

Well Injection Depth Extraction (WIDETM)
Technology Commercialization
Partnership

Informatics Corporation
North Carolina State University
Nilex Corporation

Industry Partnerships for Environmental
Science and Technology Conference,
NETL, October 2000

Acknowledgements

Funding Sponsor:



**U.S. Department of Energy
National Energy Technology Laboratory (NETL)
Industry and University Program**



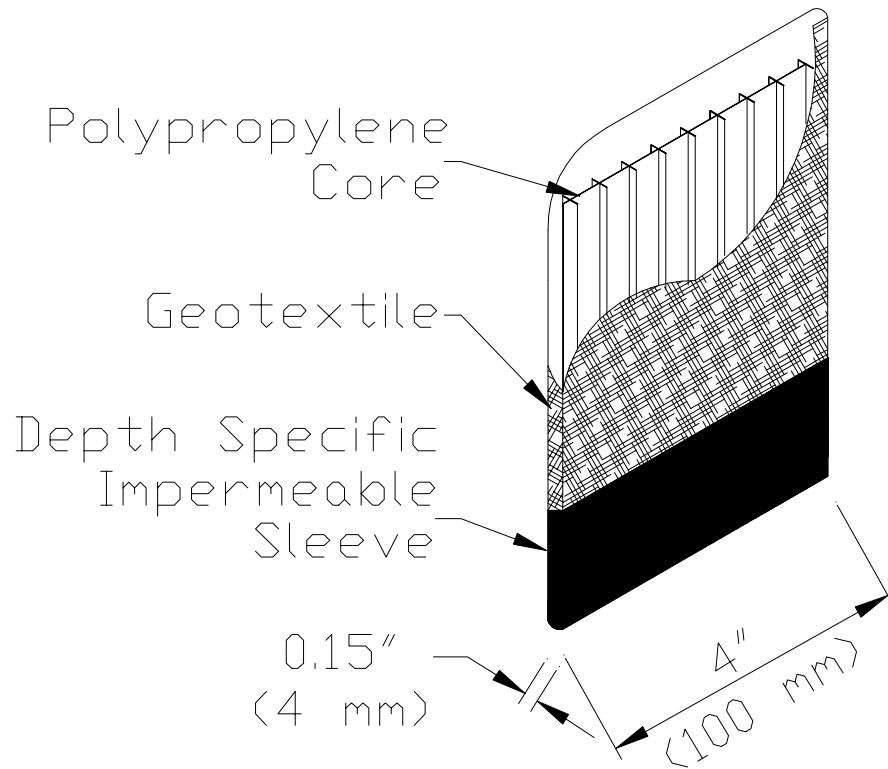
Subsurface Contaminants Focus Area

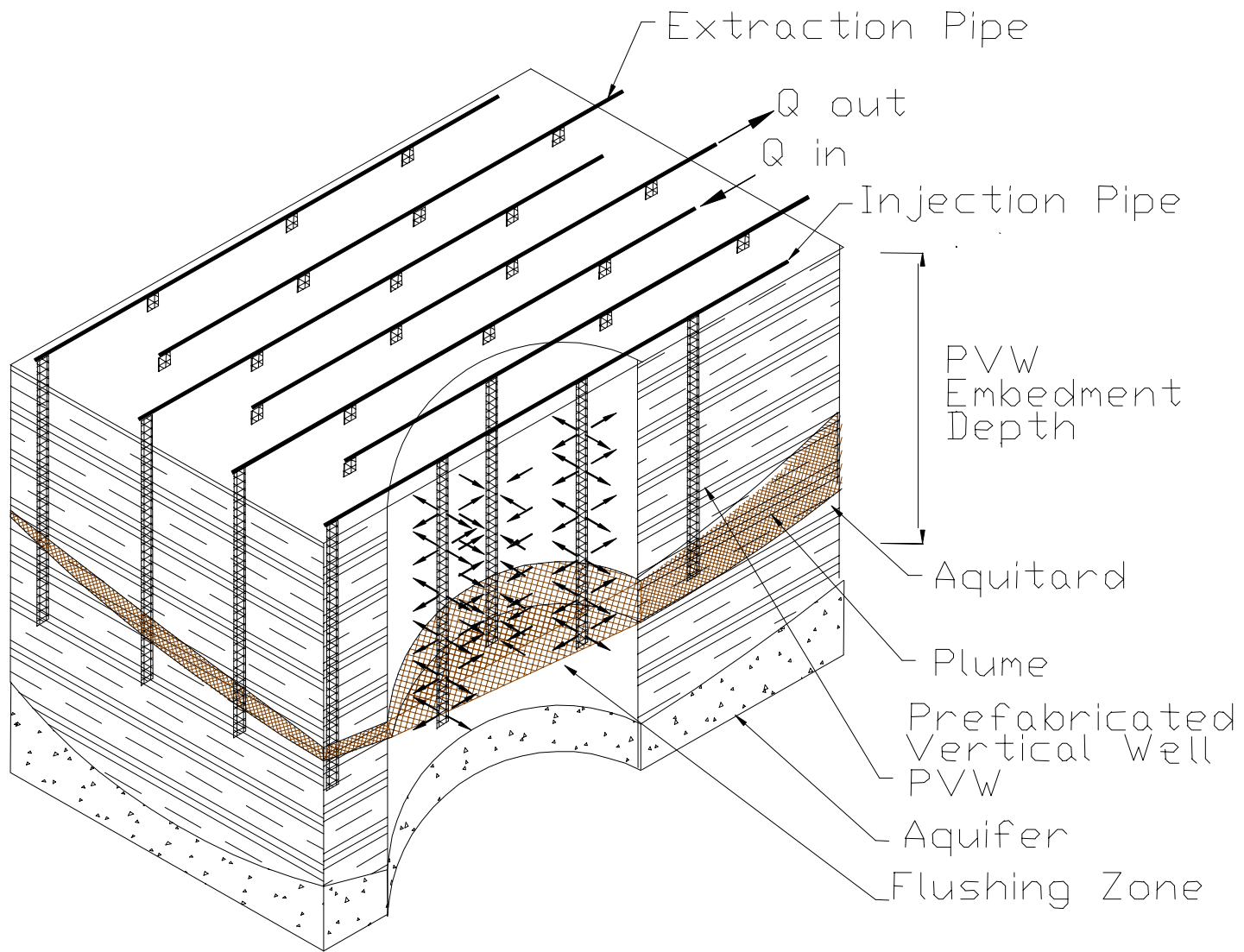
Site Hosts:

**U.S. Department of Energy
Ashtabula Environmental Management Project
Fernald Environmental Management Project
Ohio Field Office**

**US Army Corps of Engineers
Louisville, Nashville, and Huntington
Rickenbacker Port Authority**

Prefabricated Vertical Well (PVW™)





Well Injection Depth Extraction (WIDE) Soil Flushing

WIDETM System Advantages

- ✦ **Reduced Drainage Path (2 - 5 ft) for Accelerated Flushing**
- ✦ **Redundancy for Efficient Collection**
- ✦ **Applicability to Diverse Soil Types and Conditions (Low k 10^{-3} to 10^{-8} cm/s, High Clay %)**
- ✦ **Target Flushing Area for Source Plume Control**
- ✦ **Cost-Effective, Rapid Installation, Off-the-shelf Components**
- ✦ **Separation of VOC and Metal Waste Streams**
