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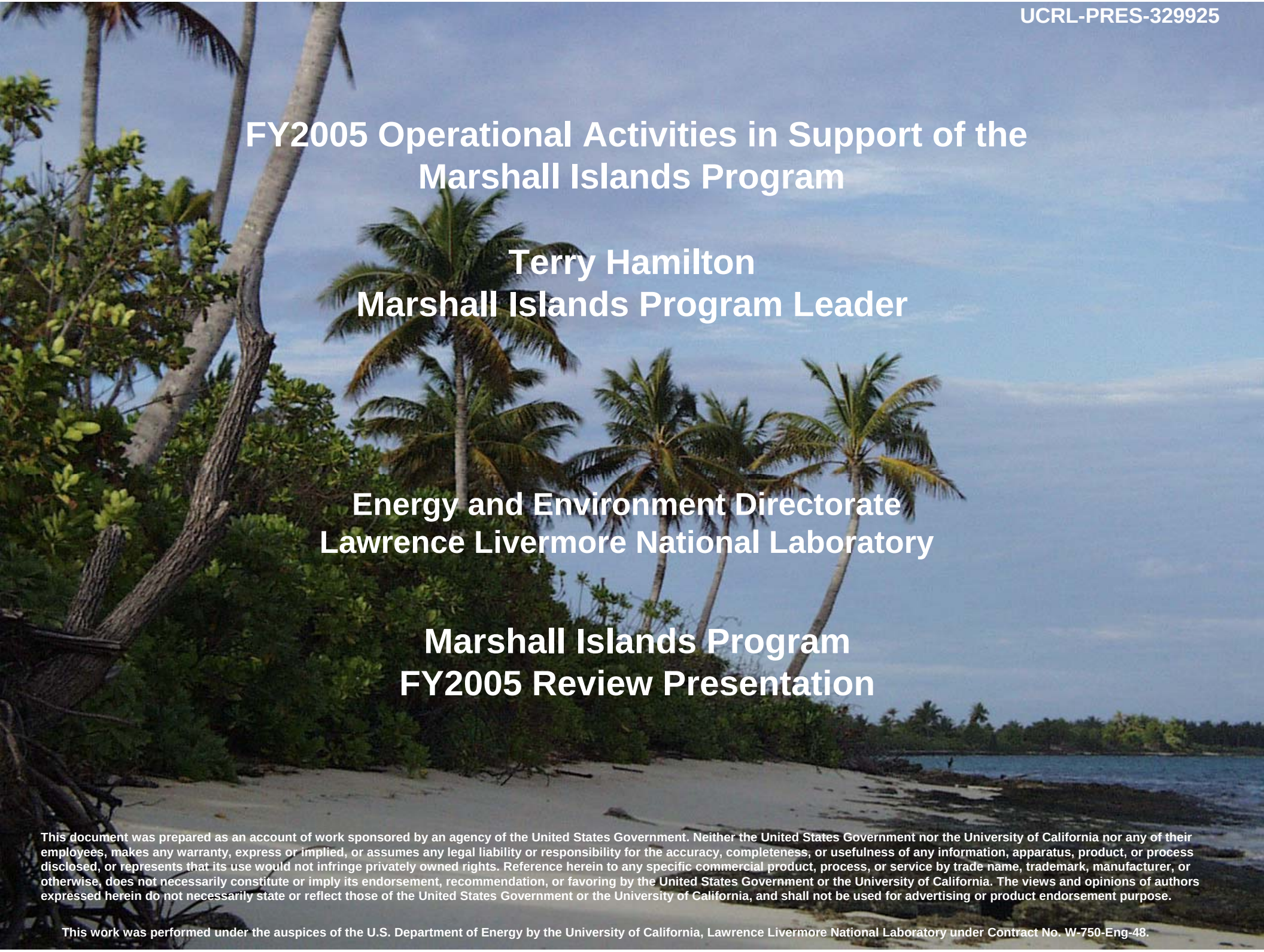

FY2005 Operational Activities in Support of the Marshall Islands Program

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Energy and Environment Directorate
Lawrence Livermore National Laboratory

Marshall Islands Program
FY2005 Review Presentation

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Background

Standard approach to risk management and cleanup of radioactively contaminated sites is to control the Total Effective Dose Equivalent (TEDE)

The U.S. regulatory definition of the TEDE from the 10 CFR Part 20.1003 (NRC, 2004) is the sum of the;

deep dose equivalent for external exposures

+

committed dose from intakes of radionuclides

Overview of presentation (non-technical)

1. FY2005 Activities

Key support areas;

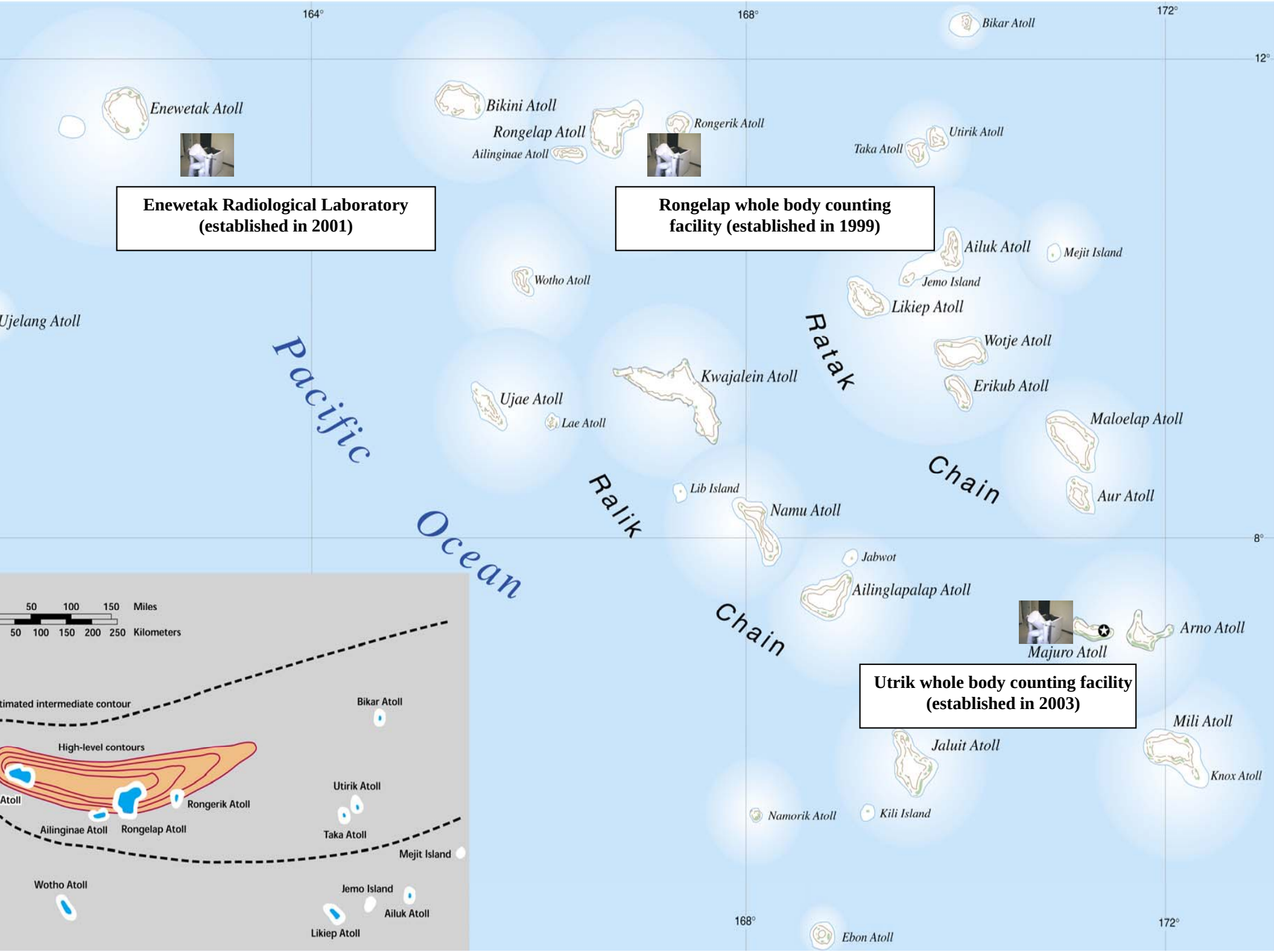
- **Individual Radiation Protection Monitoring Programs (whole body counting and plutonium urinalysis)**
- **Resettlement Support Activities**
- **Environmental Surveillance (key accomplishment: completion of a 2nd environmental mission to Enewetak Atoll; additional surveys on Rongelap and Bikini).**

