

LEAD-BASED PAINT CONVERSION TECHNOLOGY



Fort Ord Case Study

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Overview

- Discussion of Problems and Needs Associated With LBP – Specific issues at Fort Ord
- Lead-Based Paint Conversion Technology
- Application at Fort Ord
- Successes/Lessons Learned



Problem and Need at DOD Facilities

Problem

- Previous DOD LBP building deconstruction demonstration projects have generated costs of \$12-\$20/square foot
- When applied to facility specific requirements, state-wide requirements and on a national scale, these costs have been determined to be unreasonable
- Potential future liability

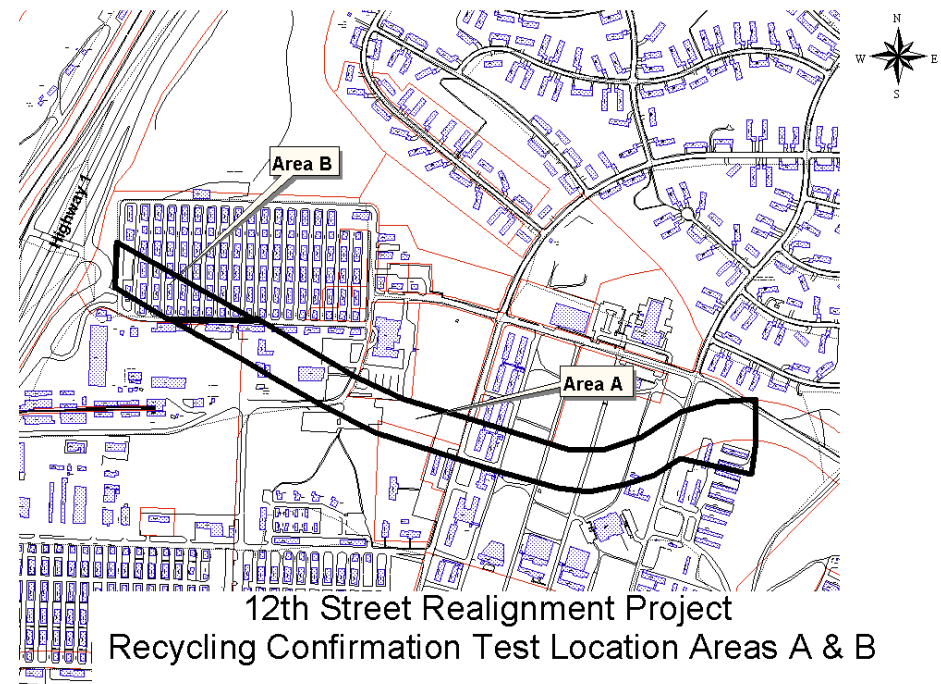
Need

- **A compliant, economic, technological solution:** conversion of LBP to a material that can meet non-hazardous leachability standards



Specific Issues at Fort Ord (Cont.)

- FY 2002 Road construction project
- Required demolition of 26 buildings
- Construction contract, Demolition subcontract, LBP stabilization subcontract



Specific Issues at Fort Ord (Cont.)

- Future redevelopment plans
- Project is the size of the City of San Francisco or Washington DC. (approximately 45 sq. miles)
- \$75 million worth of Building Removal standing in the way of \$6 Billion worth of new construction.
- Building Removal is “up-front” and requires up-front capital.
- Up-front cost savings have tremendous impact on the future success of the project.



Specific Issues at Fort Ord (Cont.)

- LBP working group formed in 1998
- Concerned with disposal of lead contaminants
- Review technologies and disposal options
- Members:
 - US EPA Region 9
 - California EPA
 - California Dept. of Toxic Substance Control
 - USACE Construction and Engineering Research Laboratory (CERL)
 - Fort Ord Reuse Authority



LBP Conversion Tech

- Well understood and deployed lead/phosphate chemistry
- Converts lead to insoluble lead-phosphate mineral
- Provides alternatives to disposal in a hazardous waste landfill
- Patented



LBP Conversion Tech

- Latex Based Application
 - Roll on
 - Spray
- Permanent application and weather durable
- Immediate conversion and little curing beyond latex drying time



EcoBond LBP™ Technology

MT² provides the coating product

- Treatability analysis
- Expertise and oversight of application

Application of EcoBond LBP can be performed by painting subcontractors



EcoBond-LBP™

- A low cost and highly effective coating and lead treatment, applied in a simple to use paint formula
 - Chemical conversion of LBP lead into a new highly stable non-leaching lead mineral
 - Transforms LBP into a non-hazardous material that passes stringent RCRA testing criteria including TCLP, SPLP and STLC
 - Applied through a number of inexpensive methods including spraying, brushing or rolling
 - Can be applied as a routine preventive maintenance (non-regulated) coating



Pre-Demolition Coating

- **Objective:** Short-term management and handling of demolition materials and reduced lead exposure to workers, air, soil and groundwater.
- **Application:** Standard surface preparation, apply by brush, roller or spray.



