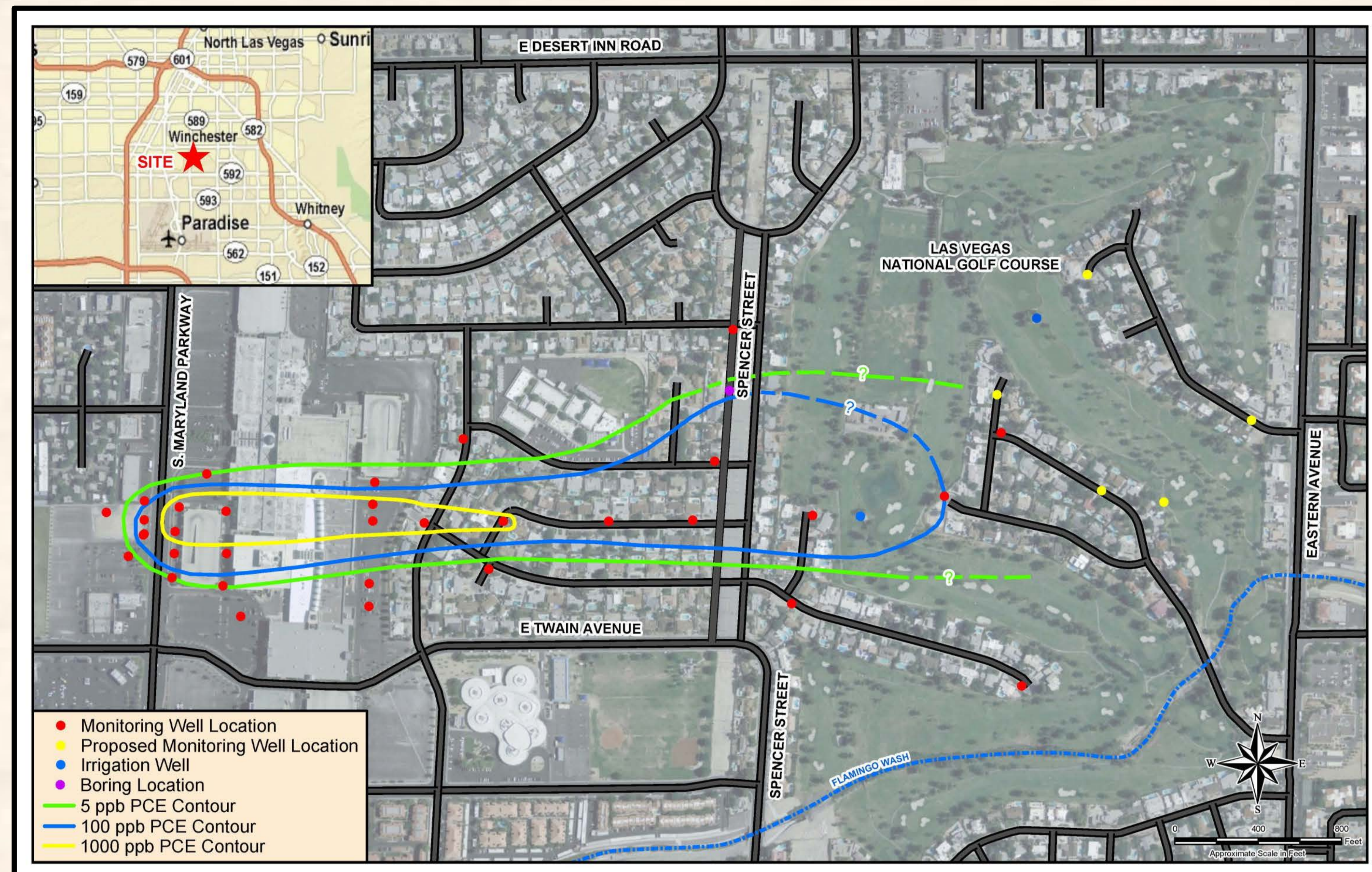


INVESTIGATION AND CLEANUP OF GROUNDWATER



Approximate Extent of PCE