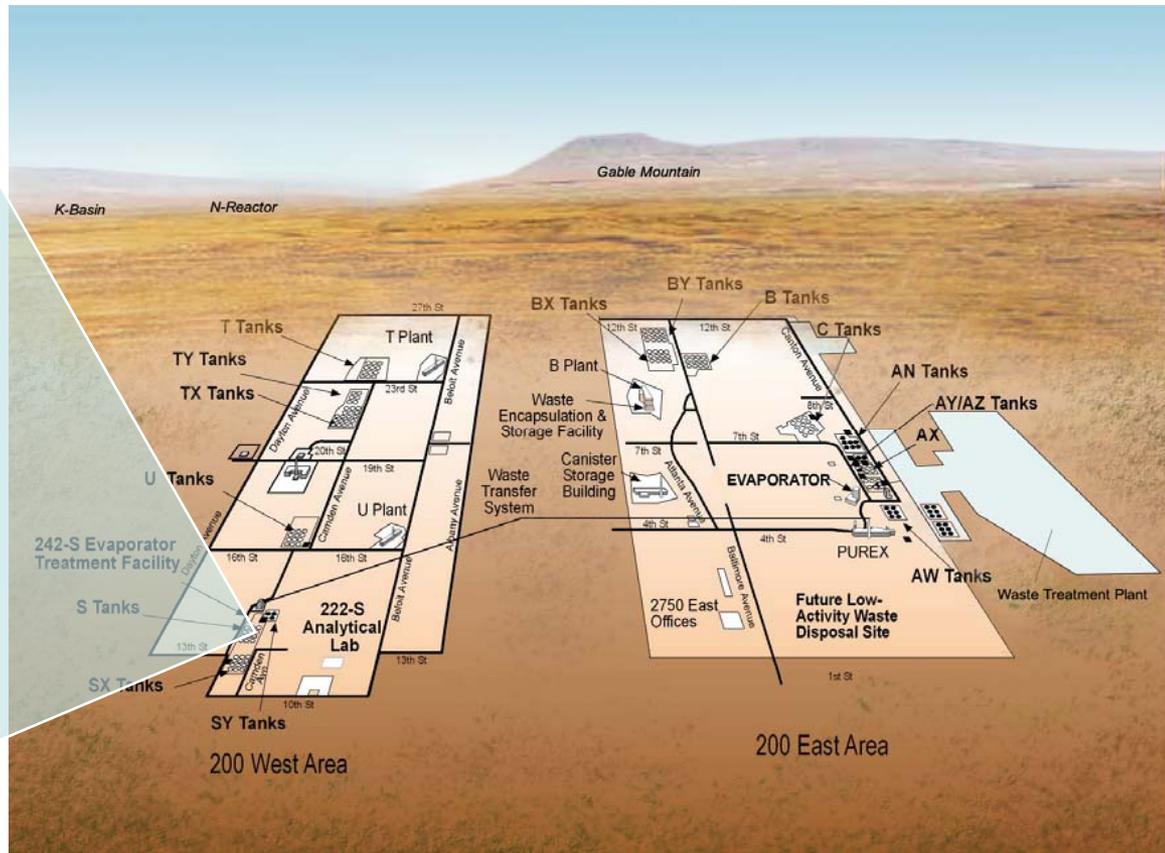


# S-102 Event on July 27, 2007 -and- Lessons to be Learned Relating to Sludge/Slurry Processing



S-Farm

S-102

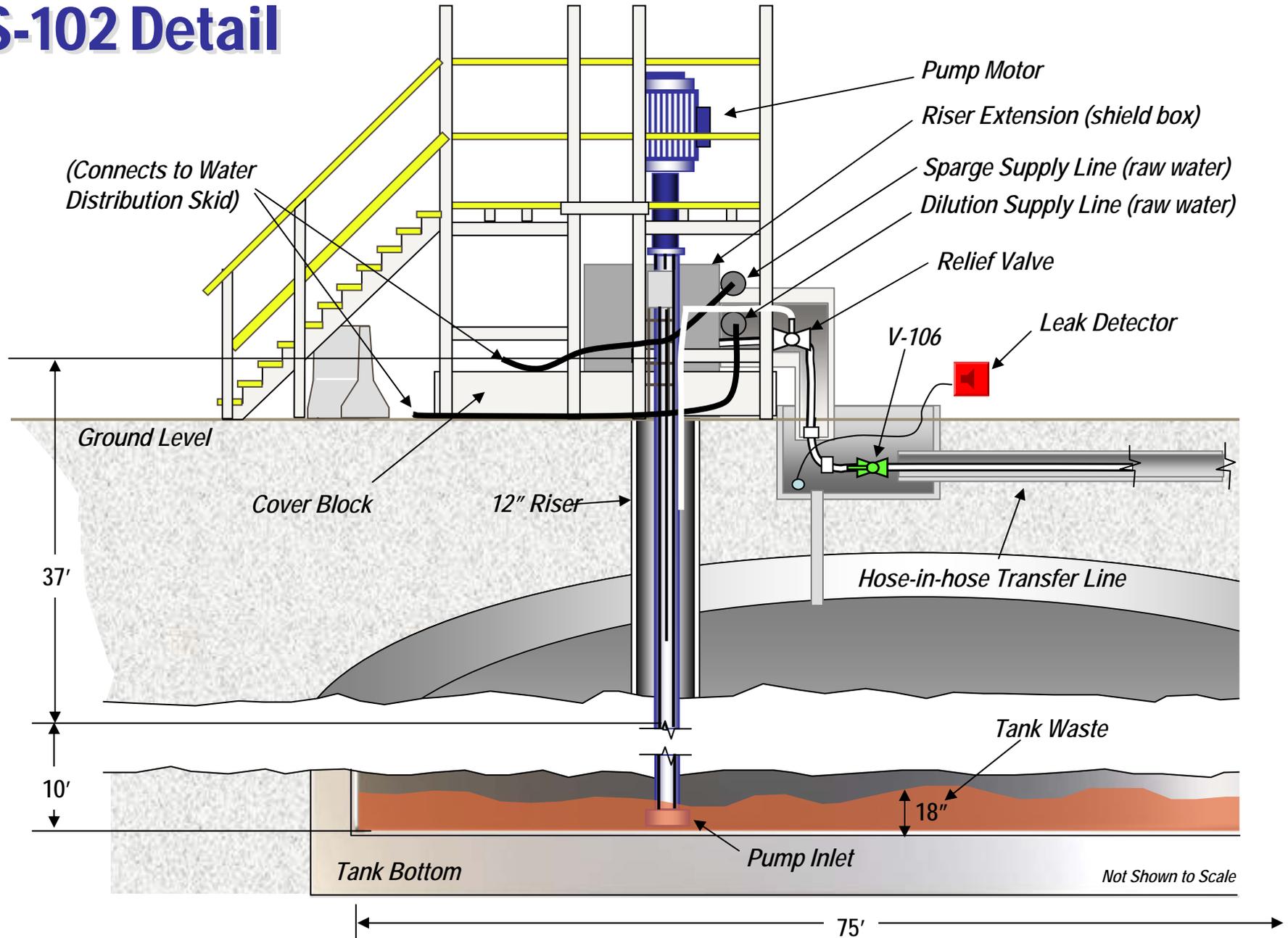


200 Area Tank Farms

# S-102 Estimated Major Constituents as of 1 Aug 2007

Constituent	Mass (kg)	Percent of total
Nitrate	26925	28.11%
Sodium	24150	25.21%
Aluminum	19725	20.59%
Phosphate	6143	6.41%
Nitrite	5948	6.21%
Uranium	3278	3.42%
Oxalate	2745	2.87%
Carbonate	2430	2.54%
Total organic carbon	1065	1.11%
Other	3390	3.54%
Total	95798	100.00%

