Conceptual Plan for Risk Based Corrective Action (RBCA)

Offsite 1,2 DCA Plume, Norwalk Tank Farm Site

Presented to the Norwalk Tankfarm RAB
DFSC and SFPP,L.P.
June 6, 1996

Goals of This Presentation

- *Outline a RBCA plan for DCA plume in conceptual terms*
- *Hear RAB's thoughts on a RBCA for DCA Plume*
- *Use results of this discussion to prepare a detailed workplan for RAB/RWQCB approval*
- *Outline process for selection of a DCA Subcommittee of RAB*

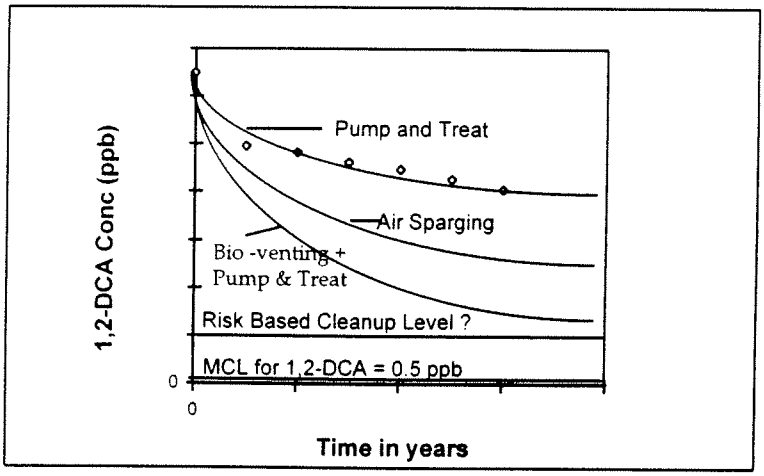
Why Use RBCA for DCA Plume?

- *West side barrier plan will stop further addition of "mass" to plume*
- *Ave. offsite concentration is relatively low-90 ppb*
- *Impractical to clean up DCA To MCL*
- *Need to find an risk based cleanup level for DCA*
- *Establishing a feasible clean up level allows a prediction of cleanup time and Project "Closure"*

What is an MCL ?

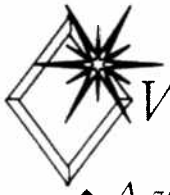
- *Stands for Maximum Contaminate Level*
- *EPA/DTSC level for chemicals in DRINKING WATER*
- *Based upon 1 in a million chance of getting cancer over a lifetime of ingestion*
- *Very Conservative & Protective of health*

Est. Effectiveness of Current Remedial Techniques



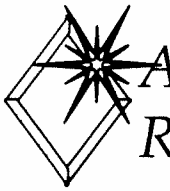
What this RBCA Plan Will Not Be

- *Not an attempt to leave offsite DCA "unaddressed"*
- *Not an attempt to let DCA plume dilute out*
- *Not an attempt to "Model Plume Away"*
- *Another "study" to further delay active cleanup if required*



What this RBCA Plan Will Be

- *A way to scientifically determine a feasible/acceptable clean up goal*
- *A way to define an end point to to DCA cleanup offsite*
- *A way to evaluate feasible technologies for control/cleanup of DCA plume*
- *The starting point to addressing the toughest issue at the Norwalk Site*



Anticipated Problems with a RBCA Process

- *RAB & Community skeptical of motives & results*
- *Another study that generates only paper*
- *May leave chemicals in subsurface even though "cleaned up"*
- *Community may not understand process*

How Do We Intend to Overcome This ?

- *Form a Joint DCA Subcommittee of the RAB*
- *RBCA Process involves subcommittee from beginning*
- *RBCA Process will consider both regulatory & political issues*
- *Openness, community/regulatory involvement and education along the way will result in "buy-in & buy-off" of the findings*

Proposed Subcommittee Makeup

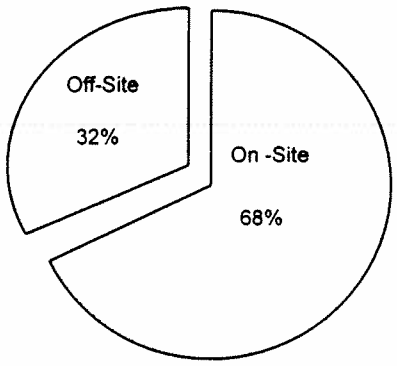
- *2 RAB Members*
- *RWQCB, City of Norwalk, DTSC*
- *Consultants*
- ***Academia- RAB to choose third party experts to ensure impartiality & validate scientific process+ peer review***
- *DFSC/SFPP*

Why Use a RBCA Cleanup Process ?