Plume in Groundwater

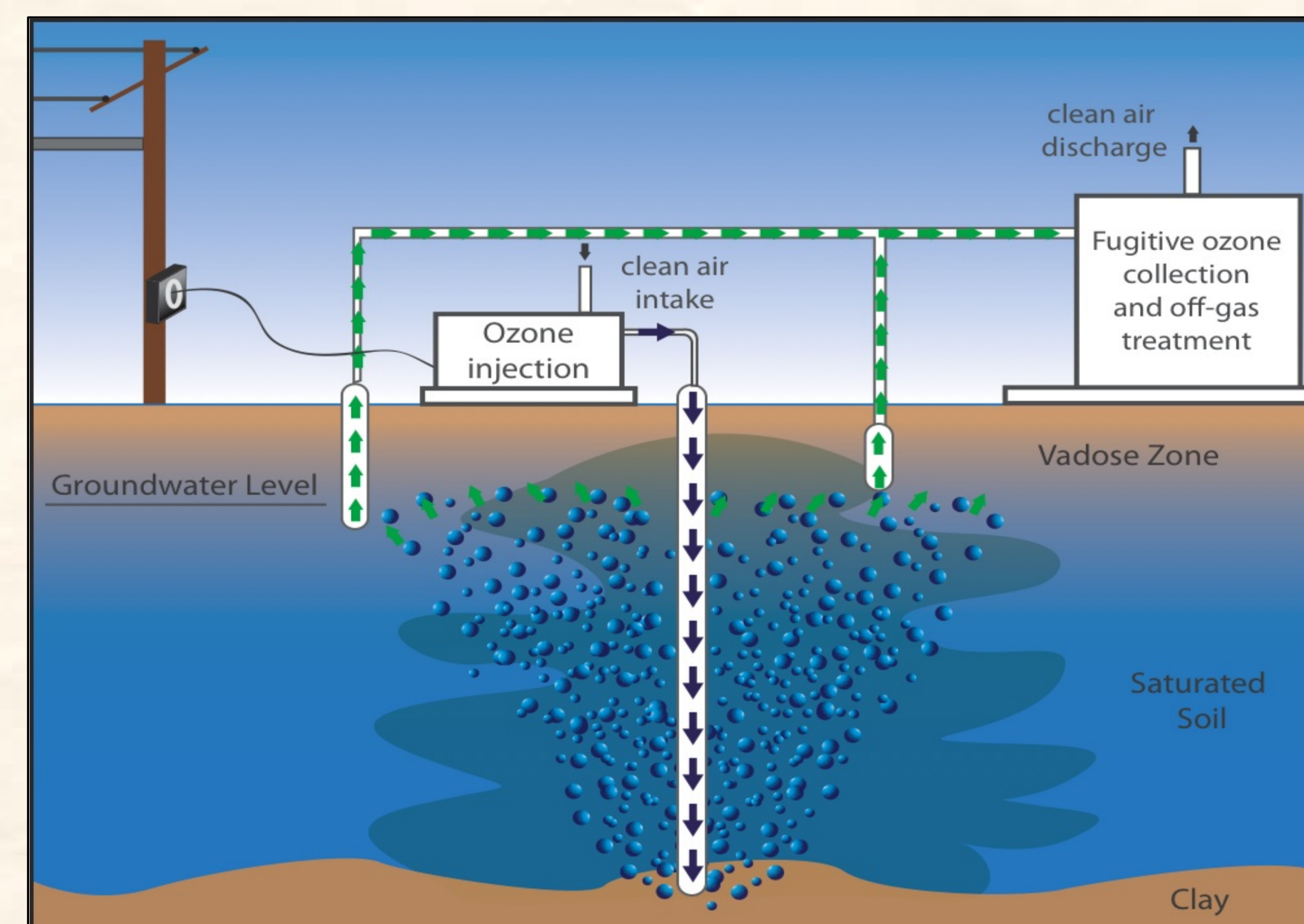
Estimated Timeline for Cleanup of Groundwater

