LIBBY ASBESTOS SUPERFUND SITE, OPERABLE UNIT 3
DATA SUMMARY REPORT: 2007 TO 2011

FIGURES – Sections 7 to 11

Revision 0 – November 2013

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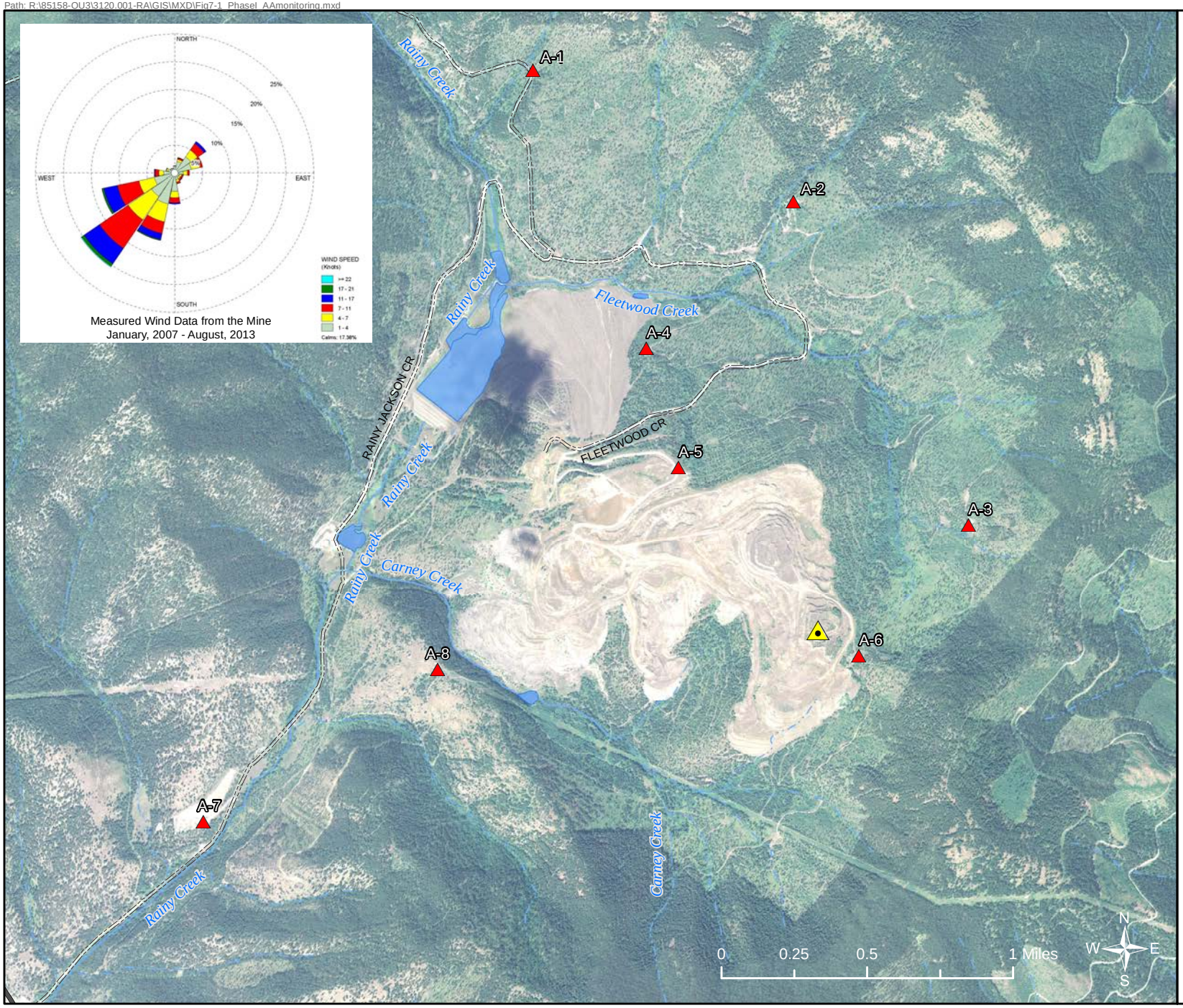

Air Monitoring Location
Meterological Station
County Road
Primary Road
Perennial Stream
Intermittent Stream
Open Water

Figure 7-1
Ambient Air Monitoring Locations, Phase I

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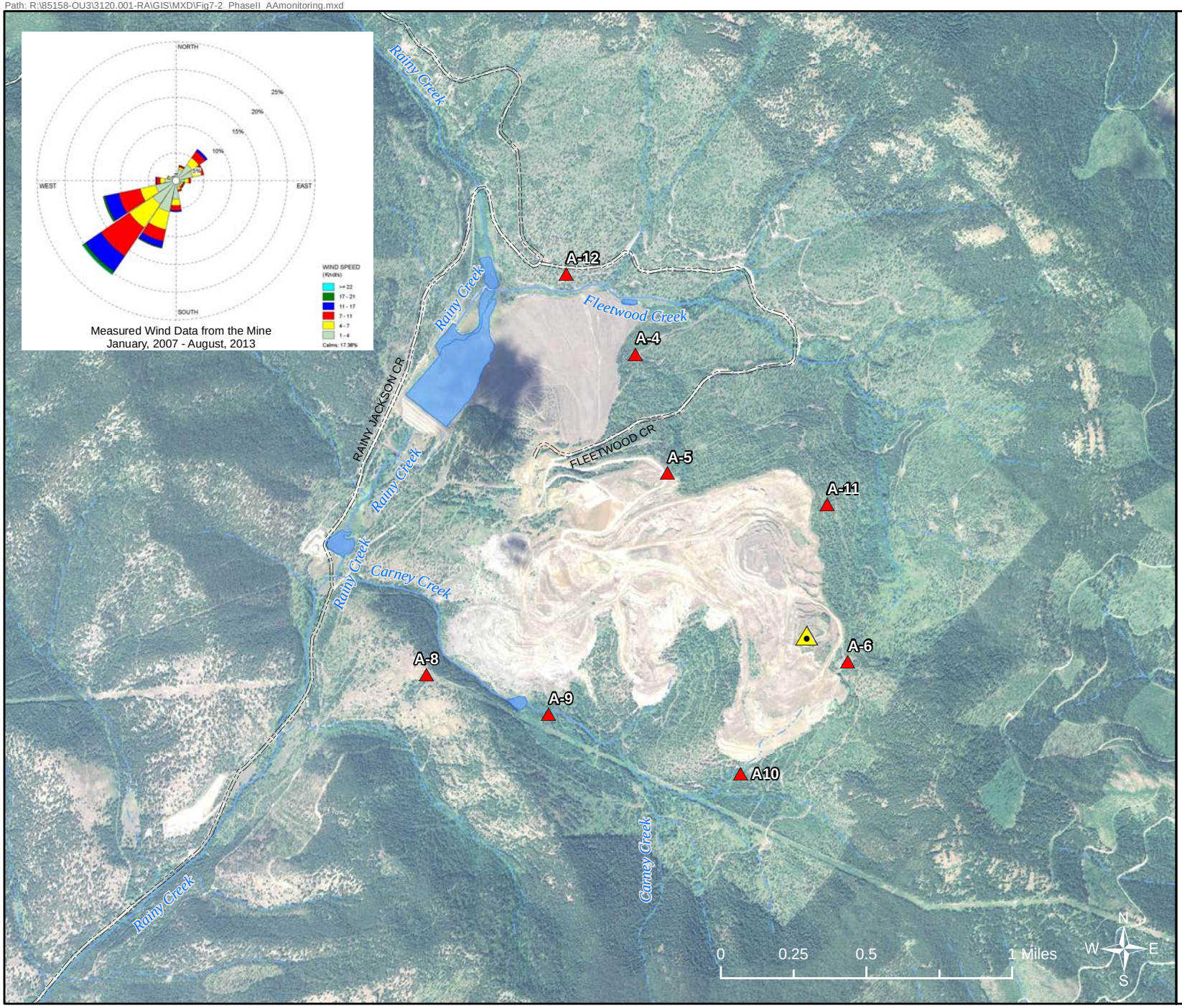

