Salt Waste Processing Facility Project

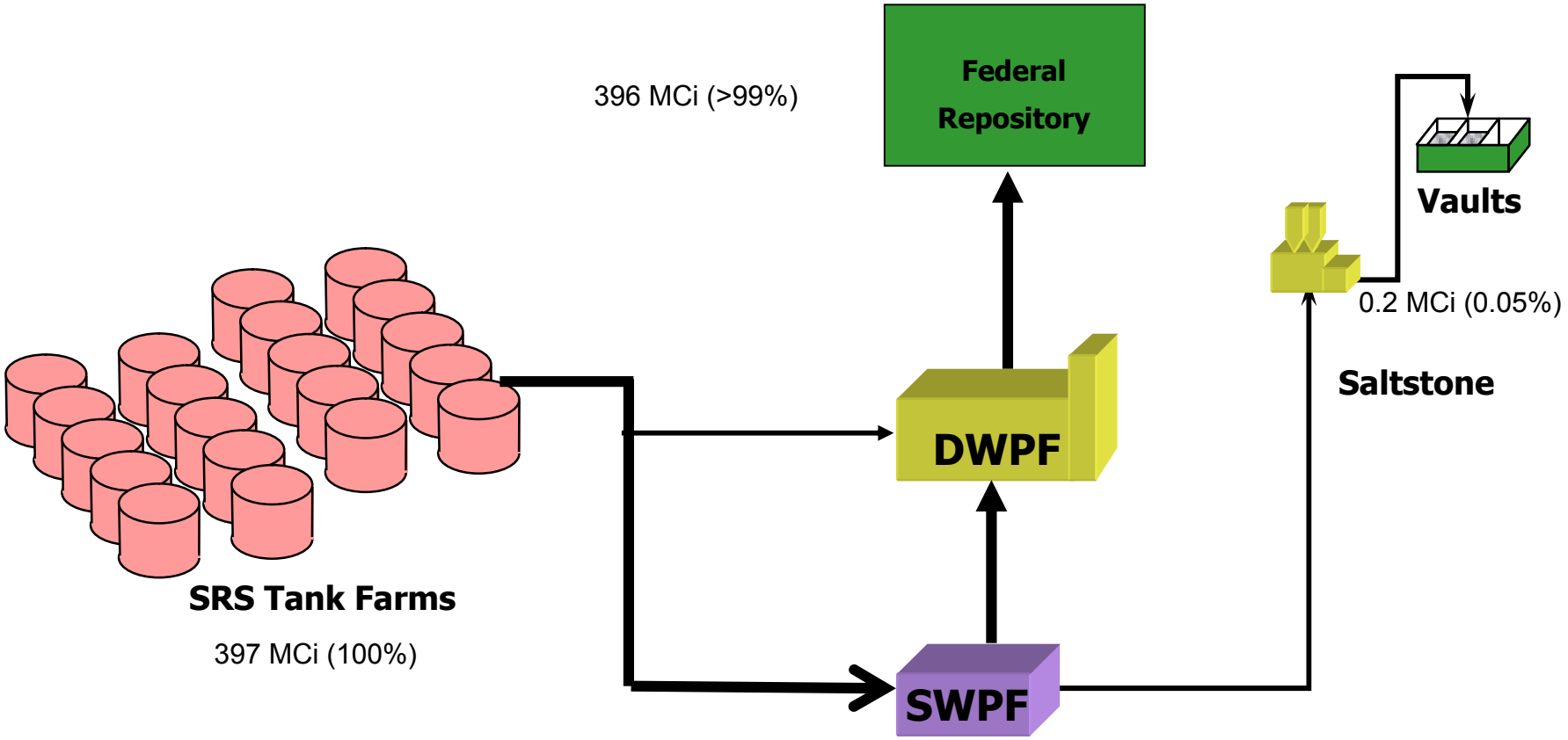
SRS Citizens Advisory Board Meeting January 2009

Zack Smith
Federal Project Director

EM Environmental Management

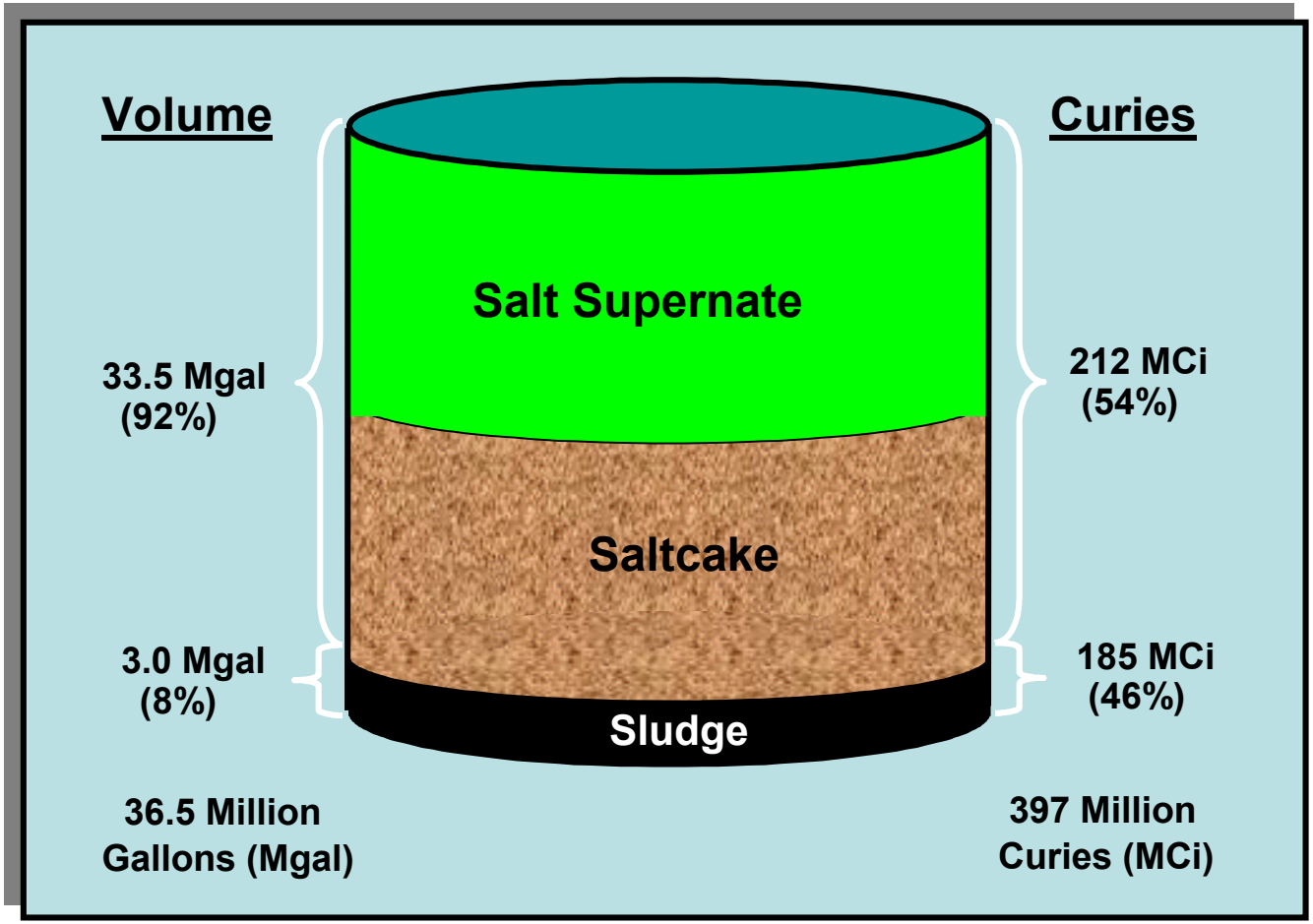
safety ❖ performance ❖ cleanup ❖ closure

