U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

September 27, 2022

Savannah River Site Citizens Advisory Board

Carlsbad Field Office/Waste Isolation Pilot Plant

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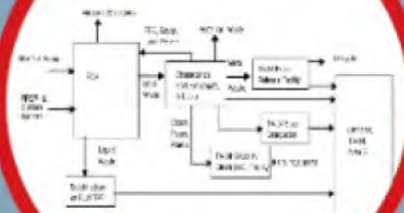
WIPP SUMMARY

- WIPP is America's only deep geologic repository for the permanent disposal of defense-generated transuranic (TRU) radioactive waste
- WIPP has been receiving waste since 1999 and has a proven track record for safe and compliant transport and emplacement of TRU waste
- WIPP's disposal limits are based on the Congressionally approved Land Withdrawal Act which authorizes disposal of 6.2 million cubic feet of TRU waste
- All TRU waste coming to WIPP must be fully characterized and certified to meet the WIPP Waste Acceptance Criteria

TRU WASTE CHARACTERIZATION PROCESS

SELECTED DRUM

PROCESS KNOWLEDGE AND CHARACTERIZATION INFORMATION



NMED, NRC

RADIOGRAPHY

EPA

NON-DESTRUCTIVE ASSAY

NRC

FLAMMABLE GAS ANALYSIS

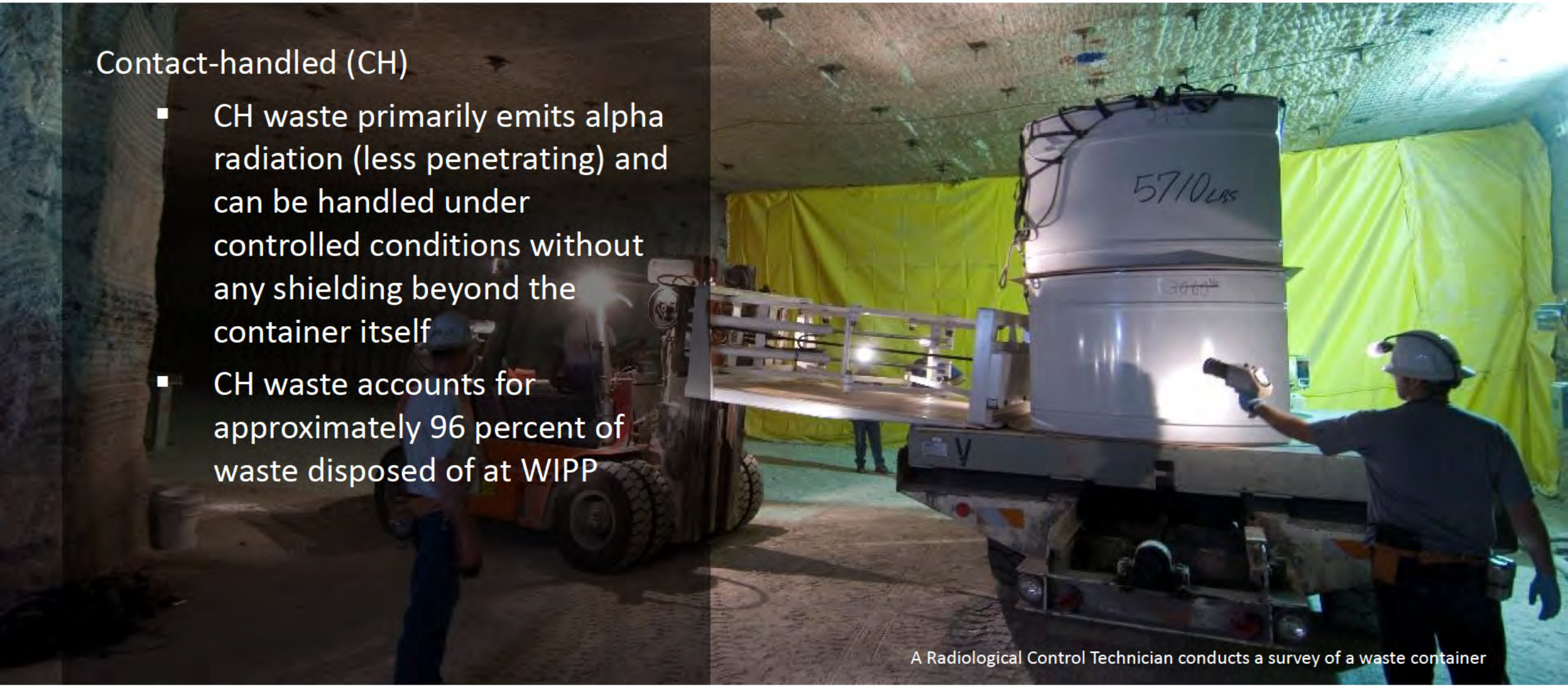
CHARACTERIZED DRUM

Ensuring all waste received at WIPP meets the Waste Acceptance Criteria

TYPES OF TRU WASTE

Contact-handled (CH)