*EcoBond™ coated building
(awaiting demolition)*

- **Results:** Removed and/or demolished materials are can be disposed in a local/regional C&D landfill at a savings of over \$100 per ton.



Preventive Maintenance Primer Coating

- **Objective:** Long-term encapsulation, elimination of future hazardous materials, reduces lead exposure to workers, air, soil and groundwater.
- **Application:** Standard surface preparation, brush, roller or spray, cover with standard paints as desired.
- **Results:** LBP isolated from further exposure.



Tanks prior to EcoBond™ preventative coating application



Treatability Results

EcoBond LBPT™ Lead Chemical Conversion				
Sample Type	RCRA Standard	Pre EcoBond LBPTM Lead Levels	Post EcoBond LBPTM Lead Levels	Meeting EPA Standard
Lead Based Paint	5	32.1	0.9	<i>Pass</i>
	5	43.6	1.0	<i>Pass</i>
	5	72.3	2.4	<i>Pass</i>



Application at Fort Ord

- EcoBond™ Applied with standard spraying equipment



Application of EcoBond™

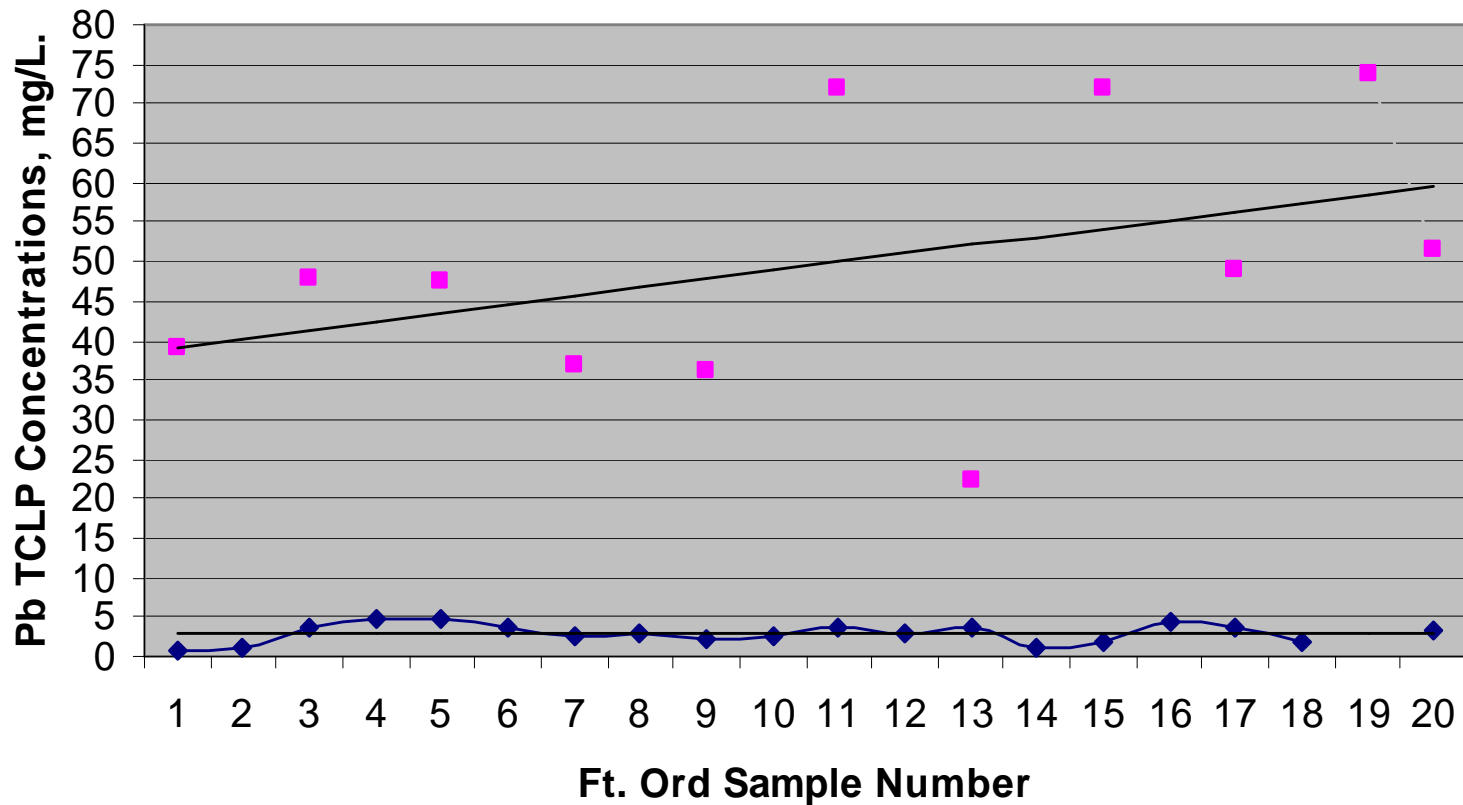


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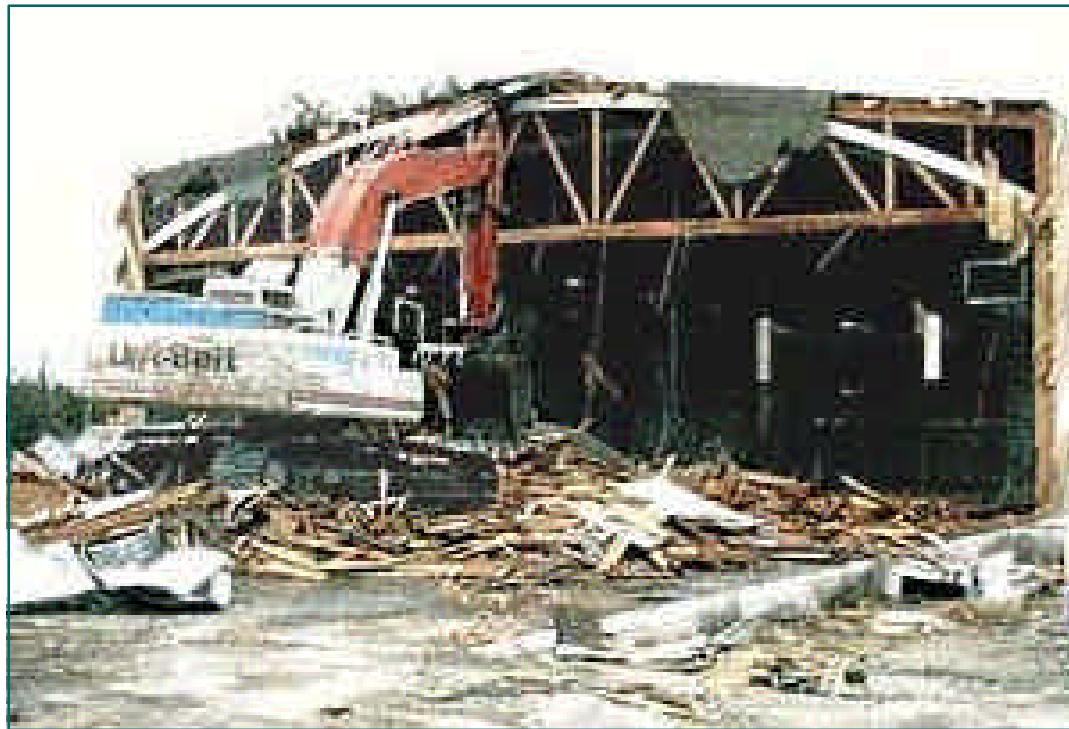
Application at Fort Ord

Treatment results



Application at Fort Ord

- Twenty six buildings in initial phase of demolition
- 2000 tons of building debris generated (Approximately 4000 cy.)



Removing Treated Siding



Application at Fort Ord

- Materials disposed of at Beatty, Nevada as a non-hazardous waste. Approximately = \$50/cy verses Federal Hazardous = \$270/cy
- Stabilized lead dust emissions during removal – use approved by local Air Board.
- Cost effective stabilization of LBP allowed cost effective separation of hazardous waste stream form recyclable waste stream. (Reduction of disposal costs.)



Success at Ft. Ord

