

DEPARTMENT OF ENERGY

**Office of River Protection**

HANFORD SITE

SEPTEMBER 8, 2011

***Agency Update to  
Hanford Advisory Board***

Scott Samuelson  
Manager



# Agenda

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- Organization
- Mission and Priorities
- HAB Advice
- FY11 Accomplishments
- Tank Farm Status
- WTP Status
- ARRA
- Budget
- Planned Actions for FY12
- Challenges



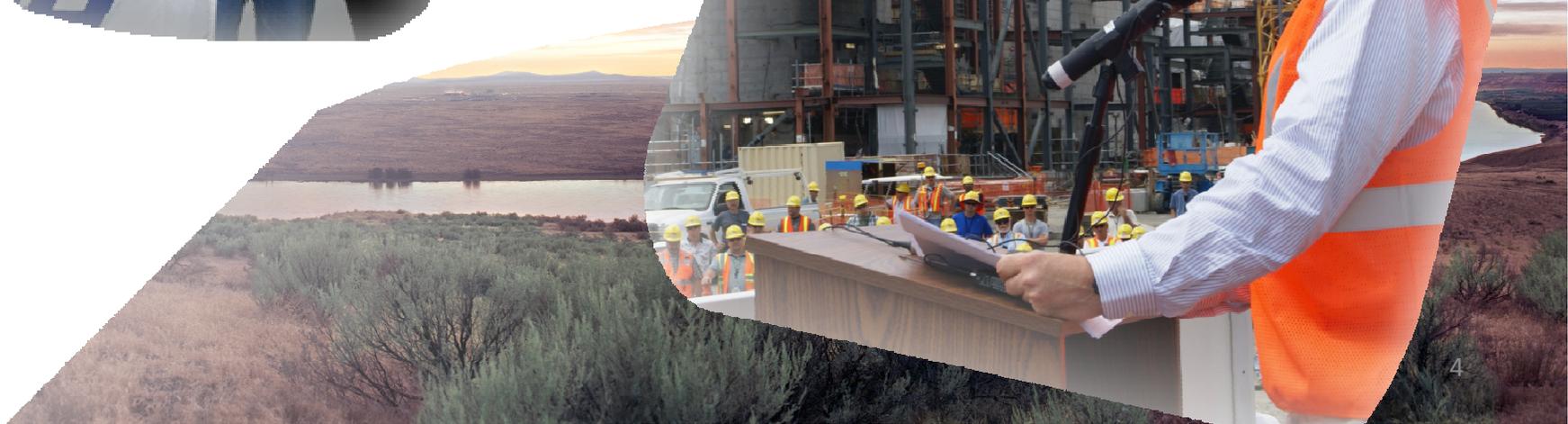
# Office of River Protection Management Team





Department of Energy  
Office of River Protection

# Mission & Priorities





# HAB Advice

## Budget

- #244, Cleanup Budget Priorities for Fiscal Years 2012, 2013 and Ensuing Years

## Public Involvement

- #239, Incorporating Public Involvement Strategic Planning into the Community Relations Plan
- #240, U.S. DOE's Open Government Plan and the Hanford Communities Relation Plan

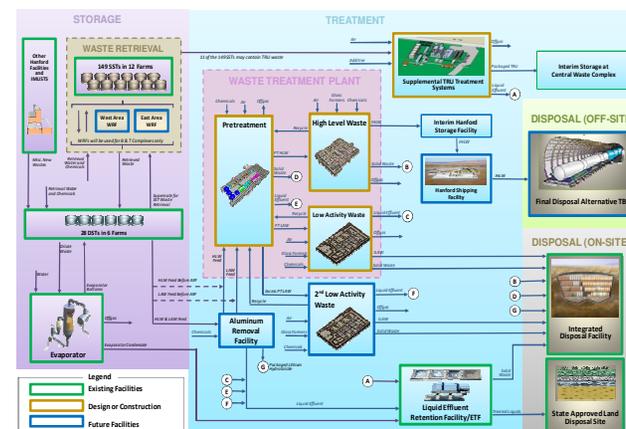


*In May, the Leadership Tri-Cities class and Hanford Communities group toured Hanford's Tank Farms and Waste Treatment Plant.*

*Mutual benefit from good discussions during committee and issue manager meetings*

## System Plan

- #238, ORP System Planning Process
- #245, ORP System Plan Revision 6





# FY11 Accomplishments

## Tank Farms Project

- Tank Retrievals
- Vapor Monitoring
- Mobile Arm Retrieval System (MARS)
- Supplemental Pretreatment
- Supplemental Immobilization
- Infrastructure and facility upgrades – ARRA work
- Tank Leak Loss and Structural Integrity

## Integration

- 2020 Vision

## Waste Treatment Plant Project

- More than 60% complete (was 52% this time last year)
- Civil, structural and architectural design for the High-Level Waste Facility complete
- Construction continues to advance on Pre-Treatment Facility
- Melters
- Piping Modules
- External Flow Sheet
- Pulse Jet Mixers
- Construction Project Reviews

*Two hand-held monitors used to detect organic chemicals, flammable gases and ammonia.*



*In preparation for MARS installation in tank C-107, workers remove the core from a 55-inch diameter hole.*



*Workers align the mast of the Mobile Arm Retrieval System into single-shell tank C-107.*

## Major Tank Farm Projects

<u>Projects</u>	<u>Date Required</u>	<u>Status</u>
Waste Feed Delivery Projects	Various	Various
Immobilized Hanford Storage Facility	8/2018	CD-0
Secondary Liquid Waste	8/2018	CD-0
Supplemental Treatment		CD-0



# FY11 Accomplishments

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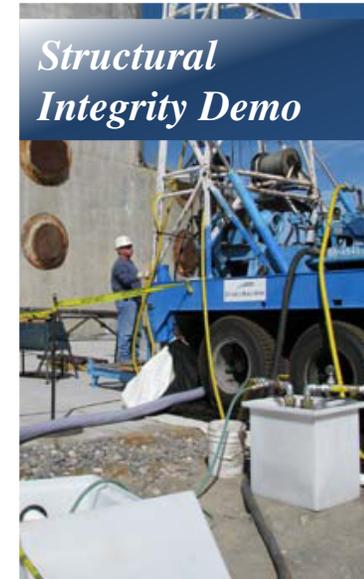
## Waste Treatment Plant Project

