

Managing Hanford's Tank Waste





Hanford's tank farms



- Washington River Protection Solutions = Hanford's tank farms contractor
- 10-year contract (2008 – 2018)
- 56 million gallons of waste in 177 tanks
- 2,100+ employees





Where did the waste come from?



1943: Hanford

- Chosen as production site of weapons-grade plutonium

1944: B Reactor

- Becomes world's first large-scale plutonium production reactor
- Produces fuel for the bomb dropped on Nagasaki, Japan

Cold War era:

- Over the next 45 years, Hanford produces plutonium for weapons

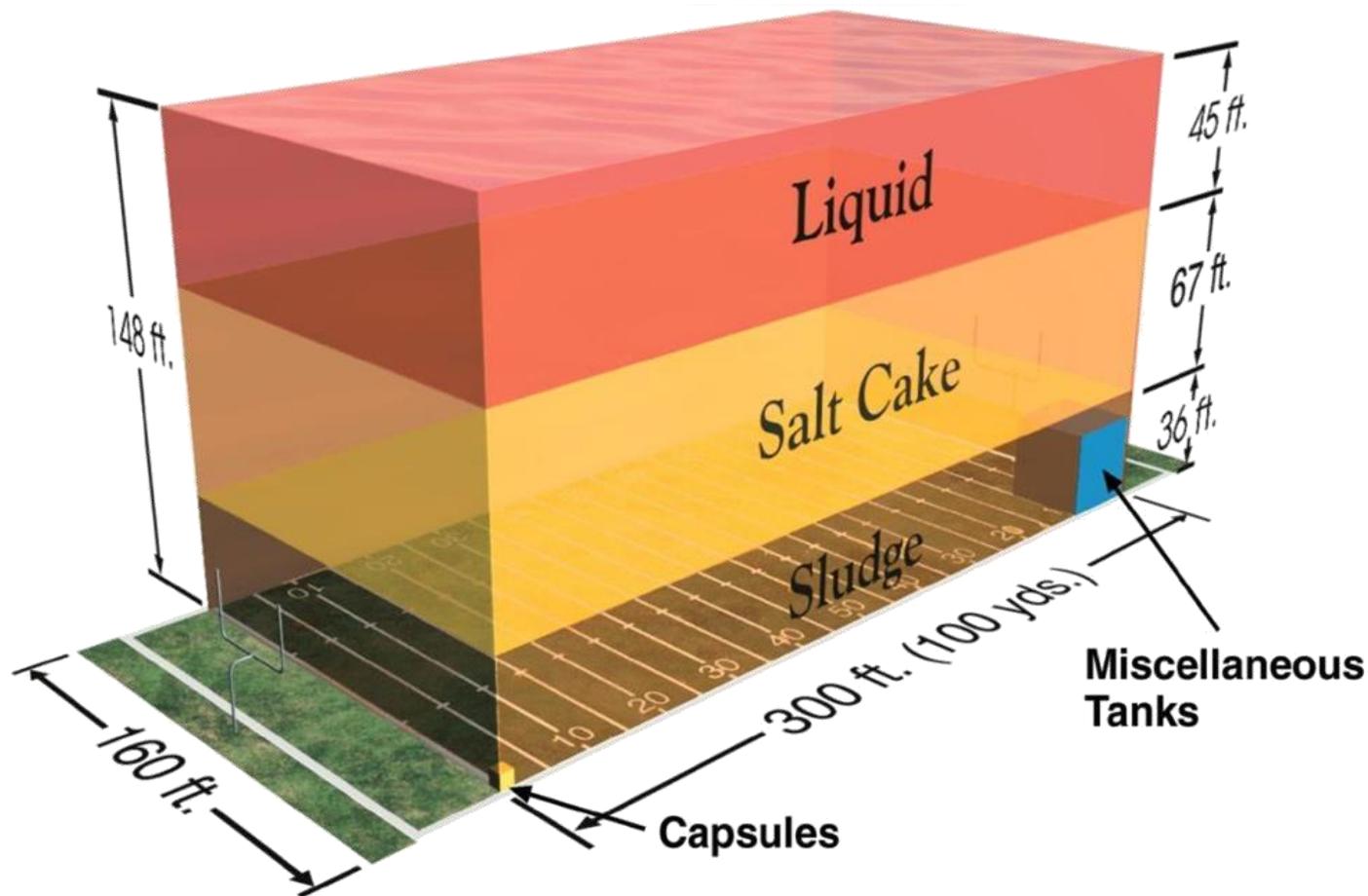




How much waste?



