

**Draft: Deep Lake, Adams County,  
2,4-D Concentration Monitoring Summary, 2013**

**29 November 2013**

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Deep Lake has an area of 33 acres, and a maximum depth of 49 feet. On 5 June 2013 the lake was treated with a liquid formulation of 2,4-D to control hybrid milfoil (*Myriophyllum spicatum* x *Myriophyllum sibiricum*). The 2,4-D was applied lake wide at 0.30 mg/L (300 ug/L) acid equivalent (ae). The Treatment Record reported the water temperature was 61°F (16.1°C), and the wind was 0 to 5 mph from the west at the time of treatment. The wind was reported to be 7 mph from the east, southeast at Volk, WI by [www.wunderground.com](http://www.wunderground.com).

Water sample sites were established at four locations to monitor 2,4-D dissipation and degradation (Figure 1). Water samples were collected at shallow sites using an integrated water sampler which collects a water samples from the entire water column. Sample site De1 was located in the deepest portion of the lake and was sampled at 0-10, 15, 20, 25, 30, 40, and 50 feet deep using a van dorn water sampler. Water samples were collected at intervals of approximately 0.25 1, 2, 3, 5, 8, 10, 14, 21, 28, and 35 days after treatment (DAT). Samples were taken to shore after completion of each sample interval, and 3 drops of muriatic acid were added to each sample bottle to fix the herbicide and prevent degradation. Samples were then stored in a refrigerator, until shipped to the US Army Engineer Research and Development Center (ERDC) laboratory in Gainesville, FL for analysis of 2,4-D.

Concentrations of 2,4-D in samples collected from site De1, 0 to 8 DAT, ranged from 308 to 680 ug/L ae at 0-10 feet deep, 51 to 218 ug/L ae at 15 feet and 17 to 115 ug/L ae at 20 feet (Figure 2). The lake appeared to be stratified at about 15 feet deep.

Concentrations of 2,4-D in samples collected from all sites, 0-10 feet, ranged from 308 to 814 ug/L ae at 0 to 8 DAT, compared to the lake wide target concentration of 300 ug/L ae (Figure 3). Concentrations of 2,4-D in samples collected from all sites, 0-10 feet, ranged from 358 to 400 ug/L ae at 35 DAT compared to the irrigation standard, 100 ug/L ae.

The mean concentration in samples collected from all sites, 0-10 feet deep and 0 to DAT, ranged from 357 to 649 ug/L ae compared to the lake wide target concentration of 300 ug/L ae (Figure 4). The mean observed lake wide concentration, from 0 to 8 DAT was 455 ug/L ae. The mean lake wide concentration at 35 DAT was 375 ug/L ae compared to the lake wide target concentration of 300 ug/L ae and the irrigation standard of 100 ug/L.

The initial concentrations of 2,4-D collected from 0 to 8 DAT were higher than the lake wide target concentration and may have resulted from an incorrect stratification depth used to calculate the amount of herbicide required. Based on the herbicide concentration data very little degradation appeared to occur between 8 and 35 DAT.