# S-102 Detail



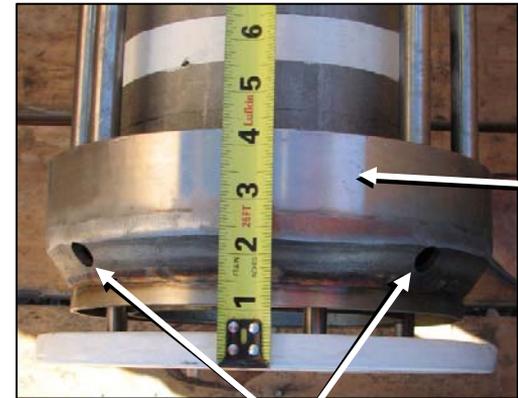
# Pump Inlet Nozzle



Pump Rotor

Dilution Water Supply Port

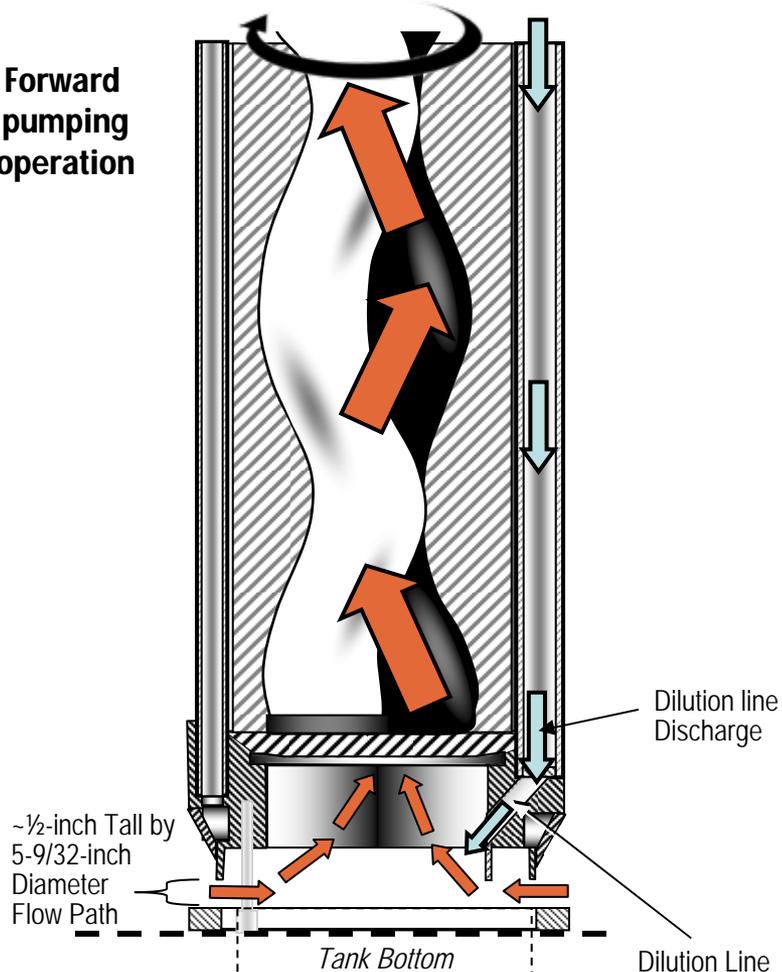
About 1 cubic foot of Gibbsite settles to pump outlet after motor trip