- *Infeasible to clean up DCA to MCL of 0.5 ppb*
- *Most of contamination mass still onsite*
- *Barrier system will stop Offsite plume mass increase*

Distribution of 1,2-DCA Mass in Groundwater

- *Est. Total 1,2-DCA Mass in GW:*
  -Approx. 106.78 pound
- *ON-SITE: 72.26 lb*
- *OFF-SITE: 34.52 lb*



Estimated Volume of DCA Affected Groundwater

- ***Onsite + Offsite***

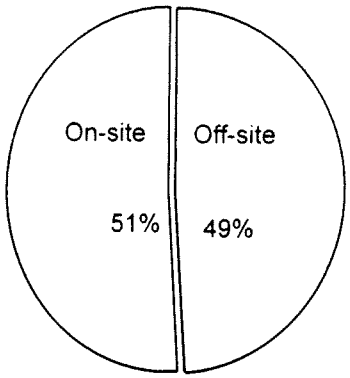
Approx. 84,600,000 Gallons

- ***ON-SITE:***

Approx. 43,300,000 Gallons

- ***OFF-SITE:***

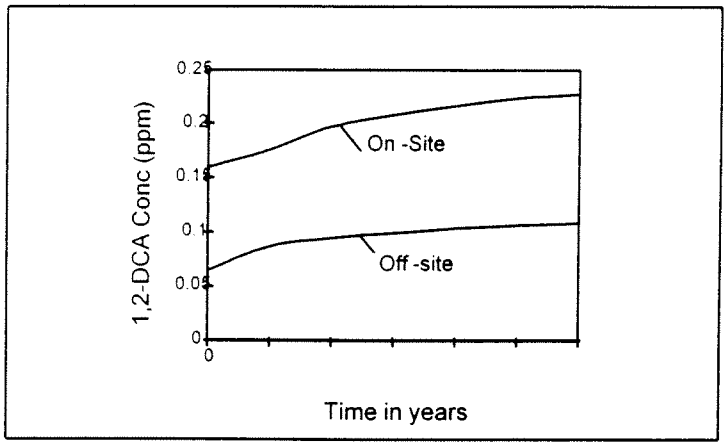
Approx. 41,300,000 Gallons



Why Cant We Clean up DCA to MCL ?

- *MCL is so low (Detection Level) 0.5 ppb*
- *Technically infeasible with current technologies*
- *Base cleanup level on Health Risk, then back calculate acceptable cleanup level*

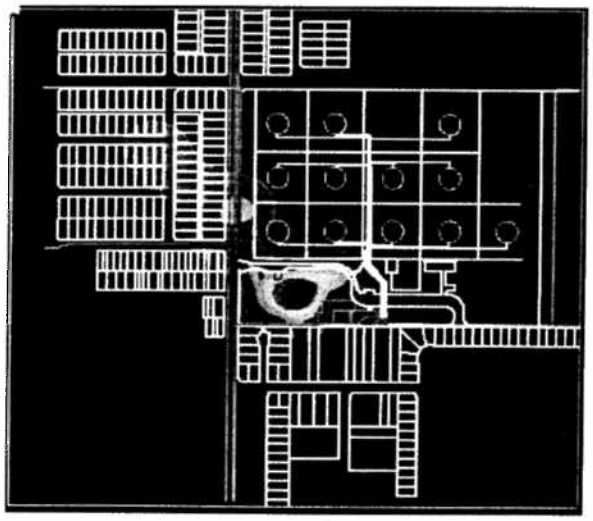
Simulated On and Off-Site DCA Concentration for Next 30 Years Without Remediation