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*Crews at the Hanford Waste Treatment Plant completed four complex jib crane installations in the Low-Activity Waste (LAW) Facility.*



*Crane Installation at LAW*



*Structural Integrity Demo*

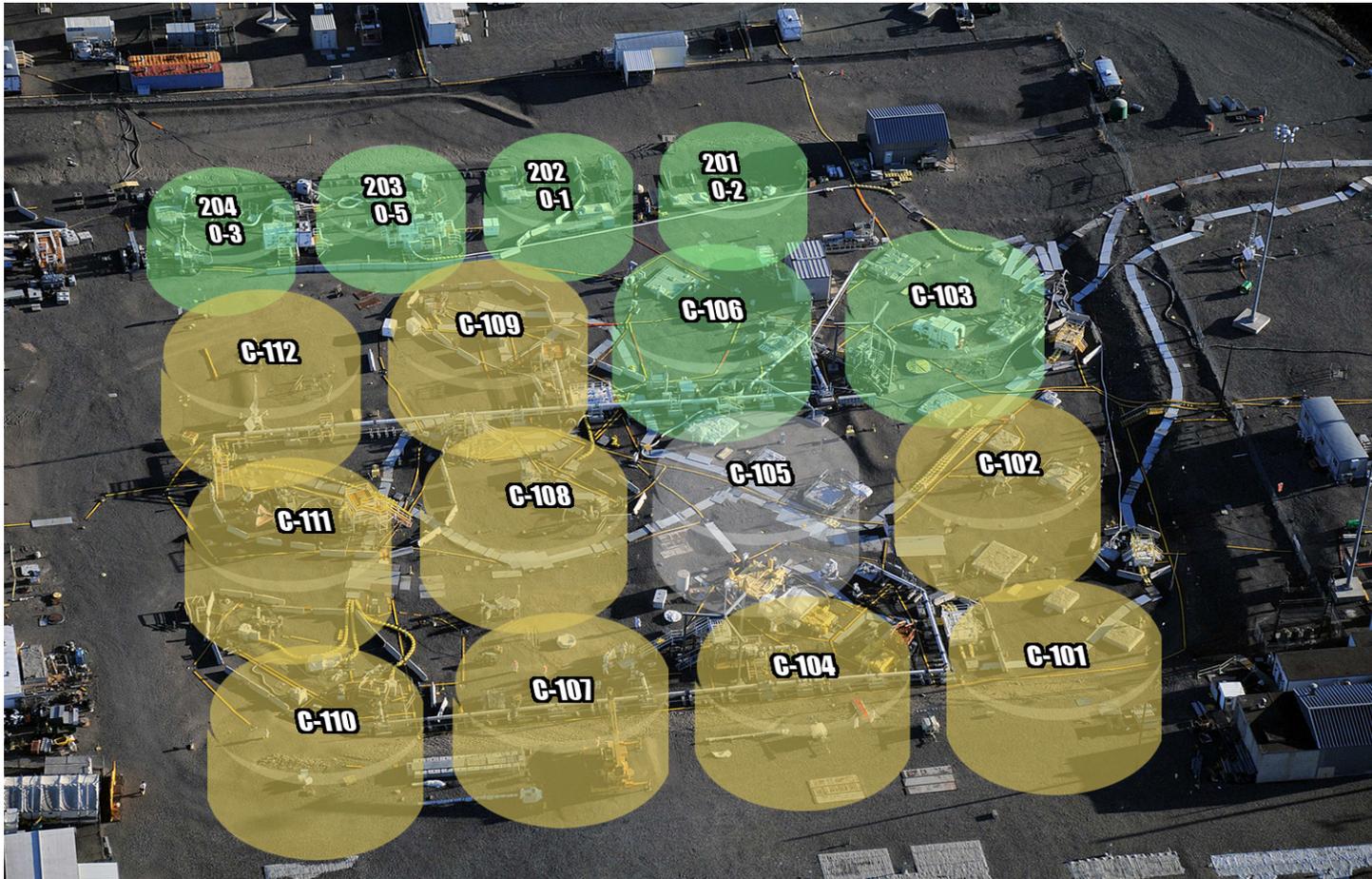
*Drill operators conduct a core sampling test on a never completed power plant, utilizing techniques that will be used to take concrete core samples of SSTs.*

## Major Tank Farm Projects

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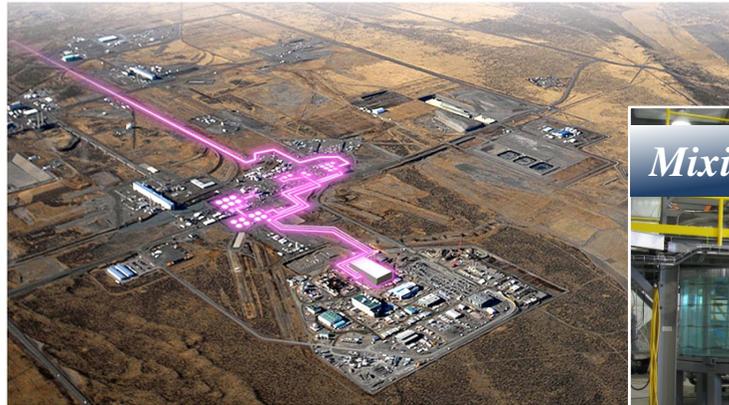
# C Farm Waste Retrieval Progress



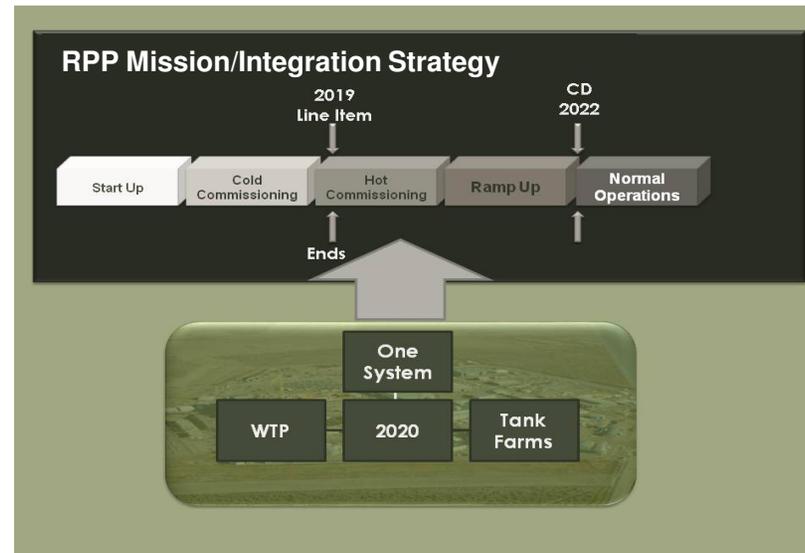


## 2020 Vision

- Integrated project schedules
- Maintenance of Interface Control Documents
- Interface meetings between ORP and its contractors
- Requirements Management Interface Matrix
- Operational infrastructure and logistics analysis