2. Where are we going!

Common Theme

1) **Individual radiation protection programs coupled with environmental sampling of food products (cesium-137,** strontium-90, TRUs**) & monitoring of external gamma dose rates provide a good scientific basis for assessing current (and changing) radiological conditions.**

2) **Environmental characterization surveys are land-use or 'changing land-use' oriented.**


164°
168°
172°
12°
8°
Bikar Atoll
Enewetak Atoll
Bikini Atoll
Rongelap Atoll
Ailinginae Atoll
Rongerik Atoll
Taka Atoll
Utirik Atoll
Enewetak Radiological Laboratory (established in 2001)
Rongelap whole body counting facility (established in 1999)
Ailuk Atoll
Mejit Island
Jemo Island
Likiep Atoll
Wotho Atoll
Ujelang Atoll
Wotje Atoll
Erikub Atoll
Kwajalein Atoll
Ujae Atoll
Lae Atoll
Maloelap Atoll
Aur Atoll
Lib Island
Namu Atoll
Jabwot
Ailinglapalap Atoll
Arno Atoll
Majuro Atoll
Utrik whole body counting facility (established in 2003)
Mili Atoll
Jaluit Atoll
Knox Atoll
Namorik Atoll
Kili Island
Ebon Atoll
Pacific Ocean
Ratak Chain
Ralik Chain
50 100 150 Miles
50 100 150 200 250 Kilometers
timated intermediate contour
High-level contours
Bikar Atoll
Utirik Atoll
Rongerik Atoll
Ailinginae Atoll
Rongelap Atoll
Taka Atoll
Mejit Island
Wotho Atoll
Jemo Island
Ailuk Atoll
Likiep Atoll

How did we do?

Whole Body Counting – Tracking Database(s) FY'05

For FY '05		Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Keh
		planning	**Step 1. baseline**-monthly	**Step 2. baseline**-monthly	**Step 3. baseline**-monthly	**Step 4. baseline**-monthly	**Step 5. baseline**-monthly	**Step 6. baseline**-mont
Red = Partial Month Totals								
Facility Location	**Month**	**Number of personnel counts**	Transfer QC systems files and print	Update personnel database file (**import files into database**)	Input of .cnf spectra files from wbc software	**Copy new pic files** (sort by date and copy)	**Copy cal detector arrangement files** (& other as needed)	**Perform dat review** 'electro mark' spectra a wbc database generate trans file and unresol listing
Rongelap	October	0	---	---	---	---	---	---
	November	16	X	X	X	X	X	X
	December	0	---	---	---	---	---	---
	January	17	X	X	X	X	X	X
	Feburary	0	---	---	---	---	---	---
	March	27	X	X	X	X	X	X
	April	12	X	X	X	X	X	X
	May	0	---	---	---	---	---	---
	June	7	X	X	X	X	X	X
	July	10	X	X	X	X	X	X
	August	18	X	X	X	X	X	X
	September	24	X	X	X	X	X	X
	October	17	X	X	X	X	X	X
		Cumulative Total - 148						

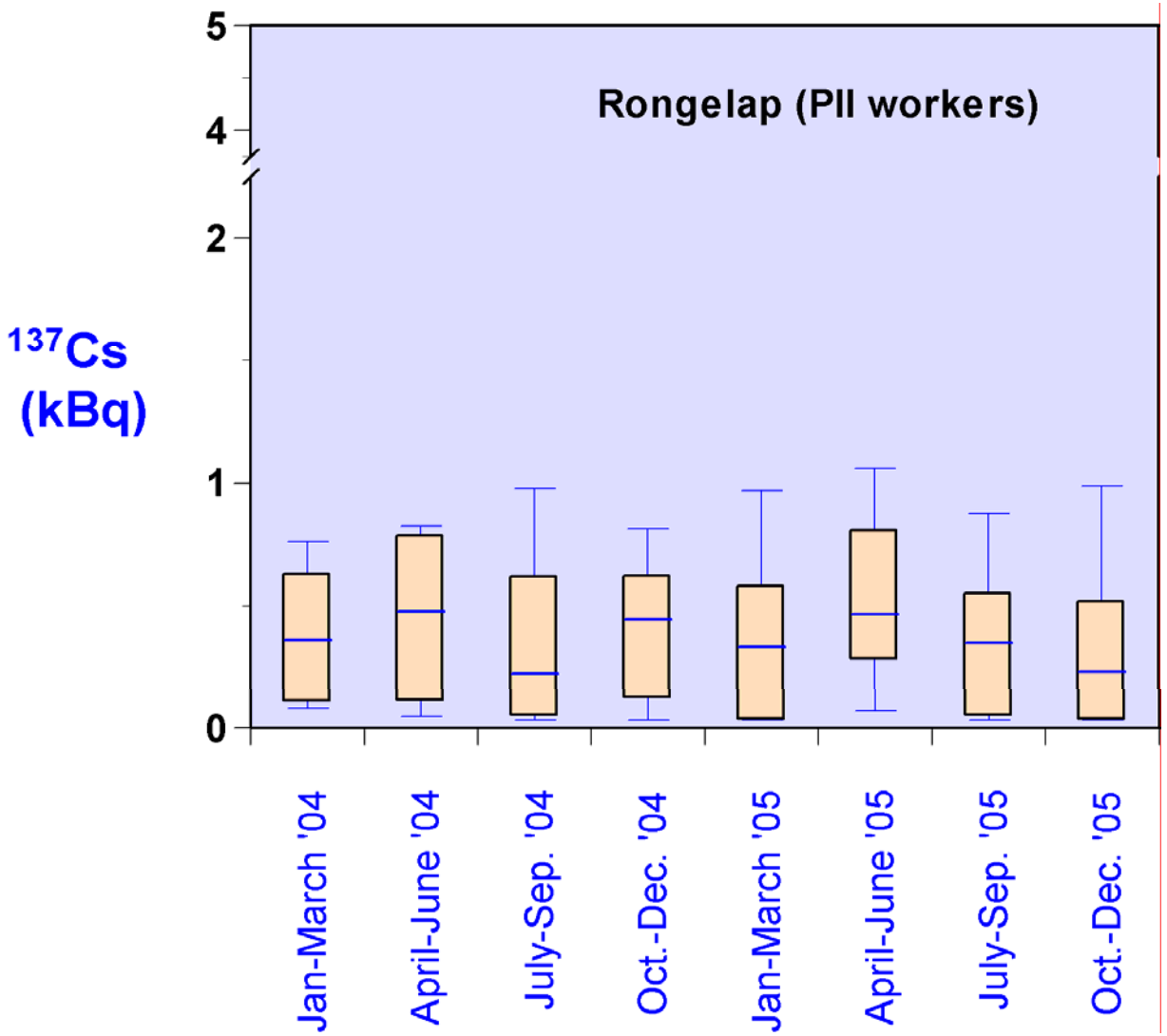
Whole Body Counting – Tracking Database(s) FY'05, cont'd