- CH waste primarily emits alpha radiation (less penetrating) and can be handled under controlled conditions without any shielding beyond the container itself
- CH waste accounts for approximately 96 percent of waste disposed of at WIPP



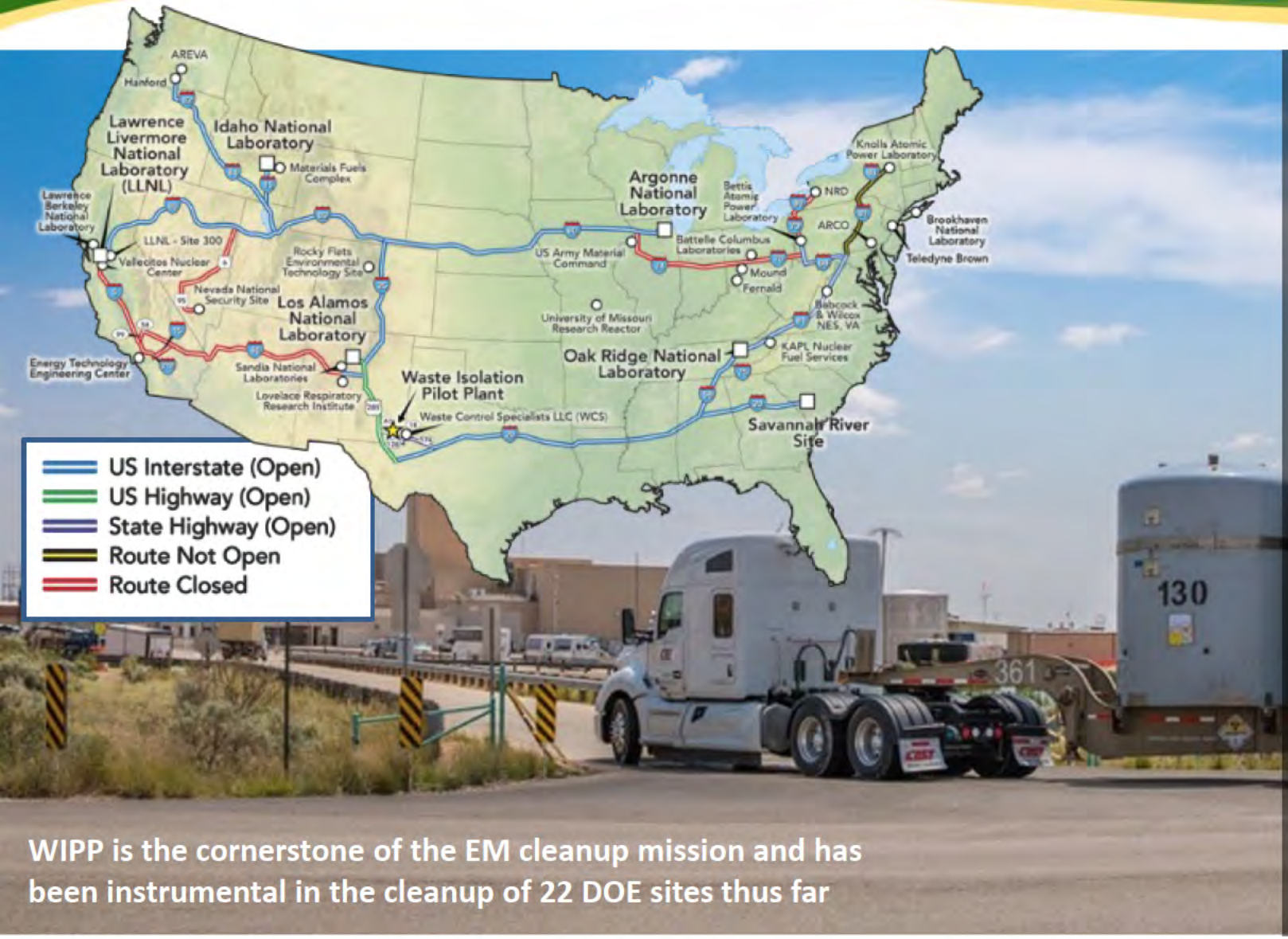
A Radiological Control Technician conducts a survey of a waste container

TYPES OF TRU WASTE

Remote-handled (RH)

- RH waste emits more penetrating gamma radiation than CH-TRU
- Both RH and CH are transported in NRC certified Type B shipping containers
- As indicated in the name, RH is handled and emplaced using remote handling equipment
- RH accounts for approximately four percent of waste disposed of at WIPP

