

## Introduction

The purpose of this report is to complete additional analysis of effects for Alternative 3 of the *North Zone Integrated Weed Management Plan Environmental Assessment*. Alternative 3 is different from Alternative 2 only with regard to the following items:

- 1) a higher application rate for glyphosate, imazapyr and metsulfuron methyl (Table 1), using the initial analysis completed by Rick Turner (2018) as the basis to evaluate whether effects would differ. There is no change in the application rate to aminopyralid and therefore no additional analysis.
- 2) herbicide would be allowed below the mean high tide line, however, this will not be included in this report as the change has no bearing on the effects to rare or sensitive plants
- 3) no buffer for broadcast spray to water's edge will not be included in this report as the change has no bearing on the effects to rare or sensitive plants

Table 1: Application rates for the proposed herbicides

<b>Herbicide</b>	<b>Range (lbs a.e./acre)</b>
glyphosate	0.5 – 8.0 (2.0 typical)
imazapyr	0.03 – 1.5 (0.45 typical)
aminopyralid	0.047 – 0.11 (0.078 typical)
metsulfuron methyl	0.0125 – 0.15 (0.03 typical)

Under the proposed alternative, all tools would be available as permitted by the label (the law) for the most effective treatment of invasive plants on within the North Zone planning area. Treatment priorities are determined by Land Use Designation (LUD) management direction (e.g. wilderness or research natural area compared to a development LUD), the invasiveness of the species, and the ability to successfully control the infestation given available resources.

## Existing Condition

Roughly 1,412 gross canopy acres have been inventoried within the planning area. There are two aspects of these 1,412 acres to keep in mind regarding the existing condition of our data:

1. The data set used is only an estimate. Inventory work is largely completed every 0.25 miles along the road corridor and at borrow pits/marine access facilities. This data was then represented spatially as a polygon based on the rough acreage every quarter mile; therefore, the data gives reasonable presence/absence data but does not provide the invasive infestation acreage between sample points. There is additional inventory information at developed or dispersed recreation sites; however, this data set is not complete. Lastly, this data contains other inventory work over the past two decades that maps an entire infestation as a polygon.
2. Gross acres is defined as the entire area delimited by the extent of the plant species regardless of the percent cover, as opposed to canopy acres which is calculated based on the area of actual plant cover within the aerial extent (Figure 1). Using the average percent cover available for invasive inventory (a crude calculation), the total canopy acreage within the project area is roughly 42.4 acres.

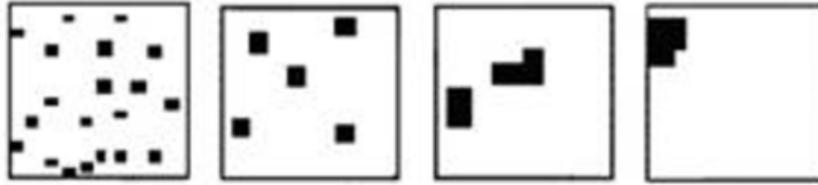


Figure 1. Outside boundary is considered the gross acreage whereas the black squares within the box are considered the canopy acres. In this example, with a 1 gross acre mapped (the square), and 5 percent cover (the black squares), the canopy acres equals 0.05 acre.

### Alternative 3

With regard to the application rate of the four proposed herbicides selected for analysis, the biology of the target plant coupled with the timing of treatment and the application method will help determine the most effective treatment. Low to typical rates (Table 1) would be utilized in the majority of the current treatment conditions: Prior to flower, the typical rate of aminopyralid for treating hawkweed (*Hieracium* sp) and other composites is appropriate. The application rate for reed canarygrass is typically 2 lbs a.e./acre in all settings.

The higher rates commonly utilized to treat composites after they flower (aminopyralid 0.11 lbs a.e./acre) and foliar spray of knotweed (2% or 3.9 lbs a.e./acre glyphosate) follow the recommended rates listed on the label. The recommended label application rate of imazapyr for a horticultural variety of reed canarygrass – ribbongrass, and yellow flag iris, is 1 lb a.e./acre.

The only currently known use for the high rate of glyphosate (up to 8 lbs a.e./acre) would be for stem injection of large patches of knotweed in settings where community members do not approve of spray.

### Direct, Indirect and Cumulative Effects

The direct effect of allowing for the range of application rates is a more effective and site-specific approach to controlling invasive plants. The ability to treat below mean high tide line (in partnership with the State of Alaska) has the direct effect of working to control invasive plants that occur below the mean high tide line that have an impact on the tideland ecosystem, including estuaries. Lastly, the direct effect of removing the 100' buffer to water's edge allows for efficient herbicide application in those settings where broadcast spray is the appropriate tool.

The indirect effect of Alternative 3 should result in greater capacity to prevent the further spread into a natural setting and restore native plant communities. The cumulative effect is similar, with the potential for greater capacity to treat and therefore control invasive plant infestations.

### Conclusions

The goal of the *North Zone Integrated Weed Management* project is to move the area toward the desired future condition where “viable populations of native and desired non-native species and their habitat are maintained and are not threatened by invasive species...” (USDA Forest Service 2008 p. 2-1). The most effective site-specific treatment prescriptions are the tool to control and eradicate invasive plants, as well as implement the Early Detection Rapid Response strategy.

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