For FY '05		Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	
		planning	**Step 1. baseline**-monthly	**Step 2. baseline**-monthly	**Step 3. baseline**-monthly	**Step 4. baseline**-monthly	**Step 5. baseline**-monthly	**Step 6. baseline**-monthly	
Red = Partial Month Totals									
Facility Location	**Month**	**Number of personnel counts**	Transfer QC systems files and print	Update personnel database file (**import files into database**)	Input of .cnf spectra files from wbc software	**Copy new pic files** (sort by date and copy)	**Copy cal detector arrangement files** (& other as needed)	**Perform data review** 'electronic mark' spectra and wbc databases, generate transfer file and unresolved listing	
Enewetak	October	3	X	X	X	X	X	X	
	November	0	---	---	---	---	---	---	
	December	15	X	X	X	X	X	X	
	January	36	X	X	X	X	X	X	
	Feburary	15	X	X	X	X	X	X	
	March	68	X	X	X	X	X	X	
	April	45	X	X	X	X	X	X	
	May	18	X	X	X	X	X	X	
	June	9	X	X	X	X	X	X	
	July	0	---	---	---	---	---	---	
	August	30	X	X	X	X	X	X	
	September	7	X	X	X	X	X	X	
	October	0							
		Cumulative Total - 246							

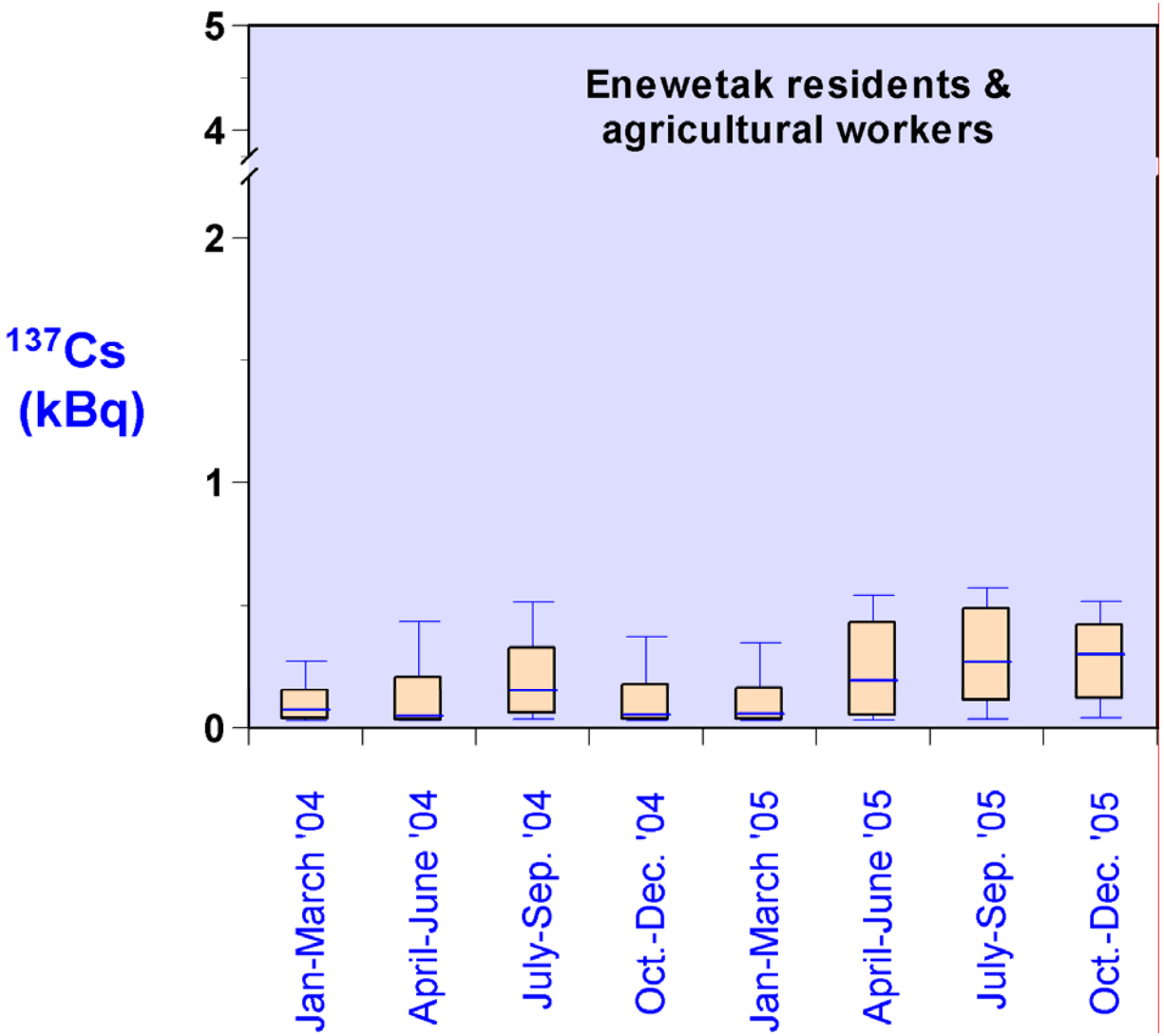
Whole Body Counting – Tracking Database(s) FY'05, cont'd

For FY '05		Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven Kehl	RI Steven K
		planning	**Step 1. baseline**-monthly	**Step 2. baseline**-monthly	**Step 3. baseline**-monthly	**Step 4. baseline**-monthly	**Step 5. baseline**-monthly	**Step 6. baseline**-mo
Red = Partial Month Totals								**Perform d review** 'elec mark' spectr wbc databa generate tra file and unres
Facility Location	**Month**	**Number of personnel counts**	Transfer QC systems files and print	Update personnel database file (**import files into database**)	Input of .cnf spectra files from wbc software	**Copy new pic files** (sort by date and copy)	**Copy cal detector arrangement files** (& other as needed)	listing
Majuro	October	56	X	X	X	X	X	X
	November	11	X	X	X	X	X	X
	December	27	X	X	X	X	X	X
	January	4	X	X	X	X	X	X
	Feburary	30	X	X	X	X	X	X
	March	62	X	X	X	X	X	X
	April	33	X	X	X	X	X	X
	May	18	X	X	X	X	X	X
	June	47	X	X	X	X	X	X
	July	43	X	X	X	X	X	X
	August	**50**	X	X	X	X	X	X
	September	15	X	X	X	X	X	X
	October	27	X	X	X	X	X	X
		Cumulative Total - 396						