WIPP SUPPORTS NATIONAL CLEANUP MISSION



- WIPP receives TRU waste from generator sites across the nation
- All WIPP shipments are made by highway using pre-approved transportation routes
- The WIPP transportation program is recognized as one of the safest in the world

WIPP is the cornerstone of the EM cleanup mission and has been instrumental in the cleanup of 22 DOE sites thus far

ACCOMPLISHMENTS

- Shipments to date in FY22: **217**
- Loaded miles in FY22: **235,860**

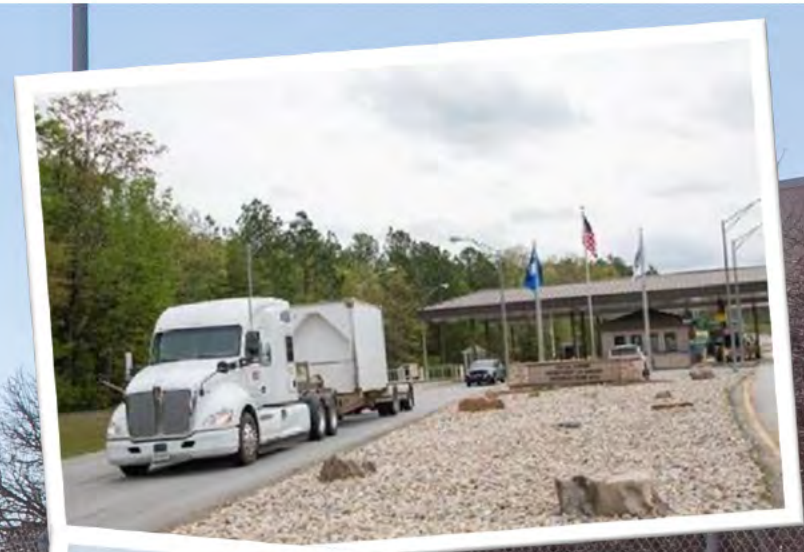
- Total shipments received: **13,189**
- Total loaded miles traveled: **15,760,206**
- Total CH waste containers emplaced: **266,231**
- Total RH waste canisters emplaced: **775**
- Shielded containers emplaced: **56** (included in total RH)

Updated August 29, 2022

SRS STATUS

- SRS has completed 1,698 shipments since beginning in 2001 – including 239 TRUPACT III shipments
  - Final shipment of legacy TRU waste in the TRUPACT III campaign arrived at WIPP in April of 2022
- Completed 15 shipments to date in FY22