- Approximately 56 million gallons of waste contained in 177 underground storage tanks
 - Enough to cover a football field 148 feet deep

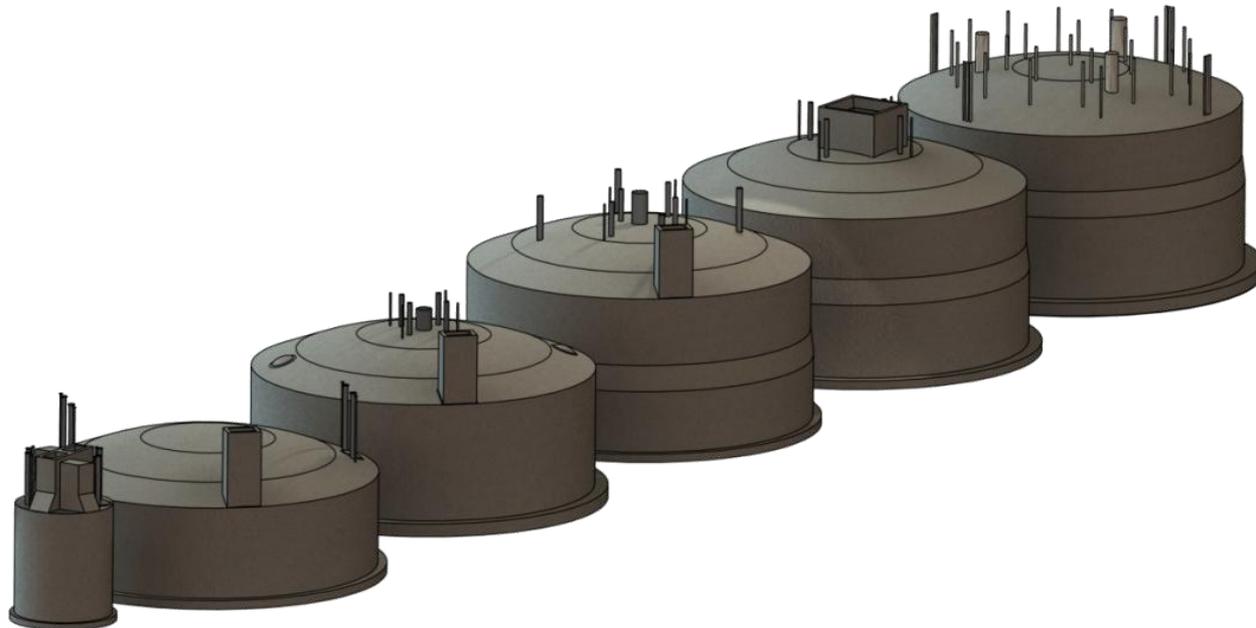
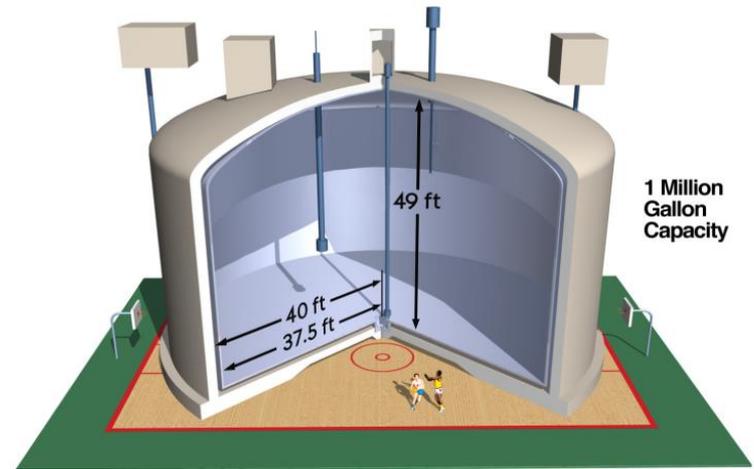