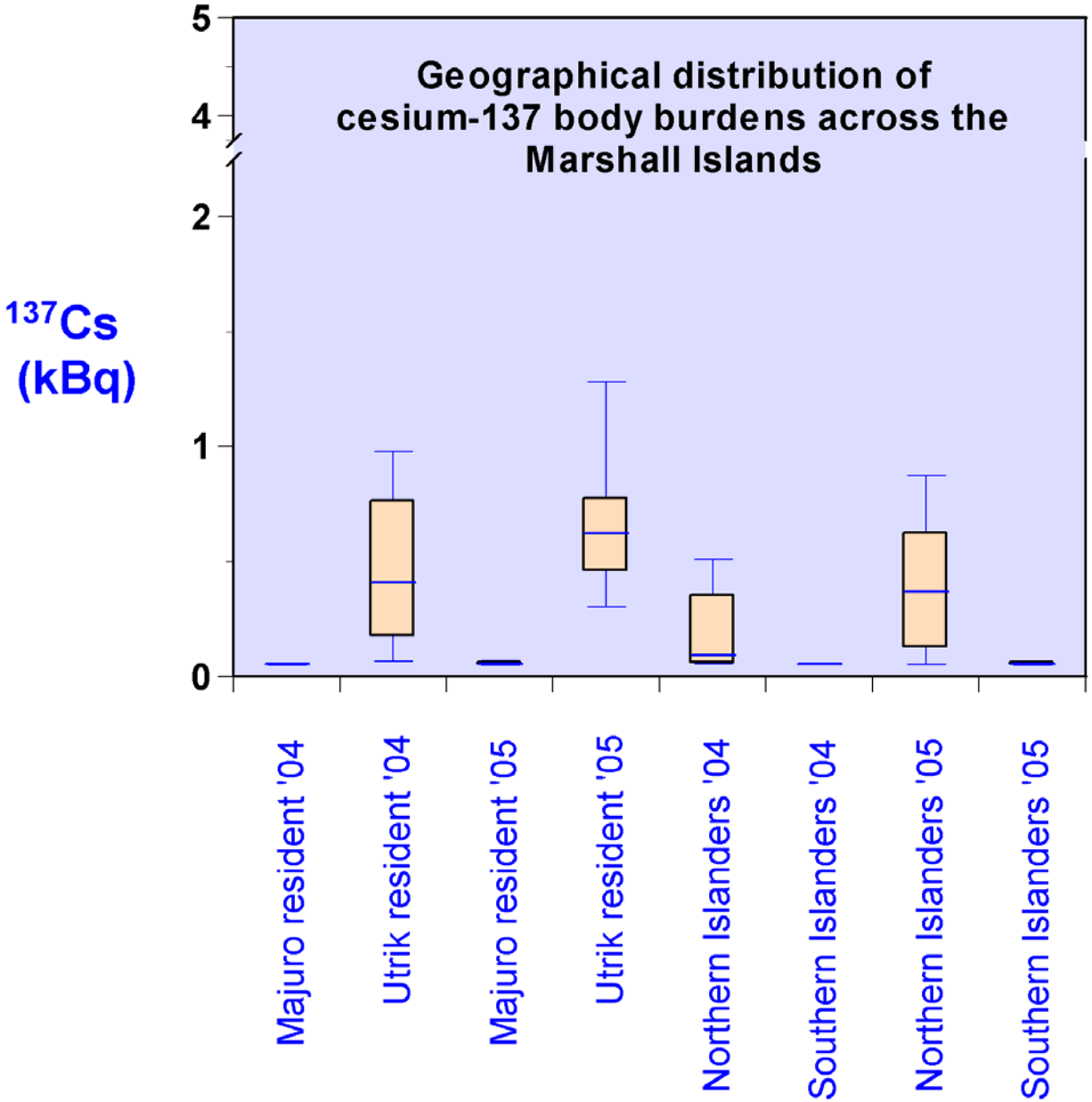
Whole Body Counting Measurements on Rongelap