Air Monitoring Location
Meterological Station
County Road
Primary Road
Perennial Stream
Intermittent Stream
Open Water

Figure 7-2
Ambient Air Monitoring Locations, Phase II

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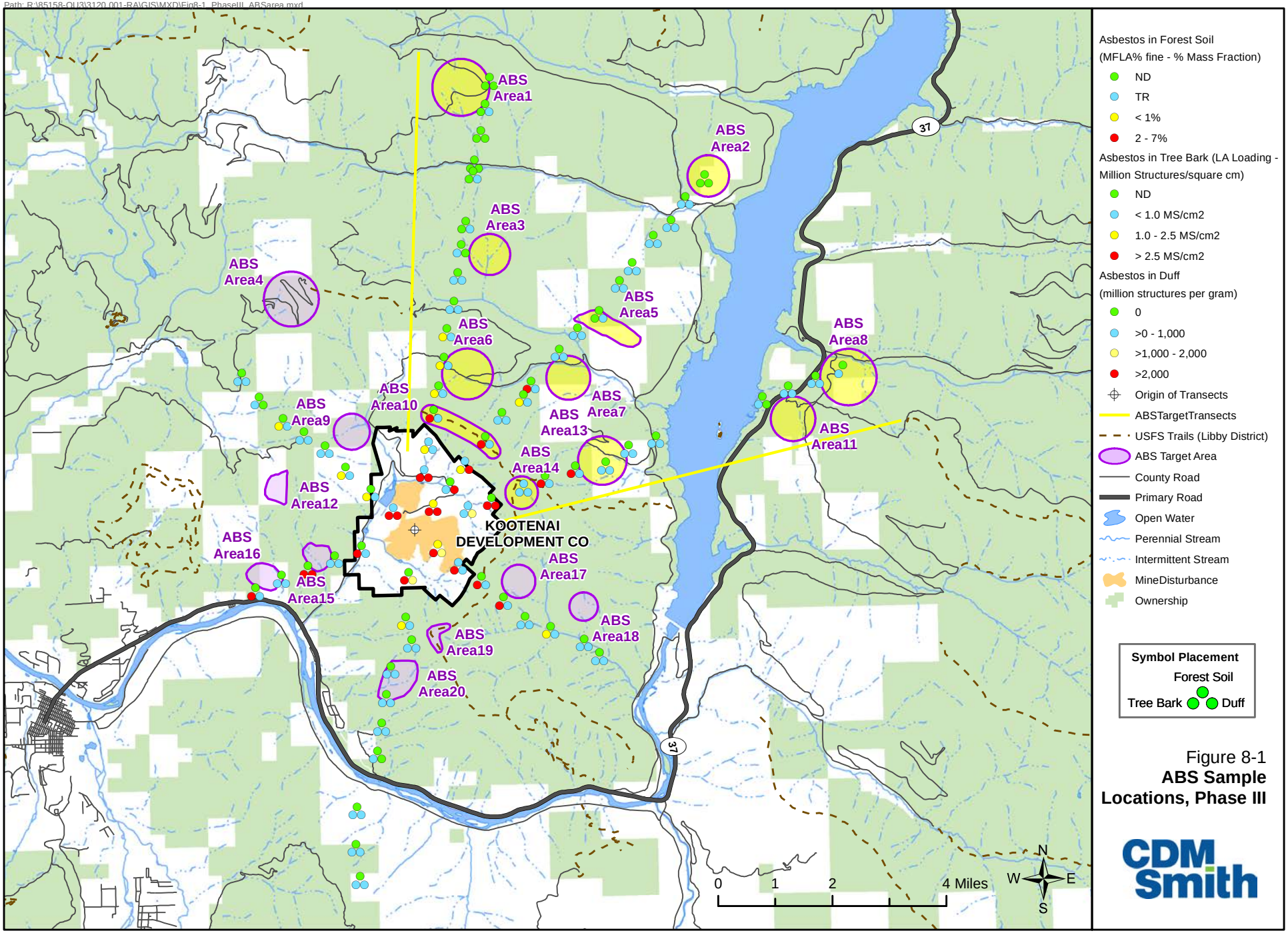

