case	PO-0011X	$53,147	$58,475	$55,837	$57,233	$58,664	$60,131	$61,634	$63,175	$64,764	$66,373	$123,706	$144,115	$36,306	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Case		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0020	$18,114	$14,566	$19,031	$15,509	$19,997	$23,467	$21,009	$21,535	$22,873	$22,625	$23,190	$23,770	$24,386	$24,474	$12,783
Business Case	PO-0020	$18,114	$14,566	$19,031	$15,509	$19,997	$23,467	$21,009	$21,535	$22,873	$22,625	$23,190	$23,770	$24,386	$24,474	$12,783
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	$76,767	$43,866	$44,866	$45,967	$47,091	$48,221	$46,378	$50,563	$51,777	$58,019	$44,292	$55,395	$56,929	$58,295	$84,684
Business Case	PO-0040	$76,767	$43,866	$44,866	$45,967	$47,091	$48,221	$46,378	$50,563	$51,777	$58,019	$44,292	$55,395	$56,929	$58,295	$84,684
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	$24,807	$14,232	$14,027	$11,556	$19,259	$17,041	$16,260	$34,556	$36,306	$26,027	$25,731	$24,530	$22,131	$26,242	$19,032
Business Case	PO-0040	$24,807	$14,232	$14,027	$11,556	$19,259	$17,041	$16,260	$34,556	$36,306	$26,027	$25,731	$24,530	$22,131	$26,242	$19,032
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Case		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,233
Business Case	PO-0040	$0	$3,150	$53,369	$32,778	$36,166	$27,612	$0	$0	$0	$0	$0	$0	$0	$0	$0

Case	PBS	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Base Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0011X	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0011X	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Case		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0013	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0020	$13,119	$13,447	$13,783	$14,127	$14,424	$14,765	$15,154	$15,533	$15,921	$16,320	$15,783	$17,146	$17,574	$14,914
Business Case	PO-0020	$13,119	$13,447	$13,783	$14,127	$14,424	$14,765	$15,154	$15,533	$15,921	$16,320	$15,783	$17,146	$17,574	$14,914
Delta		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	$61,127	$63,594	$64,096	$26,676	$16,678	$16,644	$21,518	$26,180	$36,962	$25,676	$98,896	$58,135	$19,531	$20,000
Business Case	PO-0040	$61,127	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$0	$62,594	$64,096	$25,476	$16,676	$16,644	$21,516	$26,193	$25,580	$25,576	$28,895	$58,135	$19,531	$20,000
Base Case	PO-0040	$24,228	$17,806	$8,756	$7,389	$8,438	$40,482	$44,150	$36,607	$41,574	$41,687	$58,578	$16,125	$9,360	$0
Business Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta		$24,228	$17,805	$8,756	$7,309	$8,430	$40,482	$44,150	$35,607	$41,574	$41,687	$29,578	$16,125	$9,259	$0
Base Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Case		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	$27,060	$30,613	$46,386	$26,575	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Eliminated costs in 2032 to 2044 to reflect earlier D&D completion

Eliminated 2031 to 2043 costs to reflect accelerated D&D completion

D&D costs in 2032 to 2034 accelerated to the earlier period of 2017 to 2021, consistent with USEC exercise of lease option thru 2016 due to earlier D&D completion