The tanks

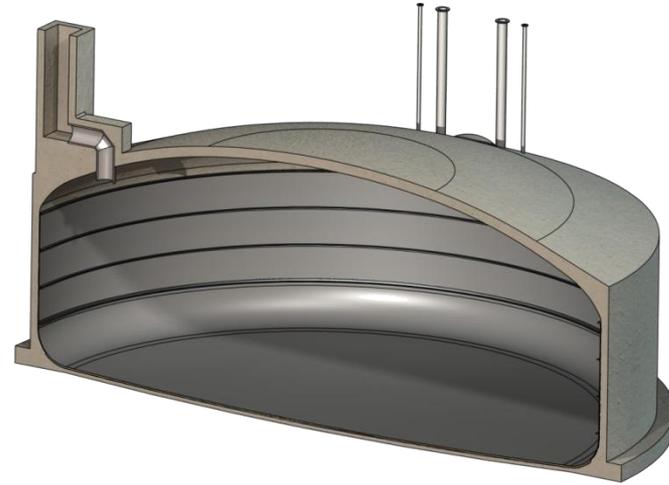


- Tanks range in capacity from 55k to more than a million gallons



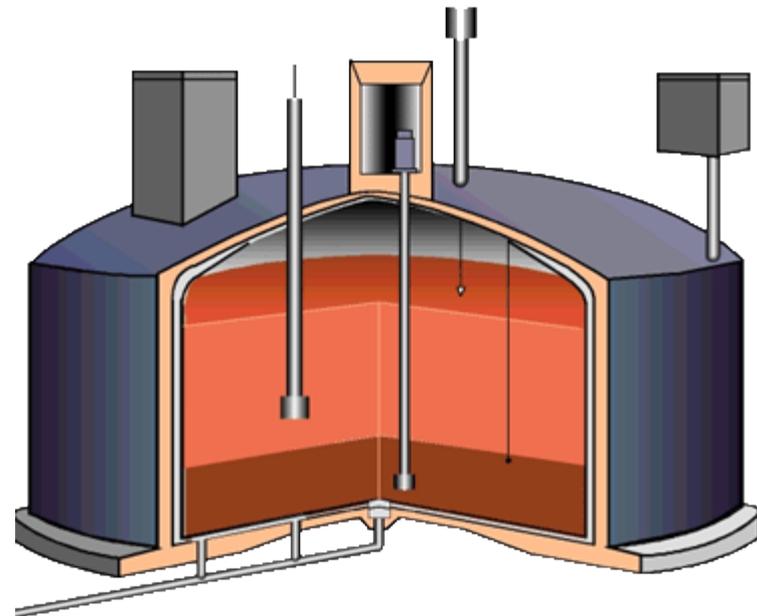
Single-Shell Tanks (SSTs)

- 149 tanks
- Constructed 1943-1964
- 55,000 – 1 million gallons



Double-Shell Tanks (DSTs)