Figure 8-1
ABS Sample Locations, Phase III

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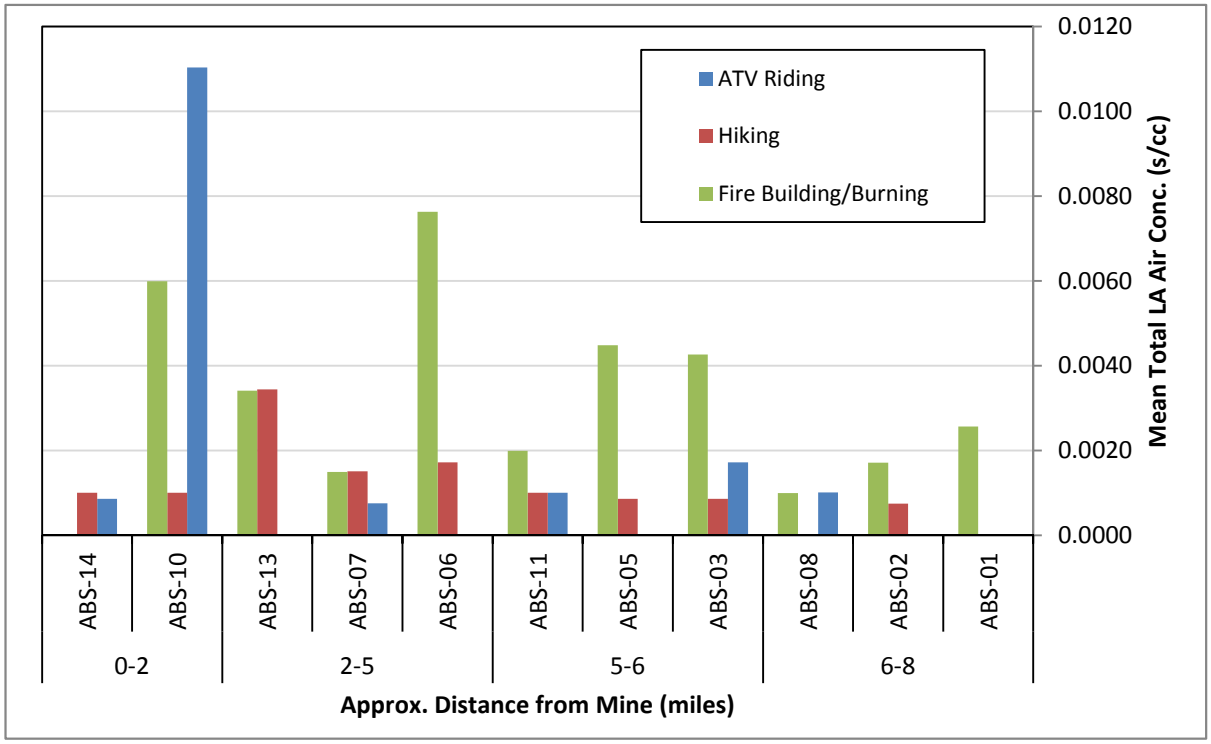
FIGURE 8-2. PHASE III ABS AIR RESULTS



LA = Libby amphibole
s/cc = structure per cubic centimeter
ABS = activity-based sampling

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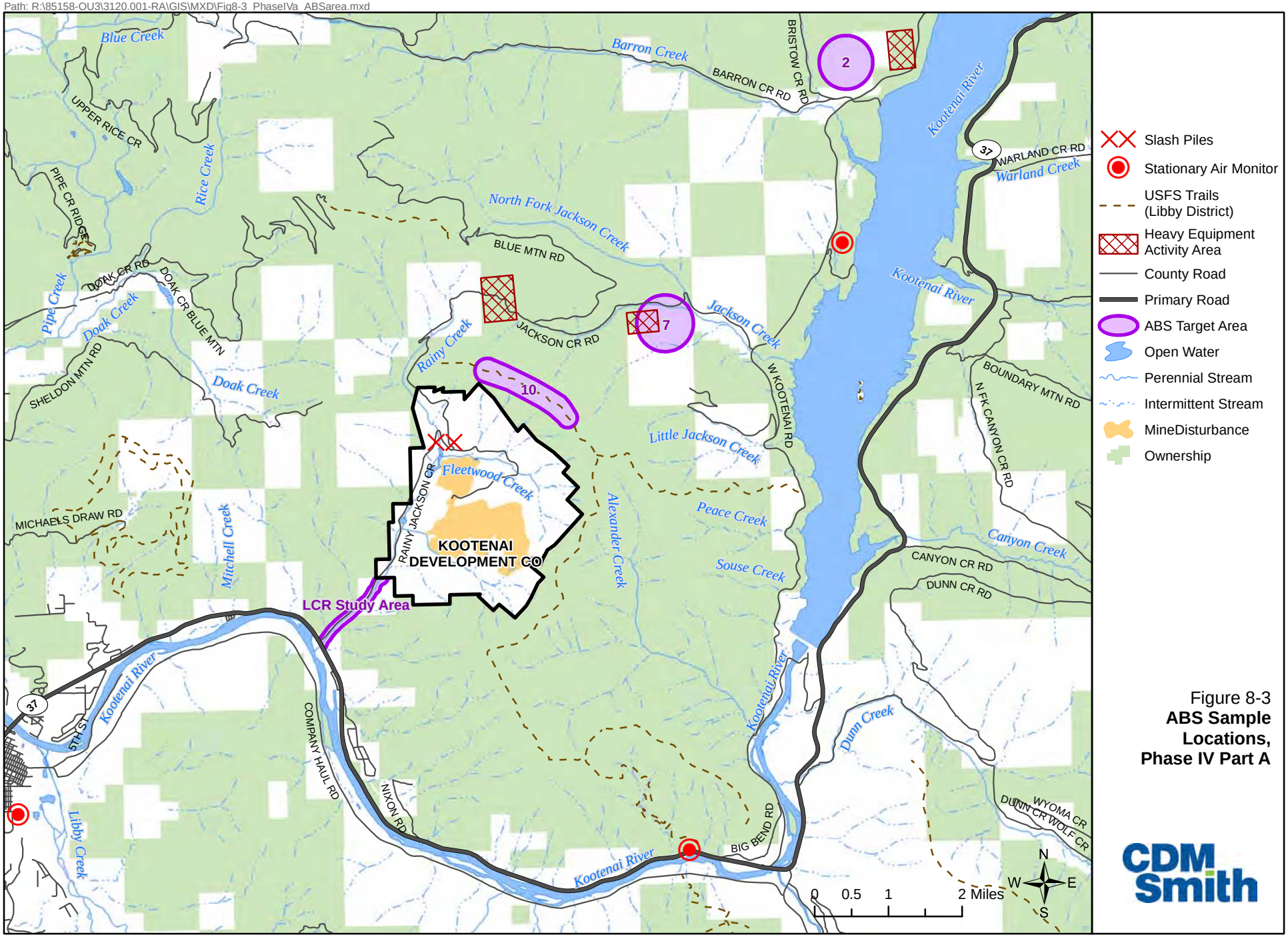