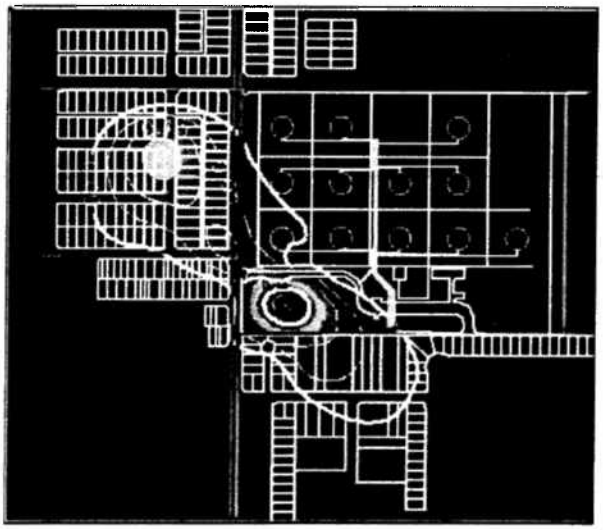
Proposed RBCA Process

- *Model DCA Plume movement with/without remedial action*
- *Predict if plume becomes stable or continues to spread*
- *Conduct additional public health risk assessment*
- *Define clean up levels*

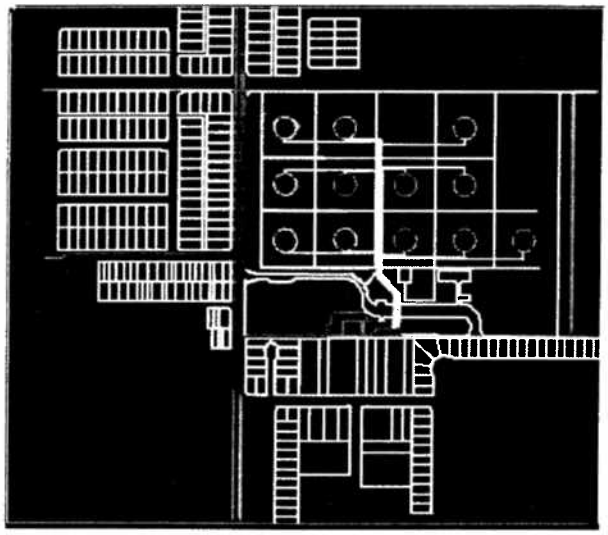
Est. Extent of 1,2-DCA Plume in 1990



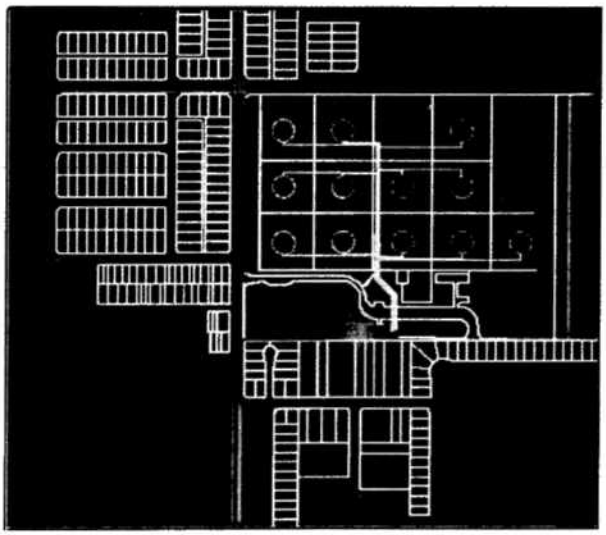
Est. Extent of 1,2-DCA Plume in Groundwater 1995