- 28 tanks
- Constructed 1968-1986
- 1 – 1.26 million gallons





washington river
protection solutions

The farms

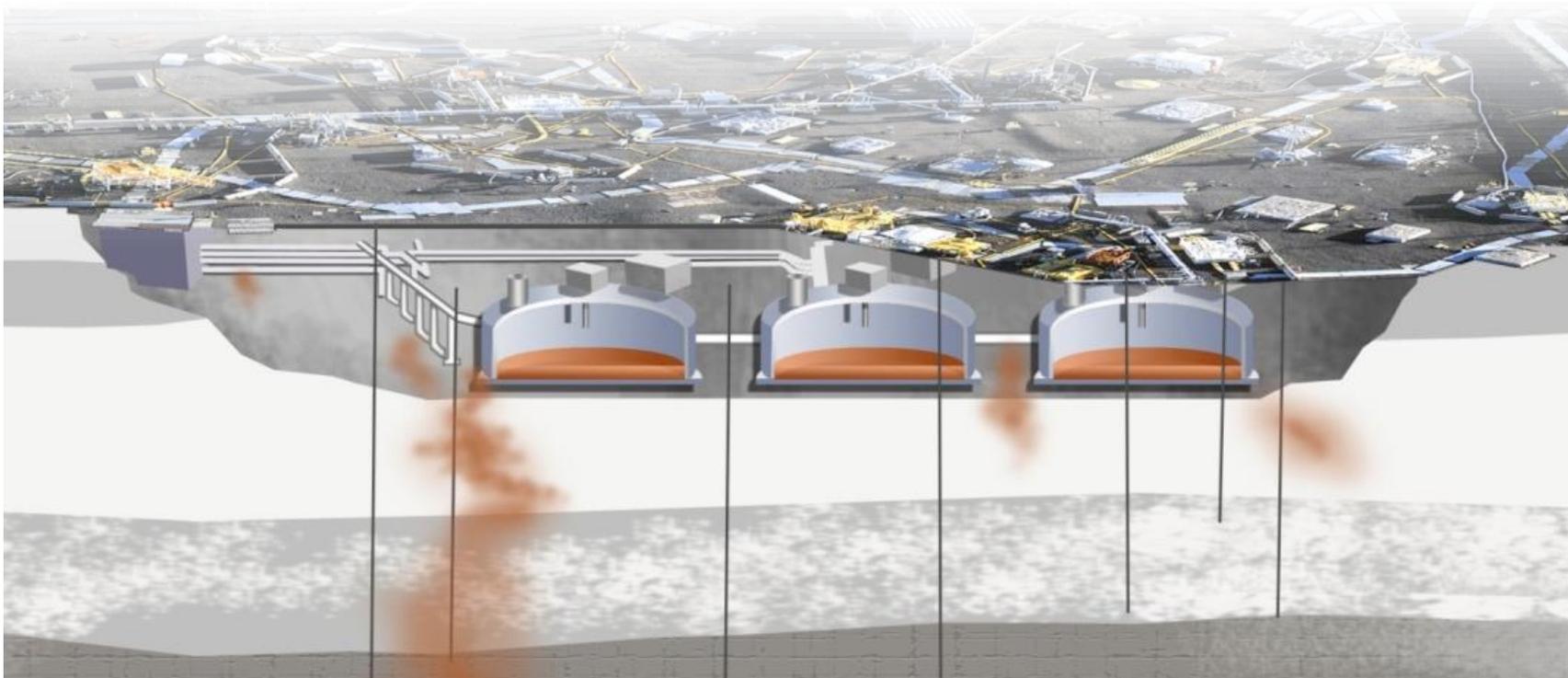




Leaking tanks



- Many of the 149 older single-shell tanks leaked in the past
- How much? An estimated 1 million gallons into the surrounding soil
- First leak confirmed in late 1950s





Waste retrieval



- Our focus: removing waste from single-shell tanks and transferring it to double-shell tanks to reduce risk of leaks





Retrieval: not an easy task



Risk:

Waste is highly radioactive and must be remotely handled

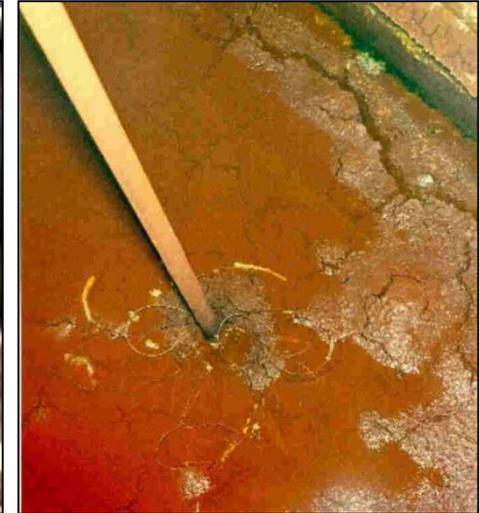
Variation:

Tanks contain multiple forms of waste

- Liquid
- Sludge
- Solids

Accessibility:

Tanks are buried underground with a limited number of small access pipes





Removing the waste



Modified Sluicing



Mobile Arm Retrieval System (MARS)



