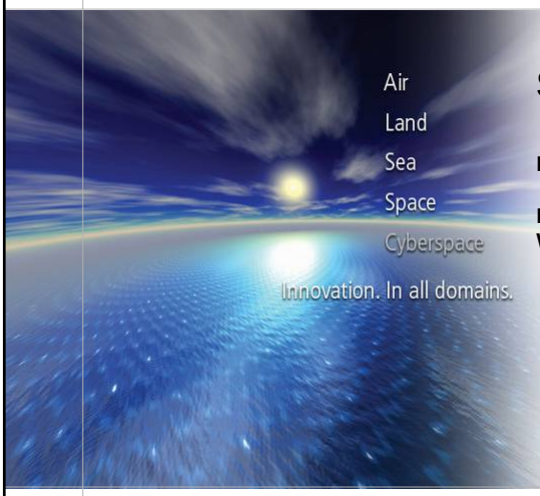
Raytheon
Customer Success Is Our Mission



Site Status Update

November 6, 2008

Former Raytheon Facility
Wayland, Massachusetts

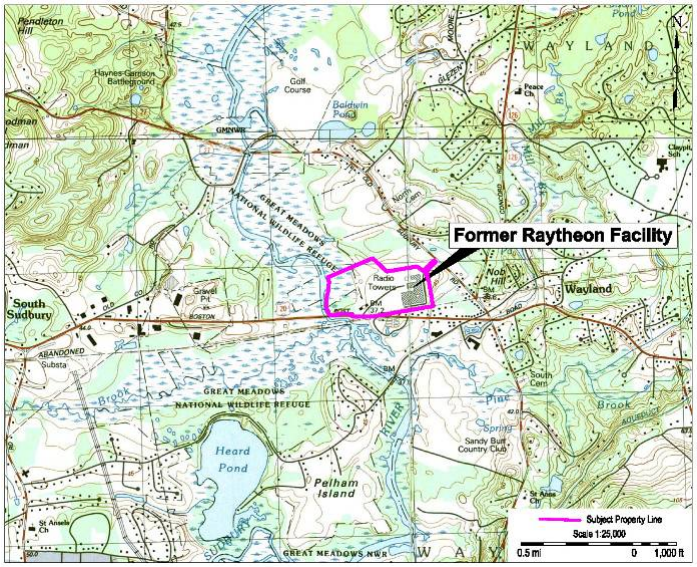
Presented by:
Louis “Chip” Burkhardt, P.G. – Raytheon

Outline

Raytheon
Integrated Defense Systems

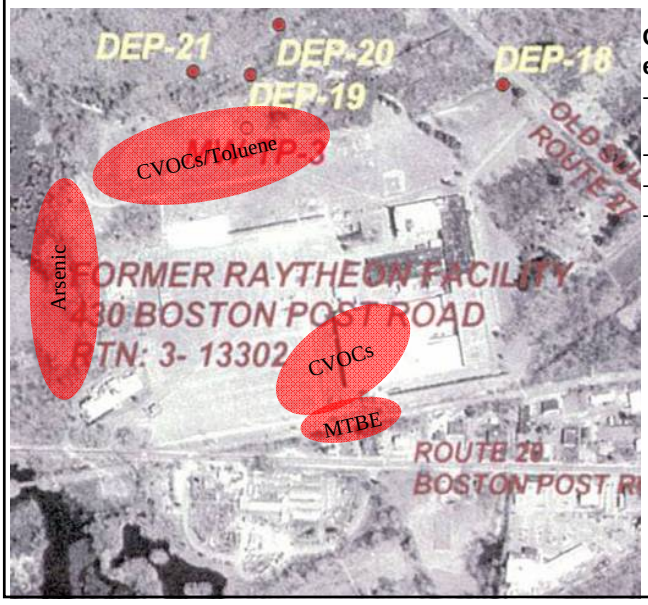
- Update on Site Activities
  - Phase IV Completion Report (RTN 3-22408)
    - Summary of source area excavation
    - Summary of groundwater remediation program
  - General Site Activities
    - Site-wide groundwater gauging and sampling
    - Wetland Monitoring
- Question and Answer Period

Raytheon
Integrated Defense Systems



Compounds of Concern

Raytheon
Integrated Defense Systems



Compounds of concern encountered:

-Chlorinated Volatile Organic Compounds (CVOCs)

-Toluene

-Arsenic (RAO-P - Submitted)

-Methyl Tertiary Butyl Ether (DPS - Submitted)