Sparge Ring

Sparge Water/Air Distribution Ports

**Forward  
pumping  
operation**



~1/2-inch Tall by  
5-9/32-inch  
Diameter  
Flow Path

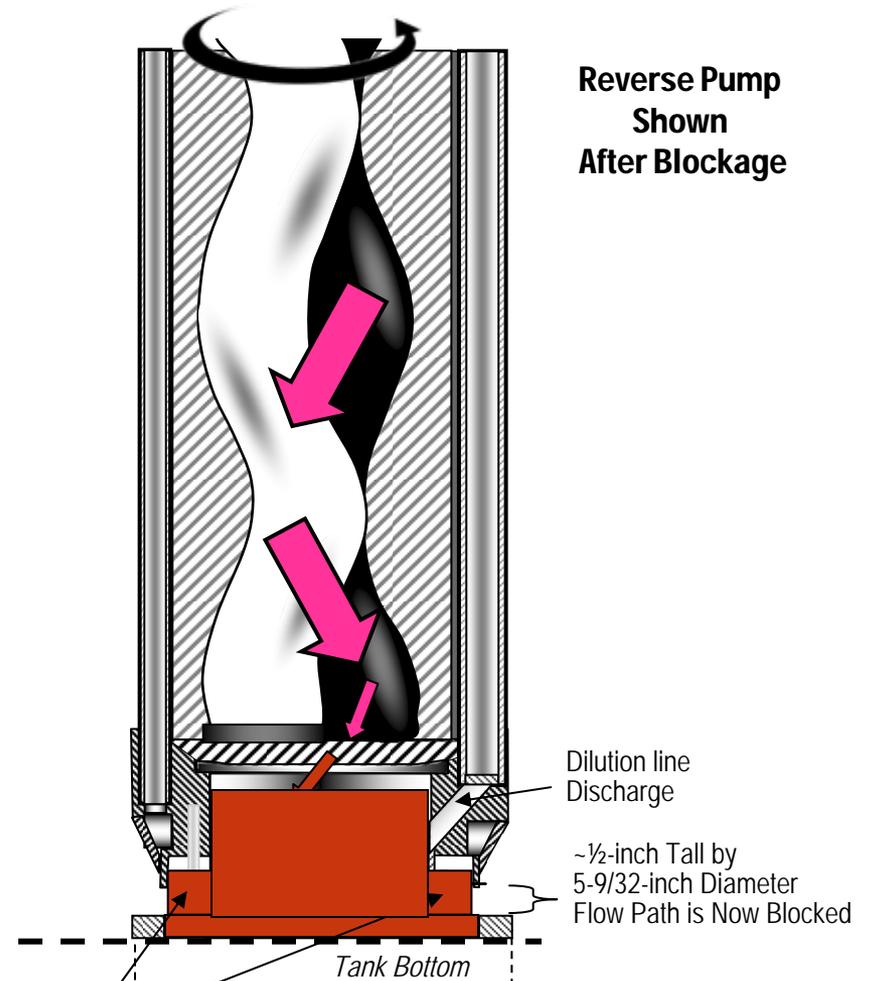
Tank Bottom

Dilution Line  
Discharge



*End Photo of Pump Inlet*

**Reverse Pump  
Shown  
After Blockage**



Dilution line  
Discharge

~1/2-inch Tall by  
5-9/32-inch Diameter  
Flow Path is Now Blocked

Tank Bottom

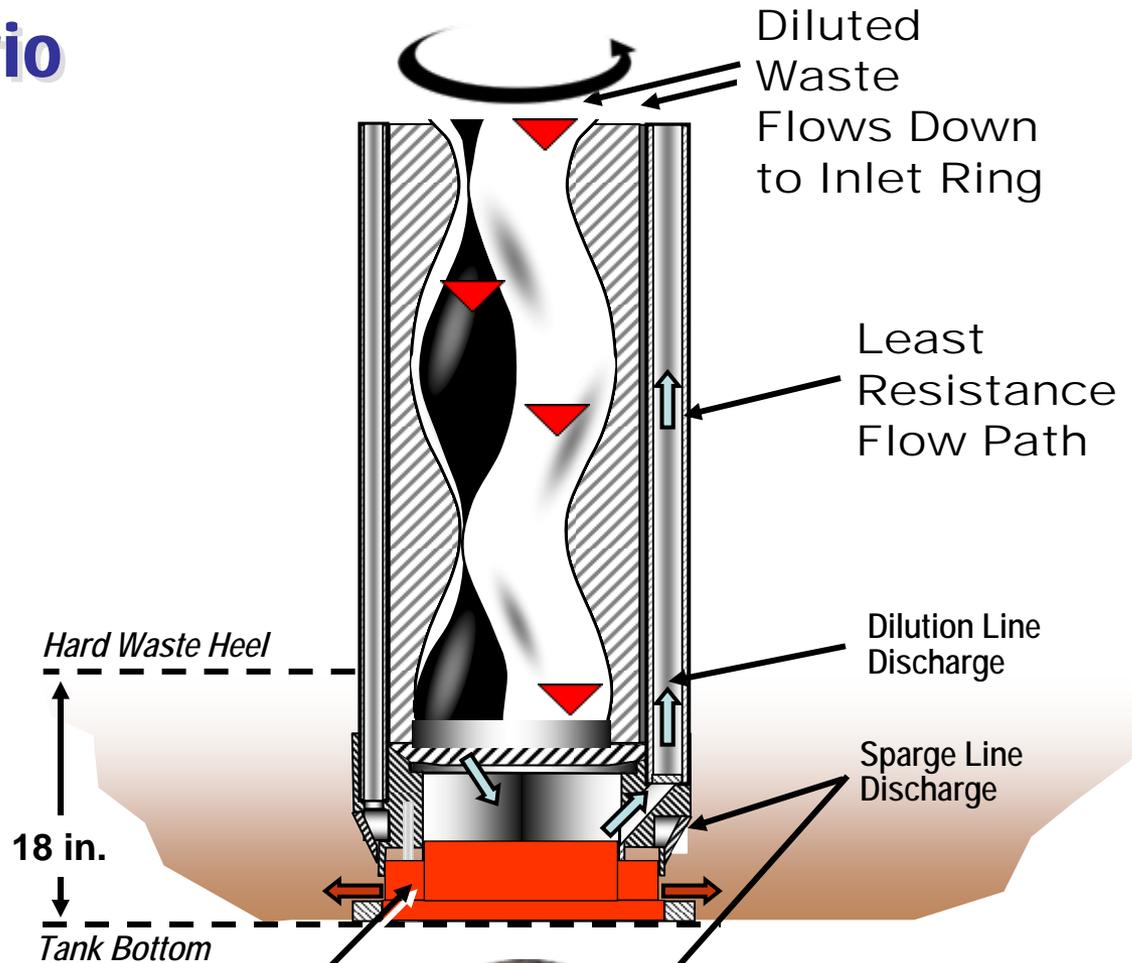
Tank  
Waste  
Plug



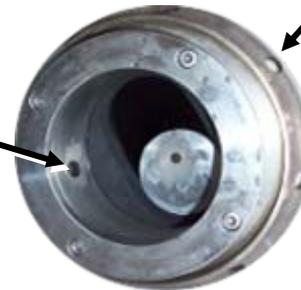
*Side-View Photo of Pump Inlet*

# Confirmed Scenario

With the pump suction plate within  $\frac{1}{2}$  - 1" from the tank floor, the dilatant (shear thickening) waste heel was sufficient strong to block the free flow of relatively low density (Specific Gravity of about 1.1) of flushed transfer waste during reverse rotation and subsequently pressurized the suction cavity of the pump to about 400psi. When the sludge level lowered below the Dilution Line discharge the pressure was transmitted up the dilution line, rupturing the above ground hose, and allowing dilute waste to spray and spill to the ground.