Updated September 6, 2022



SHIPMENTS

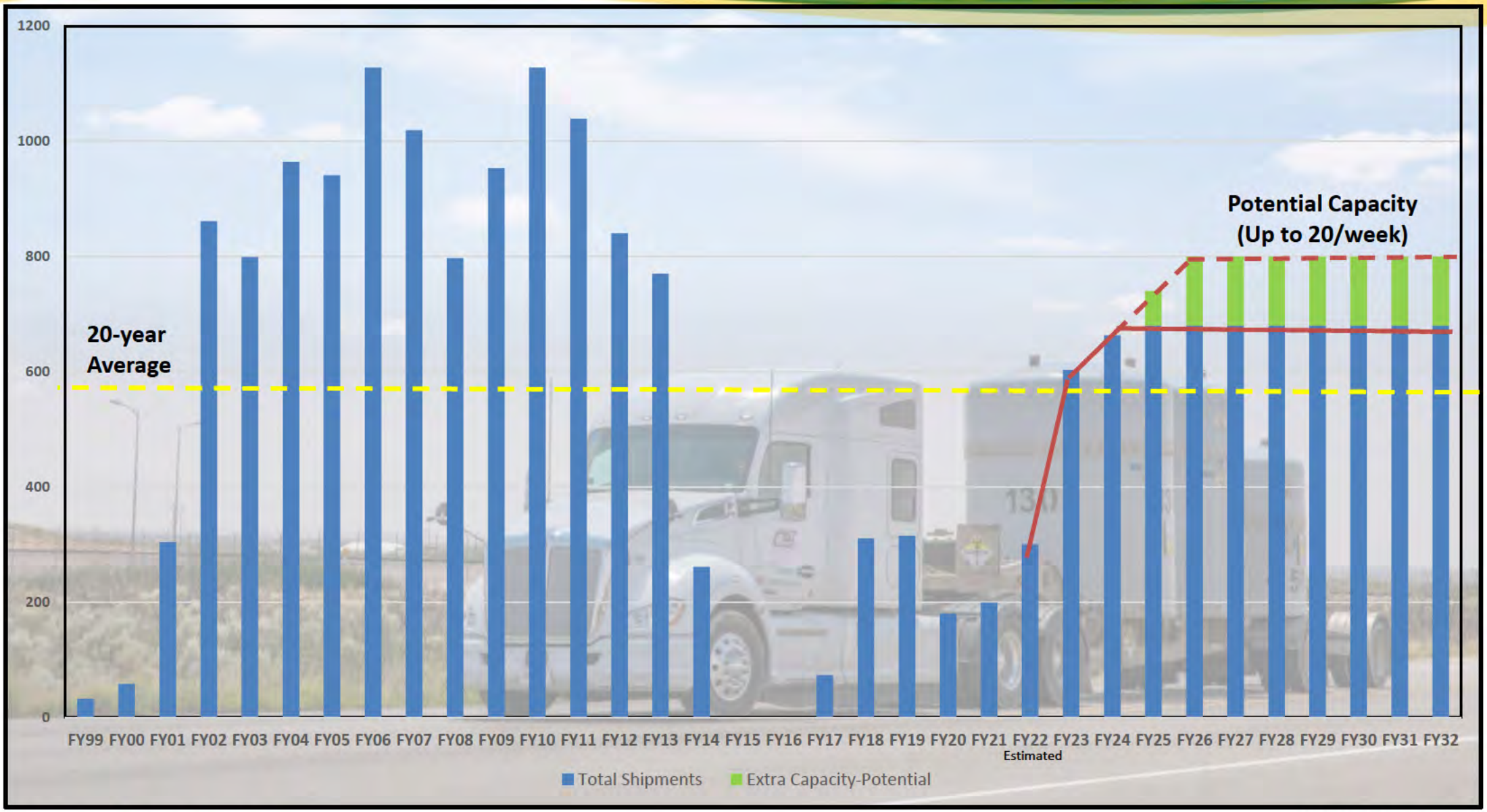
Shipments in FY 2022

Site	Actual Shipments in FY 2021	Targeted Projected Shipments in FY 2022	Actual Shipments to Date in FY 2022
LANL	56	62	66
INL	100	190	130
ORNL	22	8	6
SRS	6	34	13
SQS (SNL, LLNL, ANL)	14	5	2
WCS	1	--	--
Total	199	299	217

* FY22 targets are based on availability of certified TRU waste for shipment

Updated August 29, 2022

CURRENT/PROJECTED SHIPMENTS



WHERE ARE WE NOW?

WIPP Land Withdrawal Act (Public Law 102-579) allows for 175,564 cubic meters of TRU waste to be disposed at the WIPP facility

- Panels 1 – 6 have been filled and closed
- Waste is currently being emplaced in the last available room in Panel 7
- Mining and outfitting of Panel 8 is complete and certification is underway

Approximately 40.7% of WIPP LWA total TRU waste volume emplaced

- CH 71,158 m^3
- RH 361 m^3

Additional disposal panels and infrastructure investments are needed to accommodate the Congressionally authorized disposal volume in the LWA

- Replacement Panels 11 and 12
- As a result of waste packaging and emplacement inefficiencies, additional Panels will be needed to complete the WIPP mission."

PANEL 7 EMPLACEMENT STATUS

As of August 22, 2022

MOVING INTO PANEL 8

Waste emplacement is projected to begin in Panel 8 late this summer. Advantages to moving to Panel 8 are:

- No personal protective equipment will be required
- Improved ground conditions

FY2022 PROGRESS ON THE SAFETY SIGNIFICANT CONFINEMENT VENTILATION SYSTEM (SSCVS)

The SSCVS Project will increase high-efficiency particulate air (HEPA) to the WIPP underground, increasing worker safety throughout the mine.

- SSCVS Project is ~63% complete
  - Salt Reduction Building is ~60% complete
  - New Filter Building is ~59% complete

SALT REDUCTION BUILDING (SRB)

FY2022 Accomplishments

- Completed construction of interior concrete masonry walls
- Interior painting completed
- Installation of interior electrical (lighting, receptacles) nearing completion and exterior lighting complete
- 6 of 6 salt reduction units completed
- 16 sections of duct installed
- Turbofans and silencers have been installed on structural steel support located on the ceiling of the SRB

Interior of the Salt Reduction Building

SALT REDUCTION BUILDING (SRB)