SRS Liquid Waste System

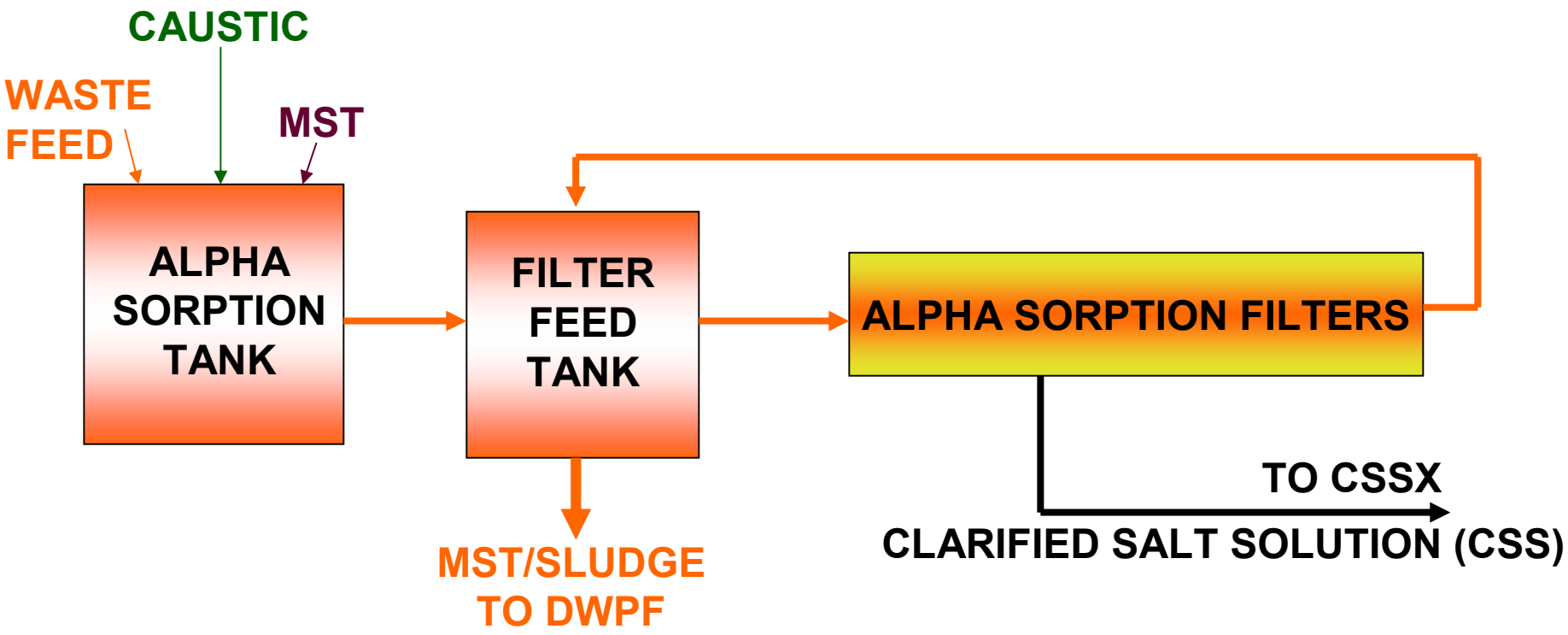


DWPF - Defense Waste Processing Facility
SWPF – Salt Waste Processing Facility

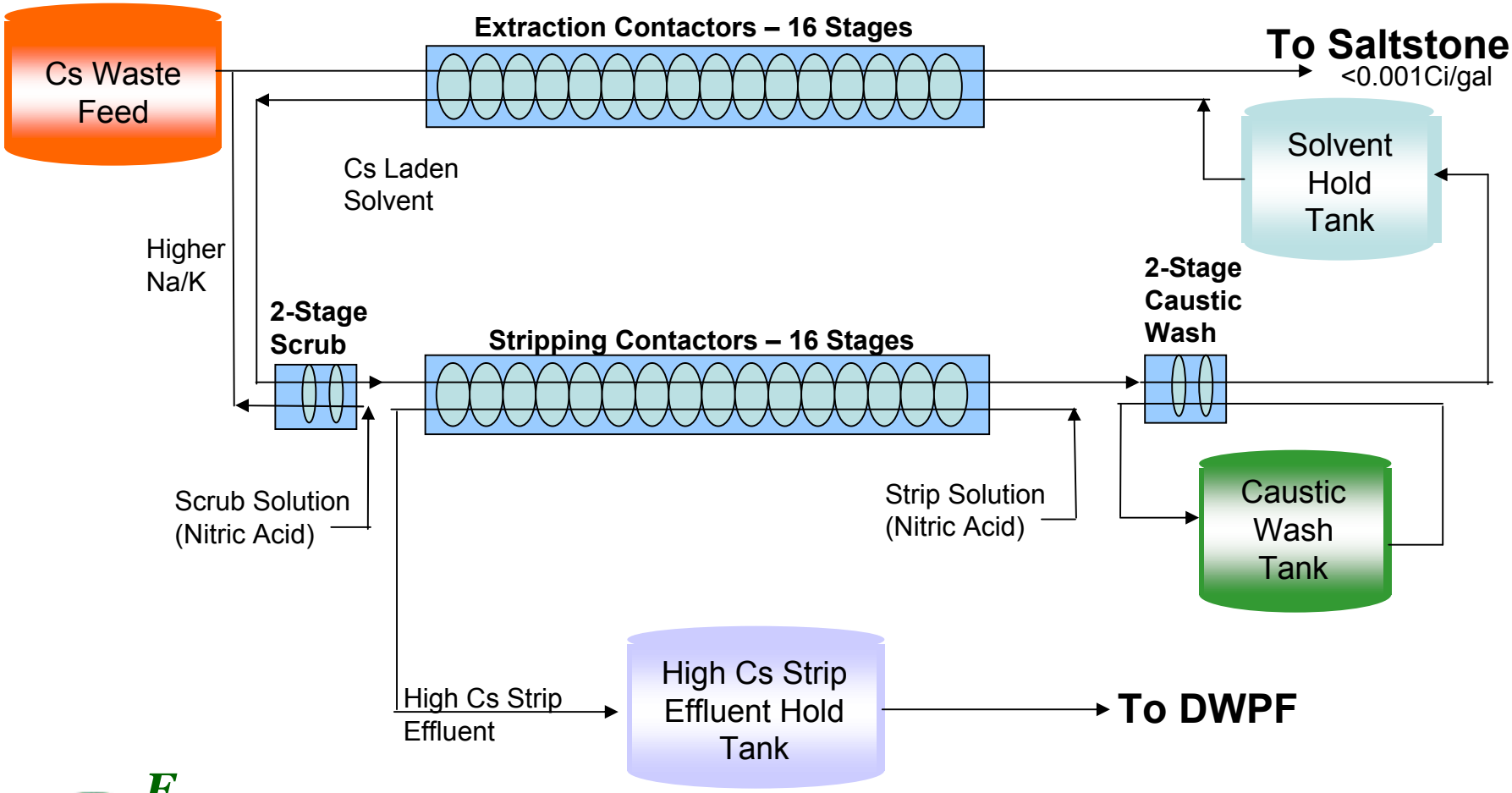
Liquid Waste Background