Case	PID	Title Name	ABID	ABID Name	Cost Type	Remaining Life Cycle Cost	2005	2006	2008	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Delta						$97,746	$0	$0	$0	$0	$0	$0	$0	$0	$0	-$3,150	-$20,150	-$22,778	-$36,152	-$27,512	$0	$0	$0	$0	$0	$0	$0	$0	$4,233	$97,026	$30,813	$46,566	$36,975	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Facility D&D	166	D&D Balance of Plant (A1 and A2)	Maintenance Costs	$1,599,252	$0	$21,926	$51,066	$71,007	$69,759	$75,412	$69,022	$66,160	$62,340	$62,303	$60,612	$57,360	$55,026	$39,449	$46,105	$51,976	$54,[illegible]	$56,301	$55,275	$49,167	$36,978	$57,363	$76,538	$46,116	$51,381	$57,187	$8,377	$0	$0	$0,767	$7,738	$24,160	$42,165	$13,202	$17,282	$0	$0
Business Case	PO-0040	Facility D&D	169	D&D Balance of Plant (A1 and A2)	Maintenance Costs	$968,066	$0	$21,926	$51,066	$71,007	$69,759	$75,412	$69,022	$66,160	$62,340	$62,303	$60,612	$57,360	$55,026	$39,449	$4,811	$5,159	$5,469	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0,767	$7,738	$24,160	$42,165	$13,202	$17,282	$0	$0
Delta						$631,185	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$40,980	$46,750	$49,307	$56,301	$55,275	$49,167	$36,978	$57,363	$76,538	$46,116	$51,381	$57,187	$8,377	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Facility D&D	167	D&D of the Process Buildings	Progress Costs	$424,341	$0	$0	$0	$0	$19,125	$38,433	$44,027	$22,966	$24,727	$11,026	$16,179	$13,362	$12,169	$9,687	$28,227	$14,612	$13,080	$13,244	$17,043	$27,323	$45,775	$24,803	$15,066	$14,307	$14,136	$819	$0	$0	$0	$5	$0	$0	$0	$0	$0	$0	$5
Business Case	PO-0040	Facility D&D	167	D&D of the Process Buildings	Progress Costs	$384,632	$0	$0	$52,846	$55,602	$34,376	$35,165	$36,574	$36,552	$37,698	$39,914	$39,400	$40,366	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta						$55,709	$0	$0	-$32,846	-$33,602	-$15,250	-$3,732	$9,053	-$14,213	-$16,971	-$27,430	-$23,227	-$20,924	$12,169	$9,687	$28,227	$14,612	$13,080	$13,244	$17,043	$27,323	$45,775	$24,803	$15,066	$14,307	$14,136	$819	$0	$0	$0	$0	$5	$0	$0	$0	$0	$0	$0
Base Case	PO-0040	Facility D&D	167	D&D of the Process Buildings	Maintenance Costs	$278,537	$2,136	$5,647	$9,878	$8,008	$12,390	$12,140	$11,731	$13,443	$13,931	$7,993	$7,679	$9,530	$0,244	$9,609	$0,442	$9,099	$9,466	$9,991	$9,736	$9,367	$5,442	$10,311	$12,115	$9,630	$18,205	$11,761	$4,694	$0	$0	$2,169	$4,176	$4,980	$5,078	$5,221	$5,323	$0	$0
Business Case	PO-0040	Facility D&D	167	D&D of the Process Buildings	Maintenance Costs	$132,119	$2,136	$5,647	$11,835	$11,590	$11,209	$12,946	$13,311	$7,858	$7,935	$9,386	$9,766	$9,162	$3,407	$1,469	$2,605	$3,481	$3,630	$3,629	$9,749	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta						$144,418	$0	$0	-$5,961	-$5,582	$1,181	-$706	-$1,581	$5,585	$6,402	-$215	-$917	-$592	$5,796	$8,141	$6,537	$5,637	$5,836	$6,062	$0,009	$9,367	$5,442	$10,311	$12,115	$9,630	$18,205	$11,761	$4,694	$0	$0	$2,169	$4,176	$4,980	$5,078	$5,221	$5,323	$0	$0
Base Case	PO-0040	Facility D&D	168	Near Term Inactive Facility D&D	Progress Costs	$5,852	$5,852	$5	$0	$0	$5	$0	$0	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case	PO-0040	Facility D&D	168	Near Term Inactive Facility D&D	Progress Costs	$5,852	$5,852	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delta						$0	$0	$0	$0	$0	$0	$0	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0103	Site Infrastructure/Support/Program Management	150	Litigation	Maintenance Costs	$18,513	$519	$518	2029	$333	$342	$351	$359	$368	$378	$387	$397	$407	$417	$427	$438	$449	$460	$472	$309	$495	$509	$521	2034	$547	$561	$575	$589	$604	$618	$634	$650	$666	$683	$700	$718	$736	$754
Business Case	PO-0103	Site Infrastructure/Support/Program Management	150	Litigation	Maintenance Costs	$18,513	$519	$518	$369	$333	$342	$351	$359	$368	$378	$387	$397	$407	$417	$427	$438	$449	$460	$472	$483	$495	$508	$521	$534	$547	$561	$575	$589	$604	$618	$634	$650	$666	$683	$700	$718	$736	$754
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0103	Stakeholder Support	150	Post-Closure Liability	Maintenance Costs	$18,513	$519	$518	2029	$333	$342	$351	2029	$368	$378	$387	$397	$407	$417	$427	$438	$449	$460	$472	$309	$495	$508	$521	$534	$547	$561	$575	$589	$604	$618	$634	$650	$666	$683	$700	$718	$736	$754
Business Case	PO-0103	Stakeholder Support	150	Post-Closure Liability	Maintenance Costs	$18,513	$519	$518	$369	$333	$342	$351	$359	$368	$378	$387	$397	$407	$417	$427	$438	$449	$460	$472	$483	$495	$508	$521	$534	$547	$561	$575	$589	$604	$618	$634	$650	$666	$683	$700	$718	$736	$754
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	PO-0104	Stakeholder Support	157	State of Ohio Grants	Maintenance Costs	$17,746	$566	$513	$221	$369	2029	$346	$353	$361	$369	$377	$386	$395	$402	$411	$420	$429	$439	$449	$458	$469	$479	$489	$359	$511	$522	$534	$546	$558	$572	$586	$599	$613	$627	$642	$656	$671	$686
Business Case	PO-0104	Stakeholder Support	157	State of Ohio Grants	Maintenance Costs	$17,746	$566	$513	$361	$369	$369	$346	$353	$361	$369	$377	$386	$394	$402	$411	$420	$429	$439	$449	$458	$469	$479	$489	$359	$511	$522	$534	$546	$558	$572	$586	$599	$613	$627	$642	$656	$671	$686
Delta						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case	Total					$7,434,156	$308,726	$368,628	$362,661	$377,409	$375,461	$379,849	$396,466	$393,643	$336,789	$604,962	$366,646	$314,882	$230,930	$230,902	$351,361	$336,987	$342,789	$348,673	$310,491	$336,313	$232,138	$309,636	$162,576	$157,211	$361,926	$307,481	$113,671	$41,394	$73,620	$68,800	$51,131	$114,968	$139,136	$98,671	$97,176	$46,613	$40,218
Business Case	Total					$6,537,703	$308,726	$368,628	$341,495	$315,609	$366,829	$369,916	$366,829	$365,991	$311,376	$366,466	$363,946	$366,697	$359,716	$339,695	$189,895	$166,795	$174,477	$173,694	$323,001	$369,495	$141,338	$309,643	$94,692	$79,661	$18,691	$15,485	$95,891	$96,189	$16,894	$39,776	$26,173	$40,849	$55,989	$91,876	$36,659	$39,735	$39,249
Delta						$1,396,376	$0	$0	-$39,807	-$39,194	-$17,068	-$9,438	$4,472	-$8,468	-$10,414	-$30,795	-$44,294	-$36,294	-$16,130	-$9,714	$74,339	$67,229	$68,382	$75,499	$76,316	$65,846	$66,895	$52,496	$108,464	$121,360	$199,634	$192,026	$97,357	$25,318	$57,026	$47,824	$66,979	$72,533	$72,854	$63,694	$60,483	$33,891	$20,000

Accelerated and compressed some costs in 2025 to 2034 to 2022 to 2034 and eliminated remaining costs in 2025 to 2034, due to earlier D&D completion

D&D costs in 2020 in 2033 accelerated and compressed to 2010 to 2018, also progress start date moved from 2014 to 2025

Adjusted near-term maintenance costs to reflect accelerated and compressed D&D schedule and eliminated costs in 2027 to 2042

ID

SITE SUBMITTAL

Idaho Acceleration of Work Scope Through 2015

The Idaho Cleanup Project (ICP) could accelerate FY 2011 and FY 2012 Deactivation & Decommissioning (D&D) work scope to FY 2009 and FY 2010. This would allow additional facilities in the INTEC area to be D&D'd during the FY 2011 – FY 2012 time frame and continue thru to FY 2015. TAN, PBF, and ETR D&D will be completed by FY 2008-2009 allowing closure of the areas.