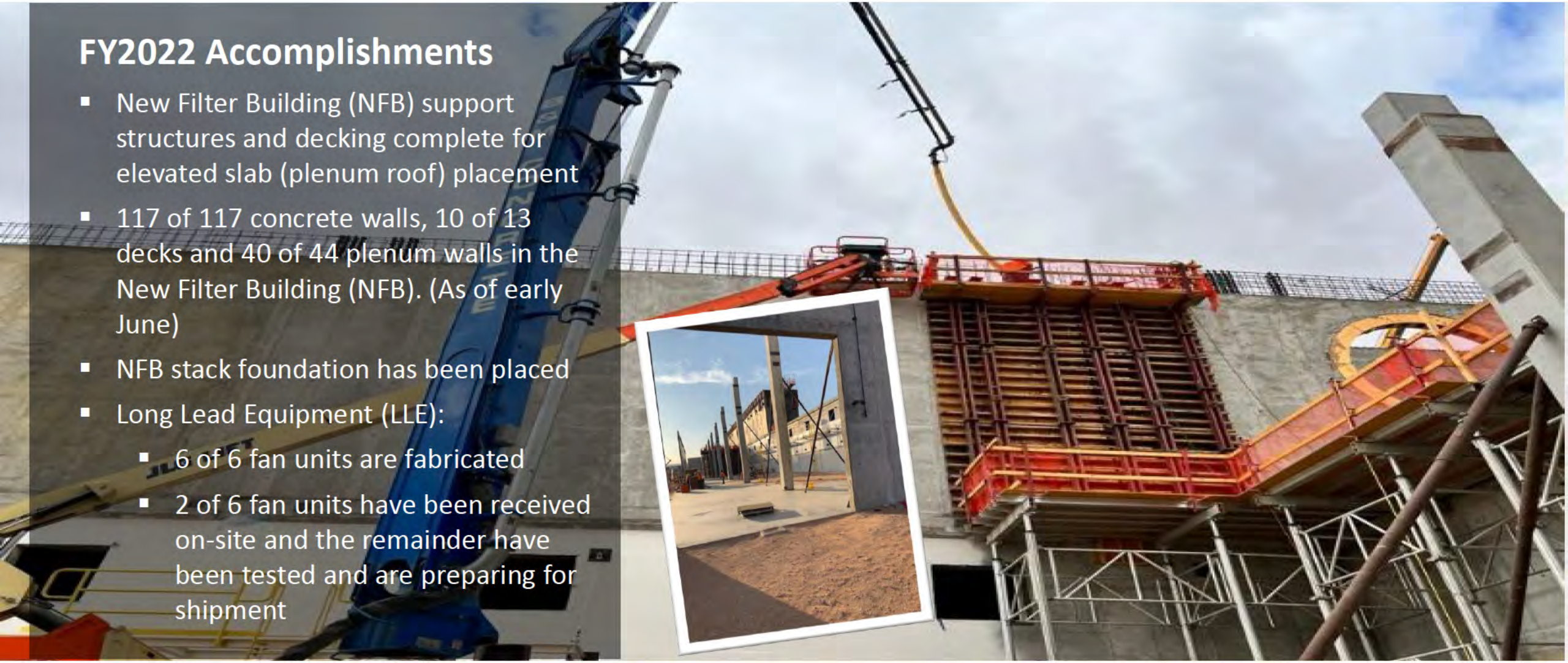
Goals in FY2022

- Complete installation of Internal utility systems
  - ✓ Lights
  - Electrical
  - ✓ Utilities
  - ✓ Fire protection
- Initiate installation of major systems
  - Fans
  - ✓ Salt Reduction Units
  - ✓ De-dusters
  - ✓ De-misters
  - ✓ Booster Fans

NEW FILTER BUILDING (NFB)

FY2022 Accomplishments

- New Filter Building (NFB) support structures and decking complete for elevated slab (plenum roof) placement
- 117 of 117 concrete walls, 10 of 13 decks and 40 of 44 plenum walls in the New Filter Building (NFB). (As of early June)
- NFB stack foundation has been placed
- Long Lead Equipment (LLE):
  - 6 of 6 fan units are fabricated
  - 2 of 6 fan units have been received on-site and the remainder have been tested and are preparing for shipment



NEW FILTER BUILDING (NFB)

Goals in FY2022-2023

- Complete structural construction of the New Filter Building (NFB)
  - The shear walls are the cast in place concrete and that will all be finished by the end of September.
  - Precast roof panels installed
    - Contingent on inspection and remediation for 48 (out of 113) suspect precast roof panels
- Complete interior painting - February 2023.
- Install Fire Protection - June, 2023.