**~ $\frac{1}{2}$ -inch Tall by  
5-9/32-inch Annular  
Flow Path is Blocked along  
with bottom opening (near  
tank floor) forcing dilute  
waste up  
Dilution Line**



*Bottom and Side-View Photo of Pump Inlet*



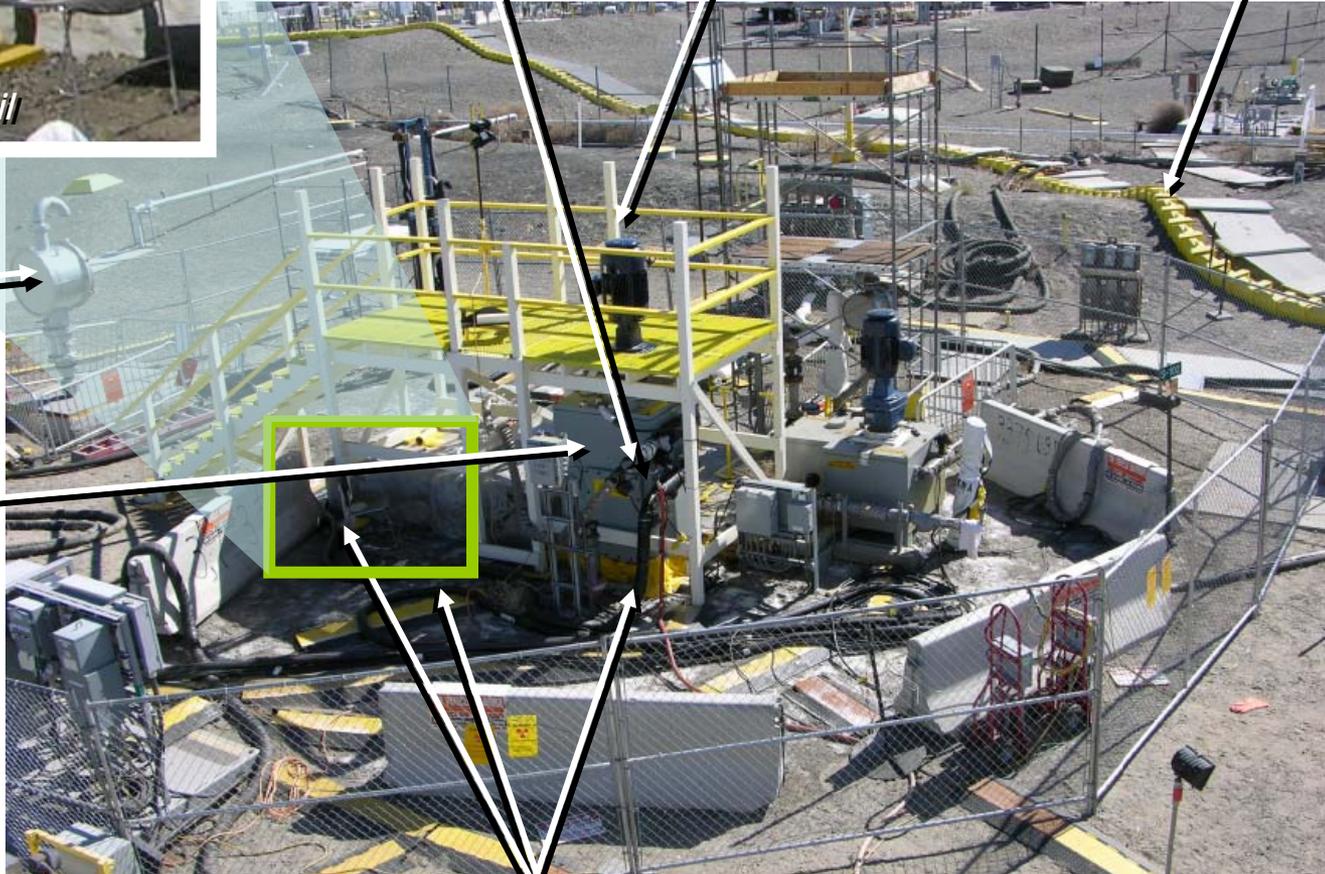