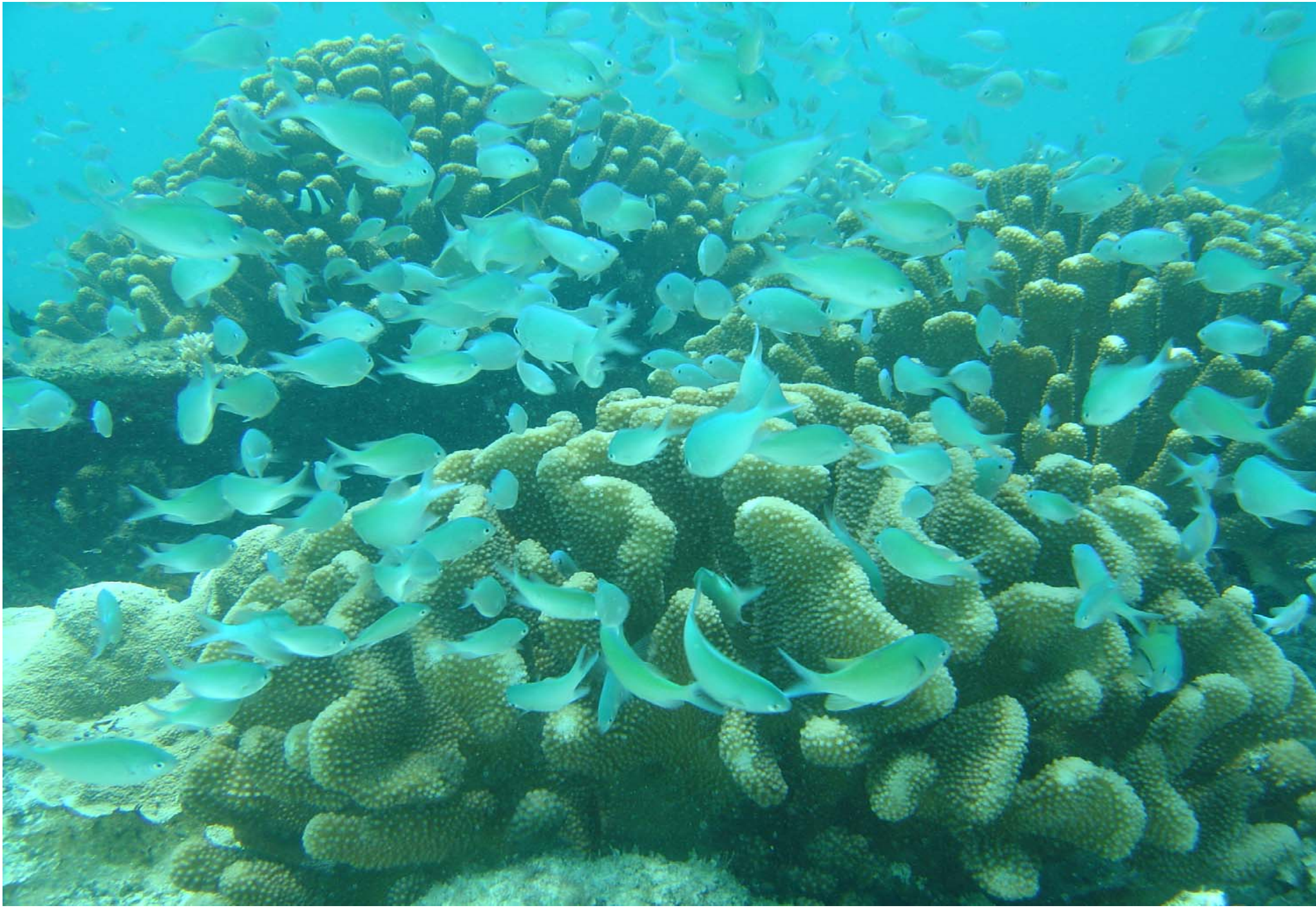


Whole Body Counting Measurement on Enewetak

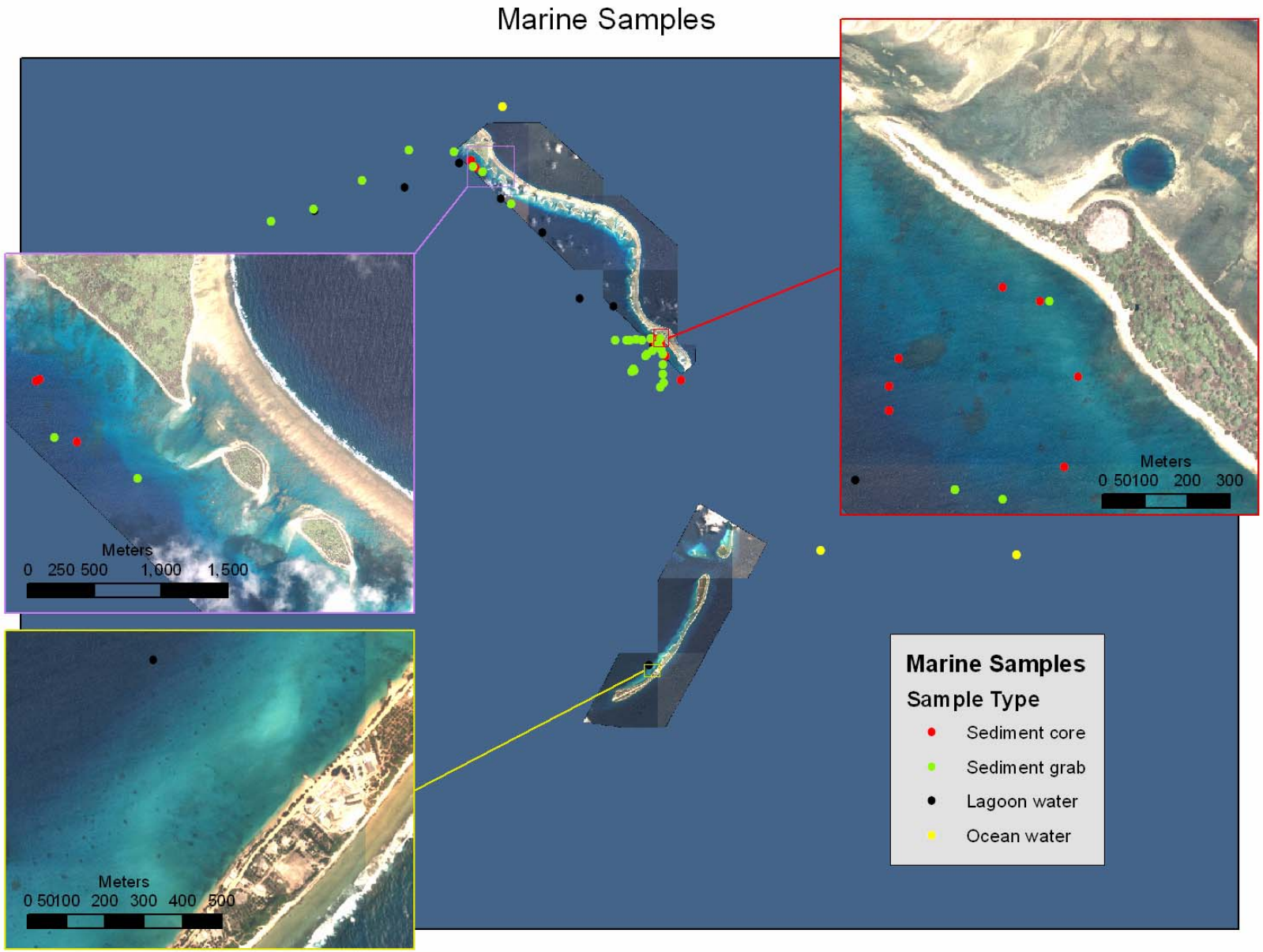


Whole Body Counting Measurements of the Utrik Population Group as well as other Marshall Islanders