Fall 2011	— NDEP concurs with revised CAP for Groundwater
Winter 2012	— Planning and pilot testing begin
Spring 2012	— Pilot testing continues, data evaluated
Summer 2012	— Draft Corrective Action Report submitted
Fall 2012	— Final Corrective Action Report, begin Proposed Plan
Winter 2013	— Proposed Plan released for public review and comment
Spring 2013	— Proposed Plan finalized; Record of Decision prepared
Summer 2013	— Remedial Design and Remedial Action

The contaminant of concern is tetrachloroethylene (PCE). It is a degreaser used by dry cleaners and is also found in some consumer household products. Discharges of PCE by the dry cleaner resulted in soil contamination at the site of the former dry cleaners.

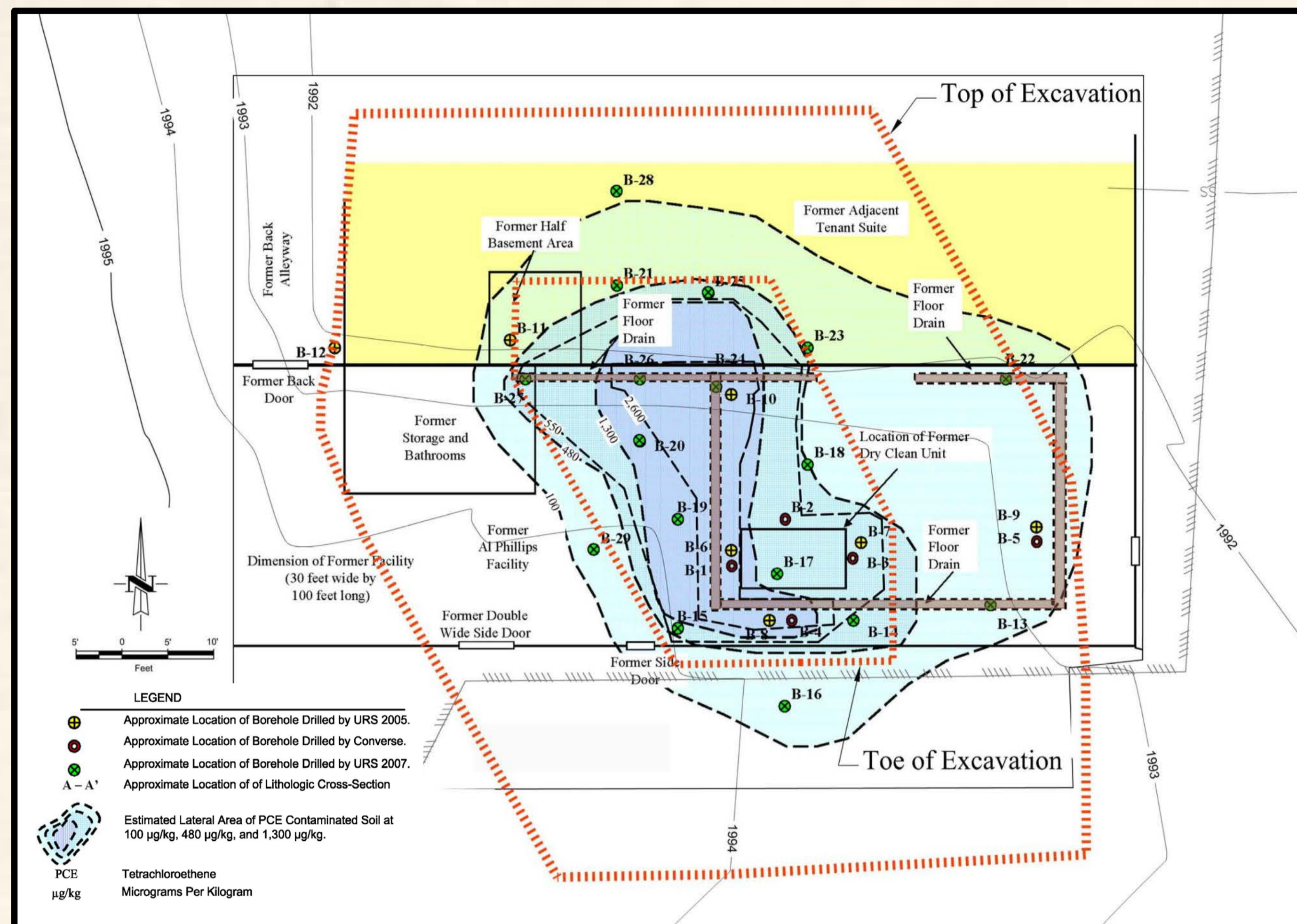
Potential remedies for cleanup of the PCE-contaminated groundwater must take into consideration the following criteria:

1. The potential for achieving interim cleanup goals
2. The technology's ability to control, reduce, or eliminate the groundwater to vapor intrusion pathway
3. The technology's ability to remove contaminant mass under controlled conditions.
4. Public health and safety concerns associated with implementing the technology in or near a residential area.
5. Public perception and acceptance issues.
6. Relative cost of implementation.



Vapor-extraction wells create a vacuum in the subsurface to direct the flow of liberated vapors to recovery or monitoring wells.

CLEANUP OF SOURCE AREA SOIL



Excavation Plan with Approximate Extent of PCE Soil Contamination



Backfilling after Excavation of PCE Contaminated Soil

Timeline for Cleanup of Soil

- Fall 2010** — Draft CAP for Soil submitted to NDEP for review
- Winter 2011** — Revised CAP for Source Area Soil submitted
- Spring 2011** — Permitting, contracting for implementation of CAP
- Summer 2011** — Excavation site marked, utilities cleared. ISCO contingency plan and waste management plans submitted
- Fall 2011** — Excavation of contaminated soil, ISCO, backfilling and site restoration, preparation of Corrective Action Report



Potassium Permanganate Added to Bottom of Excavation

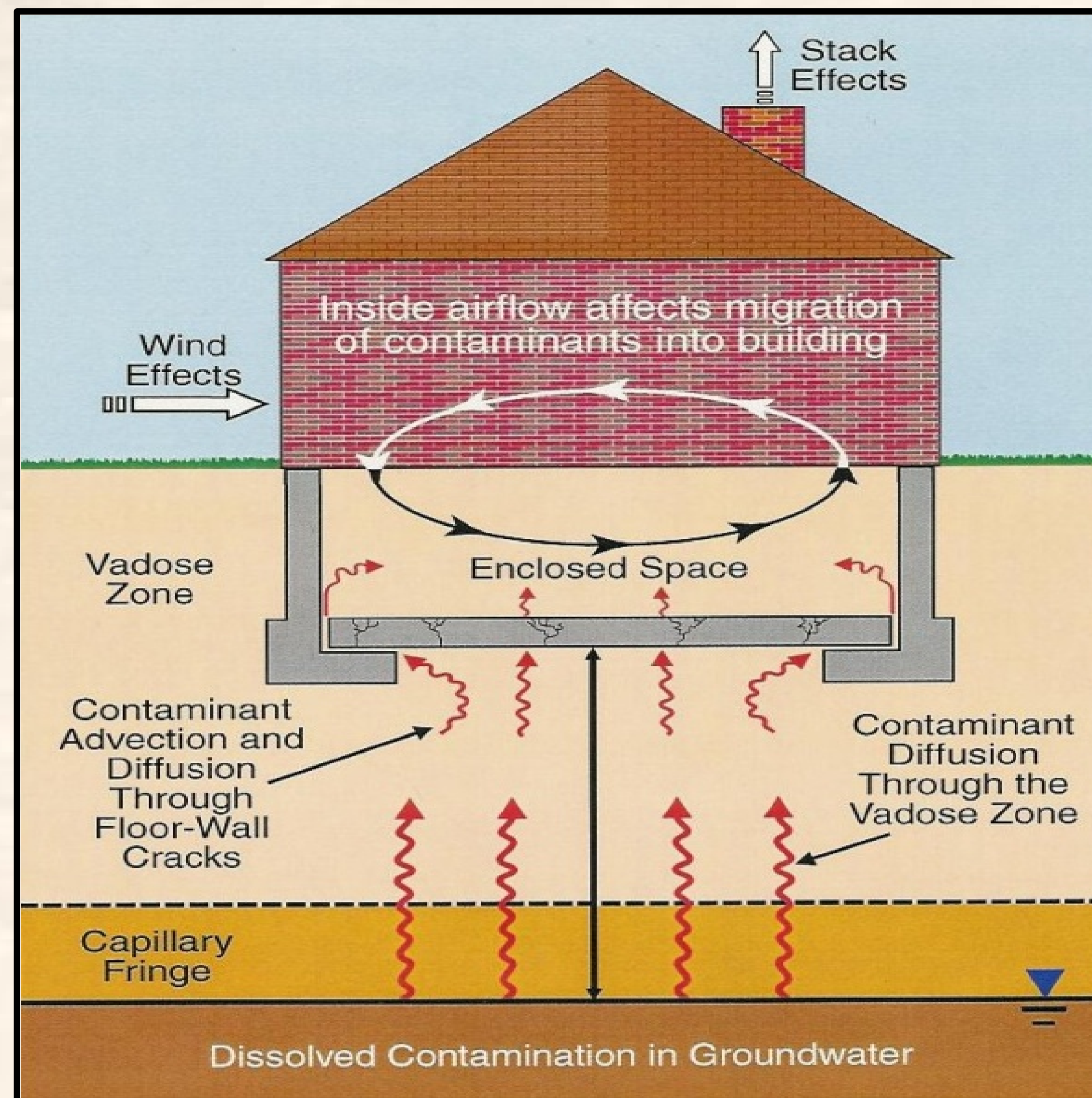
The cleanup of source area soil began in August, 2011 and finished in October, 2011. The cleanup consisted of:

- 1) Excavation of soil and disposal of PCE-contaminated soil at a permitted hazardous waste facility
- 2) Chemical oxidation at base of excavation (see photo above) using potassium permanganate to treat soil and shallow groundwater; the permanganate oxidizes and destroys PCE
- 3) Backfill and grading of soils at the former dry cleaners

INDOOR AIR SAMPLING AND MITIGATION PROGRAM

Estimated Timeline for Indoor Air Sampling and Additional Mitigation

- 2007- 2008** — NDEP tests indoor air in 97 homes; 14 SSD systems installed
- Summer 2011** — Revised “Work Plan for Mitigating Indoor Air and Well Water” submitted to NDEP; NDEP comment letter issued; addendum to Work Plan submitted
- Fall 2011** — Installation of additional monitoring wells to help determine which homes will be offered indoor air sampling
- Winter 2012** — Residents notified and offered IA sampling. Sample homes using “real-time” and offsite laboratory analysis
- Spring 2012** — Plan for and install additional SSD systems if needed
- Summer 2012** — Sampling and modification to SSD systems, if needed to achieve NDEP’s interim-action level for indoor air
- Fall/Winter 2012/13** — Residents notified and offered IA sampling.



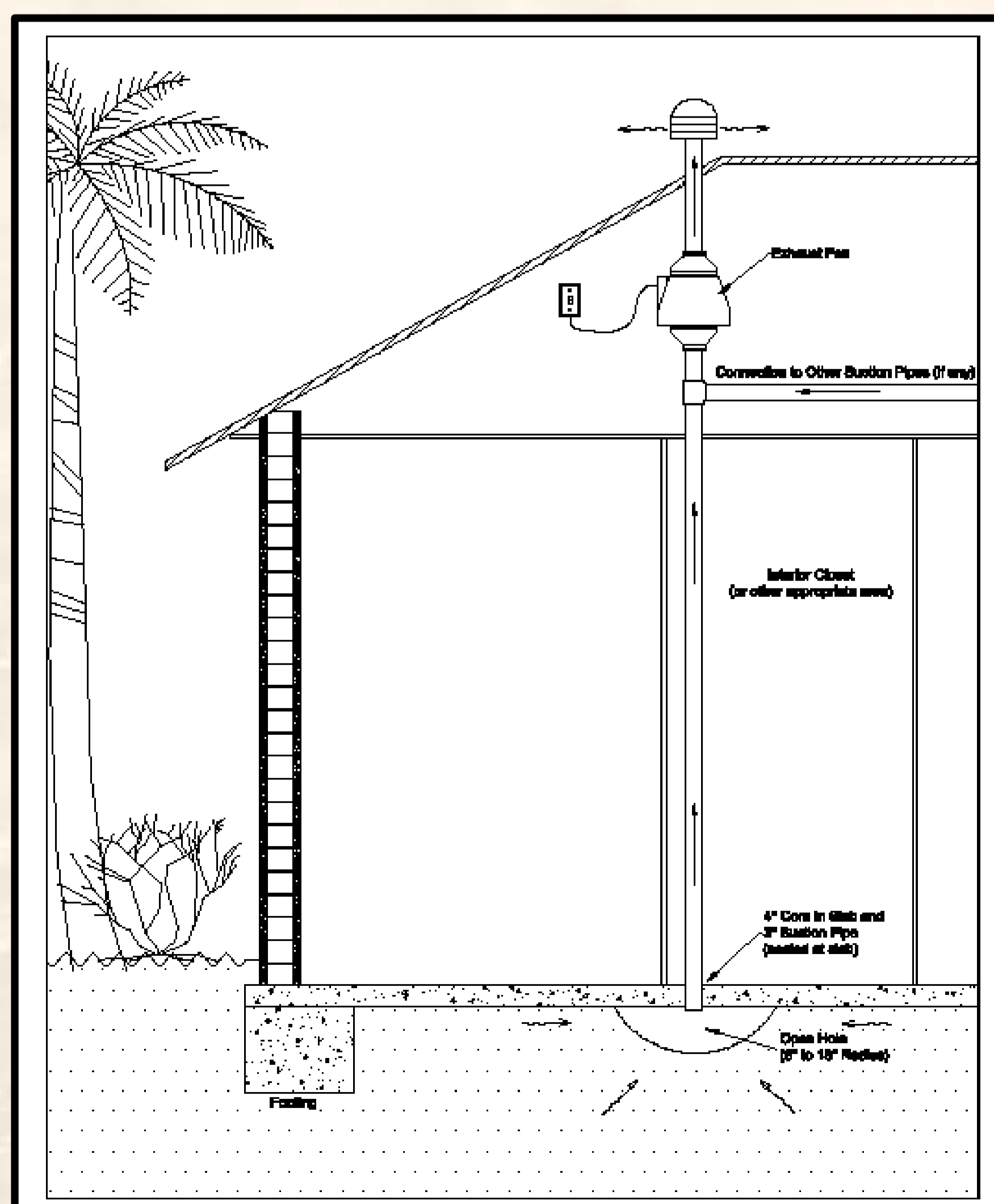
The Vapor Intrusion Process

As PCE in groundwater evaporates, it creates vapors that fill spaces in subsurface soil. Vapors in the soils above the contaminated groundwater can migrate upward and into buildings that overlie the plume. Your house acts like a vacuum, drawing vapors into the house through foundation cracks and other openings.