Raytheon
Integrated Defense Systems

Raytheon
Integrated Defense Systems

Phase IV Completion Report

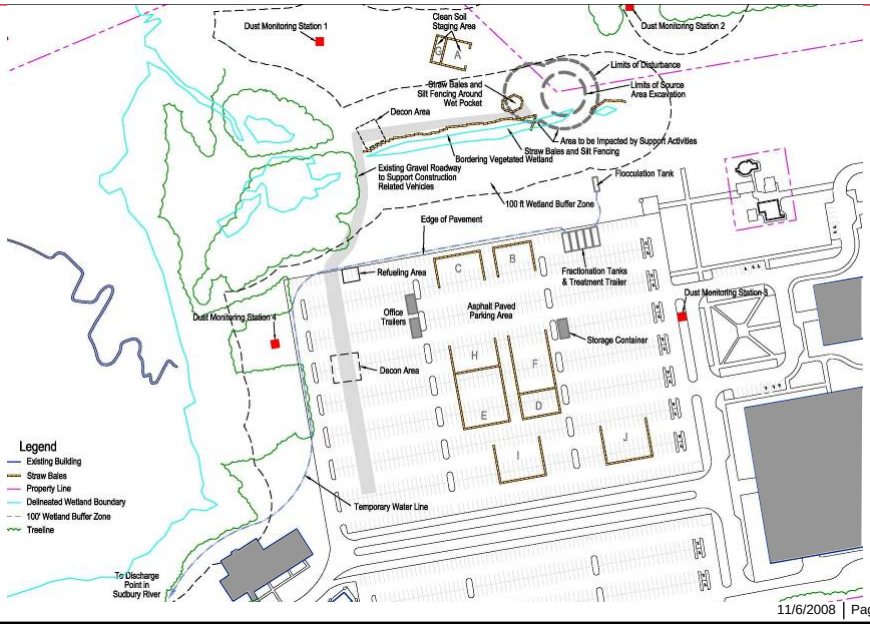
- Combines the elements of a Final Inspection Report and Phase IV Completion Statement
- Summarizes:
  - 2007 Source Area Soil Excavation
  - 2008 Enhanced Reductive Dechlorination Program