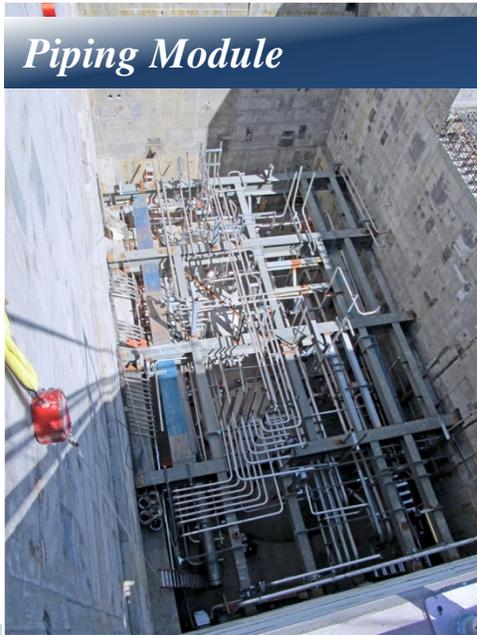


*Two hand-held monitors used to detect organic chemicals, flammable gases and ammonia.*





# WTP



*Piping Module*

*Crews at WTP placed a 19-ton piping module inside the Pretreatment Facility. It is the first and smallest of 13 such modules; the remaining 12 will be placed in the next few years.*



*Low-Activity Waste Melter*

*The second and final Low-Activity Waste melter arrived in November 2010. Once operational, the melter will heat the waste and glass-forming materials to 2,100 degrees Fahrenheit.*



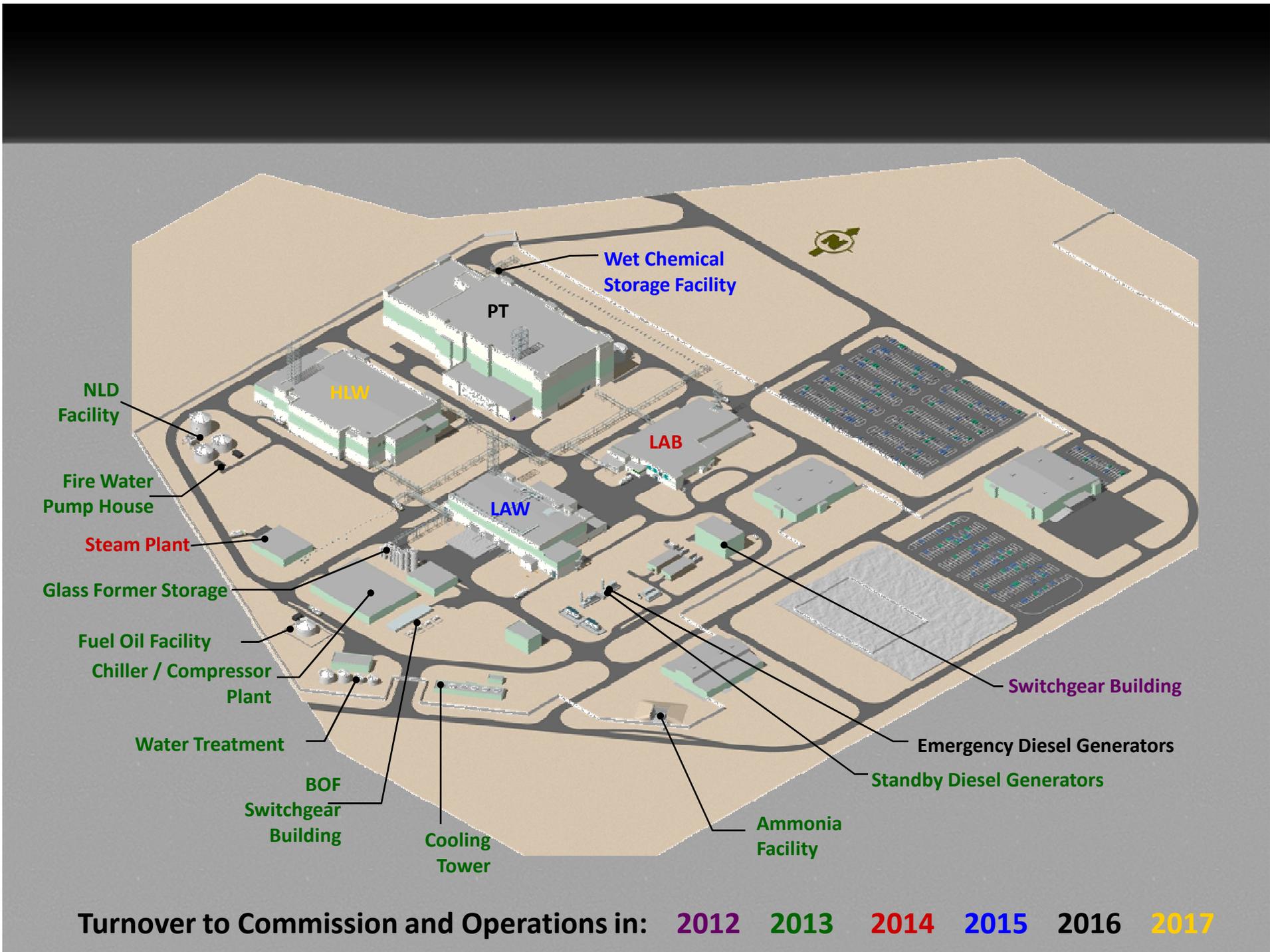
*Rebar Curtain*

*Each wall in the Pretreatment Facility includes a complex rebar grid composed on nearly one-and-a-half-inch thick rebar.*



## *WTP Reaches 60% Complete Milestone*

*WTP recently issued the final design for the concrete walls of the Pretreatment Facility and celebrated reaching 60 percent complete.*