# S-102 Event Site Overview



Breather Filter  
S-102 Retrieval Pump Enclosure

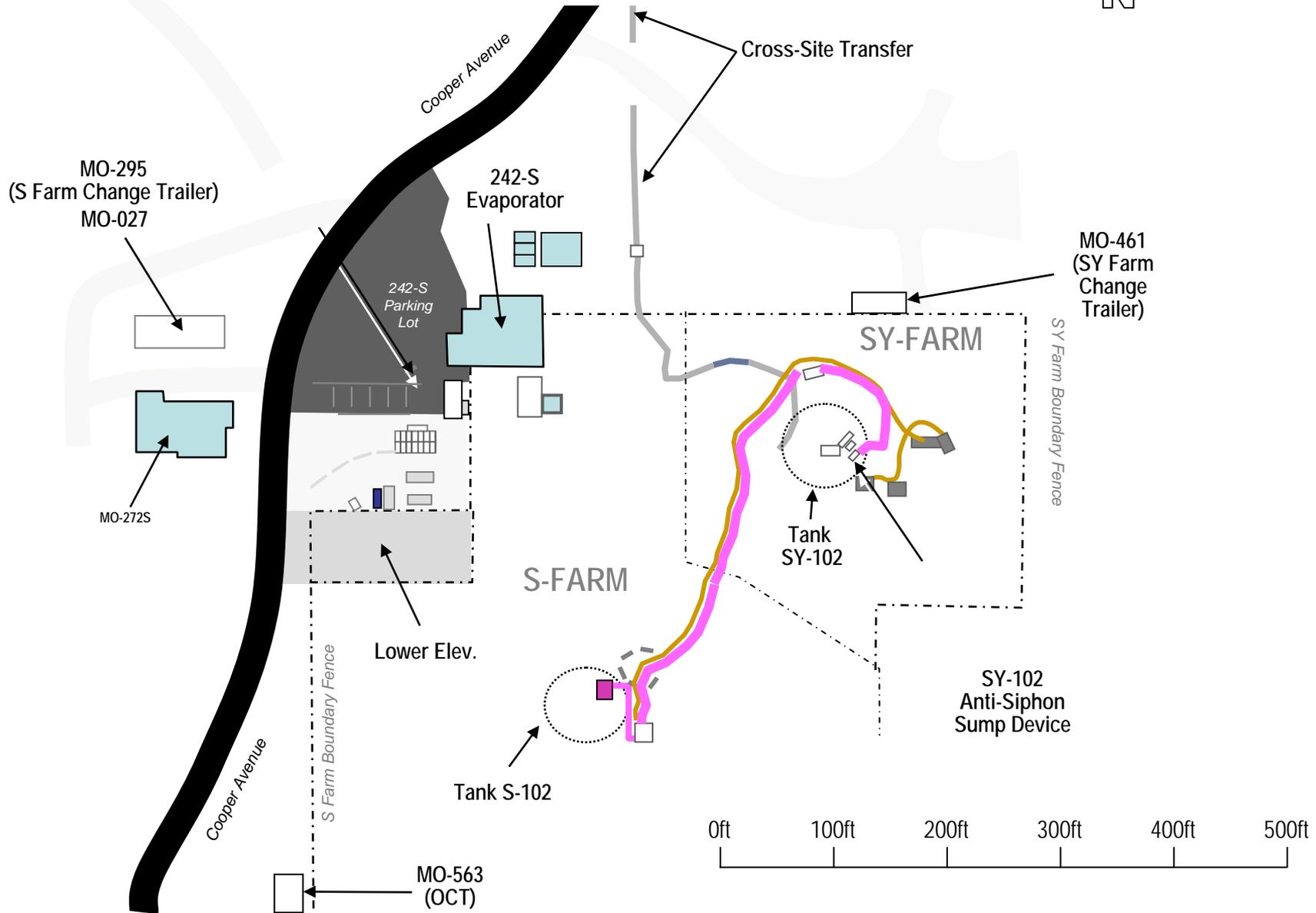
S-102 Pump Motor  
Waste Transfer Line From S-102 to SY-102

Sparge Water Line



Dilution Water Line

# S-102 Event Site



# Spill Area