These D&D accelerations from the above action would result in the closure of the following areas:

1. Materials Test Reactor Complex D&D (86,241 sq. ft.)
2. CPP-601/640 Demolition (101,279 sq. ft.)
3. Other INTEC Facilities currently in ICP contract
4. RWMC facilities D&D (over 81,825 sq. ft.)
5. New INTEC facilities D&D (over 700,000 sq. ft.)

The ICP has already accelerated some D&D activities within the current contract suggesting the above plan is realistic and achievable. For example, the Power Burst Reactor Facility should have all D&D activities (18,679 square feet – 150 acres) completed in FY 2008. The Test Area North Complex will have all D&D activities completed FY 2008 (261,040 square feet – 250+ acres). Both were to be completed in FY 2012. The acceleration of these D&D projects will save the surveillance and maintenance costs and escalation for these projects.

The successful acceleration of the D&D is contributed to several key factors, namely:

1. The establishment of a solid rapport with the regulators and the public through upfront communications and a team approach in developing and processing the critical documentation necessary in establishing the final end-sate for each high-risk facility (defines expectations).

2. The agreement by both regulators to use the CERCLA Non-time Critical Removal Action process as the process for defining and executing the D&D work.

3. The most important factor is the dedicated staff and crews. These individuals work together, train together and develop confidence and trust with each other. This approach minimizes worker accidents and results in an outstanding safety performance record.

The ICP could also accelerate the exhumation of buried waste. This scenario assumes 5.6 acres are exhumed by FY 2015, the majority of the grouting is completed, compaction of required waste zone materials is completed, the first year (of three) required to process materials for the layers of the cap is complete, and the initial soil layer installation on the cap is completed. This would clearly enable Idaho to address all TRU waste Settlement Agreement requirements by 2018. However, if this scenario was accepted, further

analysis and evaluation would need to occur related to the human resource and equipment constraints.

By accelerating the buried waste exhumation, the entire RWMC area will be ready for D&D around the 2017-2018 time frame as the AMWTP is scheduled for a 2015 completion. This will close the Radioactive Waste Management Complex 3- 4 years earlier than currently planned.

Chart 1b shows the baseline funding scenario to accomplish the above accelerations. However, a smoother funding scenario could allow for nearly the same result at a $600 - $610M level.

It should also be noted that the D&D work has not only been able to be accelerated, but it is under-running the current estimates. Therefore, even thought the charts show the baseline funding required, it is likely the D&D could be accomplished for less.

Assumptions:

- The baseline currently provides for the SRS SNF swap beginning in FY 2013. This could be accelerated, but it would compete resources completing the Navy SNF return and other accelerated work scope.

- All other work (SNF, calcine, remediation work etc.) continues at the current baseline projections.

Percent Complete from 2008 -2035:

	Base Case		**Accelerated**	
	FY 2009	FY 2015	FY 2009	FY 2015
• PBS 0011	52%	100%	52%	100%
• PBS 0012B	2%	13%	2%	13%
• PBS 0013	29%	99%	29%	99%
• PBS 0014B	5%	14%	5%	14%
• PBS 0030B	6%	22%	7%	33%
• PBS 0040B	5%	25%	14%	54%
• PBS 100	7%	28%	7%	28%

Idaho Operations Office
FY 2010 - FY 2014 Field Request

Objective:

- Footprint Reduction (Requires over baseline funding)
  - 2010 activities will reduce the EM presence at the INL by 225,000 square feet
  - 2011 activities will reduce the EM presence at the INL by 235,000 square feet
  - 2012 activities will reduce the EM presence at the INL by 1,000 square feet
  - 2013 activities will reduce the EM presence at the INL by 260,000 square feet
  - 2014 activities will reduce the EM presence at the INL by 160,000 square feet
  - 2015 activities will reduce the EM presence at the INL by 550,000 square feet
- Total reduction is 1,431,000 square feet.
  - This equates to 41% reduction of total square feet remaining at Idaho under EM purview.
- Total investment is $398M returning $834M of completed D&D facilities equating to a savings of $436M over the identified time frame.
- Near-term completions
  - The D&D of the Materials Test Reactor complex will be completed in FY 2010 removing an EM presence from the Reactor Technology Complex.

NO. 3969 P. 1

Idaho Operations Office
FY 2010 - FY 2014 Field Request
SBW 12 month delay - BA Request by PBS
$(000)

PBS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
ID-0012B-D	$15,000	$24,000	$26,000	$72,217	$75,778
ID-0012B-N	$4,000	$5,000	$4,950	$4,950	$5,000
ID-0013	$157,500	$156,900	$158,000	$157,800	$162,000
ID-0014B	$60,000	$76,780	$70,000	$95,148	$83,741
ID-0014B-LI	$85,000	$14,720	$0		
ID-0030B	$96,000	$127,000	$135,000	$154,498	$169,207
ID-0040B	$34,358	$62,000	$79,773	$0	$0
ID-0100	$3,900	$4,000	$4,100	$4,200	$4,330
Total	$455,758	$470,400	$477,823	$488,813	$500,056
Over Baseline					
ID-0014B-LI	$0	$0	$0	$0	$0
ID-0012B/C	$10,000	$0	$0	$0	$0
ID-0030B/C	$24,000	$0	$0	$0	$0
ID-0040B	$26,000	$0	$0	$65,000	$65,000
Total	$515,758	$470,400	$477,823	$553,813	$565,056

Footprint Reduction
FY 2010 (Level D D)