- MT² deployed EcoBond LBP™ conversion technology during the first phase of building demolition (26 buildings & 2000 tons of building debris)
 - Application of EcoBond LBP™ allowed the building debris to be disposed of as a non-RCRA hazardous waste.
 - This produced a savings of \$500,000 if this building material had been disposed of as a hazardous waste.
 - The project was completed with the oversight of the federal, State of California, and local regulatory agencies
 - Independent evaluation of the LBP stabilization technology by CERL and Unisphere Inc.
 - **The projected savings for demolition and disposal of the remaining Fort Ord buildings is estimated at over \$10 million**



Price Comparison

Typical LBP Method Price Comparison					
	Standard Methods			EcoBond LBP™ Methods	
	Chemical Stripper	Abrasive Blasting	Encapsulation	Grit Blast with EcoBond LBP™ Additive	EcoBond LBP™ Coating
Cost	\$5-\$8/ft ²	\$2-\$4/ft ²	\$2-\$3/ft ²	\$1-\$1.50/ft ²	\$0.50-\$0.80 ft ²



Ft Ord – Lessons for Success

- Coordination and working with agencies and owners prior to initiating site activities
- Requires upfront planning - include in the bid specifications
- Opportunity to use local contractors
- Expect some hesitation while owners, agencies and contractors gain familiarity with a new product



Ft Ord – Lessons for Success

- Access to actual Fort Ord materials for conducting treatability studies prior to the field implementation was essential given the higher lead concentration ranges.
- Shared access to FORA generated characterization (XRF, TCLP, Totals) building component data.
- Ability to work as a “team” with PARC Environmental, Granite Construction and FORA.





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