

# Fort Detrick

## Archive Search Report Update

23 February 2011 RAB

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# Outline

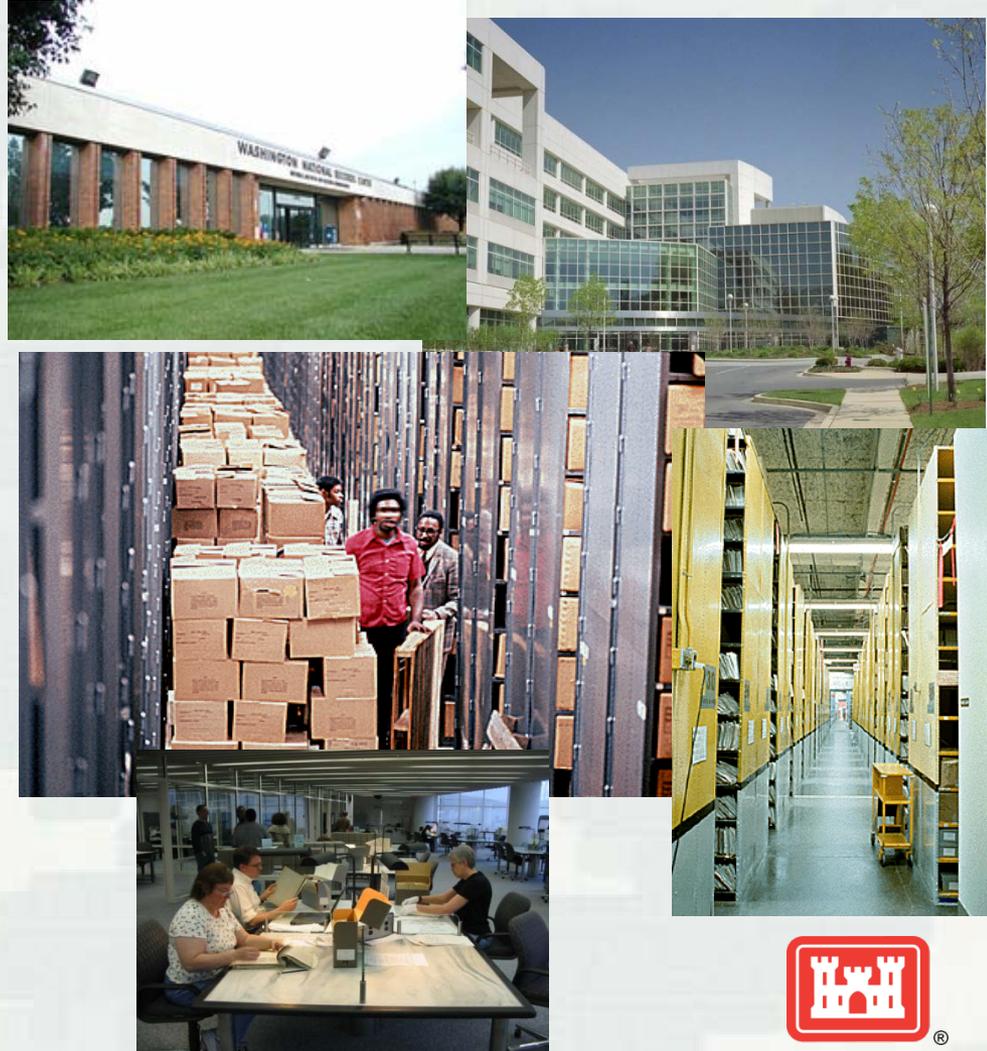
- Review of Findings through Oct.
  - Archive Search Report (ASR) and context of documents
  - Preliminary report for 2,4,5-T
  - Locations and Amounts
- Additional findings since Nov. 2010 RAB
- Next steps
- Schedule



# Archive Search Report (ASR)

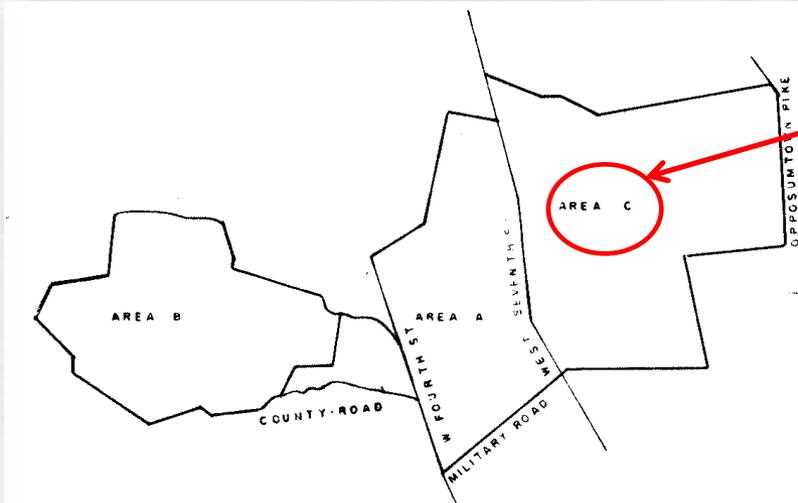
- The ASR is compiling historical research from various off-site archives and records holding facilities and analyzes them for potential environmental hazards.