Footprint Reduction			3.1%		
Facility	$s	Sq Feet	Escalation	S&M Sav	Return
2010 MTR Complex	25,000	125000			
INTEC Misc	22,000				
Complete 601/640	15,000	100,000			
Subtotal	62,000	225,000	1.000	620	115,000
2011					
Consolidate INTEC labs (602/630)	19,000				
Complete 602/630	16,000	105,000			
RWMC Misc	17,000	80,000			
INTEC Misc	10,000	50,000			
Subtotal	62,000	235,000	1.357	620	156,000
2012 NWCF (659)	20,000				
TAN Pump/Treat	1,000	1,000			
Subtotal	21,000	1,000	1.442	580	57,000
Final Fee Payment	58,000				
Subtotal	79,000				
2013					
Tank Farm	10,000				
PEW	25,000				
NWCF (659)	30,000				
Intown Warehouse		100,000			
FPF (691)		160,000			
Subtotal	65,000	260,000	1.487	650	180,000
2014					
Complete NWCF (659)	20,000	90,000			
Complete Tank Farm	10,000	70,000			
PEW	35,000				
Subtotal	65,000	160,000	1.533	650	185,000
2015					
Complete PEW	35,000	200,000			
RWMC TSARE	20,000	315,000			
RWMC Misc	10,000	35,000			
Subtotal	65,000	550,000	~~1.165~~ 1.581	650	~~141,000~~ 191,000

Yellow Colored = Overbaseline activities

Hatched = accelerated outyear baseline

Savings	Timeframe	Investment	Square Ft	% of total	% of remaining	Work Done
125,000	2010 - 2012	203,000	461,000	12%	13%	328,000
311,000	2013 - 2015	195,000	970,000	26%	28%	506,000
72,500	Baseline	144,500	461,000	12%	13%	217,000
363,500	Over Baseline	253,500	970,000	26%	28%	617,000
436,000	2010 - 2015	398,000	1,431,000	38%	41%	834,000

Steve Lichman
2 pages
From Mark Scarle

Footprint Reduction
FY 2010 (Level D D)

Footprint Reduction

	Facility		$s	Sq Feet	3.1% Escalation	S&M Sav	Return
2010	MTR Complex		25,000	125000			
	INTEC Misc		22,000				
	Complete 601/640		15,000	100,000			
		Subtotal	62,000	225,000	1.000	620	114,000
2011							
	Consolidate INTEC labs (602/630)		19,000				
	Complete 602/630		16,000	105,000			
	RWMC Misc		17,000	80,000			
	INTEC Misc		10,000	50,000			
		Subtotal	62,000	235,000	1.031	620	118,000
2012	NWCF (659)		20,000				
	TAN Pump/Treat		1,000	1,000			
		Subtotal	21,000				
		Final Fee Payment	40,000	1,000	1.063	400	78,000
		Subtotal	61,000				
2013							
	Tank Farm		10,000				
	PEW		25,000				
	NWCF (659)		30,000				
	Intown Warehouse			100,000			
	FPF (691)			160,000			
		Subtotal	65,000	260,000	1.096	650	131,000
2014							
	Complete NWCF (659)		20,000	90,000			
	Complete Tank Farm		10,000	70,000			
	PEW		35,000				
		Subtotal	65,000	160,000	1.130	650	135,000
2015							
	Complete PEW		35,000	200,000			
	RWMC TSARE		20,000	315,000			
	RWMC Misc		10,000	35,000			
		Subtotal	65,000	550,000	1.165	650	139,000

Savings	Timeframe	Investment	Square Ft	% of total	% of remaining	Work Done
125,000	2010 - 2012	185,000	461,000	12%	13%	310,000
210,000	2013 - 2015	195,000	970,000	26%	28%	405,000
72,500	Baseline	144,500	461,000	12%	13%	217,000
262,500	Over Baseline	235,500	970,000	26%	28%	498,000
335,000	2010 - 2015	380,000	1,431,000	38%	41%	715,000

(Level D D)