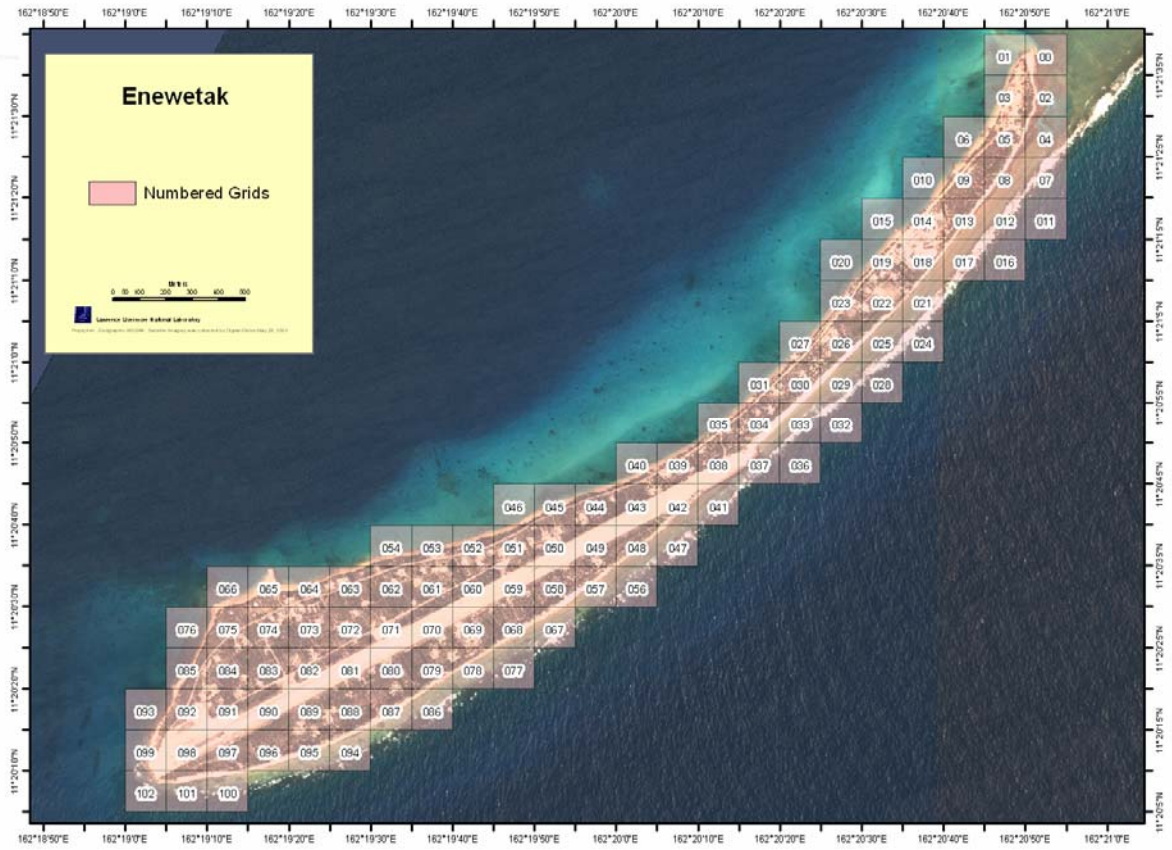




Marine Sampling on Enewetak Atoll



2005 Environmental Sampling on Enewetak Island

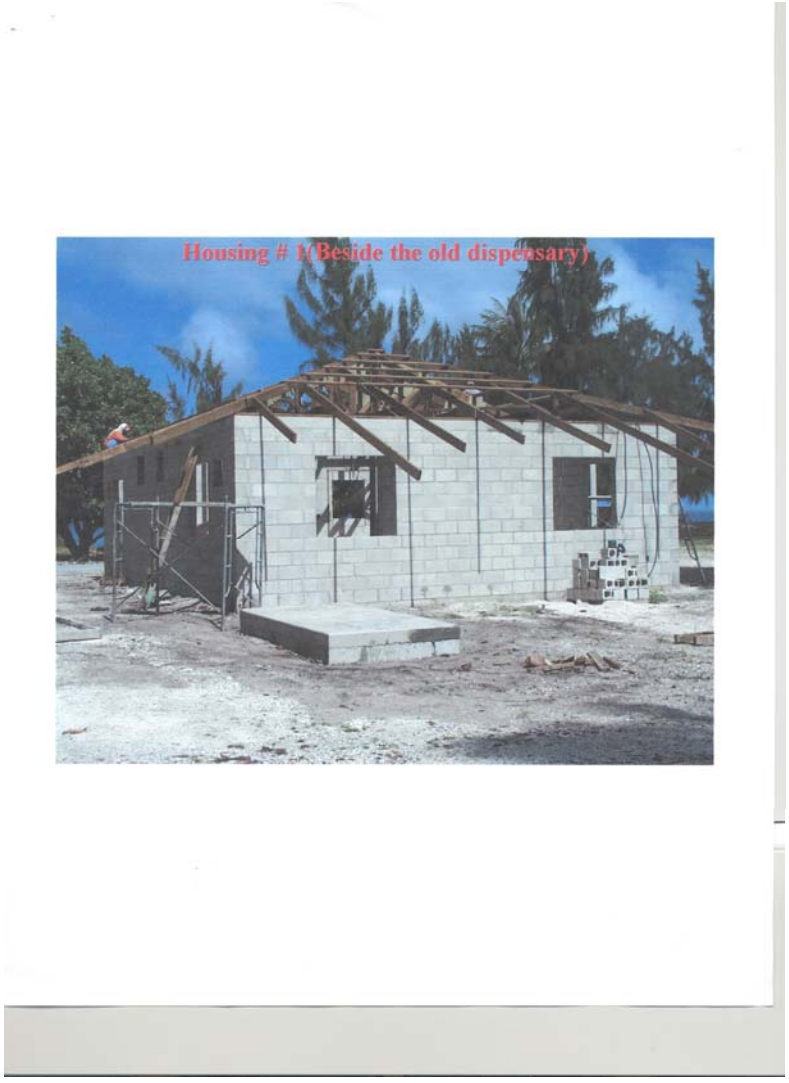


Sampling Strategy:

To collect food crop products (predominately coconuts) from each grid point location covering the entire island