UTILITY SHAFT (US) Accomplishments

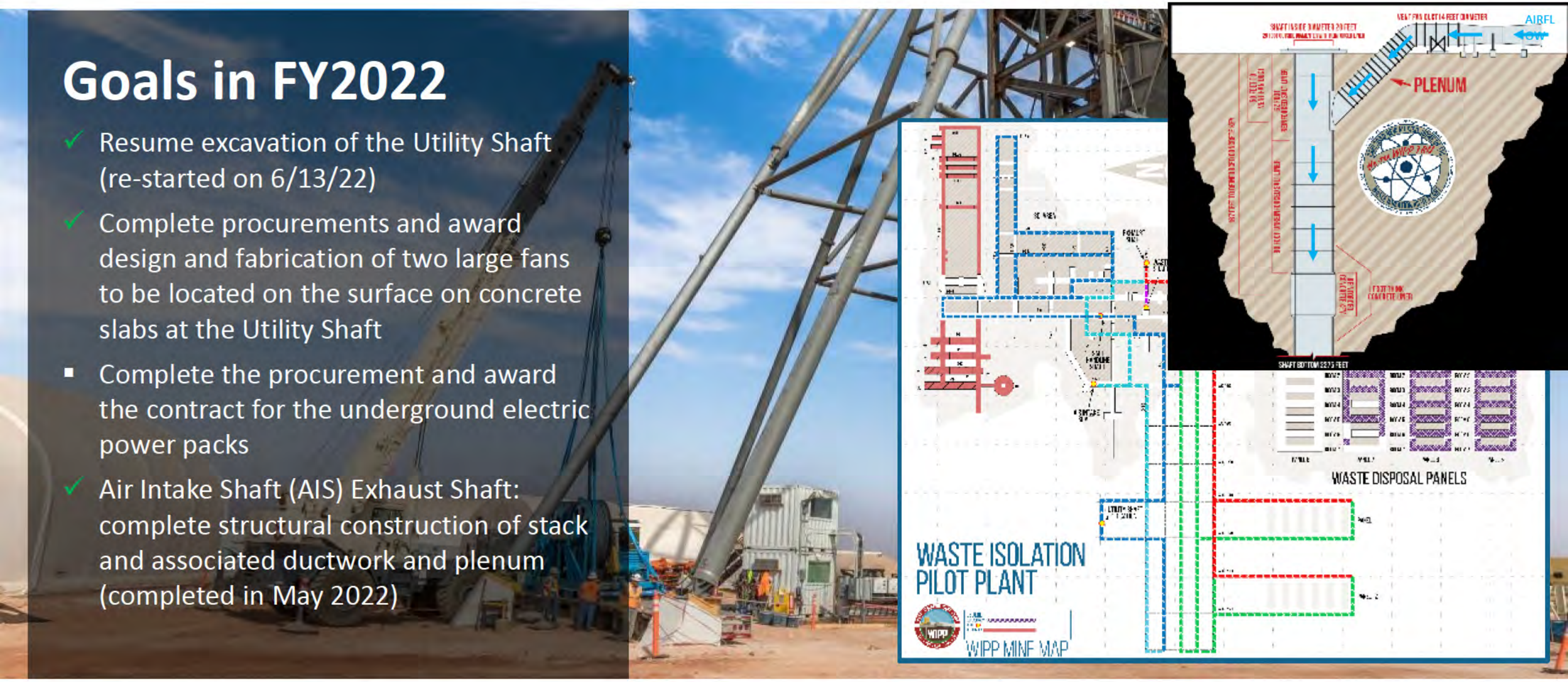
Design, construct and sink a new 2,150-foot vertical air intake shaft, Shaft Number 5, and supporting infrastructure and two 3,000 foot drifts back to the existing underground. The project will provide an unfiltered underground ventilation system for the mining dust to be removed from the underground repository.

- US Project is 65% complete

FY2022 PROGRESS ON THE UTILITY SHAFT (US)

Goals in FY2022

- ✓ Resume excavation of the Utility Shaft (re-started on 6/13/22)
- ✓ Complete procurements and award design and fabrication of two large fans to be located on the surface on concrete slabs at the Utility Shaft
- ▪ Complete the procurement and award the contract for the underground electric power packs
- ✓ Air Intake Shaft (AIS) Exhaust Shaft: complete structural construction of stack and associated ductwork and plenum (completed in May 2022)