Raytheon
Integrated Defense Systems

Phase IV Completion Report
Source Area Soil Excavation

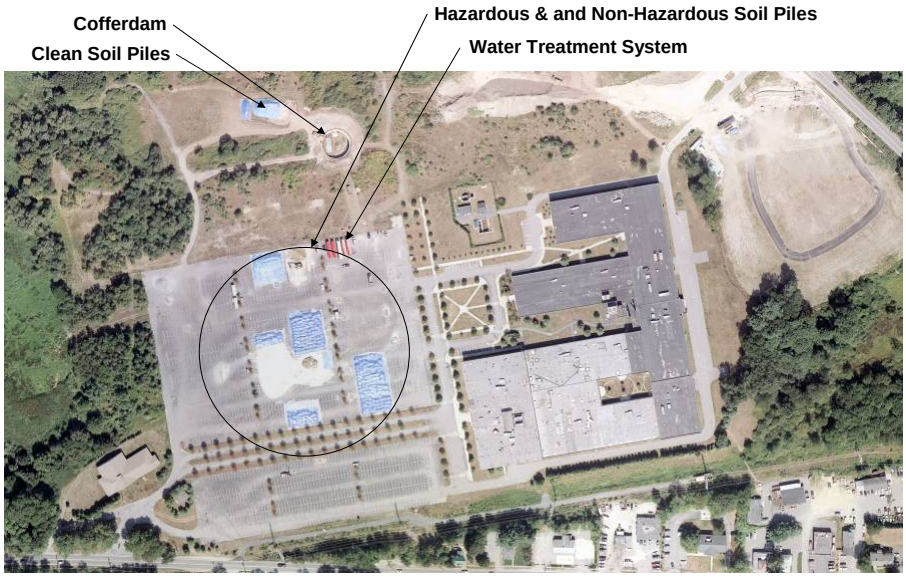
Source Area Excavation

Raytheon
Integrated Defense Systems



Excavation Activities

Raytheon
Integrated Defense Systems

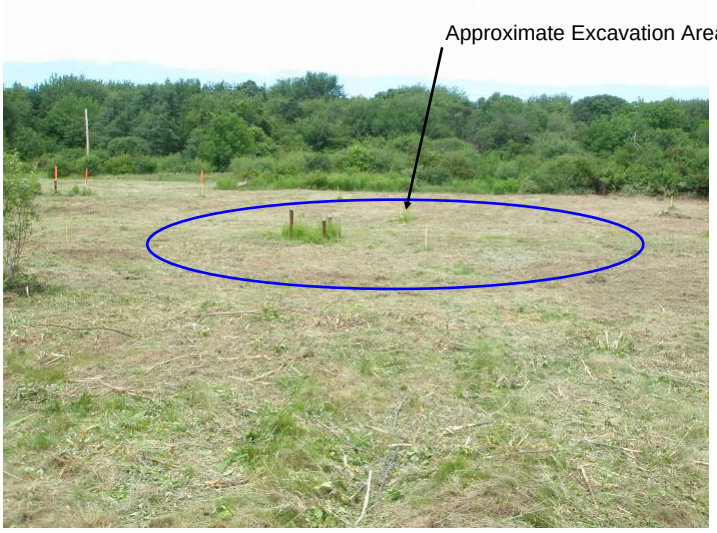


11/6/2008 | Page 9

Source Area Excavation

Raytheon
Integrated Defense Systems

- Mobilized to Site on 25 June 2007



11/6/2008 | Page 10

Source Area Excavation

Raytheon
Integrated Defense Systems

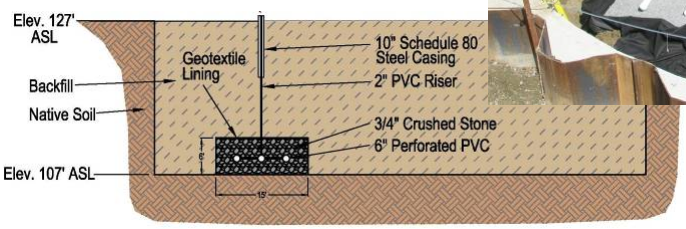
- Approximately 4,900 cy of soil removed from source area
- Advanced to total depth of roughly 20 feet below ground surface (bgs)
  - Potholes advanced up to 23 feet bgs

11/6/2008 | Page 11

Soil Excavation

Raytheon
Integrated Defense Systems

- Infiltration Gallery
  - Three lines of 40-foot perforated PVC pipe surrounded by 3,600 cy of crushed stone and geotextile liner



11/6/2008 | Page 12

Source Area Excavation

Raytheon Integrated Defense Systems

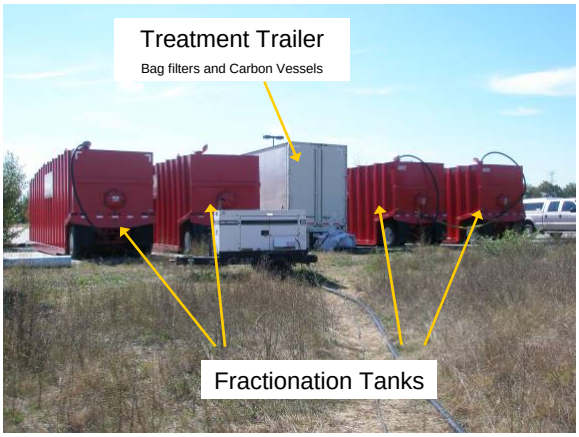
- Approximate Soil Volumes:
  - 3,000 cubic yards (4,580 tons) sent off-Site for disposal at Waste Management in New Hampshire
  - 1,900 cubic yards reused as backfill
  - 2,900 cubic yards of soil from adjacent property used as clean fill

11/6/2008 | Page 13

Source Area Excavation

Raytheon Integrated Defense Systems

- Water Treatment System
  - Approximately 49,000 gallons of water treated and discharged to the Sudbury River under the Remediation General Permit (RGP)



11/6/2008 | Page 14

Source Area Excavation

Raytheon
Integrated Defense Systems

- Wetland Restoration
  - 2.4 to 1 replication ratio (approx. 543 sqft disturbed, approx. 1,340 sqft restored)
  - 478 individual plants plus wetland seed mix

11/6/2008 | Page 15

Raytheon
Integrated Defense Systems

Phase IV Completion Report
Groundwater Remediation

11/6/2008 | Page 16

Groundwater Remediation

Raytheon Integrated Defense Systems

Enhanced Reductive Dechlorination

- Use sodium lactate to provide carbon source to naturally occurring microbes in subsurface to jump-start metabolic processes
  - Reductive Dechlorination: Process by which a consortia of microbes remove chlorine atoms from chlorinated solvents until all that is left is harmless ethene gas