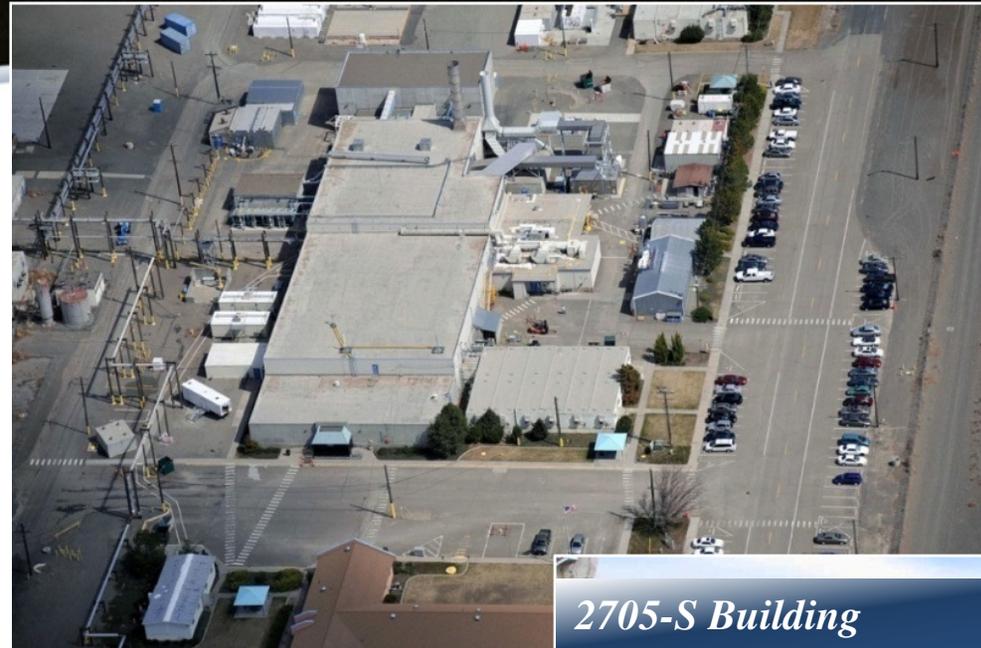


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# ARRA

## 222-S Laboratory

- Roof/HVAC/Room Upgrades
- Steel to Electrical Conversion
- Significant Instrument Upgrades
- Building Replacements (office space and conditioned storage)



*2705-S Building*

*More than \$15 million in Recovery Act funds went to upgrades at the 222-S Laboratory. All upgrades were designed to be more “green” and energy-efficient.*



*Drawing Reconstitution*

*A workers inspects equipment to see if the installed systems match what is shown on drawings of the double-shell tank farms.*



*The 2705-S modular office building upgrades included energy-saving light switches, low-flow faucets and toilets, and energy-efficient lights and appliances.*



# ARRA

## 242-A Evaporator

- Instrumentation
- Life Extension  
(pump replacements,  
water service,  
decontamination)

*Crews work diligently to decontaminate the condenser room at the 242-A Evaporator, wiping down five floors of walls and equipment.*

### Raw Water Service Building

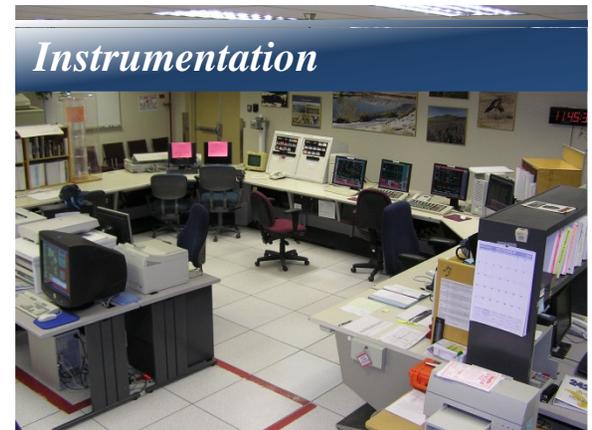


*Workers completed a major upgrade to the 242-A Evaporator's critical Raw Water System Building.*

### Condenser Decontamination



### Instrumentation



*Control panels in the A1 control room at the 242-A Evaporator.*



# ARRA

## S, SY, SX Farms

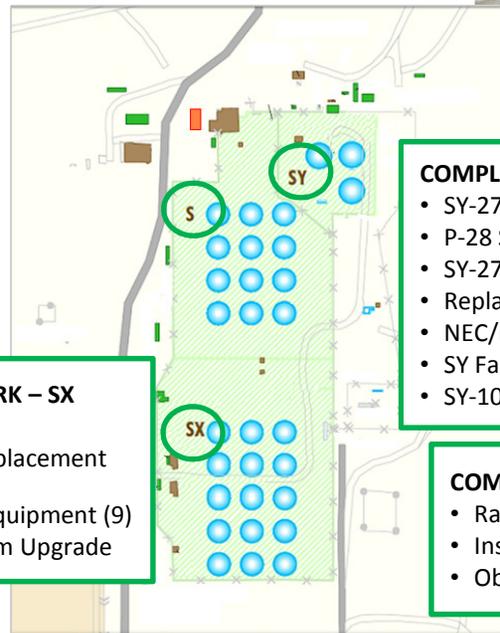
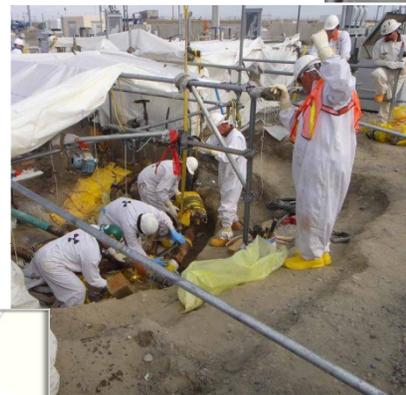
- Filter Replacements
- Transfer Lines
- Electrical/Drawing Reconstruction
- Instrumentation

*Crews remove the first piece of the SN-280 transfer line from SY Farm. The Recovery-Act funded project calls for a total of eight pipe-in-pipe waste transfer lines to be removed by the end of FY11.*

### SY Farm Transfer Lines



*Workers wearing water-resistant PPE and respirators use a high-pressure water lance to flush waste from an SY Farm transfer line.*



**COMPLETED WORK – SX Farm**

- Radial Filter Replacement (6)
- Obsolete SST Equipment (9)
- Electrical System Upgrade