- Thousands of reports and record boxes are being reviewed.



# Scope of ASR – All of Fort Detrick

- The ASR is researching all historical activities at Fort Detrick that may have caused environmental contamination that have not been previously identified and addressed.
- Fence to fence evaluation for Areas A (main post), Area B and Area C Water & Waste Water Treatment Plants.



Note: term **“Area C”** potentially confusing as in 1950s referred to the eastern expansion of Detrick in 1952; part of current **Area A.**



# Preliminary Archives Search Report Findings for Use / Testing of 2,4,5-T Compounds

- Fort Detrick requested archive search to first focus on use and testing of 2,4,5-T compounds due to concern of the manufacturing byproduct dioxin.
- Preliminary report has been finalized with findings as of October 27, 2010.
- [www.detrick.army.mil/responsible/interimArchivalReport2010.pdf](http://www.detrick.army.mil/responsible/interimArchivalReport2010.pdf)



# 2,4,5-T General

- Military defoliant or herbicide Agent Orange (Agent LNX) 50/50 mix of:
  - ▶ 2,4-Dichlorophenoxyacetic acid (2,4-D)
  - ▶ **2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)**
- Both 2,4-D and 2,4,5-T sold publicly to anyone in late 1940s, 1950s and 1960s as weed killers
- By the late 1960s, it became known that the manufacture of 2,4,5-T was contaminated with a 2,3,7,8-tetrachlorodibenzodioxin (TCDD), a dioxin
- Use of 2,4,5-T halted in 1970s for food crops besides rice; EPA terminated all uses in 1985
- 2,4-D remains in commercial use today as weed killer



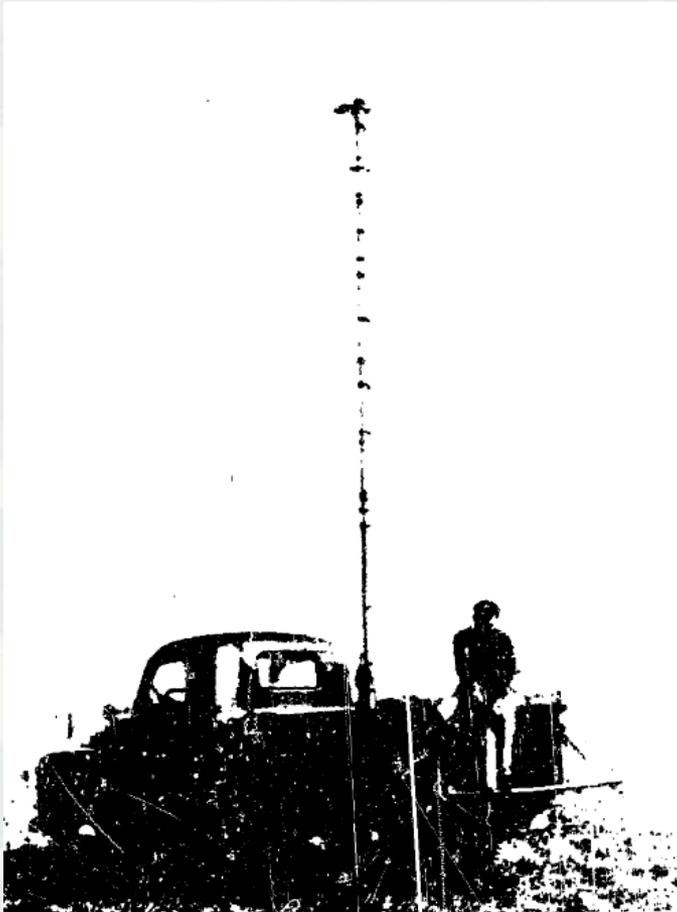
# WWII Research on “Plant Growth Inhibitors” or “LN” agents

- April 1944 – Plant Research Branch (Crops Division)
- **Step 1** - Evaluate or screen potential chemicals in lab and greenhouse (very small amounts)
  - ▶ Over a thousand screened, eventually thousands in minute amounts
  - ▶ LN-8 (2,4-D) – became standard other LN chemicals compared to and commercial product still in use
- **Step 2** – Small Field Trials (plots at Fort Detrick)
- **Step 3** – Larger Field Trials (at other installations)





# 1953 Truck Mounted Spray Test



- Applied to rows of soybeans and sweet potatoes in Area B by truck mounted sprayer along ~240 foot perpendicular path; just over 100 grams estimated used
- (1 gram = weight of \$1 bill)



# Identified Locations – Current Imagery

- Field C and D positively located
- Likely locations for Area B tests



# Total Estimated Amounts of 2,4,5-T compounds tested at Detrick based on Preliminary ASR

- Estimate on confirmed tests would be on the order **about 17 pounds between 1944 and 1968**
- Comparison - USDA determined the average farm use rate of 2,4,5-T in 1969 was 0.24 to 2 lbs per acres with an average of 0.48 lbs per acres (ex.: 100 acres farm would use 48 lbs in one year)