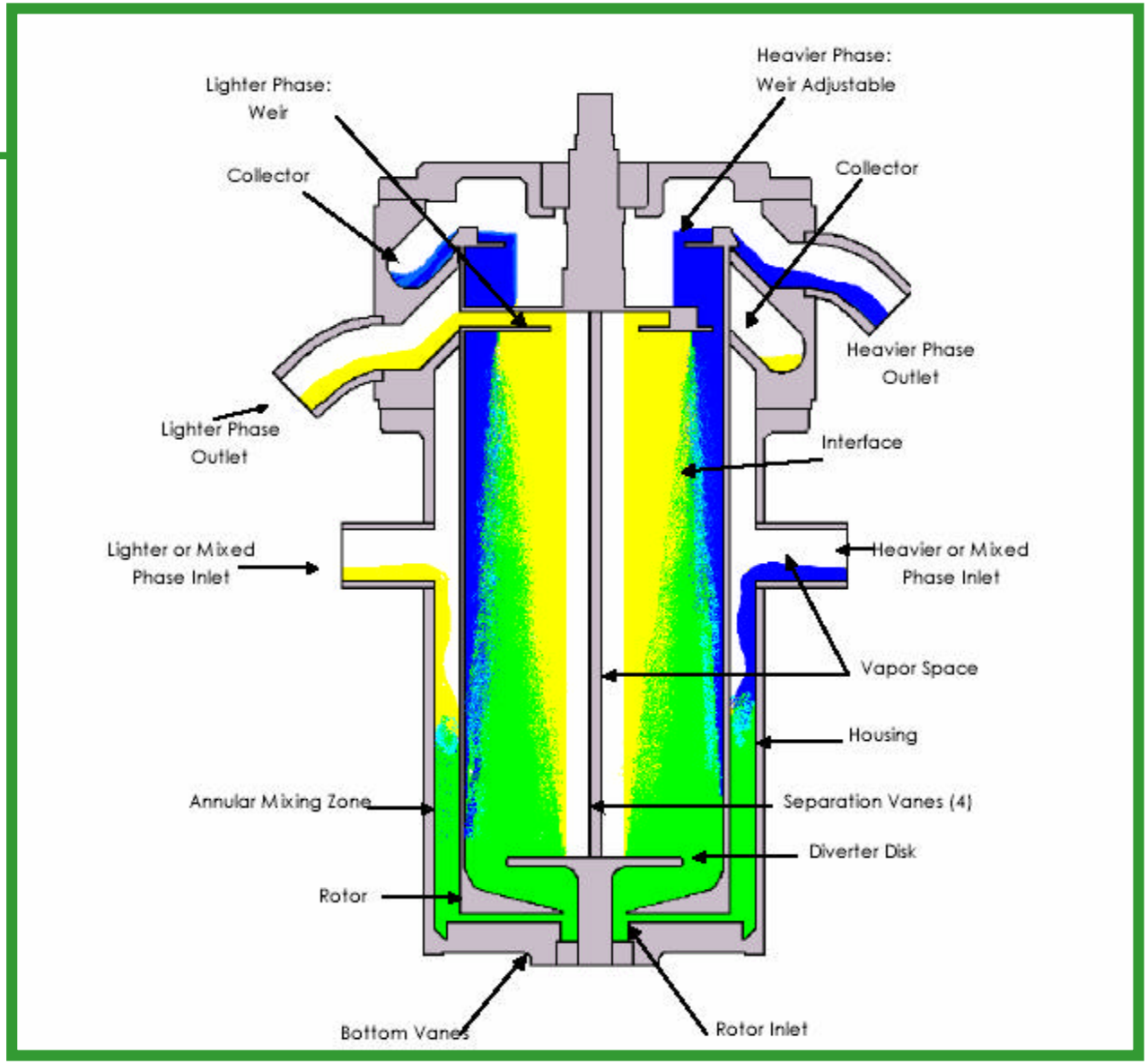
Alpha Sorption Process



CSSX Process

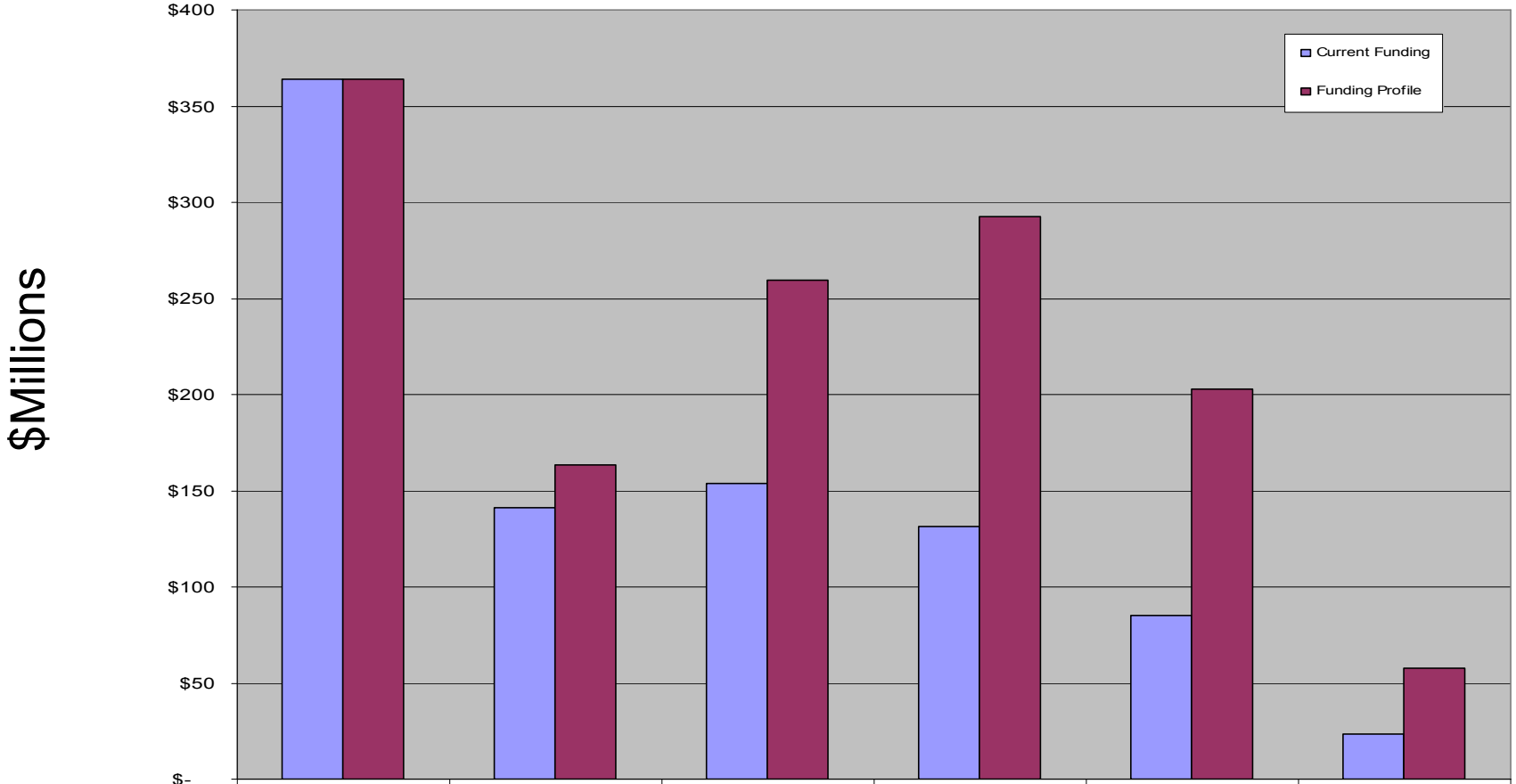


SWPF Contactor



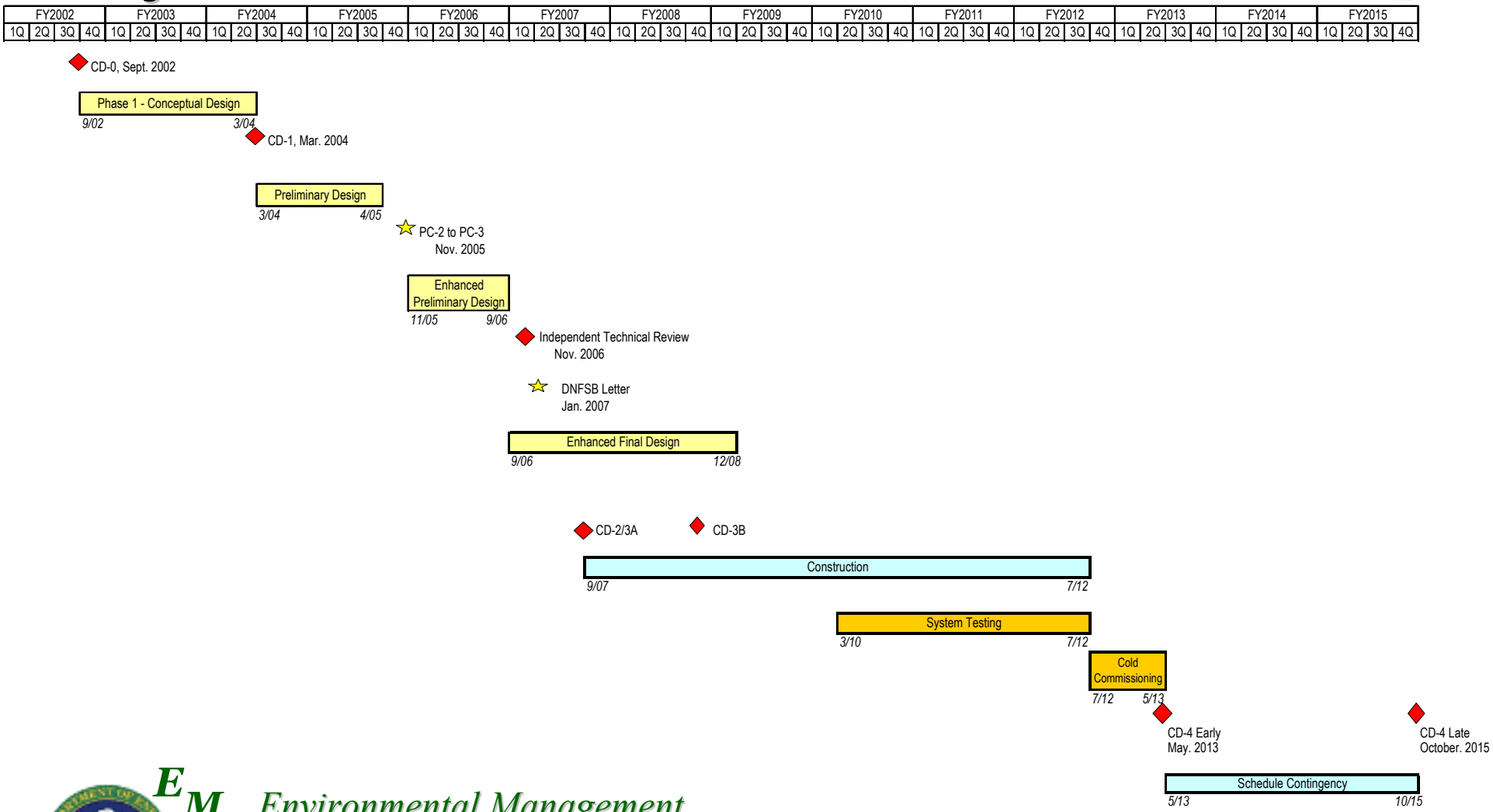
SWPF Project Layout