Figure 8-3
ABS Sample Locations, Phase IV Part A

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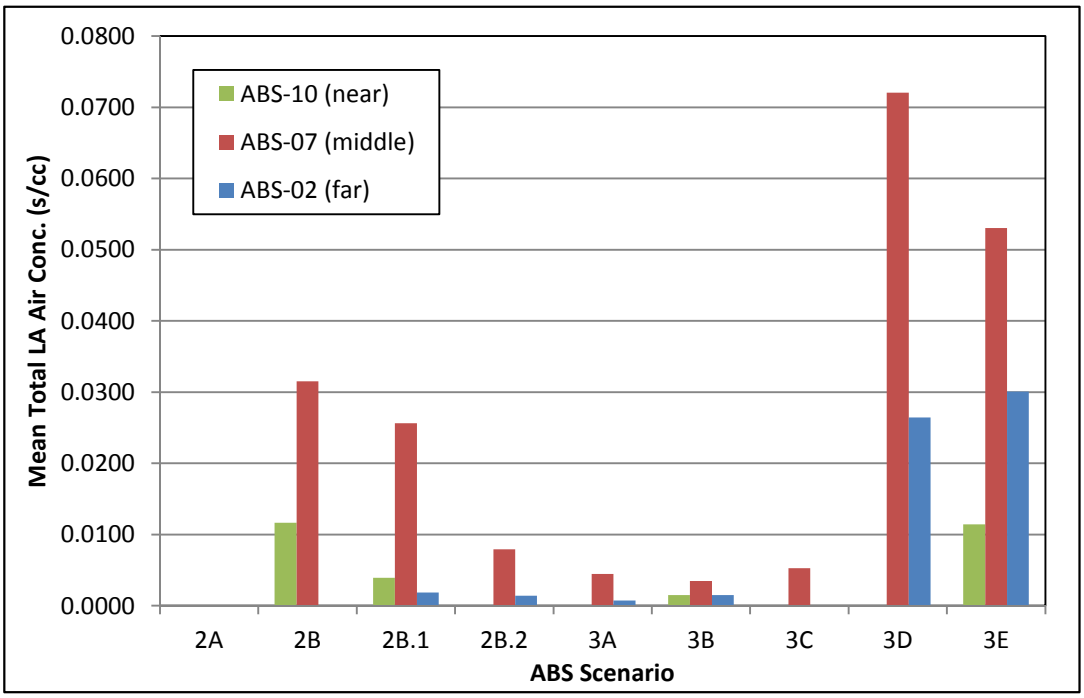
FIGURE 8-4. PHASE IV PART A ABS AIR RESULTS



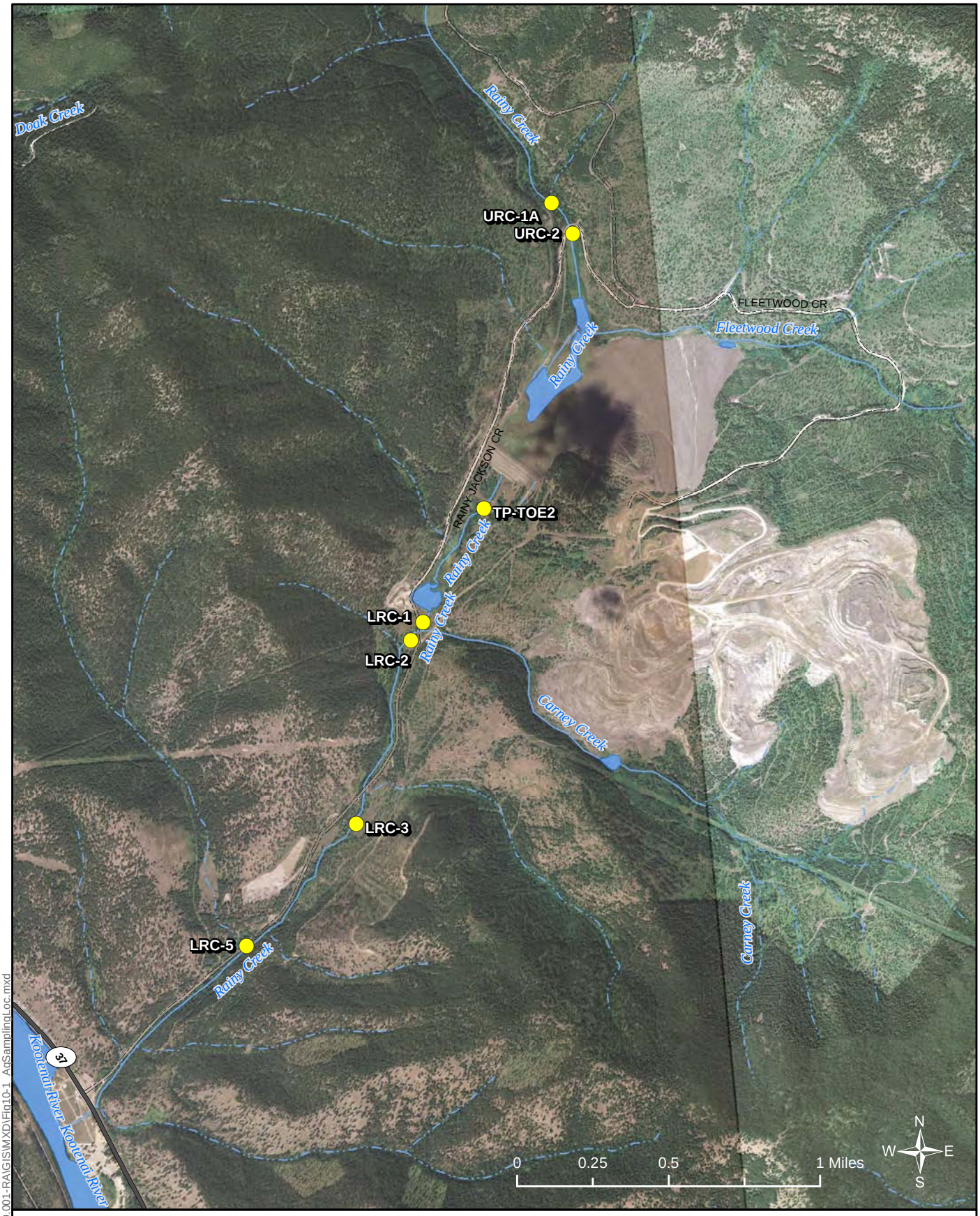
ABS Scenario Description:

2A	Driving to and from harvest area
2B	Cutting and hauling firewood
2B.1	Felling and limbing
2B.2	Cutting and stacking
3A	Trail maintenance
3B	Thinning trees
3C	Stand exam
3D	Cutting firelines by hand
3E	Cutting firelines with heavy equipment

ABS = activity-based sampling

LA = Libby amphibole

s/cc = structures per cubic centimeter



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Aquatic Location
County Road
Primary Road
Perennial Stream
Intermittent Stream
Open Water

Figure 10-1
Aquatic Community Survey Locations, OU3

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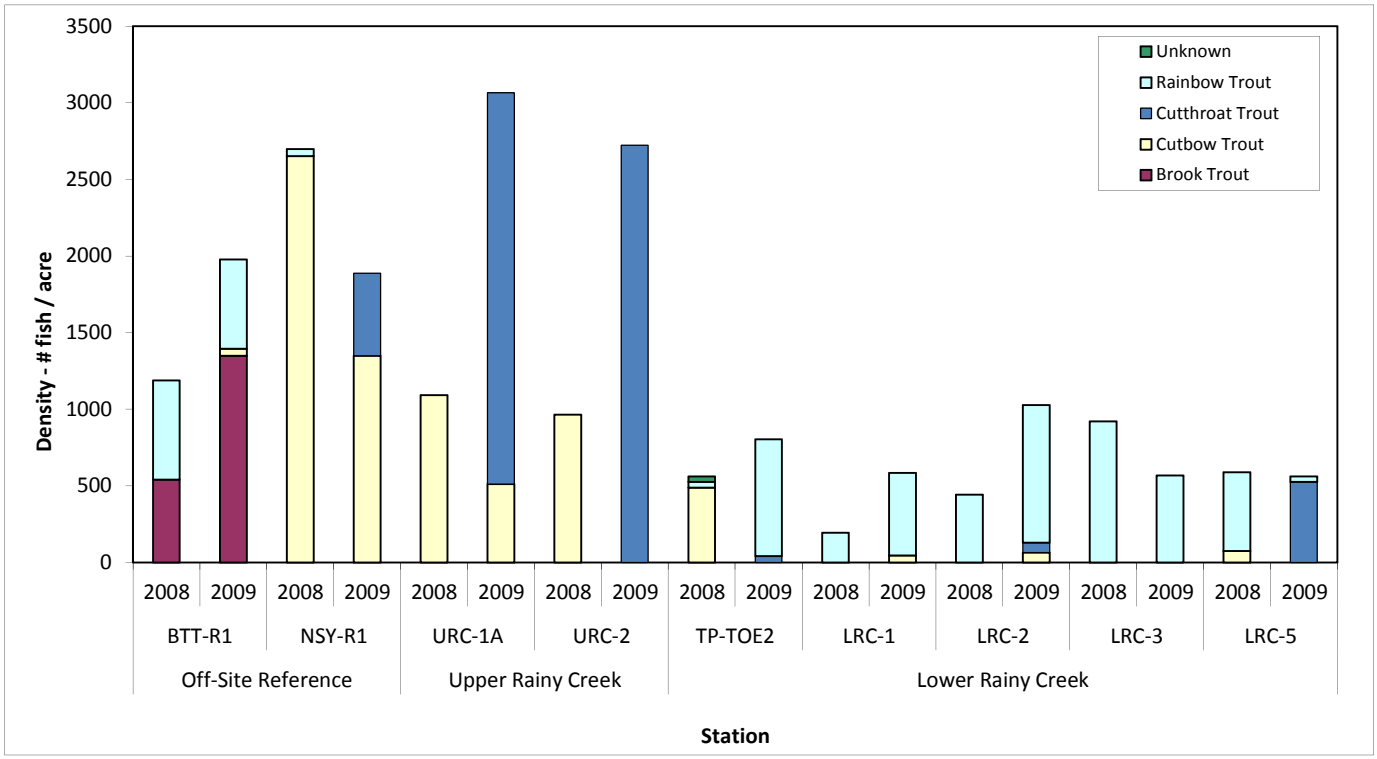
Aquatic Reference Location
County Road
Primary Road
Perennial Stream
Intermittent Stream
Open Water

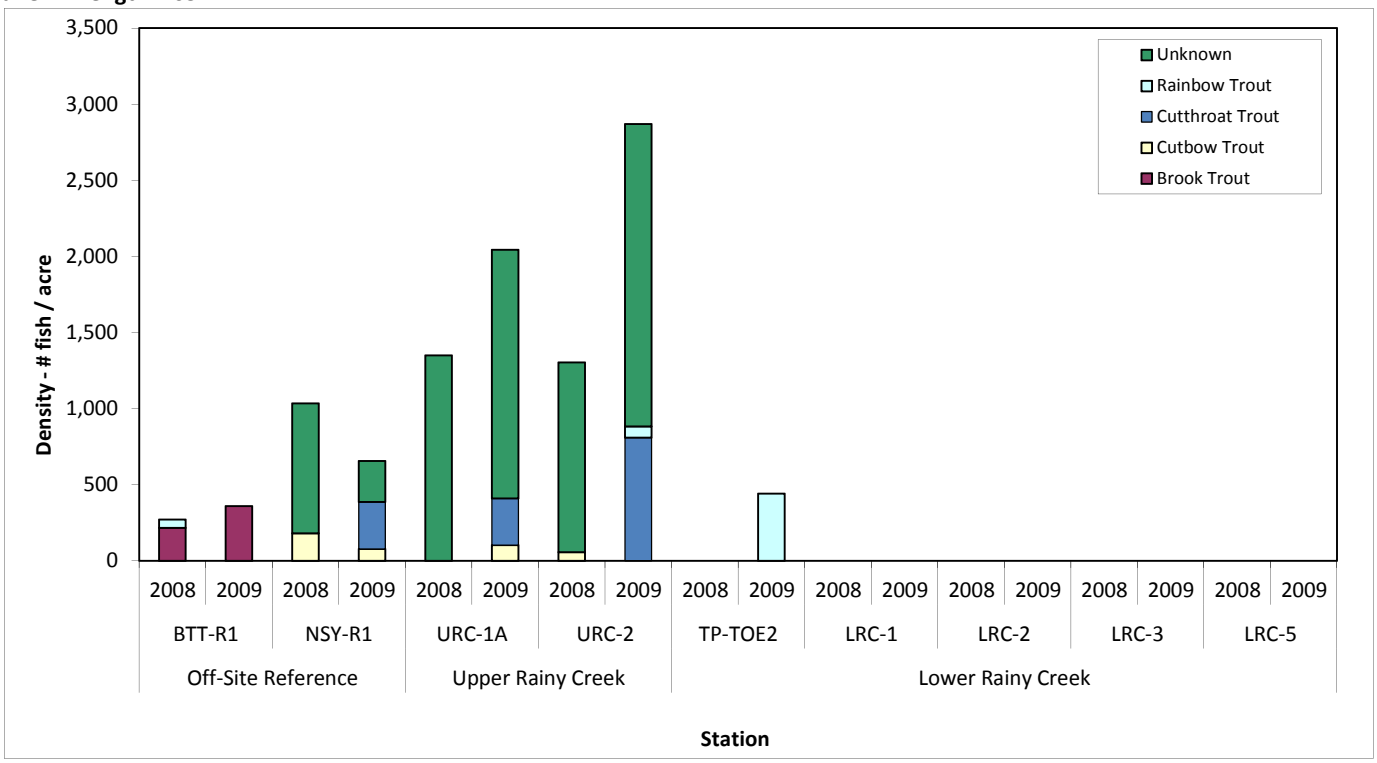
Figure 10-2
Aquatic Community Survey Reference Locations