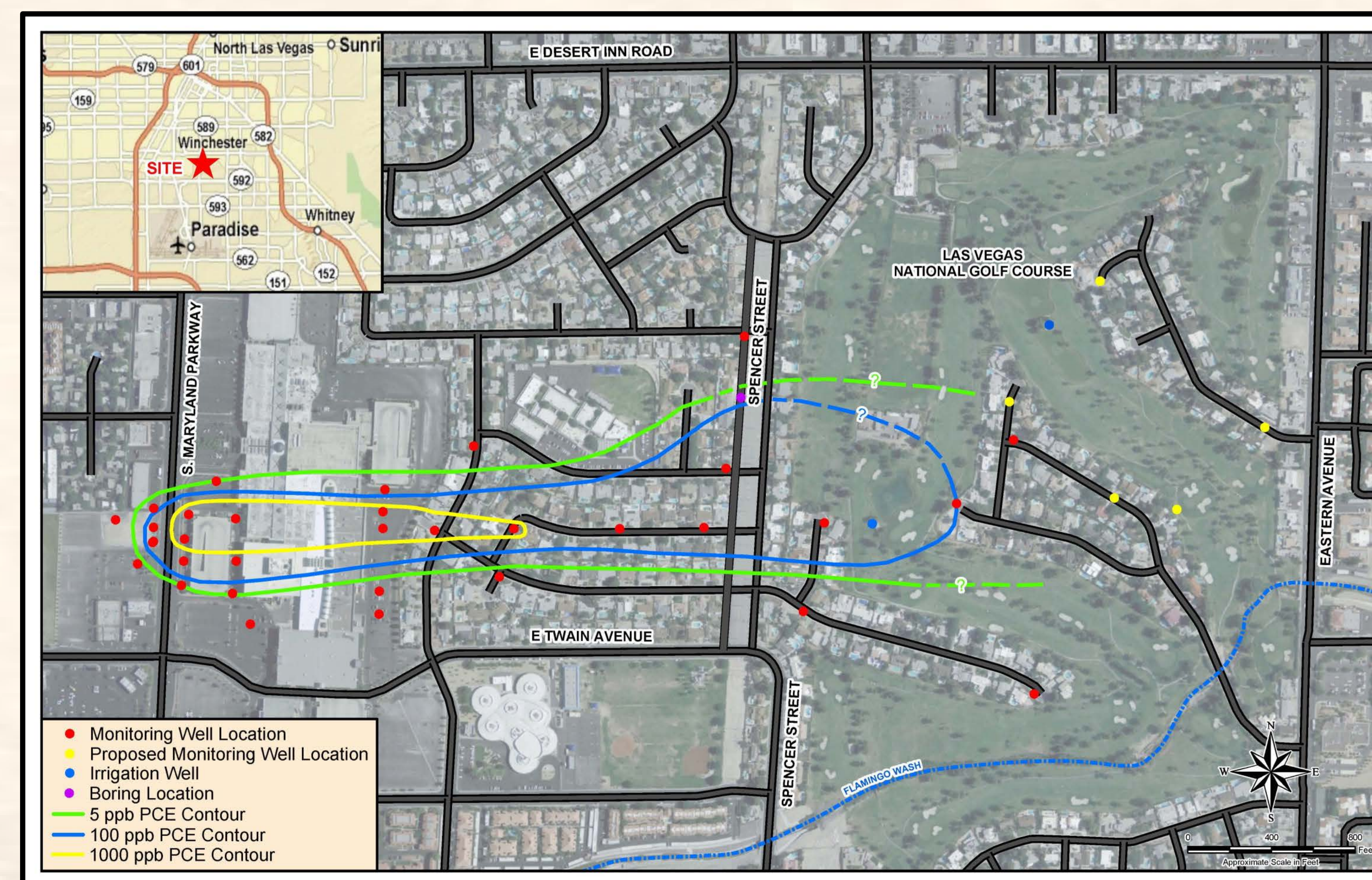
The sampling devices on the right are called “Summa canisters” which are placed in the homes for a period of approximately 24 hours. Tedlar bags and sampling syringes (left) can be used to collect an instantaneous sample.

Air Sampling Equipment



These systems are also known as “radon systems” because these systems were developed to mitigate homes for naturally occurring radon intrusion.

Sketch of Subslab Depressurization (SSD) System.

