

## **APPENDIX S: Economic Assumptions**

Assumptions used in the calculation of present value of costs for invasive plant treatments on the Forest and Scenic Area. Assumptions prepared by Malcolm Hamilton, Forest Recreation Program Manager, December 2005.

### **No Action Alternative**

No Action treatment acres are based on actual treatments in fiscal year 2003:

- 450 acres of herbicide treatments (Forest); 150 acres of herbicide treatment (Scenic Area)
- 100 acres of manual treatments (Forest); 25 acres of manual treatment (Scenic Area)
- 10 acres of mechanical treatment (Forest); 500 acres of mechanical treatment (Scenic Area).

With two exceptions, all areas are treated once per year for one year. The exceptions are the Sandy River Delta and the utility corridor under the Big Eddy-Ostrander powerline. About 130 acres of the Sandy River Delta are treated each year. Treatment consists of three separate applications of herbicide. The powerline corridor site is sprayed with herbicide two times each year.

To provide an equal timeframe for comparison to the two action alternatives, the No Action Alternative treatments were analyzed over a five year time horizon.

### **Proposed Action and Reduced Herbicide Alternatives**

- Priority 1 and 2 sites with site objectives of eradicate and contain would receive the most intense treatments. Except as noted below, herbicide treatments would be applied three times per year for the first three years.
- Picloram and Clopyralid would only be used one time per year at any site regardless of the prescription, priority or treatment strategies.
- Triclopyr would be limited to hand/selective application techniques only (spot or backpack spray, wiping, basal bark, cut stump, injection).
- Where broadcast herbicides applications methods (e.g., boom spraying) is the preferred treatment method, it would be done only one time and only during the first year of treatment. Subsequent herbicide treatments would employ some method of hand/selective application. The cost of backpack spraying was used for subsequent herbicide treatments.
- All priority 1 and 2 sites would have active restoration, regardless of the treatment strategy.
- Priority 3, 4, and 5 sites would be treated only once per year with herbicides.

- Active restoration would begin when all herbicide treatments are complete.
- Some inventoried sites have multiple invasive plant species. The Proposed Action and the Restricted Herbicide Use Alternative both prescribe a suite of herbicides because of differential effects on the various plant species. Only one herbicide per site is analyzed, however. For upland treatment sites, the first herbicides listed in the inventory database for the site was used. For aquatic influence areas, the cost of aqueous glyphosate (Rodeo) is used.
- The present value of costs for each of the alternatives includes proposed treatment areas only. The cost of the early detection / rapid response strategy (EDRR) is not included.
- None of the treatments would be expected to be 100 percent effective in the early stages. For the purpose of cost analysis only, it is assumed that each year’s regime of vegetative treatments would be 80 percent effective in the Proposed Action and 60 percent effective in the Restricted Use Herbicide Alternative.
- Restoration would occur on 50 percent of upland treatment areas, and 95 percent of aquatic influence areas corresponding to Forest Plan standards for vegetative ground cover.
- Analysis for the Proposed Action (rows of data and statistics in Table 3-10) assumes five years of integrated treatments for every acre of inventoried invasive plants as described above. Treatment acres in years 2 through 5 are reduced by 80 percent per year, as shown in the table below, to simulate the effectiveness of treatment. Treatment of any given acre is assumed to be accomplished at the end of year 5. Because each area is treated for five years, the number of “new” acres treated in years 2 through N is reduced by 80 percent in order to maintain a fixed budget for each treatment regime. The table below demonstrates these assumptions for a hypothetical treatment regime of 1000 acres treated each year. In order to maintain a steady budget of 1000 acres of annual treatment, only 800 new, previously untreated acres are treated in years 2 through N.

Treatment Year											
1	2	3	4	5	6	7	N	N+1	N+2	N+3	N+4
1000	200	40	8	1.6							
	800	160	32	6.4	1.6						
		800	160	32	6.4	1.6					
			800	160	32	6.4	1.6				
				800	160	32	6.4	1.6			
					800	160	32	6.4	1.6		
						800	160	32	6.4	1.6	
							800	160	32	6.4	1.6
1000	1000	1000	1000	1000	1000	1000	1000	200	40	8	1.6

- Analysis for the Restricted Herbicide Use alternative (rows of data and statistics in Table 3-11) assumes five years of integrated treatments for every acre of inventoried invasive plants as described above. Treatment acres in years 2 through 5 are reduced by 60 percent per year, as shown in the table below, to simulate the effectiveness of treatment. Treatment of any given acre is assumed to be accomplished at the end of year 5. Because each area is treated for five years, the number of “new” acres treated in years 2 through N is reduced by 60 percent in order to maintain a fixed budget for each treatment regime. The table below demonstrates these assumptions for a hypothetical treatment regime of 1000 acres treated each year. In order to maintain a steady budget of 1000 acres of annual treatment, only 600 new, previously untreated acres are treated in years 2 through N.

Treatment Year											
1	2	3	4	5	6	7	N	N+1	N+2	N+3	N+4
1000	400	160	64	26							
	600	240	96	38	26						
		600	240	96	38	26					
			600	240	96	38	26				
				600	240	96	38	26			
					600	240	96	38	26		
						600	240	96	38	26	
							600	240	96	38	26
1000	1000	1000	1000	1000	1000	1000	1000	400	160	64	26