

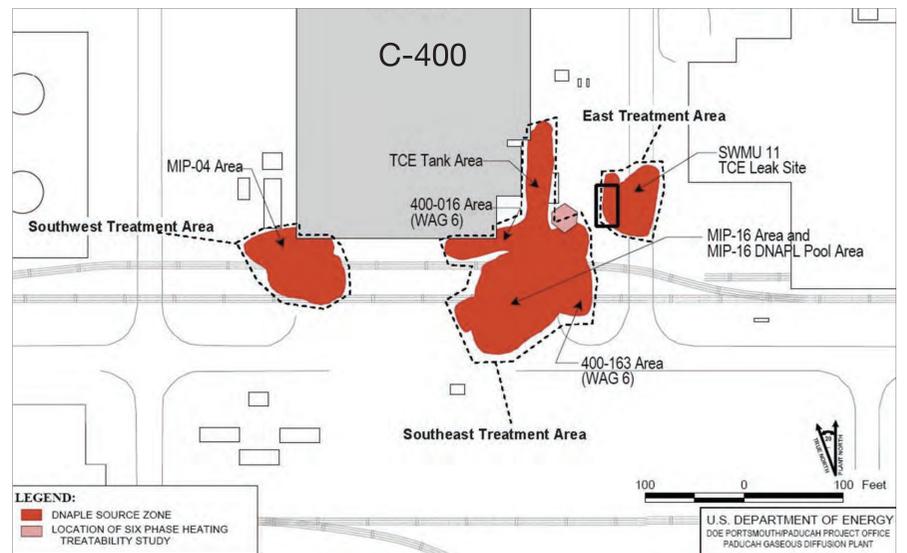
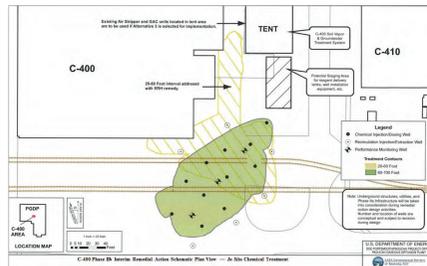
PGDP GROUNDWATER HISTORY & ACCOMPLISHMENTS

REMEDIATION

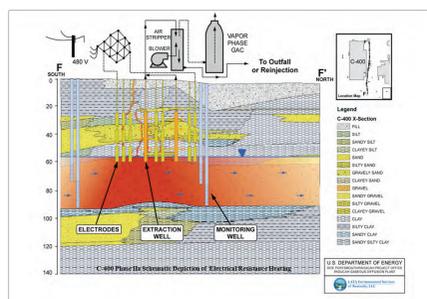
2009
C-400 Phase I action remedial action fieldwork commences

PHASE HEATING RESULTS

SOURCE AREA	ESTIMATED TCE REMOVED	YR. ACTION BEGAN COMPLETE?
C-400 SIX-PHASE TREATABILITY STUDY	1,900 GAL	2003 - YES
C-400 PHASE I	580 GAL	2009 - YES

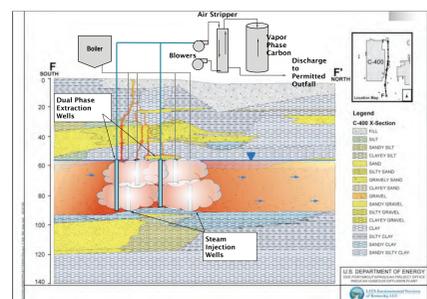


2010
C-400 Phase I (electrical resistance heating) operations completed 12

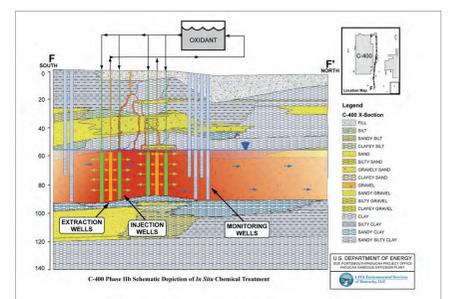


C-400 PHASE I: (DUAL PHASE HEATING) SYSTEM USED TO DESTROY TCE + TCE DNAPL SHALLOW ZONE ABOVE AQUIFER @ C-400 CLEANING FACILITY