PBS	ABB Name	Function	Category	Driver	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
ID-0012B/C	SNF Transfers	S&M	Maintain Ex Status	DOE-Order (Othe	$3,250	$3,600	$4,700	$5,000	$5,200
ID-0012B/C	SNF Transfers	FRR/CRR	Progress - Compli	Court Order, Setti	$2,750	$3,500	$3,800	$3,000	$4,000
ID-0012B/C	SNF Transfers	SRS Swap	Progress - Compli	Court Order, Setti	$1,000	$3,000	$15,000	$15,000	$15,500
ID-0012B/C	SNF Transfers	ATR	Progress - Compli	Court Order, Setti	$1,250				
ID-0012B/C	NRC License	FSV/TMI - NRC License	Maintain Ex Status	SNFSB Commitm	$3,500	$4,900	$4,950	$4,950	$5,000
ID-0012B/C	National Program	NNSFP	Maintain Ex Status	DOE-Order (Othe	$3,500	$3,250	$3,250	$3,250	$3,250
ID-0012B/C	SNF Final Disposition - Construction		Progress - Compli	Court Order, Setti	$0		$21,900	$22,667	$47,828
ID-0012B/C					$15,250	$18,250	$53,400	$54,667	$80,778
ID-0013	Infrastructure (RWMC)	Utilities	Maintain Ex Status	Other Essential Fu	$6,000	$6,250	$6,500		
ID-0013	Infrastructure (RWMC)	Haz / Transportation	Maintain Ex Status	Other Essential Fu	$1,250	$1,000	$1,000		
ID-0013	Infrastructure (RWMC)	ES&H & Project Management	Maintain Ex Status	Other Essential Fu	$13,000	$10,000	$10,250		
ID-0013	Infrastructure (RWMC)	Env Services	Maintain Ex Status	State or local stat	$3,100	$3,200	$3,200		
ID-0013	CH TRU Waste Disposition -AMWTP	AMWTP	Maintain Ex Status	Court Order, Setti	$70,000	$70,000	$70,000	$3,888	$86,240
ID-0013	CH TRU Waste Disposition -AMWTP	AMWTP	Progress - Compli	Court Order, Setti	$55,000	$55,000	$55,000	$65,912	$67,760
ID-0013	MLLW/LLW Disposition	MLLW/LLW	Maintain Ex Status	State or local stat	$4,000	$4,000	$4,000	$4,250	$4,250
ID-0013	MLLW/LLW Disposition	MLLW/LLW	Progress - Compli	State or local stat	$3,000	$4,000	$4,050	$3,750	$3,750
ID-0013					$155,350	$153,450	$153,950	$157,800	$162,000
ID-0014B/C	INTEC Infrastructure	Maintenance	Maintain Ex Status	Court Order, Setti	$6,000	$6,070	$6,000	$6,038	$6,250
ID-0014B/C	INTEC Infrastructure	Utilities	Maintain Ex Status	Court Order, Setti	$18,500	$18,500	$19,000	$19,000	$19,500
ID-0014B/C	INTEC Infrastructure	IAO Project Mng	Maintain Ex Status	Court Order, Setti	$1,043	$1,000	$1,000	$1,250	$1,250
ID-0014B/C	INTEC Infrastructure	IAO(Rad con, laundry,	Maintain Ex Status	Court Order, Setti	$7,500	$6,500	$6,750	$7,000	$7,250
ID-0014B/C	Calcine Disposition (Including Bin Sets) -		Progress - Compli	Court Order, Setti	$65	$3,050	$7,500	$38,000	$25,491
ID-0014B/C	Liquid Waste Facility Closure (Including		Progress - Compli	Court Order, Setti	$2,500	$250	$250	$8,500	$9,500
ID-0014B/C	IWTU (SBW) Design/Construct		Progress - Compli	Court Order, Setti	$85,000	$65,000	$10,000		
ID-0014B/C	IWTU Operation/SBW Disposition		Progress - Compli	Court Order, Setti	$1,500	$17,000	$17,000	$35,000	$12,500
ID-0014B/C					$124,128	$137,400	$69,500	$117,648	$83,741
ID-0030B/C	RWMC Infrastructure	See PBS 13	Maintain Ex Status	Court Order, Setti	$0			$31,000	$31,000
ID-0030B/C	CERCLA Remediation	WAG 3 Cercla	Progress - Compli	Federal Env Statu	$4,000	$3,500	$6,200	$3,750	$4,100
ID-0030B/C	CERCLA Remediation	ICDF	Progress - Compli	State or local stat	$7,000	$7,000	$12,500	$3,500	$3,500
ID-0030B/C	CERCLA Remediation	WAG 7 Cercla	Maintain Ex Status	Federal Env Statu	$3,850	$3,900	$4,000	$4,100	$4,200
ID-0030B/C	CERCLA Remediation	Wag 10 Cercla	Maintain Ex Status	Federal Env Statu	$8,000	$8,000	$8,000	$8,000	$8,000
ID-0030B/C	CERCLA Remediation	Wag 10 Cercla	Progress - Compli	Federal Env Statu	$1,500	$1,600	$1,600	$1,700	$1,800
ID-0030B/C	VCO	VCO	Progress - Compli	State or local stat	$4,457	$6,900	$3,450	$0	$10,707
ID-0030B/C	WAG 7 Buried Waste	Exhumation	Progress - Compli	Federal Env Statu	$60,000	$60,000	$70,000	$71,642	$74,000
ID-0030B/C	WAG 7 Buried Waste	Characterization	Progress - Compli	Federal Env Statu	$25,800	$25,800	$30,100	$30,806	$31,820
ID-0030B/C					$114,607	$116,600	$135,850	$164,498	$188,207
ID-0040B/C	INTEC D&D		Progress - Non Cc	DOE-Order (Othe	$24,815	$32,700	$23,000		
ID-0040B/C	RTC/PBF D&D		Progress - Non Cc	DOE Order (ESAI	$10,350				
ID-0040B/C	D&D		Maintain Ex Status	Other Essential Fu	$7,500	$8,000	$38,000		
ID-0040B/C	RWMC D&D		Progress - Non Cc	DOE-Order (Other)					
ID-0040B/C					$42,365	$40,700	$61,000	$0	$0
ID-0100	Idaho Community and Regulatory Support		Maintain Ex Status	Other Essential Fu	$3,800	$4,000	$4,100	$4,200	$4,330
ID-0100					$3,800	$4,000	$4,100	$4,200	$4,330
				Target	$455,000	$470,400	$477,800	$458,913	$500,056
ID-0014B/C	IWTU Operation/SBW Disposition		Progress - Compli	Court Order, Setti	60,000				
ID-0012B/C	SNF Transfers	SRS Swap	Progress - Compli	Court Order, Setti	0,000	$ 12,000			
ID-0040B/C	INTEC D&D		Progress - Non Cc	DOE-Order (Other	$ 20,000	$ 20,000	$ -	$ 66,000	$ 95,000
				OverTarget	$80,000	$32,000	$0	$65,000	$65,000
				Total	$544,000	$502,400	$477,800	$553,813	$566,056

Idaho

Calculations for Investment, Savings, and ROI %

December 2008

Idaho Acceleration Case:

- Accelerates D&D planned for 2021 through 2031 to 2010 through 2015
- Considerable gain through continued attainment of 1.5 CPI

Base Case		$1,959,258	$34,358	$62,000	$79,773	$0	$0	$0	$0	$0	$0	$0	$0	$76,314	$58,331	$61,538	$63,446	$59,466	$62,842	$75,852	$87,979	$81,300	$63,518	$80,348	$71,793	$170,613	$176,108	$161,568	$167,196	$194,715
Business Case		$1,671,958	$66,358	$62,000	$79,773	$65,666	$65,000	$65,006	$0	$0	$0	$6	$0	$0	$6	$0	$0	$0	$0	$0	$37,468	$81,306	$93,518	$86,348	$71,793	$176,813	$176,166	$161,568	$167,196	$194,715
Savings	**Base Case minus Business Case**	$287,300	-$26,000	$0	$0	-$65,000	-$65,000	-$65,000	$0	$0	$0	$0	$0	$76,314	$58,331	$61,538	$63,446	$59,466	$62,842	$75,852	$50,511	$0	$0	$0	$0	$0	$0	$0	$0	$0
Investment	**Amount Business Case exceeds Base Case**	($221,000)	($26,000)			($65,000)	($65,666)	($65,006)																						
Gain	**Amount Business Case is lower than Base Case**	$508,300												$76,314	$58,331	$61,538	$63,446	$59,466	$62,842	$75,852	$50,511									

ROI	**Savings / Investment (%)**	130%
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	1.473

Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.691	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614	1.686	1.761	1.839	1.921	2.008	2.096	2.188	2.286	2.388	2.494	2.605	2.721	2.842	2.968	3.101	3.238	3.383	3.533
NPV	**Savings / Discount Factor**	$76,615	-$23,633	$6	$0	-$52,289	-$50,062	-$47,930	$0	$6	$0	$0	$0	$43,346	$31,719	$32,635	$31,621	$29,376	$26,710	$33,177	$21,152	$0	$0	$0	$0	$0	$0	$0	$6	$6