FIGURE 10-3. SUMMARY OF FISH CAUGHT PER ACRE, OU3

Panel A. Length > 65 mm



Panel B. Length ≤ 65 mm



> = greater than
≤ = less than or equal to
mm = millimeter

FIGURE 10-4. FLOWCHART OF APPROACH FOR RAPID BIOASSESSMENT PROTOCOL (RBP)

Site-Specific Study

Sampling and Analysis

Metric	Biological Condition Scoring Criteria			
	6	4	2	0
1. Taxa Richness (site / reference)	>80%	60-80%	40-60%	<40%
2. Total Density (site / reference)	>80%	60-80%	40-60%	<40%
3. EPT Index (site / reference)	>90%	80-90%	70-80%	<70%
4. Shannon –Weaver Diversity (site / reference)	>85%	70-85%	50-70%	<50%
5. % Ephemeroptera (site / reference)	>50%	35-50%	20-35%	<20%
6. % Tolerant organisms (reference / site)	>80%	60-80%	40-60%	<40%
7. % Contribution of Dominant Taxon	<20%	20-30%	30-40%	>40%
8. % Scrapers (site / reference)	>50%	35-50%	20-35%	<20%
9. % Clingers (site / reference)	>50%	35-50%	20-35%	<20%

BIOASSESSMENT

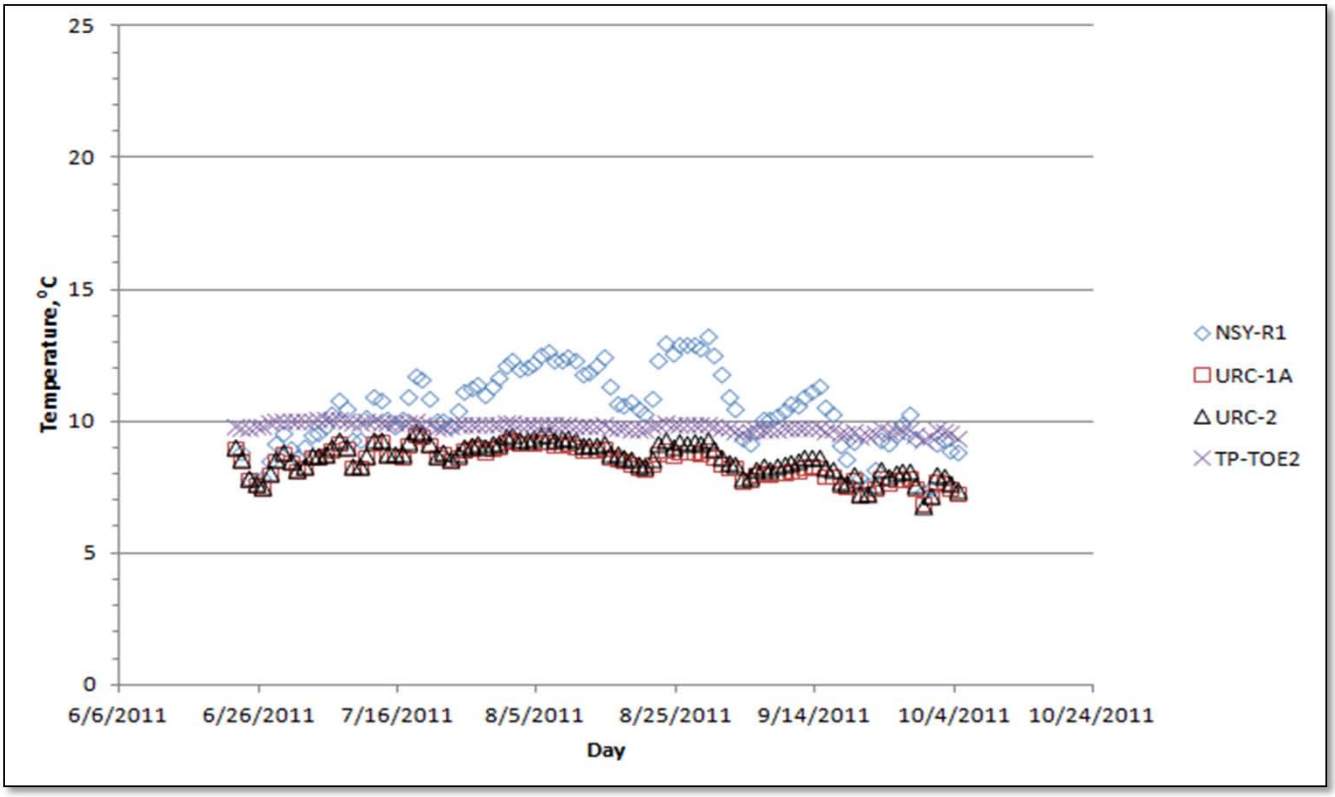
% Comparison to Reference Score	Biological Condition Category	Attributes
>80%	Not impaired	Balanced trophic structure. Optimum community composition and dominance for stream size and habitat quality.
50-79%	Slightly impaired	Community structure less than expected. Composition (species richness) lower than expected due to loss of some intolerant forms. Percent contribution of tolerant forms increases.
20-49%	Moderately impaired	Fewer species due to loss of most sensitive forms. Reduction in EPT index.
<20%	Severely impaired	Few Species present. If high densities of organisms, then dominated by one or two taxa.

