

Raytheon St. Petersburg

Remedial Action Plan Addendum




May 10, 2011

Agenda for Presentation

- Brief Summary of Site Assessment
- Progress Since Last Public Meeting
- Present the Remedial Plan
- Questions and Answers

**Raytheon is committed to successful
remediation**

SARA Findings: No Threat To Health

		 Florida State University University of Florida	 State of Florida
Drinking water	<i>No threat to Health</i>	<i>No threat to Health</i>	<i>No threat to Health</i>
Soil/ soil gas	<i>No threat to Health</i>	<i>No threat to Health</i>	<i>No threat to Health</i>
Indoor air	<i>No threat to Health</i>	<i>No threat to Health</i>	<i>No threat to Health</i>
Outdoor air	<i>No threat to Health</i>	<i>No threat to Health</i>	<i>No threat to Health</i>
Irrigation well	<i>No threat to Health</i>	<i>No threat to Health</i>	<i>No threat to Health</i>

Efforts since 2008 SARA

- Interim Remediation System operating since March 2009.
 - Groundwater is collected from 4 recovery wells and treated on site before discharge to the sewer.
 - Approximately 28 million gallons of groundwater treated.
 - The system will operate until the permanent system is installed.
- Completed a storm sewer lining project
- Prepared the site for remedy construction
- Quarterly sampling to monitor water quality

Remedial Action Team and Plan

- Raytheon continues using nationally recognized experts throughout the remedial design
 - Arcadis
 - Haley and Aldrich
 - Terratherm
- FDEP thoroughly reviewed all elements of the remedial plan
- Remedy objectives
 - Protection of health and the environment
 - Achieve Florida cleanup standards
 - Apply proven state-of-the-art technologies
 - Minimize disruption to the community

Remedial Action Plan

- **Pump and Treat** – Similar to the Interim System, the expanded pump and treat system will collect groundwater from a network of recovery wells throughout the community.
- **Thermal Remediation** – Best suited to treat elevated concentrations. This technique will be utilized to remediate below the manufacturing facility.
- **Oxidation** – A technology that destroys contaminants at elevated concentrations in place. Two types of oxidants will be used.

Groundwater Pump and Treat



- Automated controls and safety interlocks to ensure safe operation

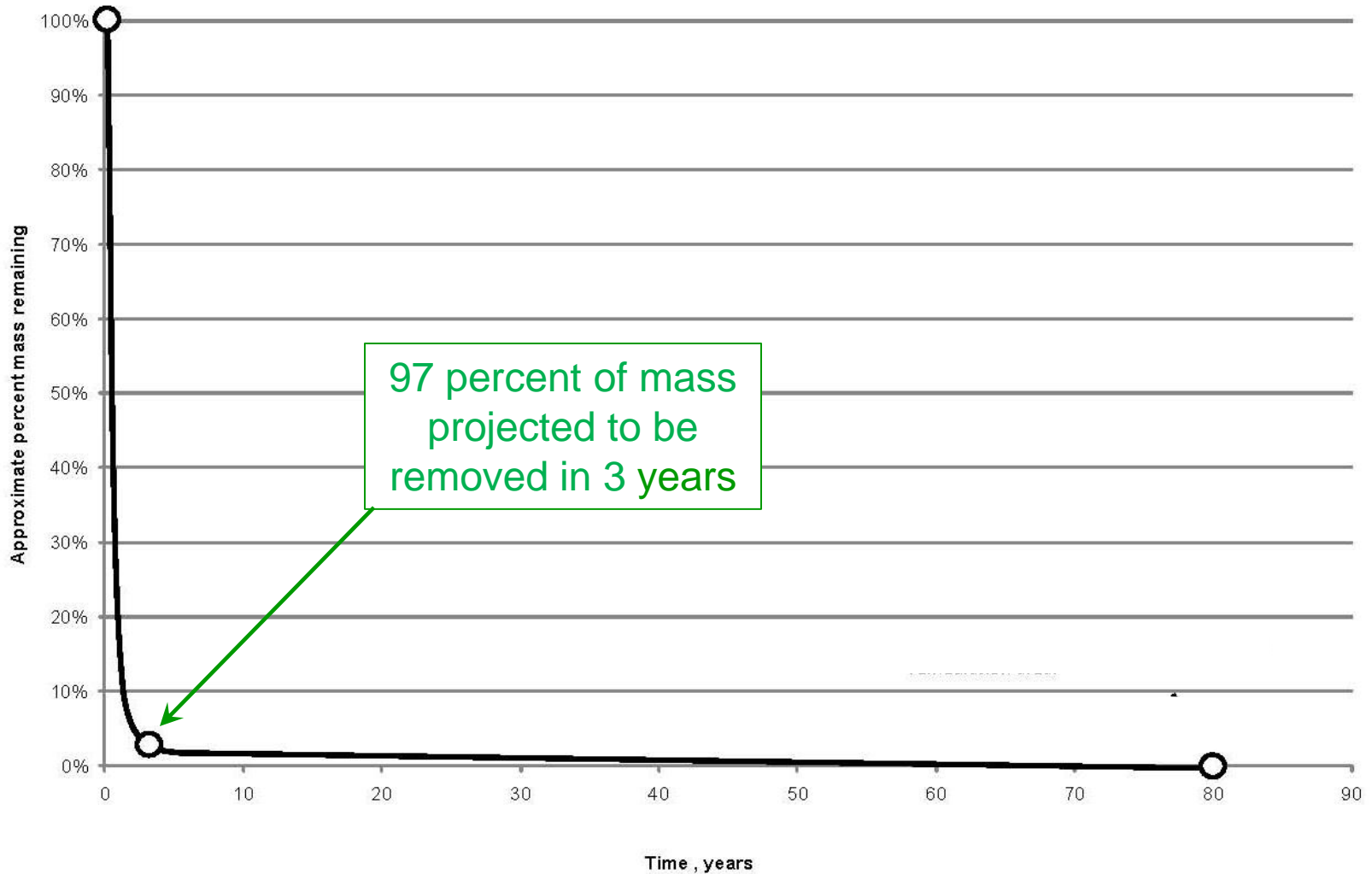
Thermal Remediation

- Install below-ground heat source, monitoring wells, temp sensors, and vacuum system on site
- Heat soil and groundwater on site
- Use vacuum system to collect contaminants
- Treat removed contaminants
- Treated water discharged to sewer.

Oxidation

- Introduce treatment compounds that:
 - Break down contaminants to harmless components
 - Quickly and effectively treat contaminants
- Implemented based on thorough understanding of local geology
- Two different approaches to be used
 - One in area of thermal treatment zone
 - One south of the plant buildings

Projected Mass Reduction



Community considerations

- Remedial Action Plan designed to limit disruption to the community.
 - Off-site piping and system wiring will be located underground
 - System is designed to limit sight and sound impacts
 - Long-term treatment equipment to be located in a secure building

- Regular performance monitoring will occur
 - Frequent and consistent monitoring
 - Annual data review
 - 5-year remedy review

Next Steps

- Remedial Action Plan approval
- Regional pumping wells and subsurface piping will be installed for pump and treat
- Installation for the thermal remedy will commence during the summer
- Oxidation implementation late 2011