Idaho

Development of Business Case

Current Year Dollars ($K)

Case	Description	Remaining Life Cycle Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Base Case	Based on PBS 40 (Based on baseline and takes into account carryover and additional efficiencies expected in 2009)	$1,959,256	$34,356	$82,000	$78,773	$6	$0	$0	$0	$0	$0	$0	$0	$76,314	$58,331	$61,538	$63,446	$58,466	$62,842	$75,852	$67,979	$61,300	$63,518	$60,348	$71,793	$170,613	$176,108	$181,568	$187,196	$194,715
Business Case	Accelerates D&D	$1,671,956	$60,356	$82,000	$78,773	$65,000	$65,000	$65,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$57,468	$61,300	$63,518	$60,348	$71,793	$170,613	$176,108	$181,568	$187,196	$194,715
Delta		$287,300	-$26,000	$0	$0	-$65,000	-$65,000	-$65,000	$0	$0	$0	$0	$0	$76,314	$58,331	$61,538	$63,446	$50,466	$62,842	$75,852	$50,511	$0	$0	$0	$0	$0	$0	$0	$0	$0

Accelerates and compresses D&D activities in 2021 to 2028 to 2010 to 2015 and includes assumption of CPI 1.5

RL

SITE SUBMITTAL

Richland

Calculations for Investment, Savings, and ROI %

December 2008

Richland Footprint Reduction:
- Accelerates River Corridor and PFP
- About a 90% footprint reduction

Base Case		$3,935	$366	$363	$479	$577	$575	$523	$406	$276	$149	$200
Business Case		$2,861	$439	$493	$497	$513	$486	$454	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$1,054	-$54	-$130	-$17	$65	$89	$69	$406	$276	$149	$200
	Reduced Costs for Surveillance & Maintenance and Project Management	$69										
	Mitigates potential REA on CPIF contract	$672										
	Increased Costs for Safeguards & Security	-$36										
	Escalation Savings from Accelerated Scope	$349										
Investment	**Sum of the investment for each case**	($338)	($54)	($130)	($37)	($66)	($45)	($7)				
Gain	**Sum of the amount that each Business Case is lower than the respective Base Case**	$1,392			$20	$130	$134	$76	$406	$276	$149	$200
ROI	**Savings / Investment (%)**	311%										
Estimated Additional Man-Years	**Sum of the estimated additional man-years for River Corridor and PFP**	2,256										
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2000**	4.45%	1.091	1.139	1.190	1.243	1.296	1.356	1.416	1.479	1.545	1.614
NPV	**Savings / Discount Factor**	$686	-$49	-$114	-$15	$52	$69	$51	$267	$167	$97	$124

Richland - River Corridor

Calculations for Investment, Savings, and ROI %

December 2008

River Corridor Footprint Reduction:
- Accelerates completion of the River Corridor Project by 4 years from FY19 to FY15.
- Reduces site footprint 87% from 586 square miles to 75 square miles

Base Case		$2,412	$224	$216	$301	$396	$385	$296	$213	$139	$60	$182
Business Case		$1,590	$276	$296	$281	$266	$251	$220	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$822	-$52	-$80	$20	$130	$134	$76	$213	$139	$60	$182
	Reduced Costs for Surveillance & Maintenance and Project Management	$0	This PBS is taxed approx. $55M less by completing early but cost is still borne by the DOE.									
	Mitigates potential REA on CPIF contract	$672	If current contractor is not funded sufficiently to earn fee by end of contract, DOE may incur a REA. New contractor would earn fee to actually complete work.									
	Increased Costs for Safeguards & Security	$0										
	Escalation Savings from Accelerated Scope	$150										
Investment	**Amount Business Case exceeds Base Case**	($131)	($52)	($80)								
Gain	**Amount Business Case is lower than Base Case**	$953			$20	$130	$134	$76	$213	$138	$60	$182
ROI	**Savings / Investment (%)**	626%										
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	876										
Annual Discount Factors	**Discount Factor Year 2 = Discount Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.091	1.139	1.190	1.243	1.298	1.356	1.416	1.479	1.545	1.614
NPV	**Savings / Discount Factor**	$559	-$47	-$70	$17	$105	$103	$56	$150	$94	$39	$112

Richland - PFP

Calculations for Investment, Savings, and ROI %

December 2008

PFP Footprint Reduction:
- Accelerates demolition of the Plutonium Finishing Plant and remaining support facilities by 4 years from FY19 to FY15
- Capitalizes on efficiencies of current trained plutonium qualified and cleared workforce

Base Case		$1,523	$162	$146	$178	$181	$190	$226	$193	$137	$90	$19
Business Case		$1,291	$164	$197	$215	$247	$235	$233	$0	$0	$0	$0
Savings	**Base Case minus Business Case**	$232	-$2	-$50	-$37	-$66	-$45	-$7	$193	$137	$90	$19
	Reduced Costs for Surveillance & Maintenance and Project Management (4 less years)	$69										
	Mitigates potential REA on CPIF contract	$0										
	Increased Costs for Safeguards & Security	-$36										
	Escalation Savings from Accelerated Scope	$199										
Investment	**Amount Business Case exceeds Base Case**	($207)	($2)	($50)	($37)	($66)	($45)	($7)				
Gain	**Amount Business Case is lower than Base Case**	$439							$193	$137	$90	$19
ROI	**Savings / Investment (%)**	112%										
Estimated Additional Man-Years	**Investment for 2010-2015 divided by $150,000/worker**	1,381										
Annual Discount Factors	**Discount Factor Year 2 = Disceunt Factor Year 1 * (1.0445). Discounted to the year 2008**	4.45%	1.091	1.139	1.190	1.243	1.298	1.356	1.418	1.479	1.545	1.614
NPV	**Discounted Savings = Savings / Annual Discount Factor**	$129	-$2	-$44	-$31	-$53	-$35	-$5	$136	$93	$58	$12