Enhanced Reach Sluicing



Chemical Dissolution



Foldtrack

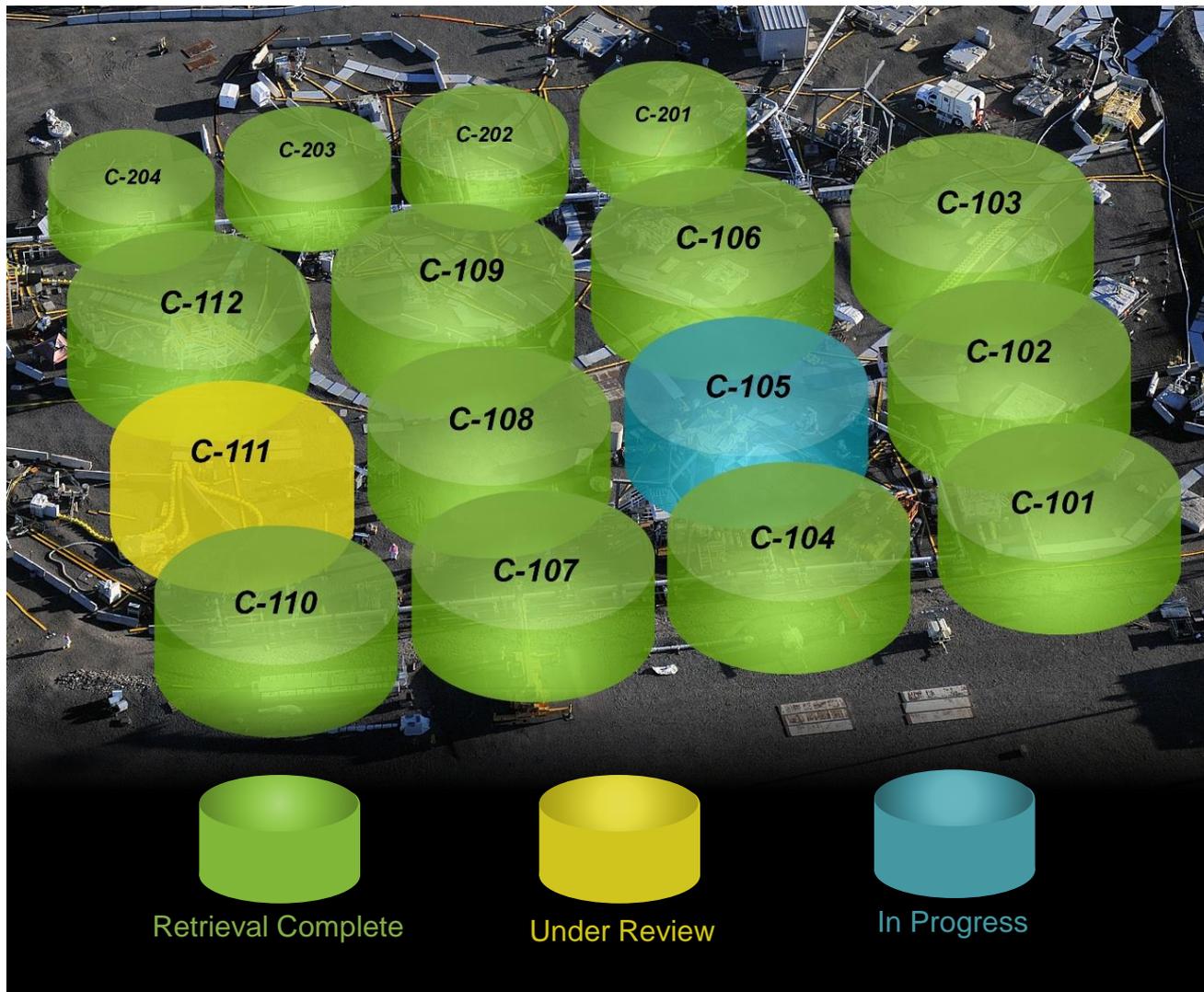


MARS Vacuum





Where we stand



Aerial photograph of C Farm with graphical overlay that depicts current status of each single-shell tank



What's next?

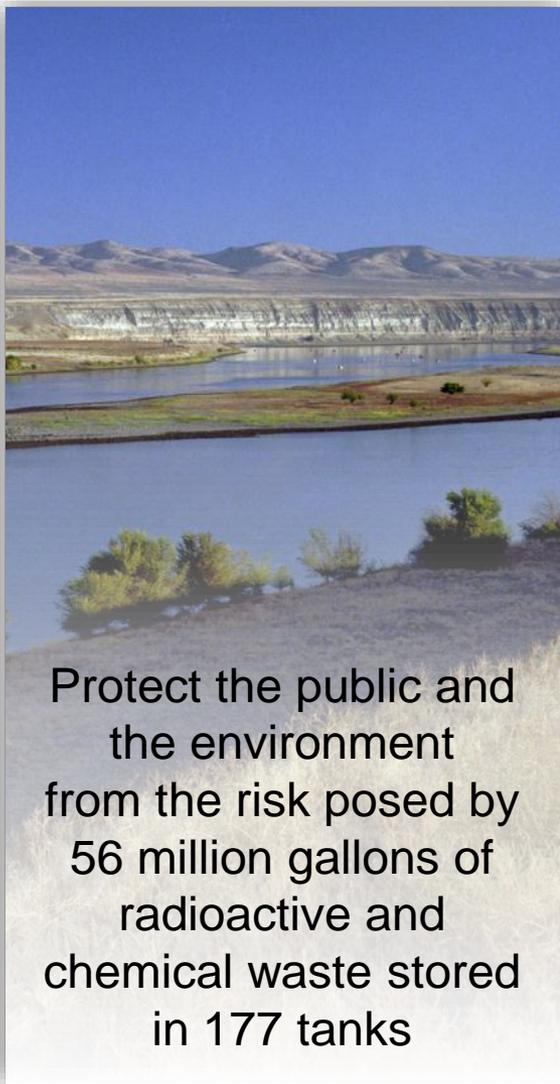


- Building world's largest radioactive Waste Treatment Plant (WTP)
- At WTP, waste will be turned into glass using a process called vitrification, which immobilizes the waste for permanent storage
- As the cornerstone of cleanup, the WTP plays an essential role in reducing the risk to the environment posed by Hanford's tank waste





Our mission



Protect the public and the environment from the risk posed by 56 million gallons of radioactive and chemical waste stored in 177 tanks



Safely manage and retrieve waste from tanks and prepare the delivery system for the Waste Treatment Plant



Immobilize the waste at the Waste Treatment Plant