PERMIT MODS AND STATUS

FY 2022 Regulatory Actions

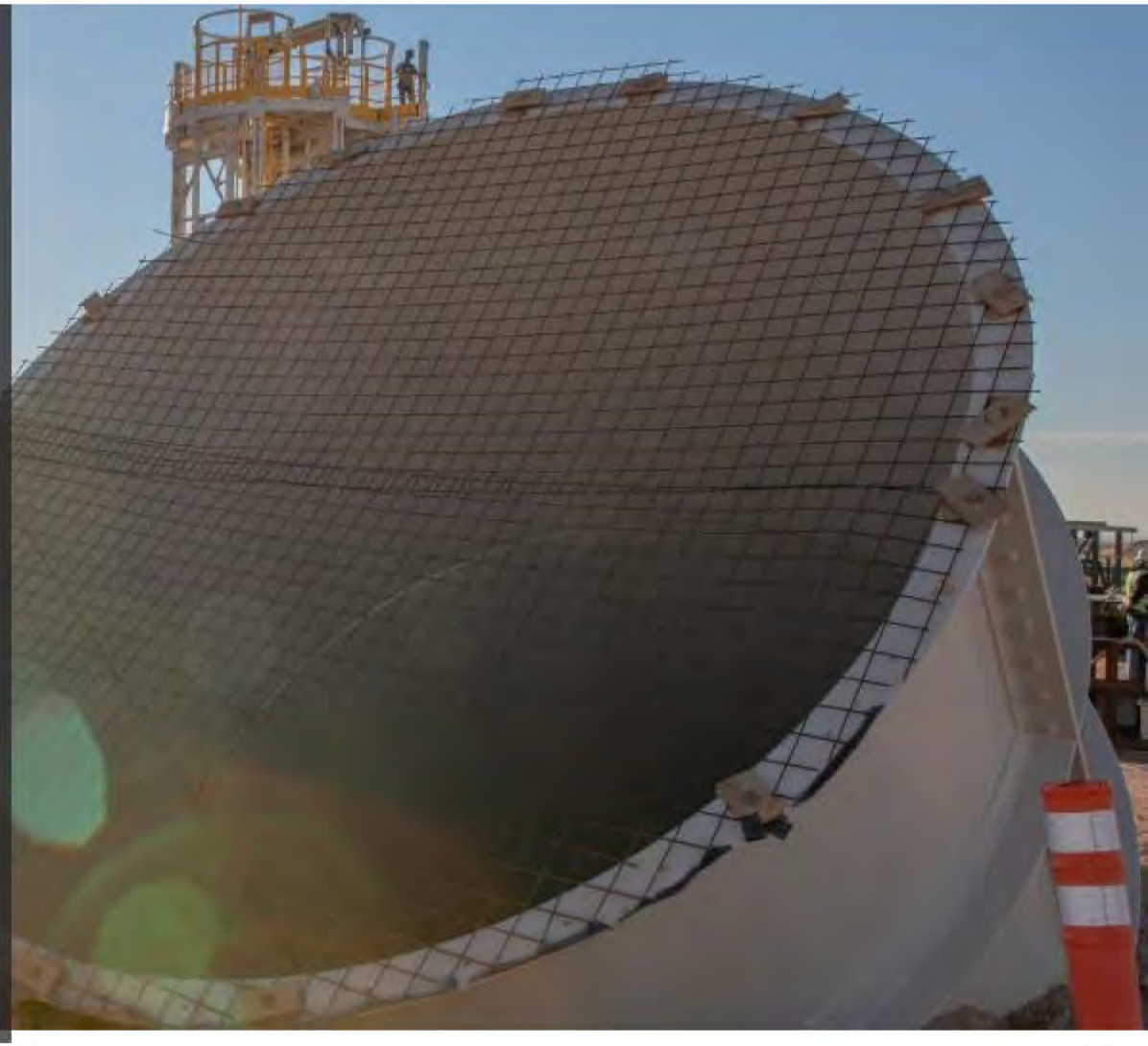
Ten-year Permit Renewal Application

- December 17, 2021 – NMED consolidated the 10 Year Permit Renewal Application and Class 3 PMR for Panels 11 and 12.
- WIPP responded to NMED Technical Incompleteness Determination (TID)
- A “draft” permit is expected to be published for public comments in October of 2022
- Public hearings are anticipated to take place in the May/June time frame

