APPENDIX 1: DETAILED DESCRIPTION OF TOAD SEARCH TYPES

There were four classes of amphibian searches conducted during this monitoring effort, each of which is summarized in the main report and described in detail below. Please note that general table and figure references below refer to tables and figures in the main body of the report, while tables A1 and A2 are included below.

Low-Intensity Search

Given the size of BFP, all search blocks could not be searched with sufficient intensity to insure most adults toads were observed, but it was also necessary to search a large area to determine where toads might be dispersing. Thus, low-intensity searches were designed to determine roughly where toads occurred and select sites for subsequent high-intensity searches.

Low-intensity searches were conducted in all delineated search blocks on the BFP (Figure 2) during three separate sessions (Table 1). The first session was conducted prior any 2006 releases to obtain an estimate of over-winter survival from previous years. The second session was conducted during the breeding season to obtain estimates of the potentially breeding population. The final session was conducted late in the summer after wild-born tadpoles (if such existed) were likely to have metamorphosed in order to estimate the population surviving the summer and likely to enter hibernation. It was our goal within each session to search all blocks within 3 days of each other, to minimize migration of toads between blocks and minimize the effects of variable weather conditions.

Searches were standardized by level of effort, which was calibrated such that all blocks could be searched over a three day period. Given that uplands encompassed much more area than wetlands, it was not possible to devote the same level of effort in uplands and remain within the 3-day window. Therefore, two technicians spent approximately 8 minutes per acre in each upland search block and 14 minutes per acre in each wetland search block. All tadpoles, toads and toadlets were counted and additional information was recorded for each adult. By using a stopwatch, time taken to process adult toads was not counted toward the total search effort. Also, searches were only conducted when wind was ≤ 4 on the Beaufort scale (Table A-1) and weather conditions were ≤ 3 on our weather scale (Table A-2).

High-Intensity Search

High-intensity searches were designed, in combination with detectability searches, to determine the relative abundance of all toads and the actual abundance of adults. High-intensity searches occurred within about 3 days of their associated low-intensity searches. Searches were rigorously standardized by level of effort such that two technicians spent about 24 minutes per acre in each upland search block and 42 minutes per acre in each wetland search block. All tadpoles, toads and toadlets were counted and additional information was recorded for each adult (see Methods). By using a stopwatch, time taken to process adult toads was not counted toward the total search effort. Weather conditions were more restrictive than for low-intensity searches, with high-intensity searches only conducted when wind was ≤ 3 on the Beaufort scale (Table A-1) and weather conditions were ≤ 2 on our weather scale (Table A-2).

The available time and budget allowed us to conduct high-intensity searches on 10 blocks, which were selected as follows:

a. Search each block in which an adult toad was found during the low-intensity searches.

b. If more than 10 blocks contained adults, search the 10 blocks with the greatest adult counts during the low-intensity searches.

c. If less than 10 blocks contained adults, add non-adult blocks with the greatest counts of metamorphs during low-intensity searches (to a maximum of 10 total blocks).

If after adding metamorph blocks there still are not 10 blocks for High-intensity searches, add additional non-adult blocks that had the greatest counts of tadpoles during low-intensity searches (to a maximum of 10 total blocks).

Detectability Search

Detectability searches were designed to estimate the detection rate of toads using our standard search methodology, which is critical to estimating the abundance of toads on the BFP. Ideally detectability searches would encompass all possible combinations of life stage and habitat type, but under given circumstances only the following detectability tests were feasible:

1. Metamorphs: Low and high intensity searches were conducted on the first suitable day after a planned release of approximately 200 metamorphs. All search blocks adjacent to the release sites were searched in this way. Timeliness of the detectability tests relative to release dates was important to control for the effects of confounding factors (e.g., dispersal, mortality).

2. Adults: We placed a number of artificial toads in random search blocks on the BFP. Artificial toads were rocks of 3 size classes (small, SVL~20mm; medium, SVL~40mm; and large, SVL~60mm) that were painted to resemble Wyoming toads (Figure 14). Ten of each sized were placed in each of two wetland and upland search blocks prior to scheduled low and high intensity searches. Technicians were not informed when or where artificial toads were placed and did not know how many were placed. They where instructed to count artificial toads as if they were real toads.

Shoreline (Egg Mass) Search

Shoreline searches were designed to document breeding on BFP by identifying naturally occurring egg masses. Three times during the suspected breeding season we searched the entire shoreline of all wetland areas on BFP specifically looking for amphibian egg masses.

Appendix 1 Tables and Figures

Table A-1: Beaufort Wind Scale

Scale (force)	Wind (MPH)	WMO Class	Effect on Water	Effect on Land
0	under 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1 - 3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4 - 7	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	8 - 12	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	19-24	Fresh Breeze	Moderate waves 4-8 ft taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	32-38	Near Gale	Sea heaps up, waves 13-20 ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Moderately high (13-20 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Whole trees in motion, resistance felt walking against wind
9	47-54	Strong Gale	High waves (20 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Very high waves (20-30 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	64-72	Violent Storm	Exceptionally high (30-45 ft) waves, foam patches cover sea, visibility more reduced	NA
12	73 and over	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced	NA

Table A-2: Sky Cover / Weather Scale

Scale	Condition
0	0-15% cloud cover
1	16-50% cloud cover
2	51-75% cloud cover
3	76-100% cloud cover
4	fog
5	drizzle
6	light rain
7	heavy rain

APPENDIX 2: IDENTIFICATION PHOTOGRAPHS OF ADULT TOADS