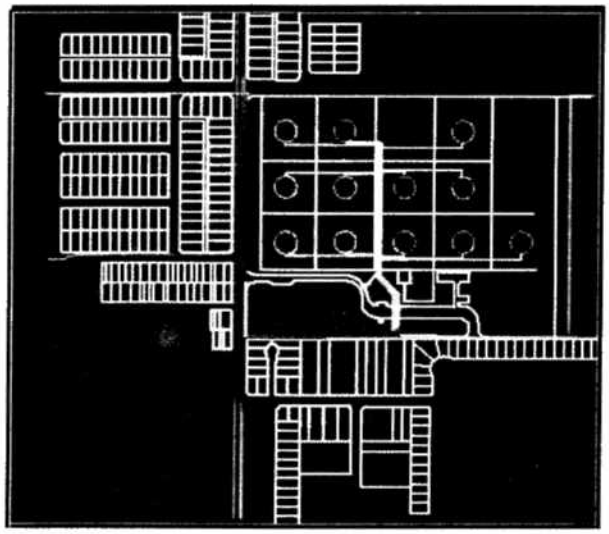
Simulated Capture Zone and 1,2-DCA Plume in GW in 2001



Simulated Capture Zone and 1,2-DCA Plume in GW in 2006



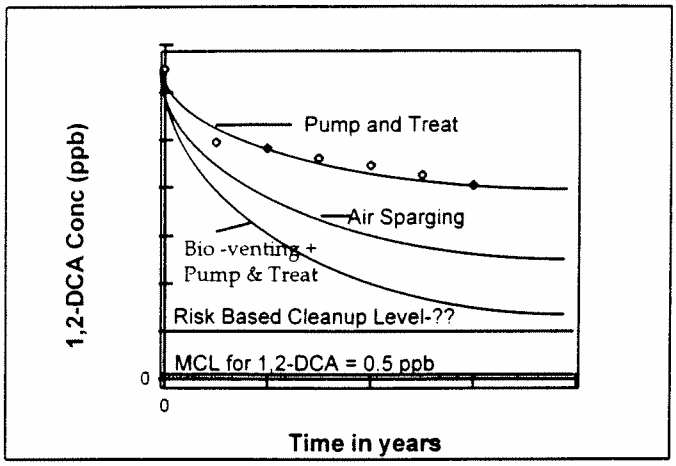
Simulated Capture Zone and 1,2-DCA Plume in GW in 2011



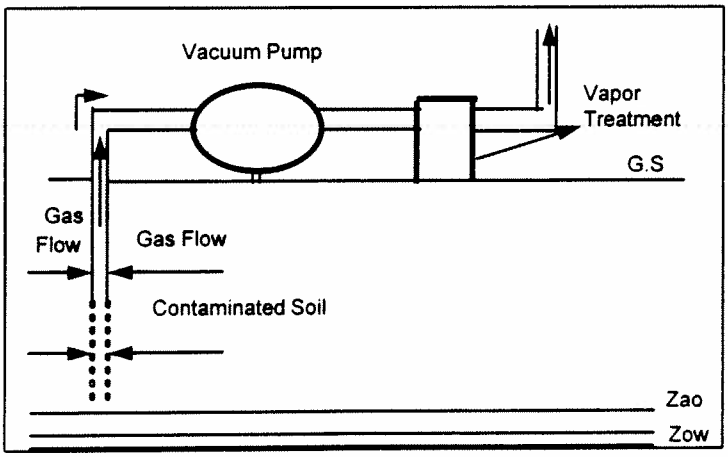
Proposed RBCA Process (Cont'd)

- *Risk level drives cleanup level*
- *Cleanup technologies selected based upon cleanup level & feasibility*
- *Technologies may include, Intrinsic Bioremediation, horizontal pumping wells, air sparging, oxygen addition, In-Situ Bio or other innovative technologies-Pilot Tests*