- ✦ **Workers Isolated from Extracted Waste**



NILEX MANDREL



PVW Installation

WIDE™ System Deployment at AEMP



WIDETM SYSTEM TCE REDUCTION

Monitoring Well #	Quadrant	Operating Hours	TCE Contaminant Reduction Range		Percent Reduction
506	I	54	Hi Low	105,000 ppb 45,000 ppb	57 %
507	II	89	Hi Low	70,000 ppb 38,000 ppb	46 %
503	III	31	Hi Low	400,000 ppb 160,000 ppb	60 %
502	IV	380	Hi Low	2,800 ppb 1,200 ppb	57 %

AEMP Performance Summary

<u>Parameter</u>	<u>Results</u>
Operating Time	741 Hrs
TCE Mass Removed	5.3 Kg (~11 lb)
Uranium Mass Removed	272 g
Groundwater Volume Extracted	42,191 gallons
Water Injection	33,866 gallons
Estimated TCE Mass (pure)	110 Kg (~220 lb)
Estimated AEMP Remediation Time	4 years (Proposed is 87 yr)

Progress Milestones

- **Innovative Technology Summary Report (ITSR):
Tech ID # 2172 - DOE Office of Science and Technology**
- **Permitted Technology: Regulatory Approval from Ohio EPA**
- **ASME Peer Review Completion – July 2000**
- **Gate 6: Mature Technology w/Deployment Capability
across US and International**
- **Value Engineering Studies w/ Ohio Field Office:
Oct, 98 AEMP: \$ 2M+ savings
Oct, 99 FEMP: \$ 5M+ savings**
- **Pending Deployments**
Lockbourne AFB
ASTD at Fernald Environmental Management Project