WIPP plans to submit a Class 2 PMR for new shielded containers to NMED

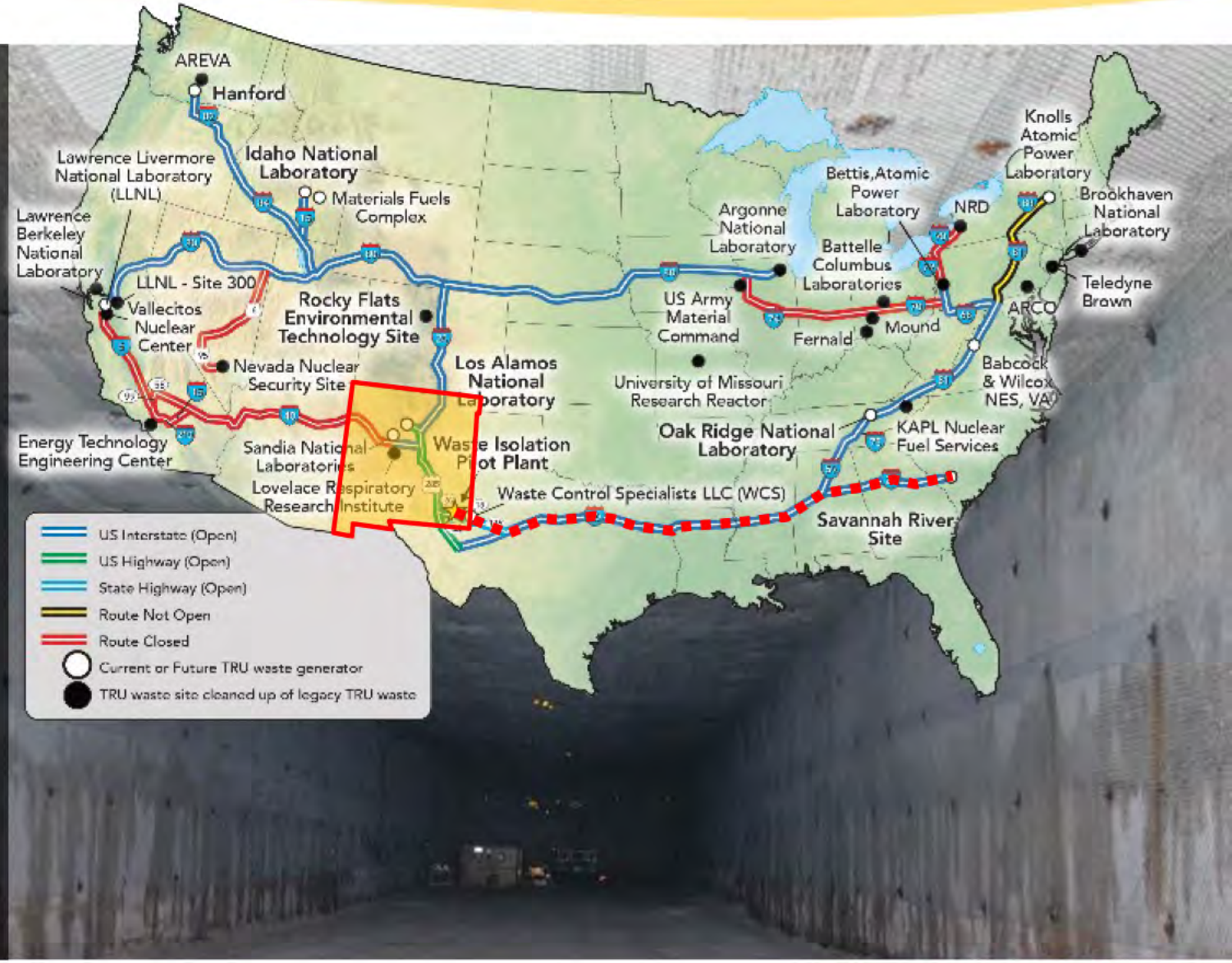
WIPP will also submit a Planned Change Notice to EPA for new shielded containers (NRC approvals for SCA’s has already be received)

A planned change notice will be submitted to EPA for Panels 11 and 12



SURPLUS Pu DISPOSITION

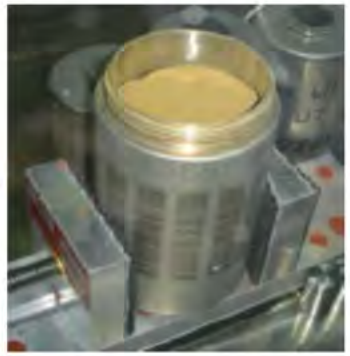
- The DOE Office of Environmental Management (EM) is currently using down-blending to disposition 13.1 metric tons (MT) of surplus Pu, including 6 MT previously approved and 7.1 MT of more recently approved for disposal at WIPP
- This surplus Pu from the Savannah River Site is part of the NNSA dilute and dispose program and is similar to waste previously received from the DOE Rocky Flats site
- All waste coming to WIPP must meet the site's Waste Acceptance Criteria and other applicable standards for transportation and disposal prior to being considered for disposal at WIPP
- Additional volumes of surplus plutonium are being evaluated for disposal at WIPP



DILUTE AND DISPOSE

WIPP involvement in the process

Plutonium oxide (PuO_2) and Blend Can Kits are placed in a glovebox



DOE-STD-3013 containers are opened for PuO_2 blending

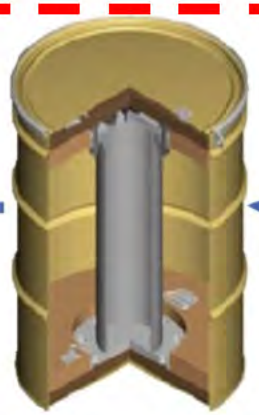
PuO_2 is added to adulterant in "blend can"

PuO_2 is blended with multicomponent adulterant

Lids are press-fit to close Robust Outer Container (ROC)

ROC reduces radiation exposure for handling of Dilute Surplus Plutonium (DSP)

DSP is packaged in Can/Bag/Can outside glovebox



DSP is loaded in Criticality Controlled Overpack (CCO) for Disposal at WIPP

Following Characterization CCOs are loaded in TRUPACT-II for transport

Visit the WIPP Website at the address below for a
Virtual Tour of the WIPP site
https://wipp.energy.gov/about-us.asp

Questions?