% = percent
< = less than
> = greater than
EPT = Ephemeroptera, Plecoptera, Trichoptera

Source: USEPA (1989, 1999)

FIGURE 10-5. STREAM POOL TEMPERATURE MONITORING RESULTS

Panel A: NSY-R1, URC-1A, URC-2 and TP-TOE2



Panel B: BTT-R1, LRC-1, LRC-2, LRC-3, and LRC-5

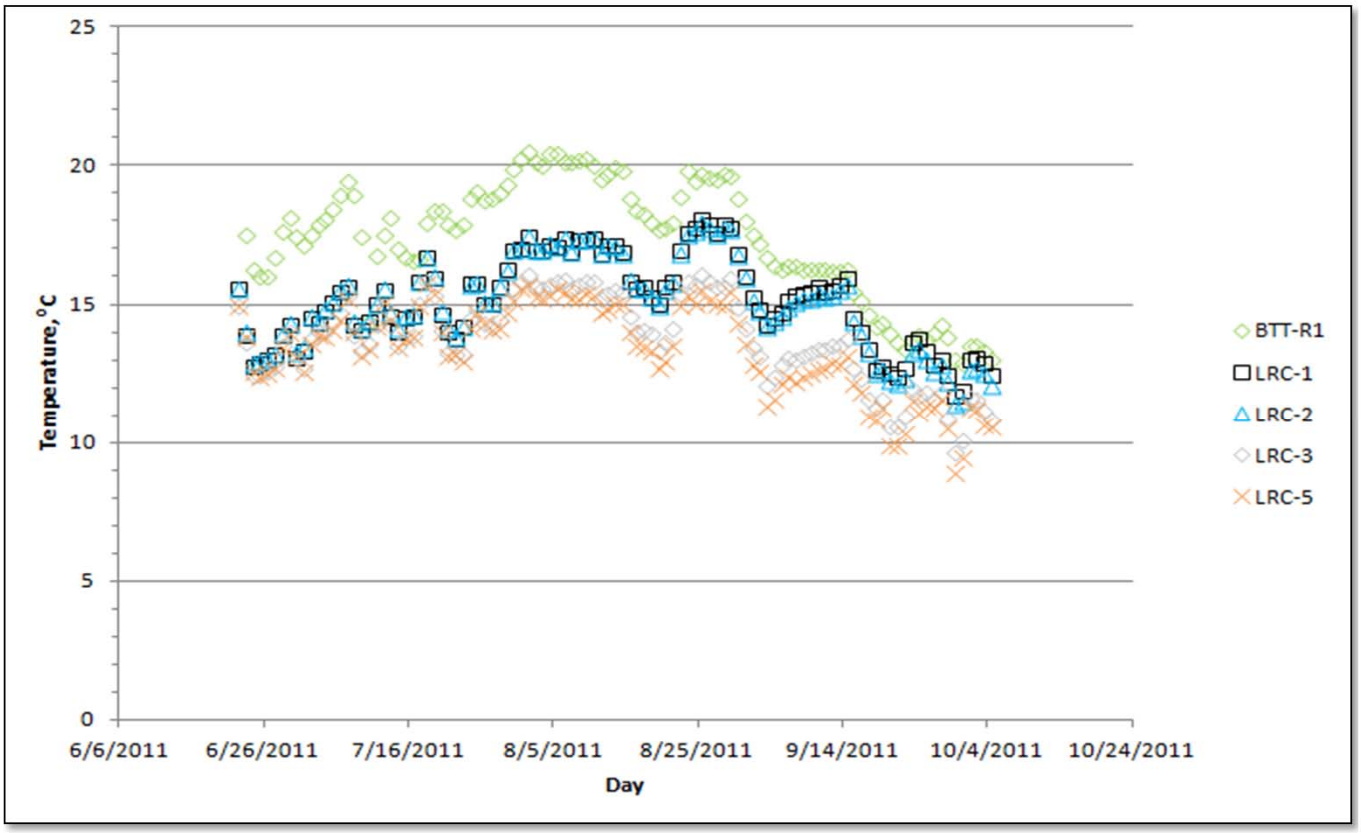
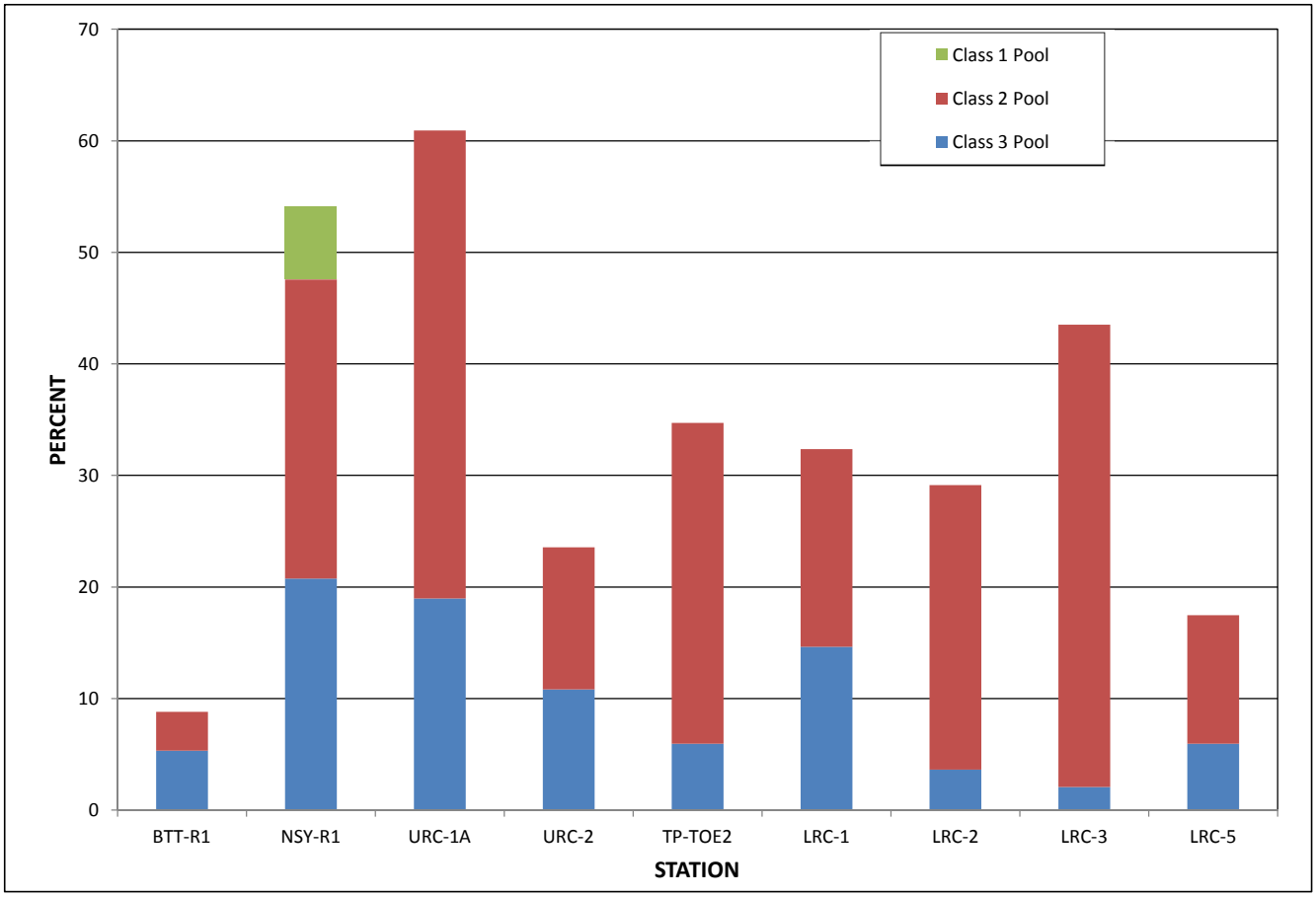
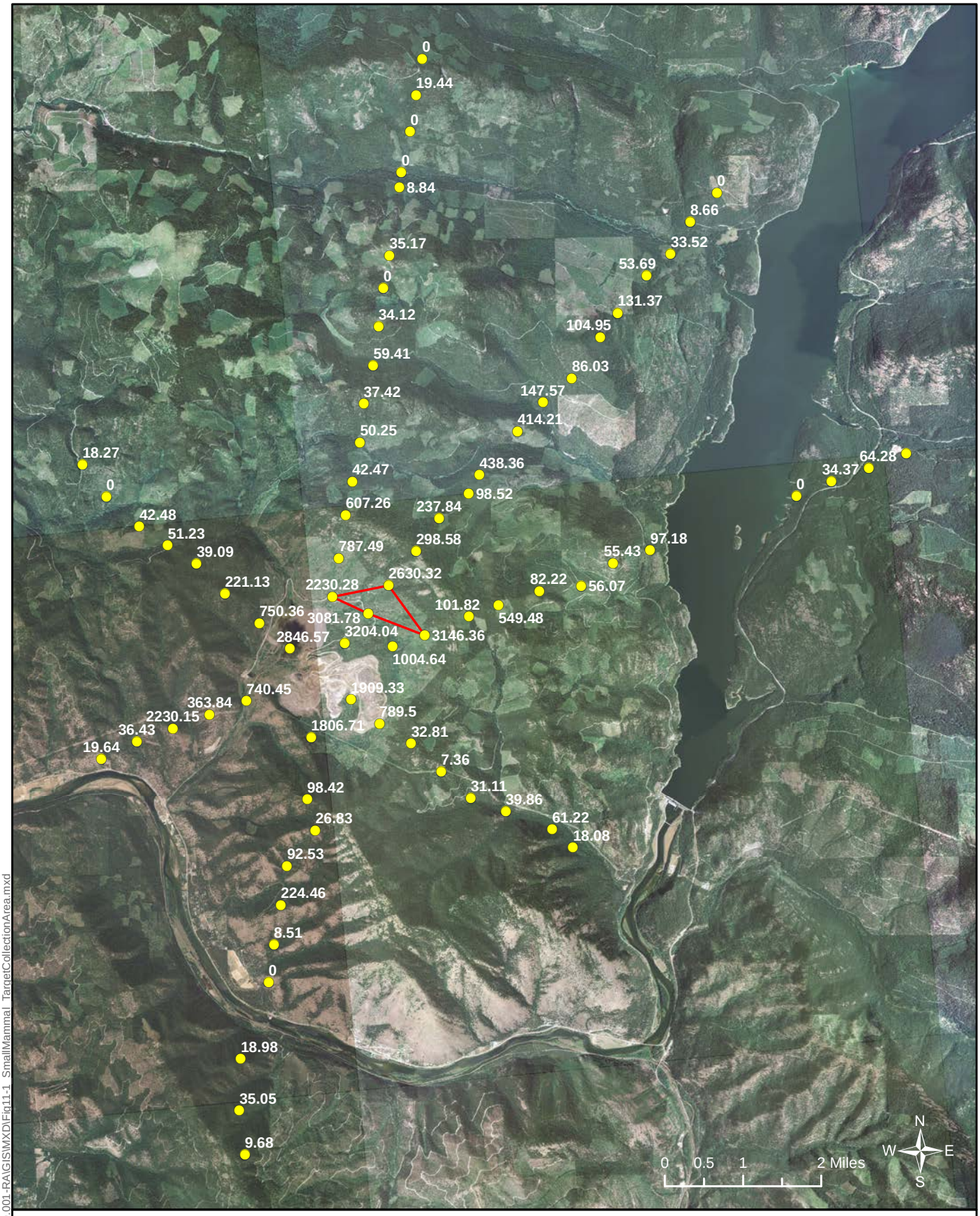


FIGURE 10-6. POOL AREA COVERAGE BY POOL CLASS





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Measured Duff LA Concentration (million structures per gram)

Target Collection Area

Figure 11-1
OU3 Small Mammal Target Collection Area

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Transect Location

Target Collection Area

Figure 11-2
Small Mammal Transect Location for OU3

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Transect Location

Figure 11-3
Small Mammal Transect Locations for the Reference Area