Annual Funding Requirements

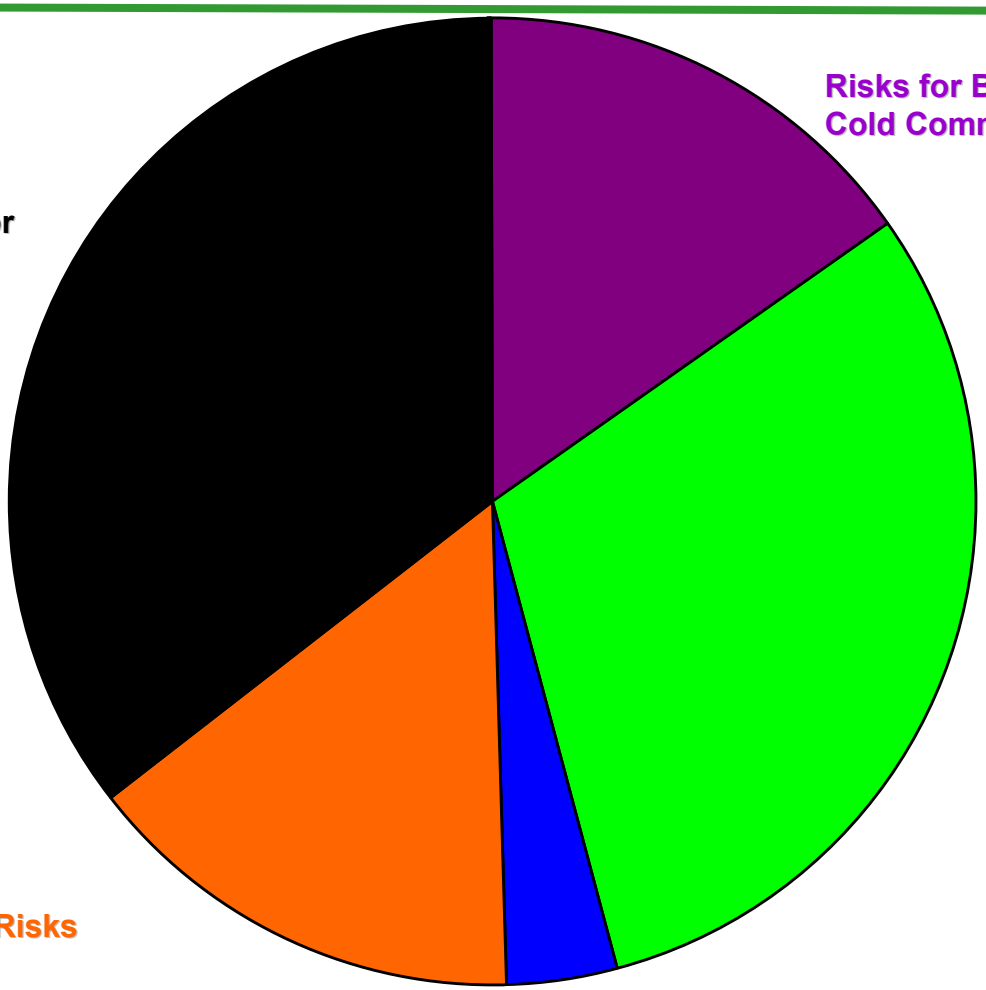


	Through 2008	2009	2010	2011	2012	2013
Current Funding	$364	$141	$154	$132	$85	$24
Funding Profile	$364	$164	$259	$292	$203	$58