2005 Monitoring Survey of External Doses on Enewetak

2005 Rongelap Resettlement Support

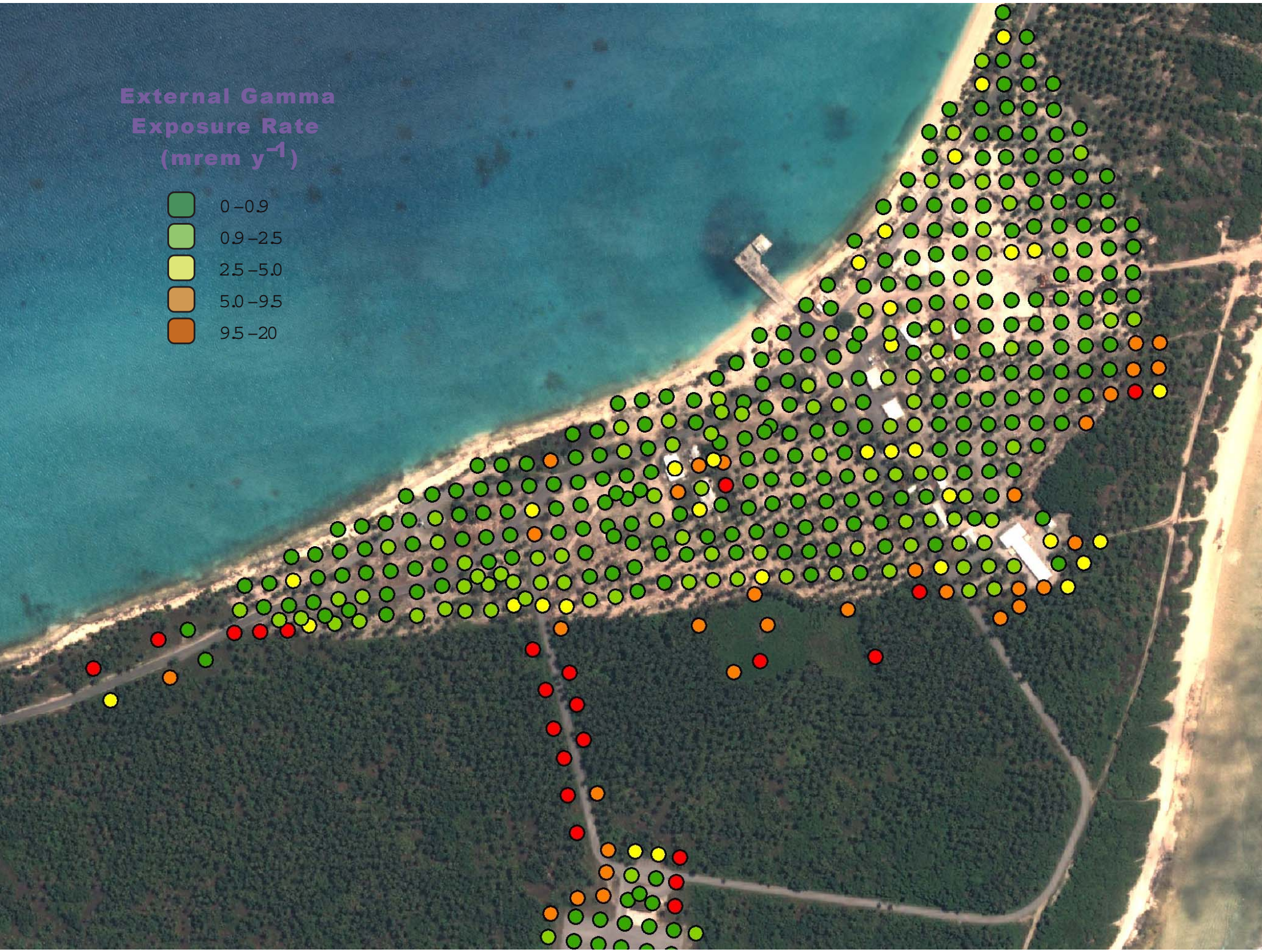


Focus Areas

1) **External dose rates around home sites**

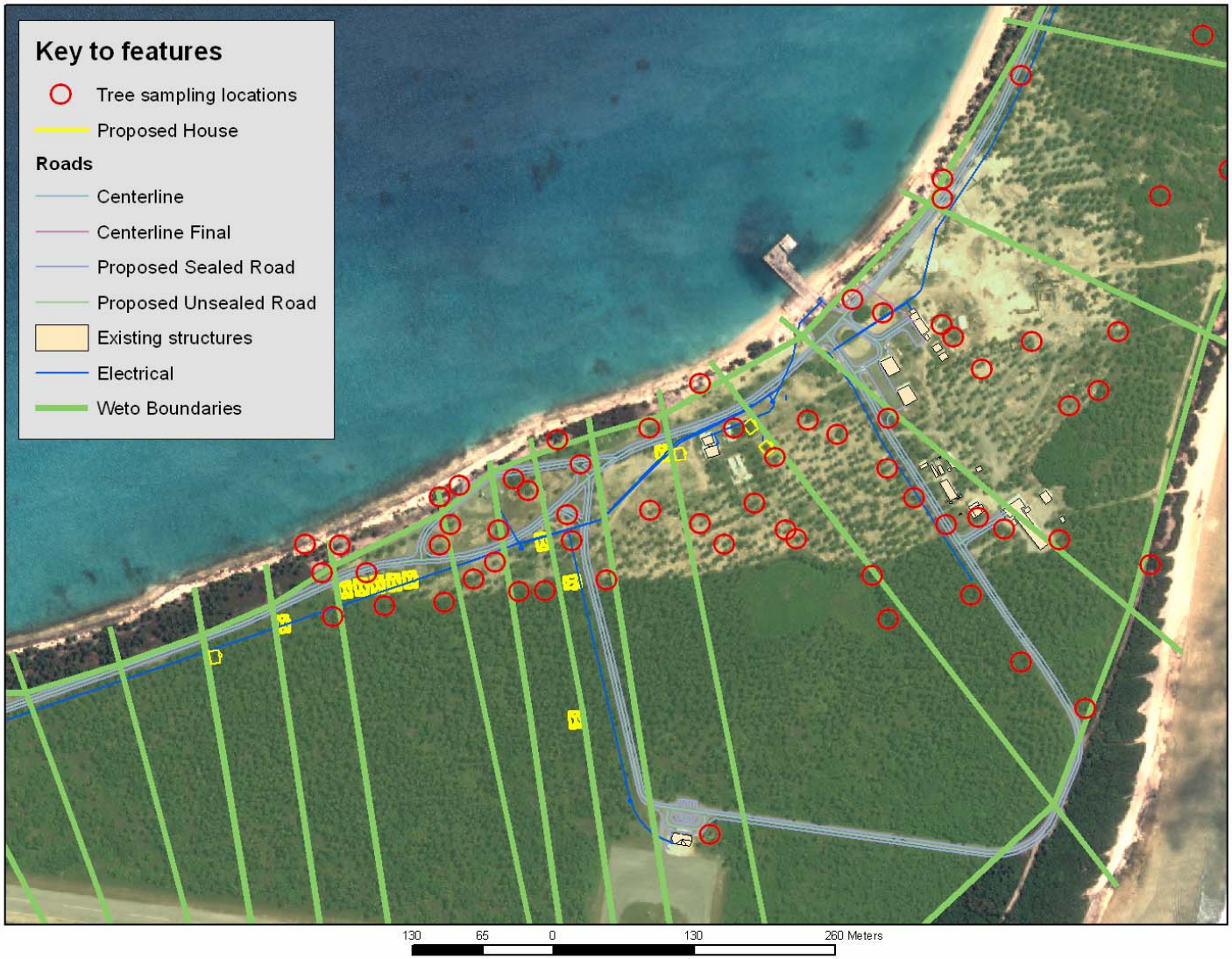
2) **Collection of food crop products around the village area**

3) **Sampling of *Pandanus* fruit and 'arrow root' growing in the potassium treated area north of the village.**

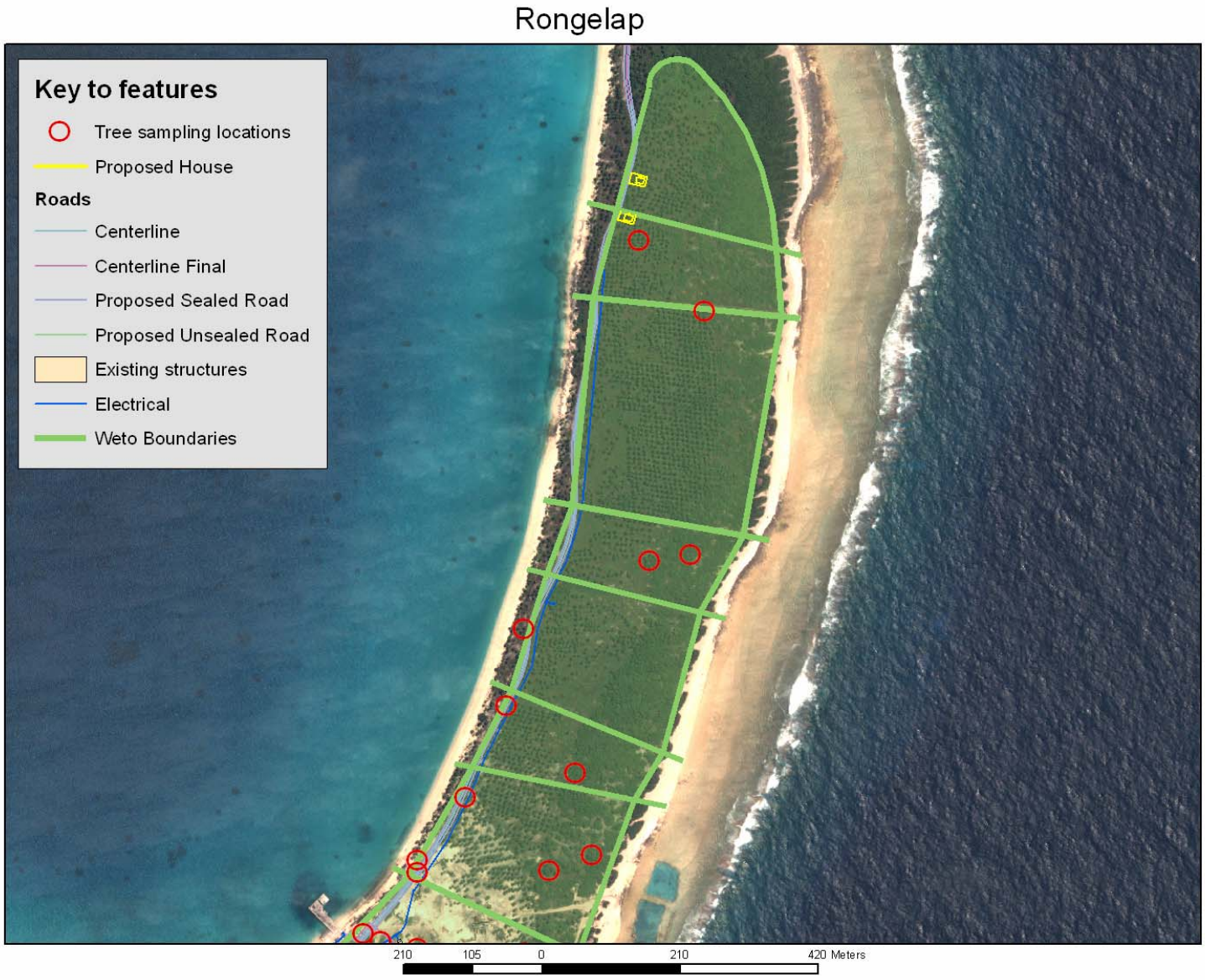

External Gamma
Exposure Rate
(mrem y-1)
0 – 0.9
0.9 – 2.5
2.5 – 5.0
5.0 – 9.5
9.5 – 20