**COMPLETED WORK – SY Farm**

- SY-271 Standby Diesel Generator
- P-28 SY Farm Exhauster
- SY-271 Aux Instrument Bldg
- Replaced Drain Seals
- NEC/Electrical Modifications
- SY Farm Electrical Upgrade
- SY-102 D&D (SHMS-GCS)

**COMPLETED WORK – S Farm**

- Radial Filter Replacement (14)
- Instrumentation (ENRAF) (2)
- Obsolete SST Equipment (3)



# Budget

- Continue good progress in tank retrievals
- Prepare for waste feed to WTP
- WTP facilities start of turnover in 2012

\*\*\* \$ in 000's throughout presentation \*\*\*

PBS	PBS Title	FY2011 Actual	ARRA Dollars	FY2012 President's Budget	FY2013 Request Allocation
ORP-0014	Radioactive Liquid Tank Waste Stabilization and Disposition	\$396,600		\$521,391	\$519,100
ORP-0060	Major Construction Waste Treatment Plant	\$740,178		\$840,000	\$970,000
Total-ORP	Office Base Funding Total	\$1,136,778	<b>326,035</b>	\$1,361,391	\$1,489,100



# ***FY12 Plans***

## **Tank Farms**

### *C-Farm*

### *New Projects*

- Hanford Storage Facility

### *TPA Activities*

- Single-shell tank structural analyses
- Hose-in-hose transfer lines
- Barriers
- Waste feed delivery

## **WTP**

### *Low-Activity Waste Facility*

- Complete design
- Stage Oxidizer
- Piping installation 90% complete
- Complete system duct work

### *High-Level Waste Facility*

- Complete installation needed in Wet Process Cell, Oxidizers, offgas absorbers, items needed in Filter Cave, and pipe and hanger for PA06

### *Pretreatment Facility*

- Receive boiler and heater exchange
- Receive Motor control center
- Complete fabrication of 4 B cell vessels for Ultrafiltration
- Place concrete, steel, piping and HVAC ducting

### *Analytical Lab*

- Complete construction sustainability

### *Balance of Facilities*

- Complete Title II Civil/Structural design
- Complete construction of Chiller Compressor Plant and Anhydrous Ammonia Facility



# Challenges

- Budget
- Aged Equipment and Infrastructure
- Communications
  - Surveys
  - Interviews
  - Internal



AP/SY Ventilation Upgrades



New Equipment Being Installed  
in Tank C-104 for Waste Retrieval



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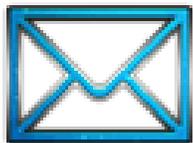
Flickr

[flickr.com/riverprotection](https://flickr.com/riverprotection)



Podcasts

[youtube.com/ORPHanford](https://youtube.com/ORPHanford)



Newsletter

*Please Contact Pamela McCann ([Pamela\\_McCann@orp.doe.gov](mailto:Pamela_McCann@orp.doe.gov) or 509-376-7663) to be added to the newsletter distribution list*



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# Backup Slides



# C-Farm Retrieval Roadmap to 2014

## Modified Sluicing

<b><u>C-104</u></b>	
Design	Complete
Procure/Construction	Complete
Bulk Retrieval	FY 2010-11
<b>Hard Heel Design/Construct</b>	<b>FY 2011-12</b>
<b>Hard Heel Retrieval</b>	<b>FY 2012</b>

<b><u>C-111</u></b>	
Design	Complete
Procure/Construction	Complete
Bulk Retrieval	FY 2010-11
<b>Hard Heel Design/Construct</b>	<b>FY 2012-13</b>
Hard Heel Retrieval	FY 2013

<b><u>C-112</u></b>	
Design	FY 2010-11
Procure/Construction	FY 2010-11
<b>Bulk Retrieval</b>	<b>FY 2012</b>
Hard Heel Design/Construct	FY 2013
Hard Heel Retrieval	FY 2013

<b><u>C-101</u></b>	
Design	FY 2011
<b>Procure/Construction</b>	<b>FY 2011-12</b>
<b>Bulk Retrieval</b>	<b>FY 2012</b>
Hard Heel Design/Construct	FY 2013-14
Hard Heel Retrieval	FY 2014

<b><u>C-108</u></b>	
Design	Complete
Procure/Construction	Complete
Bulk Retrieval	FY 2010
Hard Heel Design/Construct	FY 2010-11
Hard Heel Retrieval	FY 2011

<b><u>C-110</u></b>	
Design	Complete
Procure/Construction	Complete
Bulk Retrieval	Complete
Hard Heel Design/Construct	FY 2011
<b>Hard Heel Retrieval</b>	<b>FY 2012</b>

<b><u>C-109</u></b>	
Design	Complete
Procure/Construction	Complete
Bulk Retrieval	Complete
<b>Hard Heel Design/Construct</b>	<b>FY 2011-12</b>
<b>Hard Heel Retrieval</b>	<b>FY 2012</b>

<b><u>C-102</u></b>	
Design	FY 2011
<b>Procure/Construction</b>	<b>FY 2012-13</b>
Bulk Retrieval	FY 2013
Hard Heel Design/Construct	FY 2014
Hard Heel Retrieval	FY 2014