Project Level Milestones

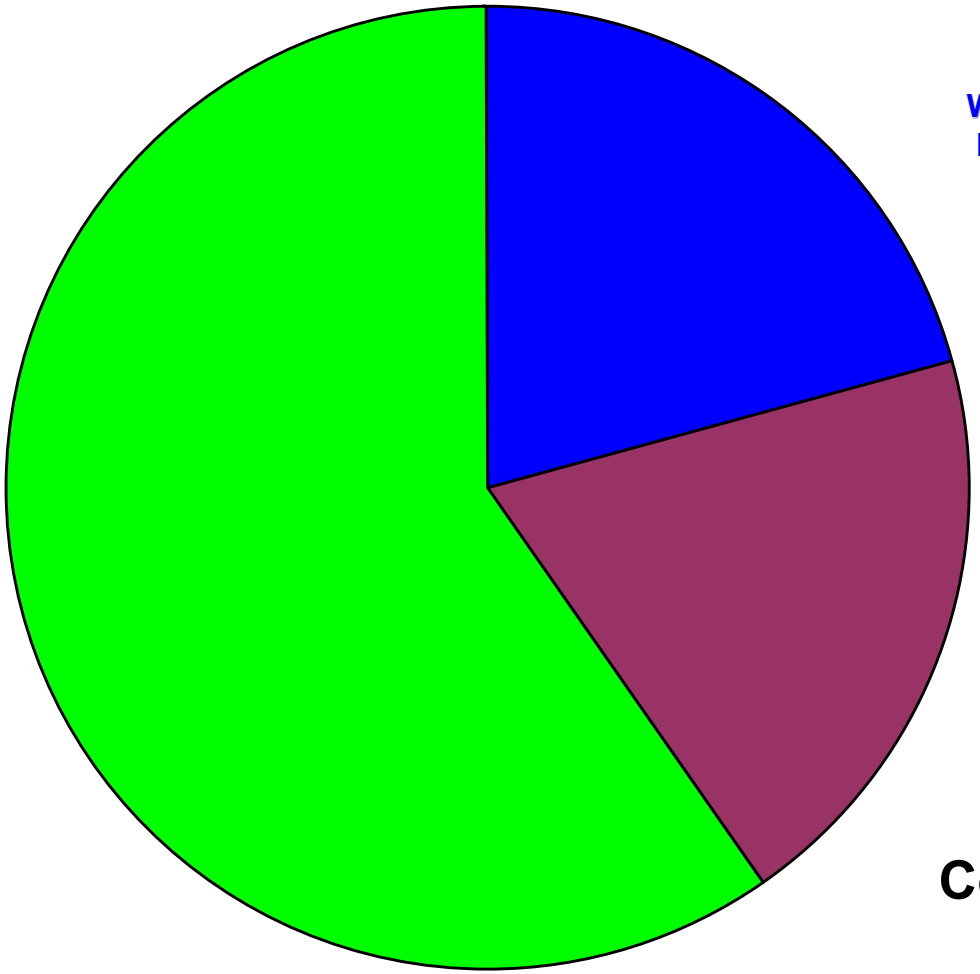


Open SWPF Project Risks



Total SWPF Open Risks: $275M

Open Post Construction SWPF Program Risks



Waste Characterization Risks Affecting SWPF Througput $512M

SWPF Operations Risks Affecting SWPF Througput $476M

Tank Farm and DWPF Operations Risks Affecting SWPG Throughput $1,462M

Total Post Construction SWPF Program Risks: $2.45B

Overall Project Status

- 90% design completion review completed.
- Started limited construction and early procurements September 2007.
- Deputy Secretary approved all construction work December 8, 2008.
- Current activities:
  - Basemat construction underway
  - Basemat rebar installation more than 50% complete
  - Drain pipe installation in basemat slab approximately 25% complete
  - Actinide Sorption Drain Tank and Waste Transfer Enclosure basemat concrete slab complete

SWPF J Area Aerial Progression – July 2008

SWPF J Area Aerial Progression – December 2008

Central Processing Area
Looking East-Northeast

Conduit installation in Placement 4 (1/5/09)

Installation of embed plates in ASDT Cell (1/2/09)

Temperature probes (thermocouples) installed in placement #8 (12/23/08)

- BACKUP

Construction Materials

- Tons of reinforcing steel – 4,600
- Tons of steel – 3,300
- Cubic yards of concrete – 40,000
- Miles of pipe - 23
- Number of remote actuated valves – 600
- Number of tanks - 75

Construction Labor

- Carpenters – 60
- Electricians – 80
- Ironworkers – 50
- Laborers – 30
- Pipefitters/Welders – 180
- 400 Craft for 21 months

Operations Personnel – Facility Operations

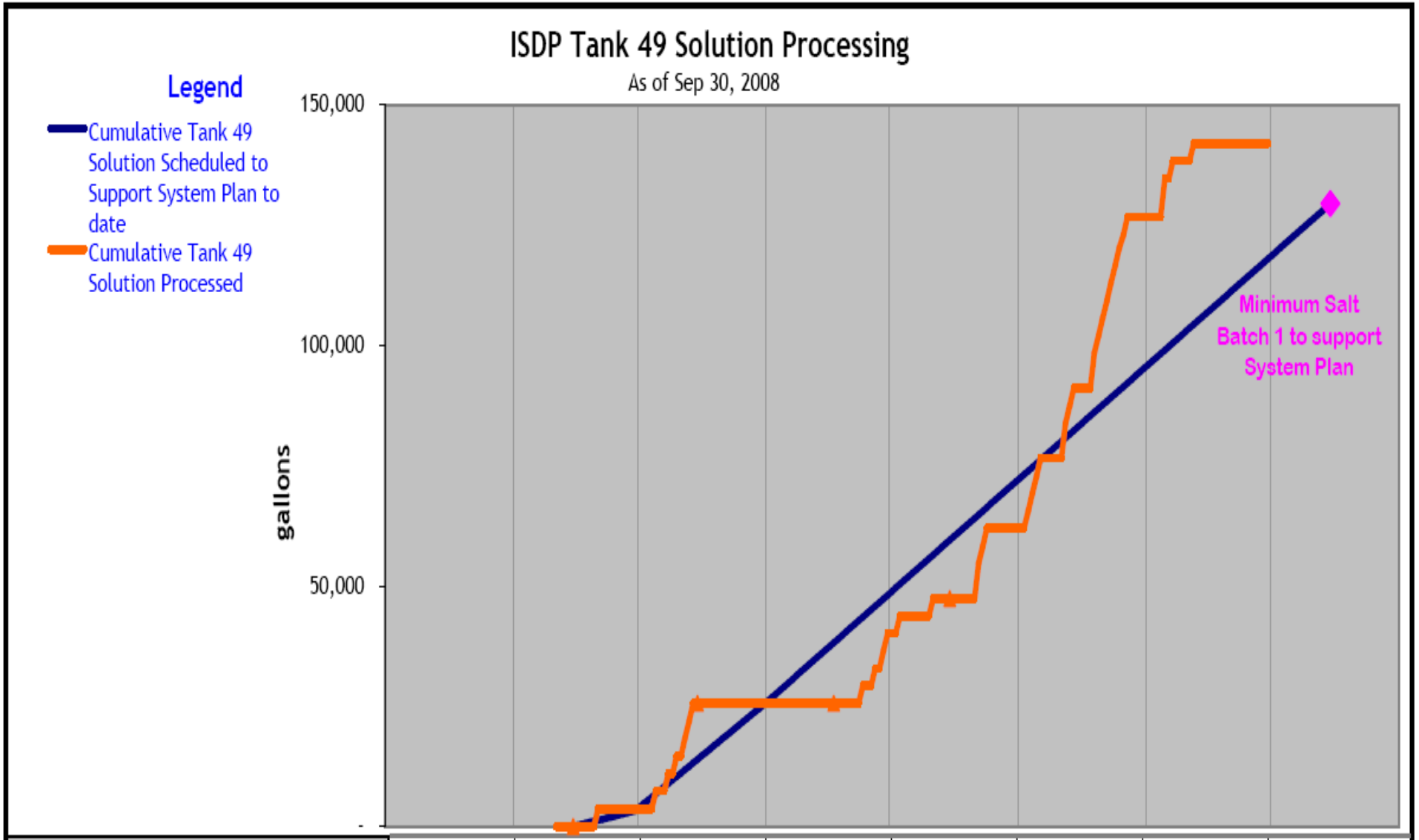
- Engineers and Managers – 35
- Operators – 40
- Laboratory – 20
- Maintenance/Work Control – 35
- Radcon/Safety/QA – 25
- Support Staff – 30
- Total estimated at 185 FTE during operations