2011
C-400 Phase II Remedy Proposals 12

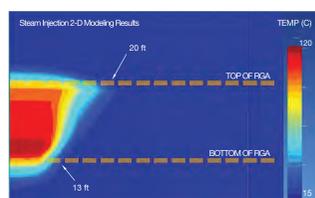


C-400 PHASE II: STEAM INJECTION TO DESTROY TCE & TCE DNAPL AT C-400 CLEANING FACILITY

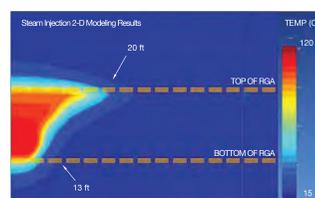


C-400 PHASE II: OXIDANT INJECTION TO DESTROY TCE AT C-400 CLEANING FACILITY

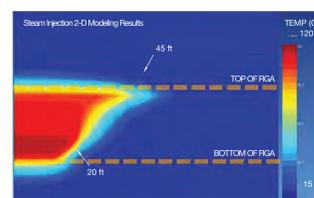
2012
DOE, EPA and KY agree to conduct 2D and 3D numerical modeling to evaluate potential for Steam Injection to remove DNAPL at C-400 Building



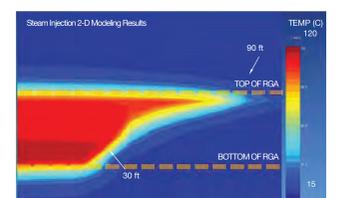
ONE INJECTION WELL
Temperature profile after 30 days of steam injection for case RZ-11 with Kh= 200 ft/d and 18:1 anisotropy. Steam is only injected in the bottom interval in the RGA at a rate of 1000 lbs/hr.



TWO INJECTION WELLS
Temperature profile after 30 days of steam injection for case RZ-4 with Kh= 200 ft/d and 18:1 anisotropy. Steam is only injected at two intervals in the rga at 500 lbs/hr in each interval.



ONE INJECTION WELL
Temperature profile after 30 days of steam injection for case RZ-12 with Kh= 200 ft/d and 18:1 anisotropy. Steam is injected in the bottom interval in the rga at a rate of 2000 lbs/hr.



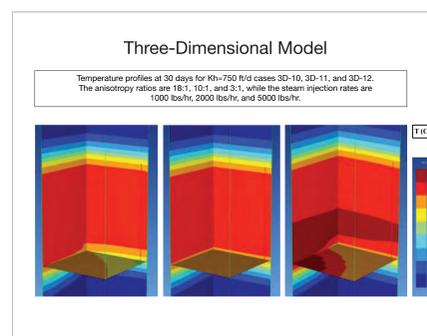
ONE INJECTION WELL
Temperature profile after 30 days of steam injection for case RZ-13 with Kh= 200 ft/d and 18:1 anisotropy. Steam is injected in the bottom interval in the rga at a rate of 5000 lbs/hr.

3-D Model Results

K _v \ anisotropy ratio	18:1		10:1		3:1	
	200 ft/d	425 ft/d	200 ft/d	425 ft/d	200 ft/d	425 ft/d
1000 lbs/hr	3D-1, 1000 lbs/hr	3D-5, 1000 lbs/hr	3D-6, 1000 lbs/hr	3D-9, 1000 lbs/hr	3D-3, 1000 lbs/hr	3D-7, 1000 lbs/hr
2000 lbs/hr	3D-2, 1000 lbs/hr	3D-8, 5000 lbs/hr	3D-10, 1000 lbs/hr	3D-11, 2000 lbs/hr	3D-4, 2000 lbs/hr	3D-12, 5000 lbs/hr

Legend: Good (Green), Fair (Yellow), Unfavorable (Red)

COMPARISON OF 3D SIMULATIONS



3-D QUARTER FIVE-SPOT MODEL USED IN NUMERICAL SIMULATIONS OF STEAM INJECTION (ABOVE AND RIGHT)