2005 Rongelap Resettlement Support, cont'd

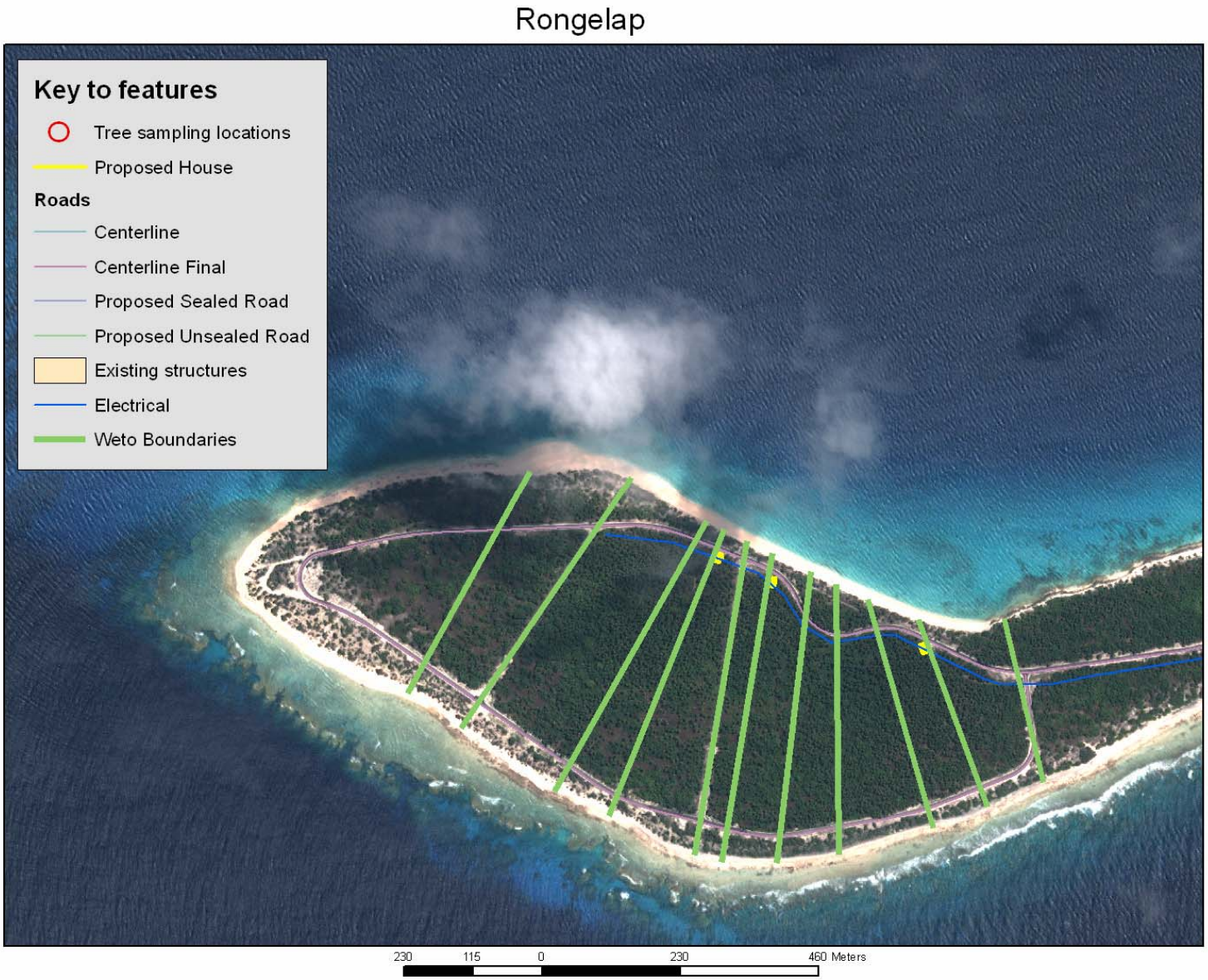
Rongelap Village Area



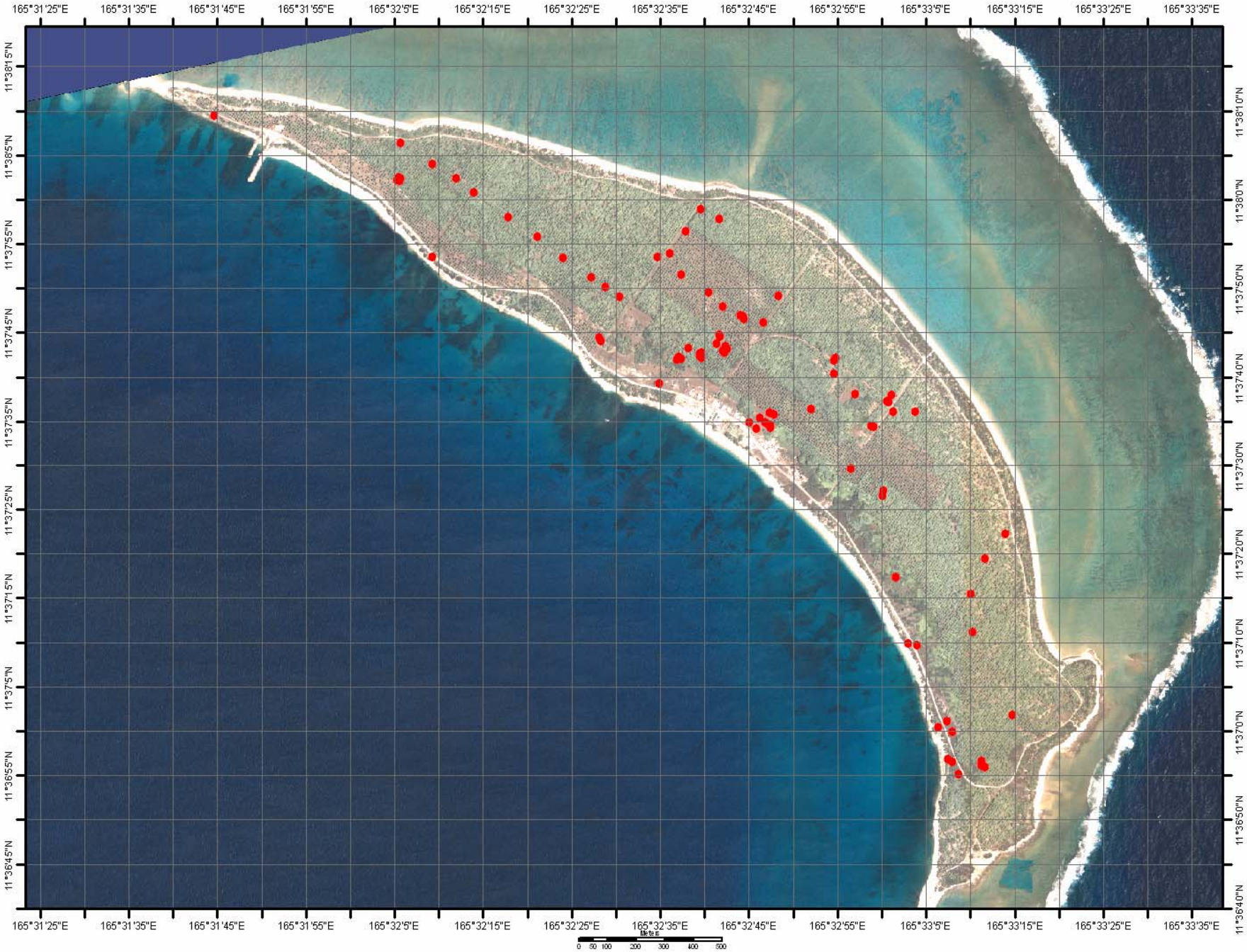
2005 Rongelap Resettlement Support, cont'd



2005 Rongelap Resettlement Support, cont'd



Bikini Sample Trees



Summary

1) **Good support from DOE during FY2005 to go back to the field**

2) **FY2006 effort will be concentrated on four main areas**

   - **Continuation of our individual radiation protection monitoring programs including the development of baseline urinary excretion data for plutonium on Utrik and for the resettled population on Rongelap Island**
   - **<u>Analytical work</u> (carried over from FY2005)**
   - **Rongelap Island resettlement support (‘external dose rate measurements’)**
   - **Outer island sampling on Bikini using a ‘pantry’ sampling approach**

End