## MARS

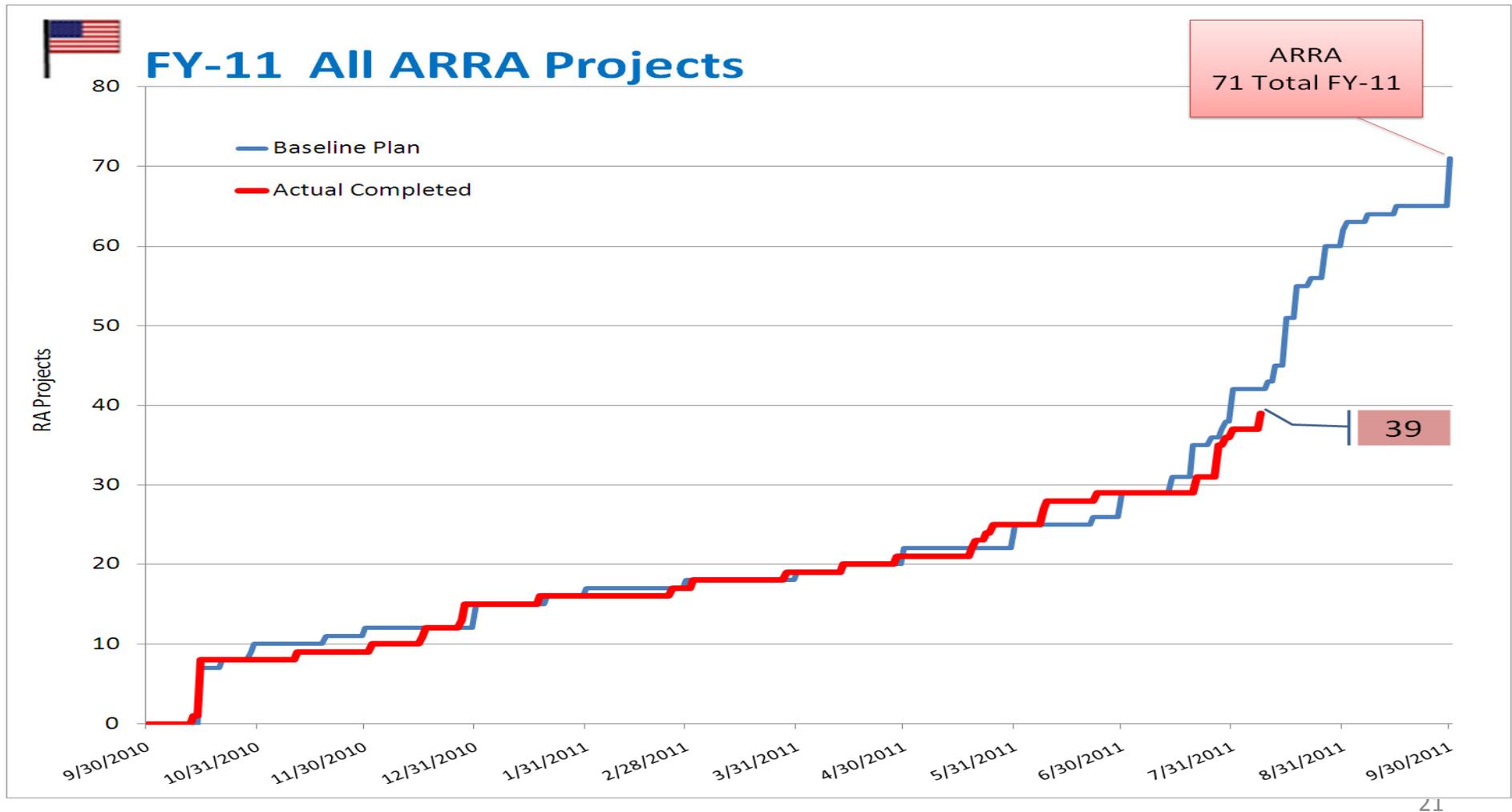
<b><u>C-107</u></b>	
Design	FY 2010-11
Procure/Construction	FY 2010-11
MARS Retrieval Ops	FY 2011
<b>Hard Heel Retrieval</b>	<b>FY 2012</b>

<b><u>C-105</u></b>	
<b>Design/Procure/Construct Phase 1</b>	<b>FY 2011-12</b>
<b>Design/Procure/Construct Phase 2</b>	<b>FY 2012-13</b>
MARS Retrieval Ops	FY 2013-14
Hard Heel Retrieval	FY 2014

- FY11 Tank Retrievals
- C-104      Bulk retrieval - AMS
  - C-107      Bulk retrieval - MARS
  - C-108      Hard heel retrieval - Chemical
  - C-109 & C-110      Select hard heel technology
  - C-111      Bulk retrieval – next retrieval technology under consideration
  - C-101 & C-112      Design and construct bulk retrieval system