CD-2 to CD-3 Changes in Costs ($M)

CD-2 Approved Baseline (based on 25 – 35% design) **$ 900**

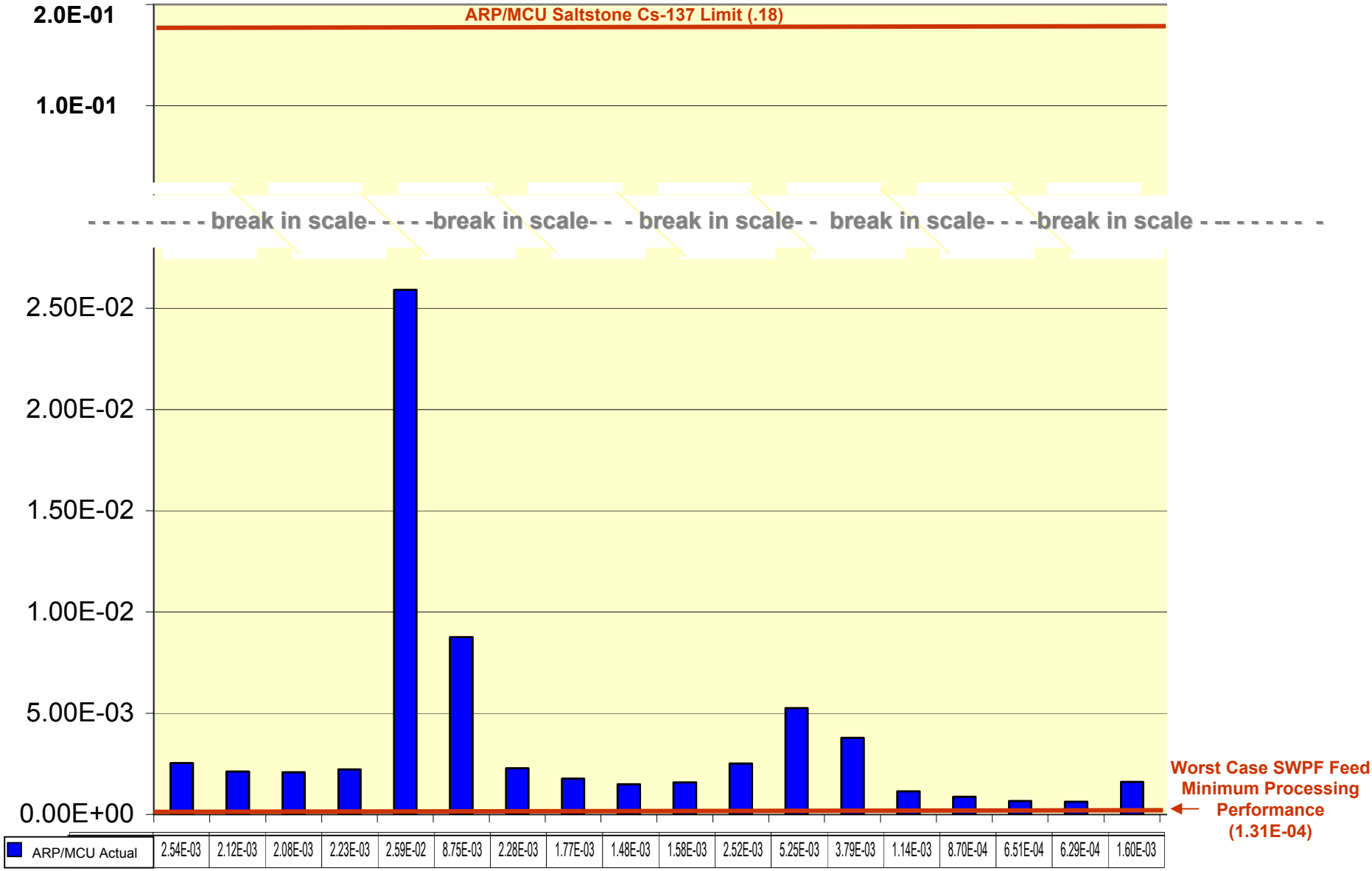
Baseline Cost Increase Contributors	
Contingency (new risks, increasing risk impacts as identified by the EIR team, and DOE Complex/WTP Lessons Learned)	$ 186
Engineered Equipment (high escalation realized through vendor bids, industry-wide issues including loss of vendor pool, increased cost to address design evolution including NQA-1 performance requirements and upgrades. Approximately $18M of these costs were associated with increased materials due to design evolution)	$ 75
Construction (increased installation labor to address design evolution, increased cost of staff due to industry competition, increased Foreman ratio)	$ 66
Construction Support (Increased labor to address design evolution quantity increase & support needs, project duration increase, additional staff to address Early Construction and DOE Complex/WTP lessons learned)	$ 65
Engineering and Design (extension of project schedule, design evolution beyond plan, realized risk of design resource shortage)	$ 28
Commissioning and Support – (increased project duration/delay costs)	$ 14
DOE Support (increased duration/delay costs)	$ 5
Changes to CD-2 Approved Baseline	**$ 439**