Figure 1. Deep Lake 2,4-D Treatment Areas 2013



Figure 2

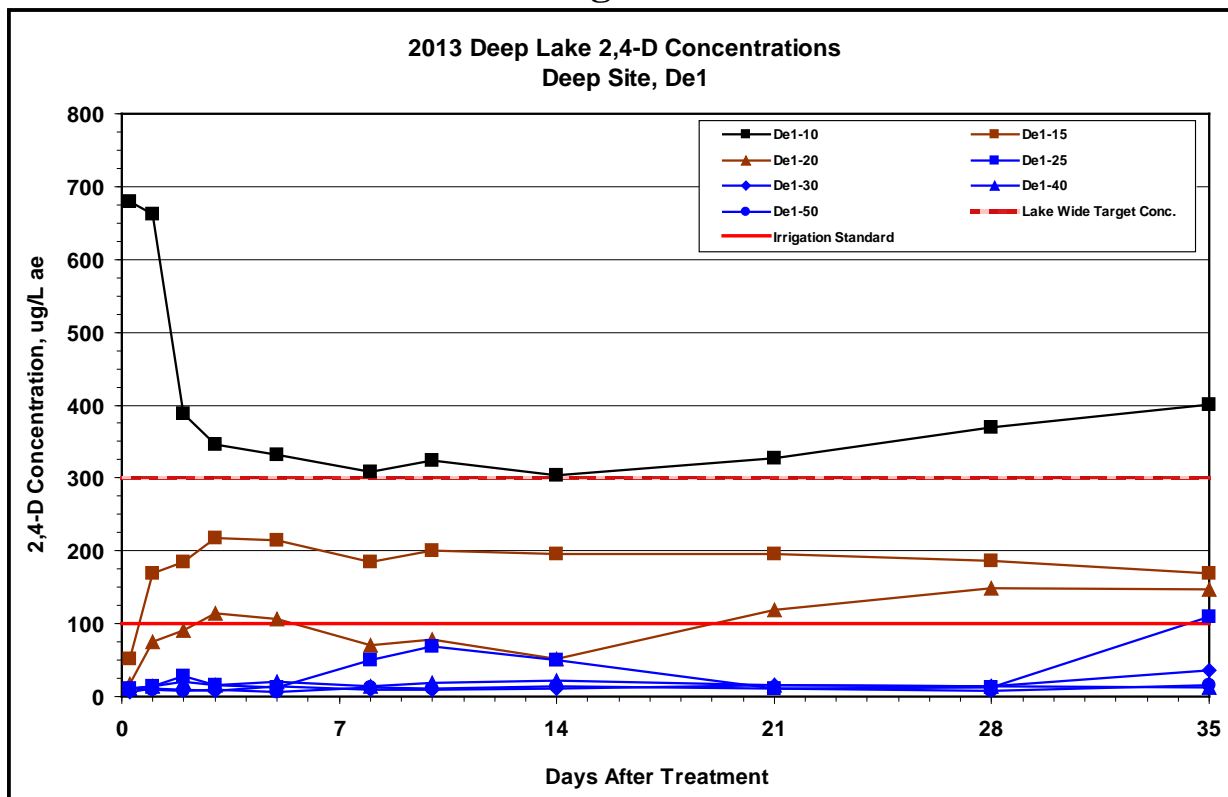
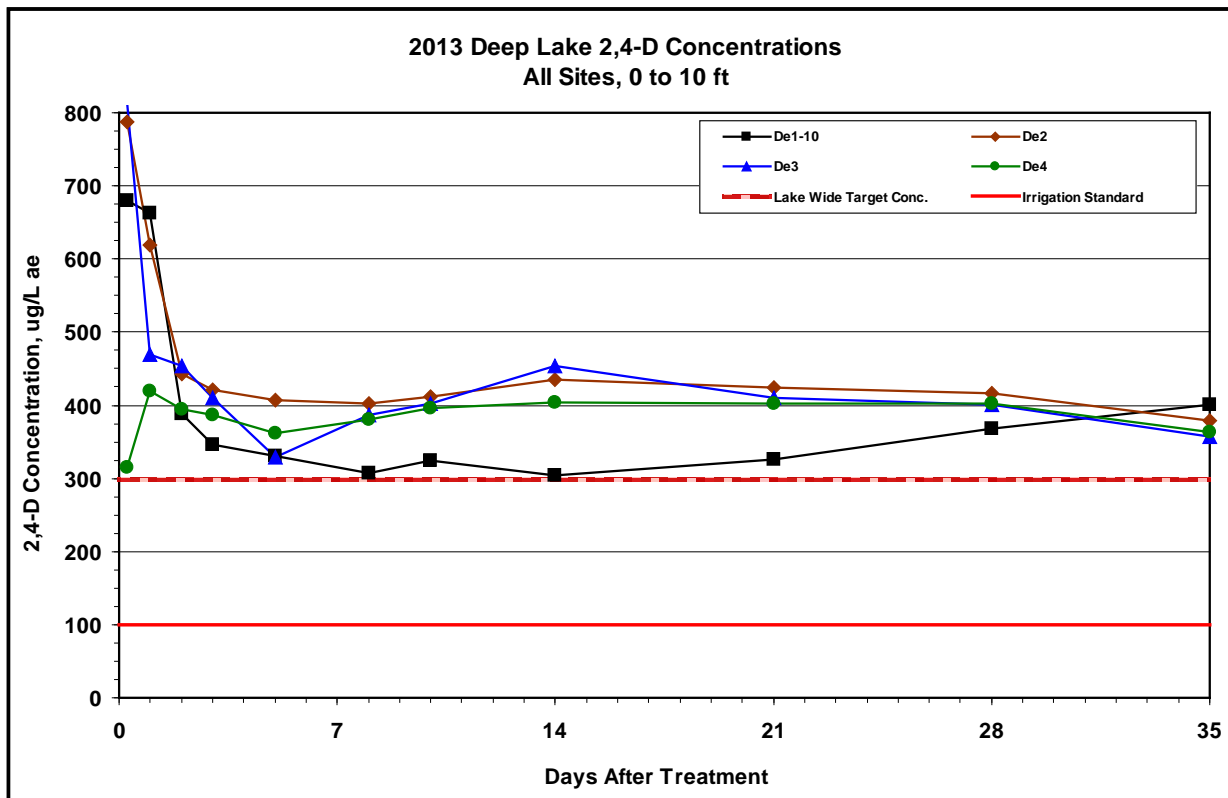


Figure 3



### Figure 4