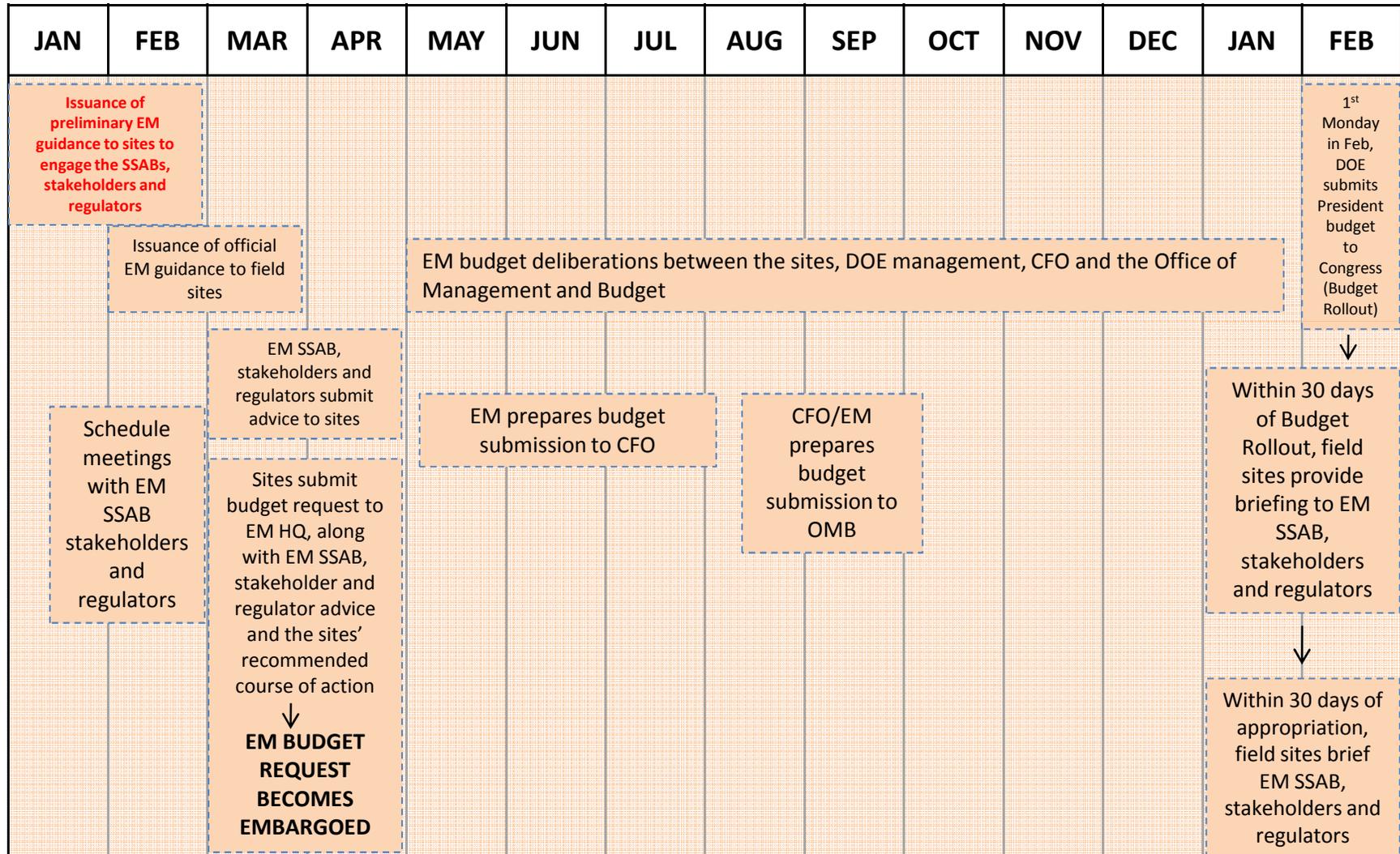


# FY-2011 Pathway to RA Completion



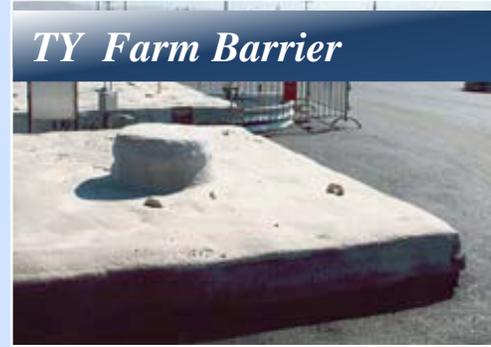


## EM SSAB, Stakeholder & Regulator Involvement In EM Budget Process



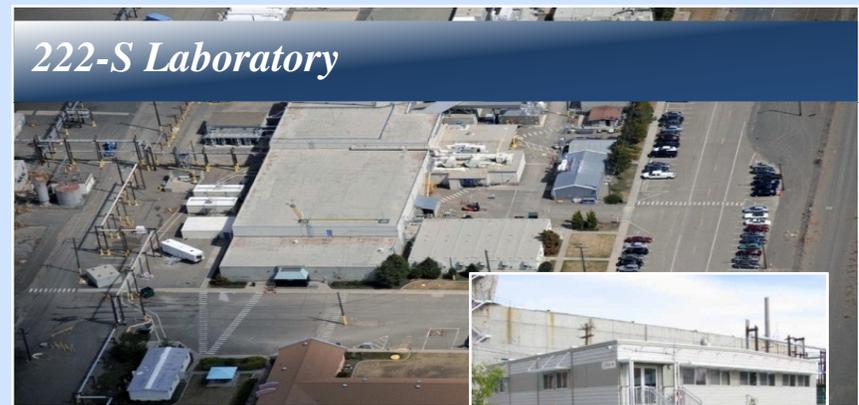
# ARRA

*Development of a full-scale Wiped Film Evaporator (WFE) is nearing completion. The WFE bring mobile evaporation technology to the tank farms.*



*Nearly 400,000 gallons of water runoff have been diverted since September by an RA-funded interim moisture barrier at the TY Farm.*

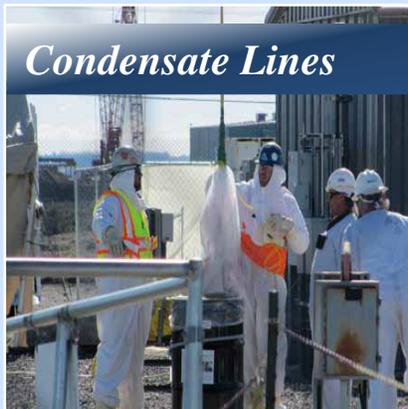
*Workers wearing water-resistant PPE and respirators use a high-pressure water lance to flush waste from an SY Farm transfer line.*



*More than \$15 million in Recovery Act funds went to upgrades at the 222-S Laboratory. All upgrades were designed to be more “green” and energy-efficient.*



*The 2705-S modular office building upgrades included energy-saving light switches, low-flow faucets and toilets, and energy-efficient lights and appliances.*



*Workers prepare for installation of the AZ jumper by removing the vapor seal attached to one of the pump nozzles and putting it into the waste barrel.*

# Major ARRA Projects



SY-P28 Exhauster Removal



222-S Lab Fan Deck Stairs



222-S Lab Instruments



Raw Water Service Upgrade

- **RA-1 Tank Farm Infrastructure Upgrades (Operating) - \$105M**

- ❖ AP/SY Farm Ventilation
- ❖ SY Farm Electrical Upgrades
- ❖ Valve Funnel Replacements
- ❖ Valve Pit Jumpers Replacement
- ❖ AP Level Rise Construction Modifications
- ❖ AZ Farm Control System Upgrade
- ❖ Other Tank/Farm Upgrades
- ❖ DST Upgrades/Life Extension
- ❖ SST Life Extension
- ❖ TY Farm Interim Barrier Construction
- ❖ AY/AZ Farm Infrastructure Design

- **RA-2 Other Infrastructure Upgrades (Operating) - \$60M**

- ❖ Wiped Film Evaporator
- ❖ Core Sampling System
- ❖ Mobile Arm Retrieval System (MARS) - Vacuum System
- ❖ Procure All-Terrain Crane & Tank Farm Vehicles/Equipment

- **RA-3 Facilities Upgrades (Operating) - \$93M**

- ❖ 242-A Evaporator Upgrades/Life Extension
- ❖ 222-S Laboratory Upgrades/Life Extension
- ❖ Secondary Waste Form Testing
- ❖ 200 East Storage Facility
- ❖ 272-AW Refurbishment

- **RA-4 Waste Feed Infrastructure Upgrades (Operating) - \$50M**

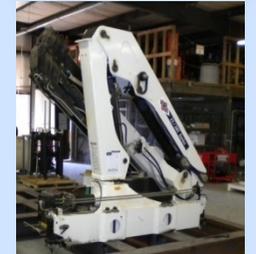
- ❖ DST Control Systems Update
- ❖ Exhauster D&D (AW & AN Farms)
- ❖ AZ Condensate Line Upgrade
- ❖ AW Farm COB Isolation & Removal
- ❖ Mixer Pump Design
- ❖ Tank Waste Mixing Demonstrations
- ❖ AW Farm D&D (SHMS-GCS Removal)
- ❖ SY-102 D&D (SHMS-GCS Removal)
- ❖ Waste Feed Delivery Systems