Lockbourne AFB

DOE-NETL & Army Corps of Engineers

- Former Lockbourne AFB, Rickenbacker Port Authority – Columbus OH
- US DOE NETL MOU for Technology Transfer
ES&H Program Support Division &
Army Corps of Engineers FUDS Program
(Louisville, Nashville, Huntington)
- Informatics/NCSU/NILEX Partnership for WIDE™ Deployment
- Phase I: Sep 2000 thru Jun 2001
Limited Deployment Area for Engineering design/
feasibility/scale-ability/regulatory approval
- Phase II: Jul 2001 – As Required
Full site deployment at areas TBD



Former Lockbourne AFB
Rickenbacker Port Authority, Columbus OH



Former Lockbourne AFB
Area of Concern 3
Rickenbacker Port Authority, Columbus OH



**Lockbourne AFB – Columbus, OH
AOC 3; JPL & JP4 Jet Fuel Contamination**



Lockbourne AFB – Columbus, OH



ASTD



Accelerated Site Technology Deployment Program

**S32-00-ASTD Well Injection Depth Extraction (WIDE™)
Fernald Environmental Management Project
Waste Pit #5 De-Watering**



FEMP Waste Pit #5

Team of: Informatics, NCSU, NILEX, IT GROUP, Fluor-Daniel Fernald



WIDE™ R&D Accomplishments

Office of Science & Technology Subsurface Contaminants Focus Area

NETL Industry and University Programs

1992-1999: (NCSU & WVU)

12 MS & 1 Ph.D. Awarded

NETL ES&H Program Support Division & Corps

2000 - Present: (NCSU)

1 MS (new) & 3 Ph.D. (former MS)

Over 14 Technical Publications in Peer Reviewed Journals

Thank You OST

WIDETM Commercialization Challenges

Challenge: Technology IP, capability, critical mass at NCSU

Solution: Informatics staff build-up from NCSU experience
(*Partnership for Building Careers*)

Challenge: WIDETM not familiar throughout EPA, DOE weapons complex, DoD, Private Sector remediation industry

Solution: WIDETM needs NETL/SUBCON for technology association, validation, support, contacts, PM, & Contracting

Challenge: Innovative Technology Commercialization
Scientific Business Planning & Development Support

Solution: NETL provided DAWNBREAKER® to assist Informatics, NCSU, NILEX, WIDETM Developers

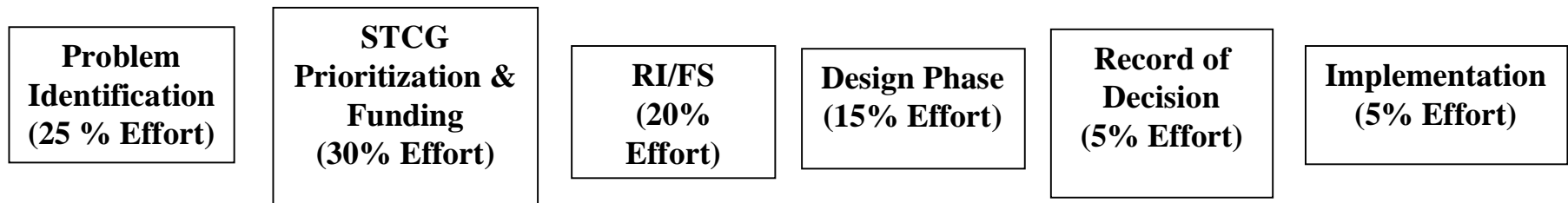
WIDETM Commercialization Infrastructure

- Informatics leading commercialization in partnership with Nilex and NC State
- Informatics Infrastructure within DOE and DoD
 - Hanford, WA Ashtabula, OH
 - Oak Ridge, TN Paducah, KY
 - Rocky Flats, CO Idaho Falls, ID
 - San Antonio, TX AFCEE
- SBA as 8a
- GSA – Federal Supply Price List

- NILEX: largest PVD contractor with international capabilities
- NCSU: Recognized R&D university

WIDETM Commercialization Conclusion

- Continue w/DOE market but focus on how to do it.



- Advance into DoD market
- Make strategic partners of M&O contractors
- Staying Power – need long-term commercialization commitment to match long-term problem solutions.
- **GET DEPLOYMENTS**