Tetrachloroethene (PCE)
→ **Trichloroethene (TCE)**
→ **cis-1,2-Dichloroethene (cDCE)**
→ **Vinyl Chloride (VC)**
→ **Ethene**

11/6/2008 | Page 17

Groundwater Remediation

Raytheon Integrated Defense Systems

Sodium Lactate Delivery Methods

- Infiltration Gallery
  - Constructed directly upgradient of highest remaining concentrations.
  - Designed as primary focus of program
- Two Injection Well Transects
  - First transect, 200 feet downgradient from infiltration gallery: 3 wells screened from 37' to 47' feet below grade
  - Second transect, 400 feet downgradient from infiltration gallery: 6 wells screened from 55' to 65' below grade

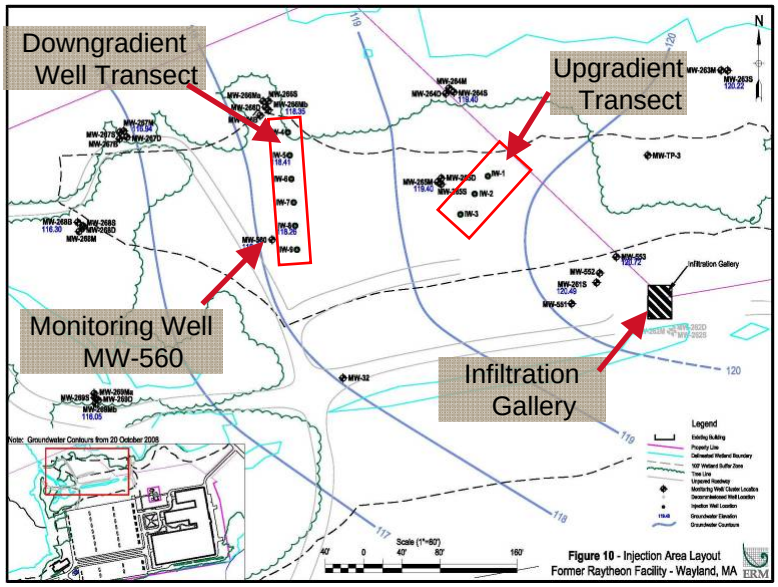
New monitoring well MW-560

- Placed near southern end of downgradient transect to monitor southern edge of CVOC plume

11/6/2008 | Page 18

Groundwater Remediation

Raytheon
Integrated Defense Systems

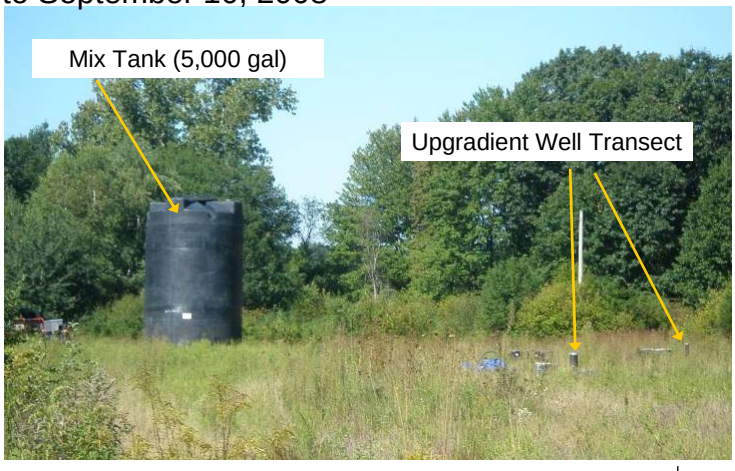


Groundwater Remediation

Raytheon
Integrated Defense Systems

Sodium Lactate Injection

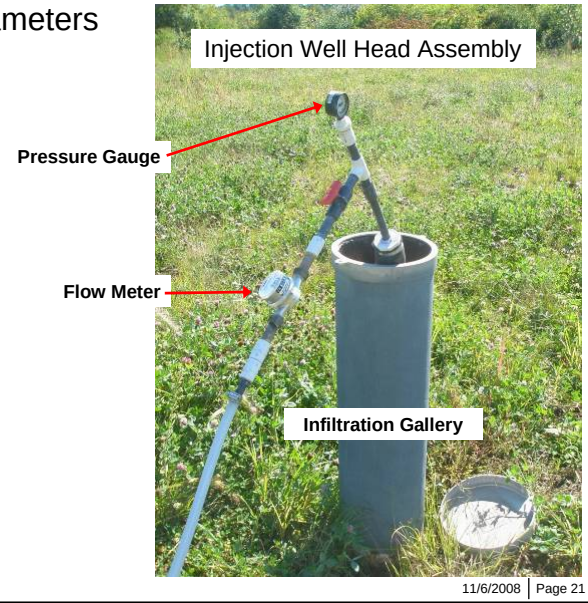
- Approximately 35,000 gallons of sodium lactate injected from August 26 to September 10, 2008