Total Project Cost **$ 1,339**



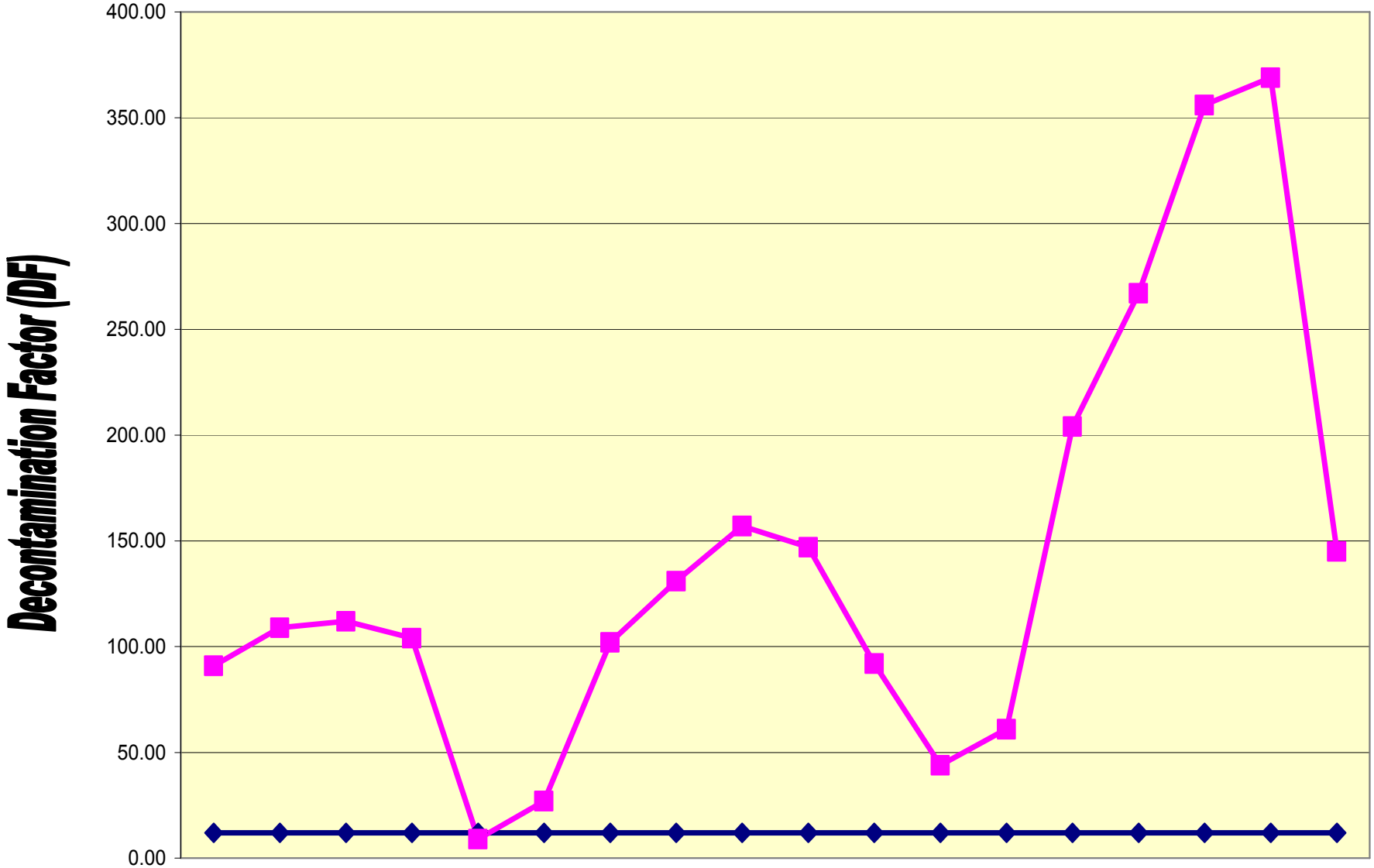
Data	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08
Cumulative Tank 49 Solution Processed	-	3,679	25,584	40,145	61,969	126,630	141,925	-
Cumulative Tank 49 Solution Scheduled to S	-	3,300	25,300	48,096	71,651	95,207	118,002	129,400
Cumulative Goal Status		Blue	Green	Green	Green	Blue	Blue	

SWPF Decontamination Salt Solution Cesium Concentration Levels (Ci/gal)



Note: ARP/MCU Design Decontamination Factor of 12 Based on Number of Contactors
SWPF Design Decontamination Factor of 40,000 Based on Number of Contactors

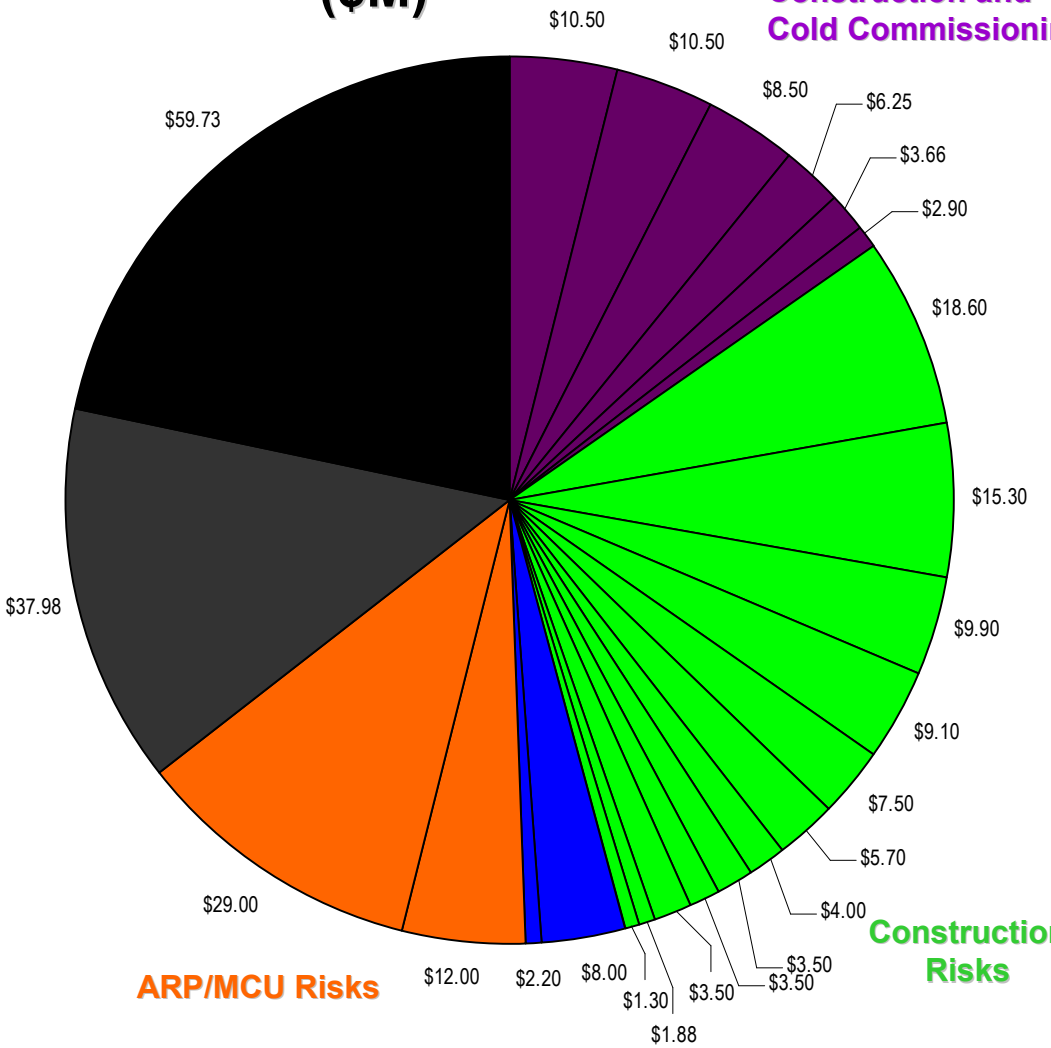
Cesium Decontamination Factors



DSSHT Batch Number	11.00	12.00	13.00	13a	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00
ARP/MCU Actual DF	91.00	109.00	112.00	104.00	9.00	27.00	102.00	131.00	157.00	147.00	92.00	44.00	61.00	204.00	267.00	356.00	369.00	145.00