# Historical Context

## U.S. 2,4,5-T use rates for the year 1969

Appendix table 1.--Cost of 2,4,5-T and application, all domestic uses, United States, 1969

Use category	Acres treated	Materials			Application		Total cost of material and application
		Pounds per acre	Cost per pound	Total cost	Cost per acre	Total cost	
	1,000 acres	Pounds	Dollars	1,000 dollars	Dollars	1,000 dollars	1,000 dollars
<b>Farm use:</b>							
Hay, pasture, and rangeland.....	2,441	0.24	2.75	1,611	1.00	2,441	4,052
Other crops.....	671	1/ .59	2.75	1,093	1.00	671	1,764
Other farm use.....	339	2.00	2.75	1,865	1.00	339	2,204
<b>Total farm use.....</b>	<b>3,451</b>	<b>.48</b>	<b>2.75</b>	<b>4,569</b>	<b>1.00</b>	<b>3,451</b>	<b>8,020</b>
<b>Nonfarm use:</b>							
Federal Government.....	296	2.22	2.75	1,807	5.00	1,480	3,287
Lawn and turf.....	1,200	.50	2.75	1,650	1.00	1,200	2,850
Rights-of-way.....	2,175	2.01	2.75	12,022	10.00	21,750	33,772
Private nonfarm forests.....	430	2.07	2.75	2,448	3.00	1,290	3,738
Aquatic areas.....	81	2.00	2.75	446	2.00	162	608
Other uses.....	306	1.91	2.75	1,607	2.00	612	2,219
<b>Total nonfarm use.....</b>	<b>4,488</b>	<b>1.62</b>	<b>2.75</b>	<b>19,980</b>	<b>5.90</b>	<b>26,494</b>	<b>46,474</b>
<b>Total all uses.....</b>	<b>7,939</b>	<b>1.12</b>	<b>2.75</b>	<b>24,549</b>	<b>3.77</b>	<b>29,945</b>	<b>54,494</b>

1/ Calculated weighted average of individual crops and crop groupings (0.59233).

8,892,000 lbs

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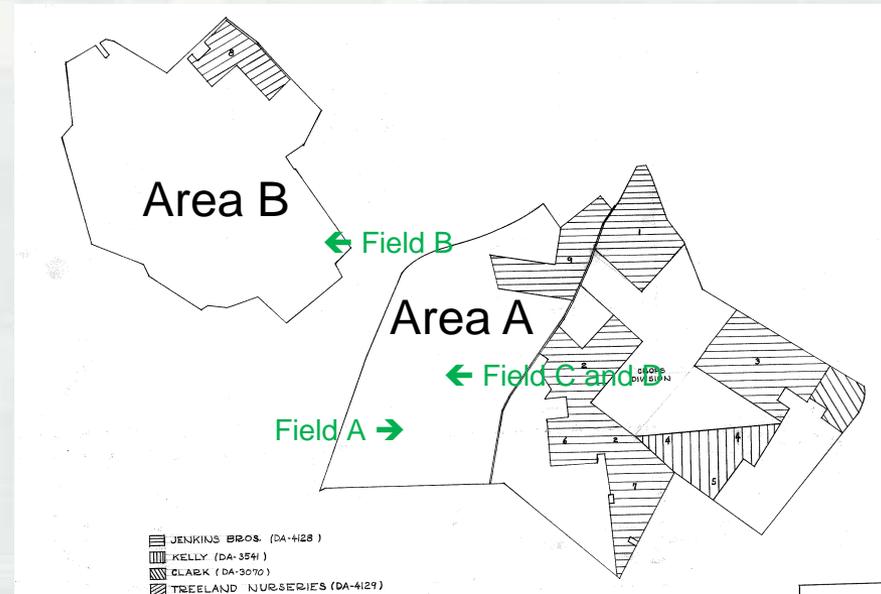
# Additional 2,4,5-T Findings since November

- No identified aviation (e.g. helicopter or airplane) applied herbicide testing at Fort Detrick (large scale tests at other locations).
- Additional findings are limited. Magnitude of use appears small (*i.e. total 10s of lbs not 100s of lbs*)
- Additional tests at Detrick in mid-1950s test results only summarized in reports; test procedures and application rates similar, so amounts will remain small.
- Researcher's lab notebooks may include additional information.



# Additional Historical Findings

- At end of 1957, Army dropped anti-crops work for about 2 years
  - ▶ Crops Division goes from 118 to 11 personnel to complete reports
- 1958 begin Agricultural Out Grant /Lease program of Areas of Detrick to farmers in community



# Next Steps

- Analysis is not just for herbicides but all potential environmental releases at Detrick
- Research Continuing - *looking for additional published reports & lab notebooks*
- Analyzing over 2,600 reports & documents, over 400 maps and aerial imagery (1937, '43, '47, '52, '53, '58, '64, '70, '72, '76, '79, '82, '98 )



# Schedule

- Date of completion of full report dependant on amount of records being reviewed
- Best estimate for draft ASR September-November 2011