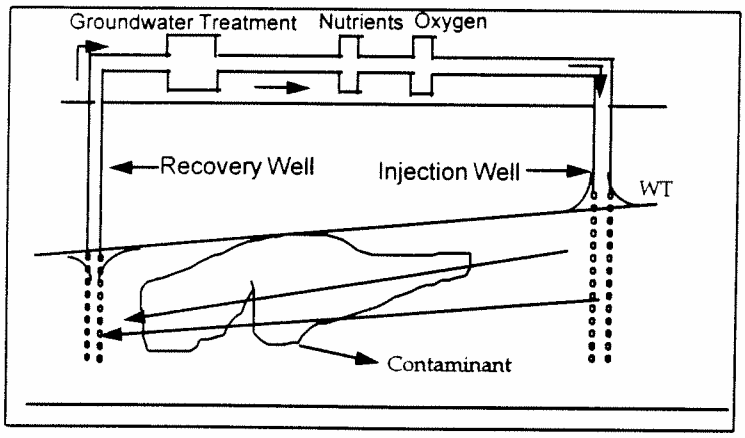
State-of-the-art Remediation Techniques



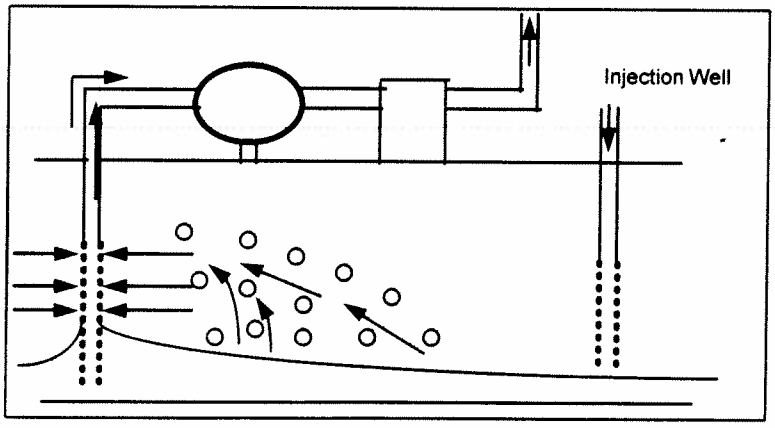
Soil Vacuum Extraction System



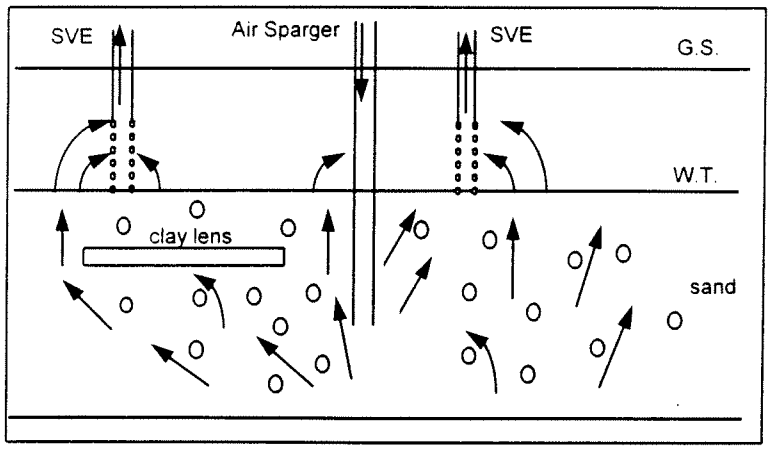
In-situ Bioremediation system



Air Injection well and upwelling due to applied vacuum



Air Sparging System in Operation



Ultimate Goals of This RBCA Process

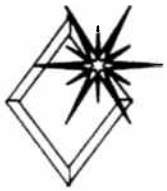
- *Clean up of Off-site DCA plume to an acceptable level*
- *Receive a "No Further Action Letter" from RWQCB/DTSC*
- *All parties involves have confidence in Methods used & Cleanup Results*

How Will this be Achieved

- *A joint forum Including Community, Regulators, **Academia** & the RP's*
- *All parties buy into plan at beginning rather than trying to convince them at the end of the process*
- *Community & city involvement will ensure that non-regulatory issues are addressed in the process*
- *Presents a great opportunity to all parties to overcome the problem via a credible & sound process that will be an example for other sites*

Proposed Schedule

- *Present this outline (modified) to RAB in special meeting -6/6/96*
- *Outline expected workload of DCA Subcommittee 6/6/96*
- *Select DCA Subcommittee (Ballot/Vote)*
  By Mail ? 6/20/96 ?
- *Full RAB Votes on DCA Subcommittee 7/25/95 ?*
- *Incorporate RAB comments & prepare written RBCA Plan- 9/26/96*



Questions ??????