Groundwater Remediation

Raytheon
Integrated Defense Systems

- Typical injection parameters
  - Flow rate = 3 – 6 gpm
  - Pressure = 5 – 15 psi



11/6/2008 | Page 21

Groundwater Remediation

Raytheon
Integrated Defense Systems

Performance Monitoring Program

- Geochemical Parameter Monitoring
  - Measure temperature, conductivity, dissolved oxygen concentration, pH, and oxidation-reduction potential in the field
  - Monthly monitoring schedule initiated in September
- Groundwater sampling program
  - Collect samples for analysis of a suite of chemicals and parameters (CVOCs, dissolved metals, dissolved gases, etc.)
  - Quarterly monitoring schedule initiated in October
- Data from the performance monitoring program will be used to design additional injections

11/6/2008 | Page 22

Raytheon
Integrated Defense Systems

Update on Site Activities
Groundwater Gauging & Monitoring

Groundwater Monitoring

Raytheon
Integrated Defense Systems

Groundwater Gauging

- Site-wide gauging rounds conducted on October 20
  - Water levels measured in 97 monitoring wells

Groundwater Quality Monitoring

- Quarterly monitoring rounds conducted in July and October
  - Monitoring data summarized in upcoming Remedy Operation Status Submittal

Groundwater Monitoring

Raytheon Integrated Defense Systems

- 1,4-Dioxane - Background
  - On February 15, 2008 the DEP lowered the Reportable Concentration (RCGW-1) for 1,4-Dioxane in groundwater from 1,000 µg/L to 3 µg/L
  - Historically used by manufacturers to stabilize solvents (e.g., TCE)
  - Given the delineated CVOC concentrations on Site, Raytheon decided to collect samples for 1,4-Dioxane analysis
- Investigation Program
  - 42 wells selected based on current or historical TCE concentrations. Sampling program conducted in May and June 2008
  - 4 detections in Southern Area – all below 3 µg/L
  - 9 detections in Northern Area – 6 samples greater than 3 µg/L

Groundwater Monitoring

Raytheon Integrated Defense Systems

- Analysis and Response
  - Northern Area detections ranged from 2 µg/L to 35.2 µg/L
  - The 6 exceedances of the RCGW-1 standard were located in wells MW-261S, MW-266Ma, MW-267S, MW-267M, MW-268M, and MW-552
    - These wells generally exhibit the highest CVOC concentrations in the Northern Area
    - These wells will be monitored as part of the ongoing groundwater remediation program
  - A Release Notification Form is not required because the data suggest 1,4-dioxane was released with the chlorinated solvents already covered under RTN 3-22408
    - Detected in wells with highest CVOC concentrations
    - Historically used as a TCE stabilizer

Raytheon
Integrated Defense Systems

Update on Site Activities
Wetland Monitoring

Raytheon
Integrated Defense Systems

Wetland Monitoring

- There are now two wetland areas to monitor:
  - Western wetland area adjacent to Sudbury River associated with 2003 Wetland Restoration activities
  - Northern Area wetland associated with 2007 Source Area Soil Excavation
- Monitoring rounds for both wetlands conducted in 2008
  - 2008 growing season is the last of 5 years of monitoring required by the Order of Conditions for the 2003 project
  - 2008 growing season is the first of 3 years of monitoring required by the Order of Conditions for the 2007 project
- 2008 Annual Wetland Monitoring Report will be submitted in November 2008

PIP Schedule

Raytheon
Integrated Defense Systems

- Public comments on Draft Phase IV Completion Report due in writing by December 8, 2008:

  Louis “Chip” Burkhardt
  Raytheon Company
  Mail Stop 3029-09
  880 Technology Park Drive
  Billerica, MA 01821
  (978) 436-8238

- Raytheon will continue to make documents available at the information repositories (Public Library and Board of Health) and extranet web site

  www.ermne.com; username – raytheon; password – wayland

- Next PIP meeting is likely to be scheduled in Spring 2009

11/6/2008 | Page 29

Raytheon
Integrated Defense Systems

Q & A

11/6/2008 | Page 30