Richland

Development of Business Case

Case	Remaining Life Cycle Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Current Year Dollars ($000)										
RIVER CORRIDOR INVESTMENT OPPORTUNITY											
Base Case	$2,411,716	$224,269	$216,338	$300,889	$395,920	$384,900	$296,400	$213,100	$138,900	$59,500	$161,500
Cleanup from 2016 to 2019 accelerated and compressed into 2018 to 2015, restoring funding to original contract levels											
Business Case	$1,589,683	$275,932	$296,011	$281,211	$265,516	$250,914	$220,099	$0	$0	$0	$0
Delta	-$822,033	$51,663	$79,673	-$19,678	-$130,404	-$133,986	-$76,301	-$213,100	-$138,900	-$59,500	-$161,500
PLUTONIUM FINISHING PLANT (PFP) INVESTMENT OPPORTUNITY											
Base Case	$212,841	$44,183	$43,461	$36,145	$37,146	$33,061	$18,154	$513	$178	$0	$0
Near-term Safeguards & Security costs increased to support acceleration and outyear cost eliminated after 2015											
Business Case	$248,861	$52,240	$47,616	$45,341	$42,959	$44,226	$18,279	$0	$0	$0	$0
Delta	$35,820	$0,057	$4,155	$7,196	$5,813	$11,165	$125	-$513	-$178	$0	$0
Base Case	$197,640	$14,866	$17,575	$17,809	$16,100	$26,965	$26,762	$26,505	$24,105	$24,273	$1,660
Program management and support near-term costs adjusted to reflect acceleration and out-year costs eliminated due to earlier D&D completion											
Business Case	$129,081	$12,978	$13,545	$14,252	$23,982	$21,129	$43,195	$0	$0	$0	$0
Delta	-$68,559	-$1,888	-$4,030	-$3,557	$5,882	-$4,836	$16,413	-$26,505	-$24,105	-$24,273	-$1,660
Base Case	$1,112,524	$102,617	$85,443	$122,522	$126,105	$130,578	$163,372	$165,808	$113,043	$65,685	$17,261
D&D near-term costs adjusted to reflect acceleration schedule and outyear costs accelerated and compressed from 2016 to 2019 to 2010 to 2015											
Business Case	$913,347	$98,306	$135,740	$155,862	$180,186	$169,290	$173,951	$0	$0	$0	$0
Delta	-$199,177	-$4,311	$50,297	$33,340	$54,003	$38,712	-$9,421	-$165,808	-$113,043	-$65,685	-$17,261
PFP Base Case	$1,523,005	$161,665	$146,479	$178,476	$181,440	$188,604	$226,306	$192,827	$137,329	$89,958	$19,921
PFP Business Case	$1,291,089	$163,524	$196,901	$215,456	$247,139	$234,645	$233,425	$0	$0	$0	$0
Delta	-$231,616	$1,859	$50,422	$36,979	$65,699	$45,041	$7,117	-$192,827	-$137,329	-$89,958	-$19,921

Business Case Template --
Cost Information Input (Current Year $ ($000))

	2009 +	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
ABBs Altered by Business Case:											
Richland PBS RL-0011											
ABB: PFP Disposition SNM											
Base Case Progress	$67,967	$40,347	$27,800	$301	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress	$225	$225	$0	$0							
Adjusted Base Case Maintenance	$0										
Business Case Progress	$225	$225	$6	$0	$0	$0	$6	$0	$6	$6	$6
Business Case Maintenance	$6	$6	$0	$0	$6	$0	$6	$6	$6		
Business - Adj. Base Progress		$6	$6	$6	$6	$6	$6	$6	$6	$6	$6
Business - Adj. Base Maintenance		$0	$0	$0	$0	$6	$0	$0	$0	$0	$0
ABB: PFP Maintain Safe & Secure SNM											
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$12,289	$6,465	$6,808	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress	$0	$0	$0								
Adjusted Base Case Maintenance	$0										
Business Case Progress	$0	$0	$0	$6	$0	$6	$0	$0	$0	$0	
Business Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Progress		$0	$0	$0	$6	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance		$0	$0	$0	$6	$0	$0	$0	$0	$0	$6
ABB: PFP Maintain Safe & Secure PFP											
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$212,841	$44,183	$43,481	$36,145	$37,146	$33,081	$16,184	$513	$178	$0	$0
Adjusted Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Adjusted Base Case Maintenance	$212,841	$44,183	$43,481	$36,145	$37,146	$33,081	$16,184	$513	$178		
Business Case Progress	$0										
Business Case Maintenance	$248,661	$52,240	$47,516	$45,341	$42,959	$44,226	$16,279	$0	$0		
Business - Adj. Base Progress		$0	$0	$6	$0	$0	$6	$6	$0	$0	$0
Business - Adj. Base Maintenance		$8,057	$4,155	$7,196	$5,813	$11,165	$125	($513)	($178)	$0	$0
ABB: PFP Program Mgmt & Support											
Base Case Progress	$0	$2	$0	$0	$0	$0	$0	$0	$0	$2	$0
Base Case Maintenance	$197,840	$14,865	$17,575	$17,809	$18,166	$26,865	$26,782	$26,505	$24,105	$24,273	$1,660
Adjusted Base Case Progress	$3	$0	$0	$0	$0	$0	$2	$0	$0	$0	$0
Adjusted Base Case Maintenance	$197,840	$14,865	$17,575	$17,809	$18,166	$26,865	$26,782	$26,505	$24,105	$24,273	$1,660
Business Case Progress	$0	$0									
Business Case Maintenance	$129,061	$12,978	$13,545	$14,252	$23,982	$21,129	$43,165	$6	$0	$0	$0
Business - Adj. Base Progress		$0	$0	$0	$0	$0	$6	$0	$0	$0	$0
Business - Adj. Base Maintenance		($1,888)	($4,030)	($3,557)	$5,882	($4,836)	$16,413	($26,505)	($24,105)	($24,273)	($1,660)
ABB: PFP Disposition (D4)											
Base Case Progress	$1,089,718	$86,327	$76,011	$169,312	$114,321	$130,878	$169,372	$165,808	$113,043	$65,865	$17,261
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress	$1,112,824	$102,817	$85,443	$122,822	$126,195	$130,878	$183,372	$165,808	$113,043	$65,865	$17,261
Adjusted Base Case Maintenance	$0									$0	$0
Business Case Progress	$913,347	$96,306	$135,740	$196,862	$186,198	$189,286	$173,951	$0	$0	$0	$0
Business Case Maintenance	$0	$0	$0	$0	$9	$0	$0	$6	$0	$0	$0
Business - Adj. Base Progress		($4,311)	$50,297	$33,340	$54,963	$38,712	($9,421)	($165,808)	($113,043)	($65,845)	($17,261)
Business - Adj. Base Maintenance		$0	$0	$0	$0	$0	$6	$0	$9	$0	$9
ABB: PFP Site Wide Services											
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$359,115	$51,808	$47,606	$42,880	$41,995	$44,853	$48,344	$35,453	$28,867	$17,667	$342
Adjusted Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Maintenance	$359,115	$51,808	$47,806	$42,880	$41,995	$44,853	$48,344	$35,453	$28,907	$17,667	$342
Business Case Progress	$0										
Business Case Maintenance	$359,115	$51,508	$47,606	$42,680	$41,995	$44,853	$48,344	$35,453	$28,867	$17,667	$342
Business - Adj. Base Progress		$0	$0	$0	$9	$0	$0	$0	$0	$6	$0
Business - Adj. Base Maintenance		$9	$0	$0	$0	$0	$0	$9	$0	$0	$0
Base Case Totals	$1,866,840	$243,806	$216,866	$267,247	$311,382	$234,286	$274,666	$228,279	$160,353	$107,825	$19,303
Adjusted Base Case Totals	$1,882,346	$213,306	$193,965	$221,167	$233,430	$234,286	$274,689	$228,269	$166,294	$107,825	$19,263
Business Case Totals	$1,650,429	$215,257	$244,487	$258,135	$289,134	$279,288	$281,789	$35,453	$28,867	$17,667	$342
Investment	$297,115	$1,859	$50,422	$36,070	$65,699	$45,041	$7,117				
Gain	$430,032							$192,827	$137,326	$89,958	$16,821