- **RA-5 Waste Feed Transfer Lines Upgrades (Capital) - \$18M**

- ❖ SY Transfer Line Upgrades



Valve Pit Improvements



MARS Vacuum System



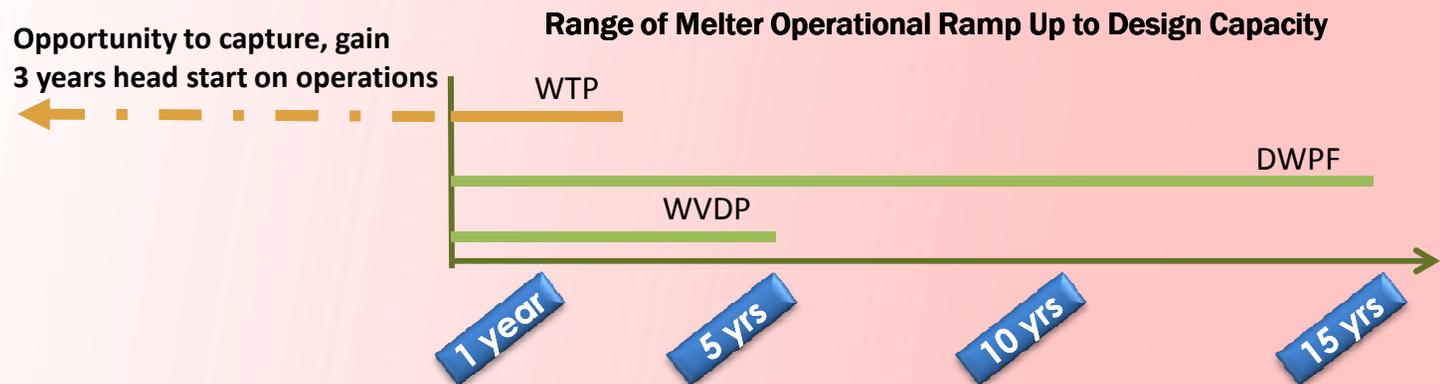
135T All-Terrain Crane



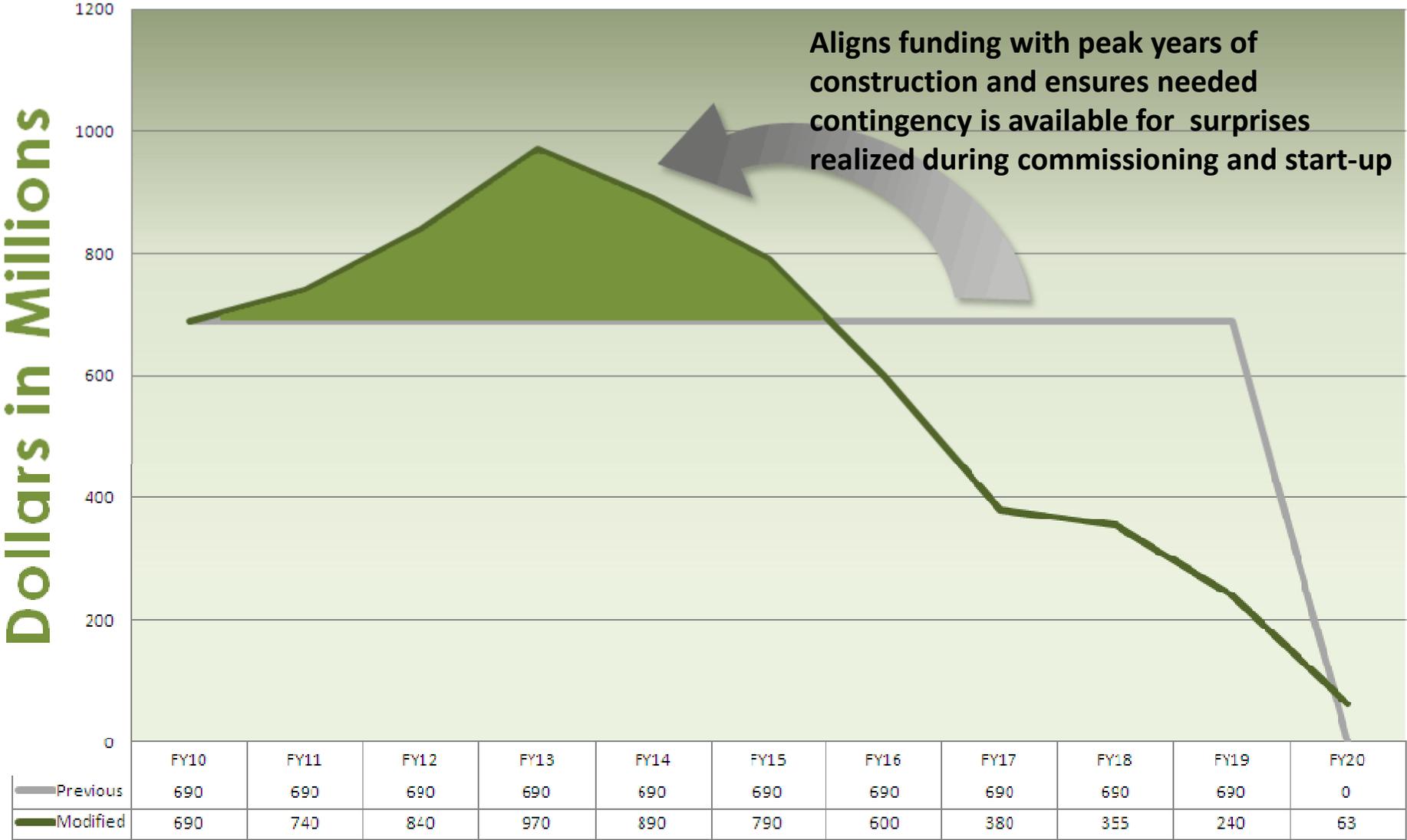
Tank Waste Mixing



# WTP Operational Start-Up Basis



# Modified WTP Funding Profile



**Total Project Cost Remains \$12.263B**