Note: ARP/MCU Design Decontamination Factor of 12 Based on Number of Contactors
SWPF Design Decontamination Factor of 40,000 Based on Number of Contactors

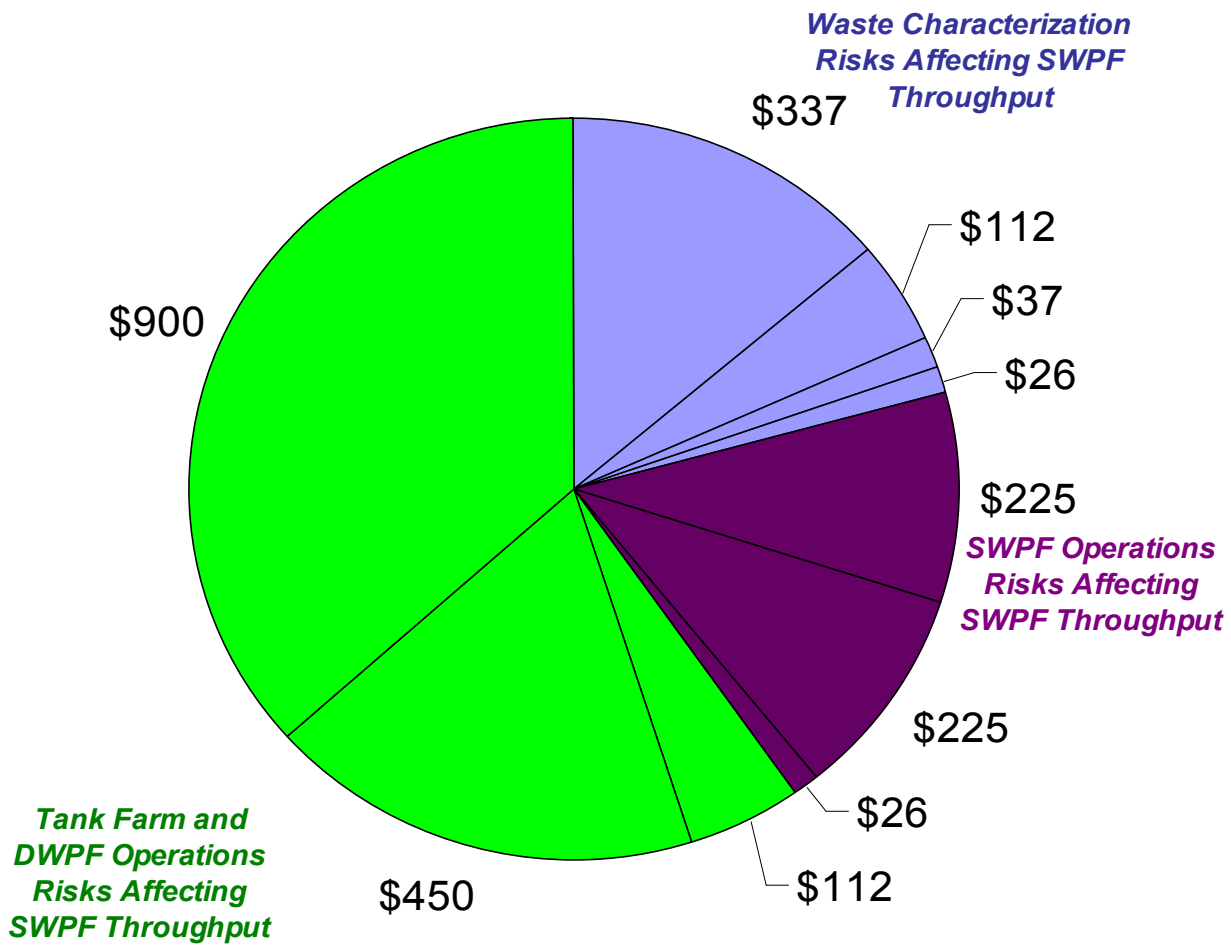
Open SWPF Project Risks ($M)



Risk Titles and Most Likely Impact

- DOE Federal Staffing Insufficient to Support Project ($10.5M)
- Subcontractor/Vendor Unsatisfactory Performance ($10.5M)
- Supplemental Analyses/Testing Required due to Oversight Process Issues ($8.5M)
- Site Interface Problems ($6.25M)
- Labor Forward Procing Rates Prove Inadequate for Project $3.66M
- Errors, Ommissions, and Change to the Project Baseline ($2.9M)
- Material, Subcontract, Equipment, and Fabricated Component Escalation ($18.6M)
- Design Rework During Construction due to Design Changes Post CD-3 ($15.3M)
- Limited NQA-1 Qualified Vendors ($9.9M)
- Construction Productivity is Less Than Assumed in Baseline ($9.1M)
- DOE Fiscal Year (FY) Funding Issues ($7.5M)
- Cyber Security Imposed on EPC ($5.7M)
- WACs for DWPF & SPF don't support Full Capacity SWPF Operations ($4M)
- Labor Shortages ($3.5M)
- Loss of Key Personnel ($3.5M)
- Unforeseen Safety Accident/Incident (SWPF Specific) ($3.5M)
- Weather Delays Impact Construction Activities ($1.88M)
- Regulatory Interface Requirements are Greater Than Assumed ($1.3M)
- Resolution of ORR Findings ($8M)
- General Equipment Failures ($2.2M)
- ARP/MCU Testing Requires SWPF to add Coalescer ($12M)
- ARP/MCU or Waste Characterization Info Differs from Baseline ($29M)
- 80% Confidence Factor ($37.98M)
- 95% Confidence Factor ($59.73M)

Open Post Construction SWPF Program Risks ($M)



Total Risk Value= $2.45B

Risk Titles, IDs, and Most Likely Impact

- Heel and Annuli Waste Cannot Be Processed Through SWPF- Risk #42 ($337M)
- Rogue Feed Constituents Affect SWPF Decontamination Factor and Throughput- Risk #70 ($112M)
- Salt Feed Chemical or Radiological Changes Result in Feed That Does Not Meet SWPF WAC - Risk #77 ($37M)
- Feed Criticality Issues Reduce SWPF Throughput- Risk #101 ($26M)
- SWPF Operational Risks Reduce Attainment- Risk #168 ($225M)
- SWPF Not Available in September 2012 - Risk #205 ($225M)
- SWPF Commissioning and 1Yr Operations Risk - SWPF RAMP ($26M)
- Infrastructure Modifications Not Complete to Support SWPF Startup - Risk #245 ($112M)
- Tank Farm Infrastructure Does Not Support SWPF Operations - Risk #90 ($450M)
- Close Coupling between SWPF and Other Facilities Limits SWPF Throughput - Risk #91 ($900M)

NOTE: Risk numbers indentified are associated with PBS-14 Risk Management Plan