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037
ABB: PFP Disposition SNM																		
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Progress	$6	$6	$6	$6	$0	$6	$6	$6	$6	$6	$6	$0	$6	$6	$0	$6	$6	$6
Business - Adj. Base Maintenance	$0	$6	$0	$6	$0	$6	$6	$0	$6	$0	$0	$0	$6	$6	$0	$0	$0	$0
ABB: PFP Maintain Safe & Secure SNM																		
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	29	$0	$0
Business - Adj. Base Progress	$6	$0	$0	$6	$0	$0	$0	$0	$0	$6	$6	$6	$0	$0	$0	$0	$0	$6
Business - Adj. Base Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6	$6	$0	$0	$0	$0	$0	$0
ABB: PFP Maintain Safe & Secure PFP																		
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Progress	$6	$6	$6	$0	$0	$0	$0	$0	$0	$0	$6	$0	$0	$0	$0	$6	$0	$0
Business - Adj. Base Maintenance	$6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6	$0	$0	$0	$0
ABB: PFP Program Mgmt & Support																		
Base Case Progress	$0	$0	$0	$0	$2	$2	$2	$0	$0	$0	$0	$0	$2	$0	$0	$2	$2	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$2	$0	$0	$0	$2	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Progress	$0	$0	$0	$0	$6	$0	$0	$0	$0	$6	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6	$0	$0	$0
ABB: PFP Disposition (D4)																		
Base Case Progress	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2	$0	$2	$0	$0	$0	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Progress	$0	$0	$0	$0	$9	$9	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$8	$0	$0	$0	$0	$0	$0	$0	$0	$0
ABB: PFP Site Wide Services																		
Base Case Progress	$2	$0	$0	$6	$0	$6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Progress	$0	$0	$6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business - Adj. Base Progress	$0	$9	$0	$6	$8	$8	$0	$0	$0	$0	$0	$0	$9	$0	$0	$0	$0	$0
Business - Adj. Base Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Base Case Totals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Adjusted Base Case Totals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business Case Totals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$8	$0	$0	$0	$0	$0	$0	$0

Base Case and Business Case

	2009 +	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Affected ABBs - Adjusted Base Case	$1,523,005	$191,665	$146,479	$178,476	$191,440	$189,604	$226,308	$192,827	$137,326	$89,958	$10,921
Affected ABBs - Business Case	51,281,069	$186,524	$196,961	$215,455	$247,139	$234,645	9233,425	$0	$0	$0	$0
Delta		($1,859)	($50,422)	($36,979)	($55,699)	($45,041)	($7,117)	$192,827	$137,326	$89,958	$16,921
Affected ABBs - Adjusted Base Case Proj	$1,112,524	$102,817	$85,443	$122,522	$126,195	$130,878	$183,372	$165,908	$113,043	$65,866	$17,291
Affected ABBs - Adjusted Base Case Mai	$410,481	$89,048	$61,035	$55,954	$55,246	$59,026	$42,936	927,016	$24,266	$24,273	$1,660
Affected ABBs - Business Case Progress	$913,347	$96,306	$135,740	$156,862	$180,196	$188,290	$173,951	$0	$9	$0	$0
Affected ABBs - Business Case Maint	$377,742	$65,218	$91,181	$59,593	$96,941	$65,355	$59,474	$6	$0	$6	$6

	2009 +	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Escalation Rate is :	1.923																										
	1.92	1.071	1.095	1.129	1.148	1.173	1.200	1.227	1.235	1.284	1.314	1.344	1.375	1.406	1.439	1.472	1.506	1.540	1.576	1.612	-	-	-	-	-	-	-

	2009 +	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Affected ABBs - Adjusted Base Case Proj	$947,014	$95,850	$78,014	$109,354	$110,106	$111,363	$152,872	$135,122	$90,051	$51,148	$13,139
Affected ABBs - Adjusted Base Case Mai	$356,686	$55,154	$55,728	$49,941	$48,200	$50,349	$35,795	$22,018	$18,344	$10,901	$1,263
Affected ABBs - Business Case Progress	$891,485	$01,823	$123,938	$135,111	$157,216	$144,378	$145,016	$0	$0	$6	$0
Affected ABBs - Business Case Maint	$333,572	$60,617	$55,843	$53,188	$58,403	$55,738	$46,582	$0	$6	$0	$0