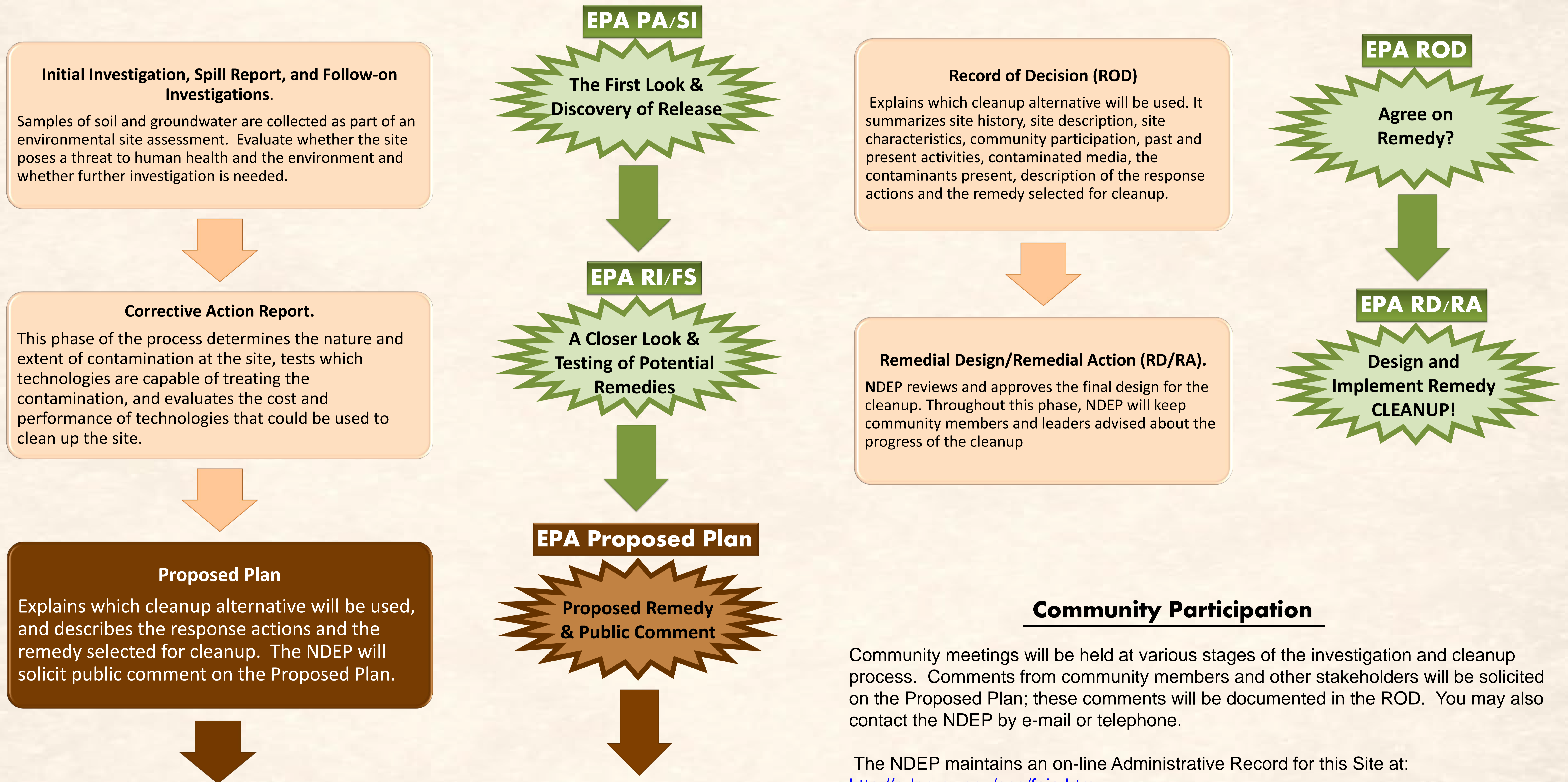


Approximate Extent of PCE Plume in Groundwater

Indoor air will be sampled in homes based on groundwater sampling conducted in November and December 2011.

THE CLEANUP PROCESS

NDEP Process Analogous to "Superfund" Cleanup Process



Maryland Square Resident Call-in Line (702) 486-0975. Leave a message and we will return your call within one to two work days.