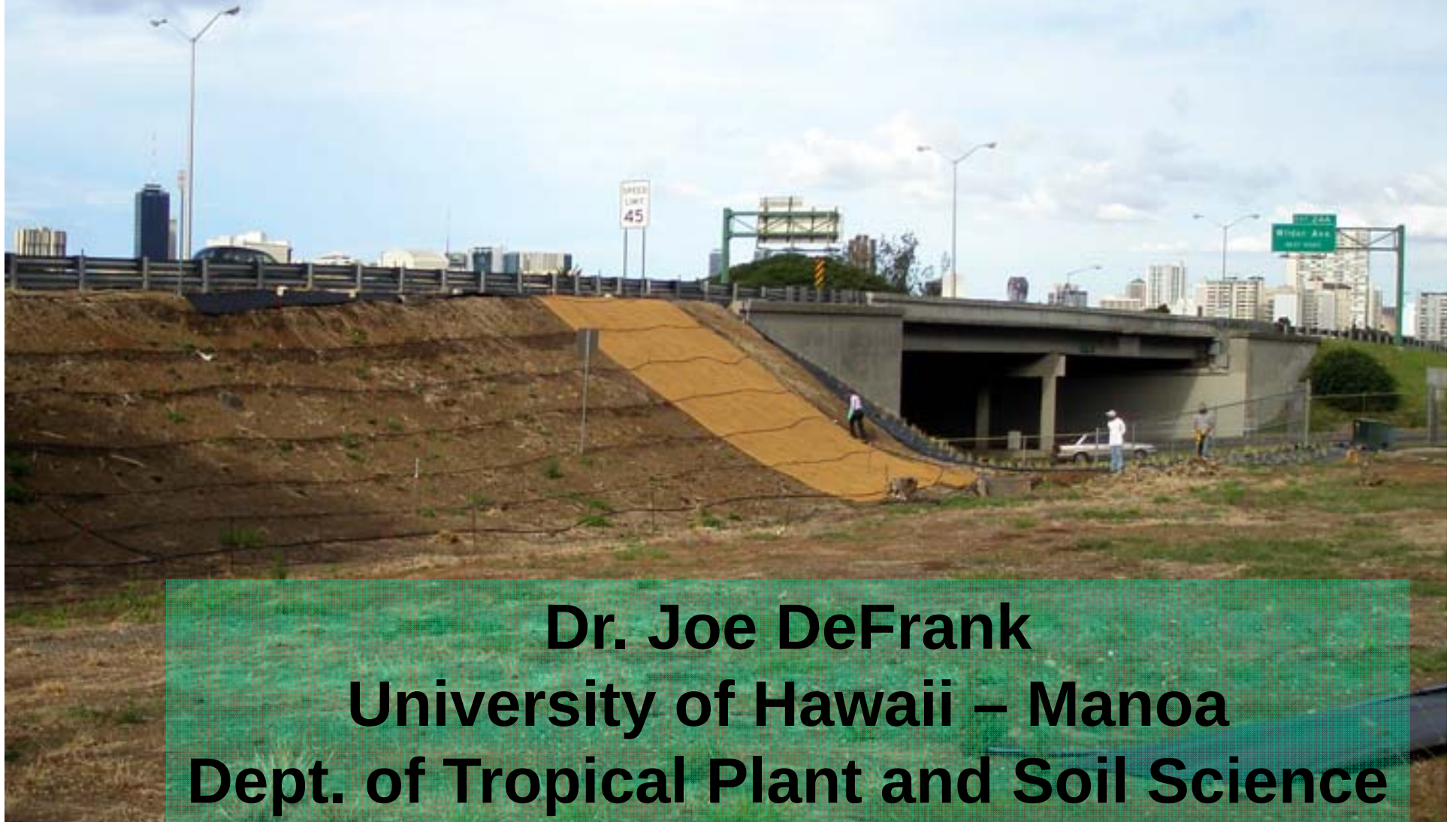


Site preparation for Native Hawaiian Plants On Hawaii's Roadways



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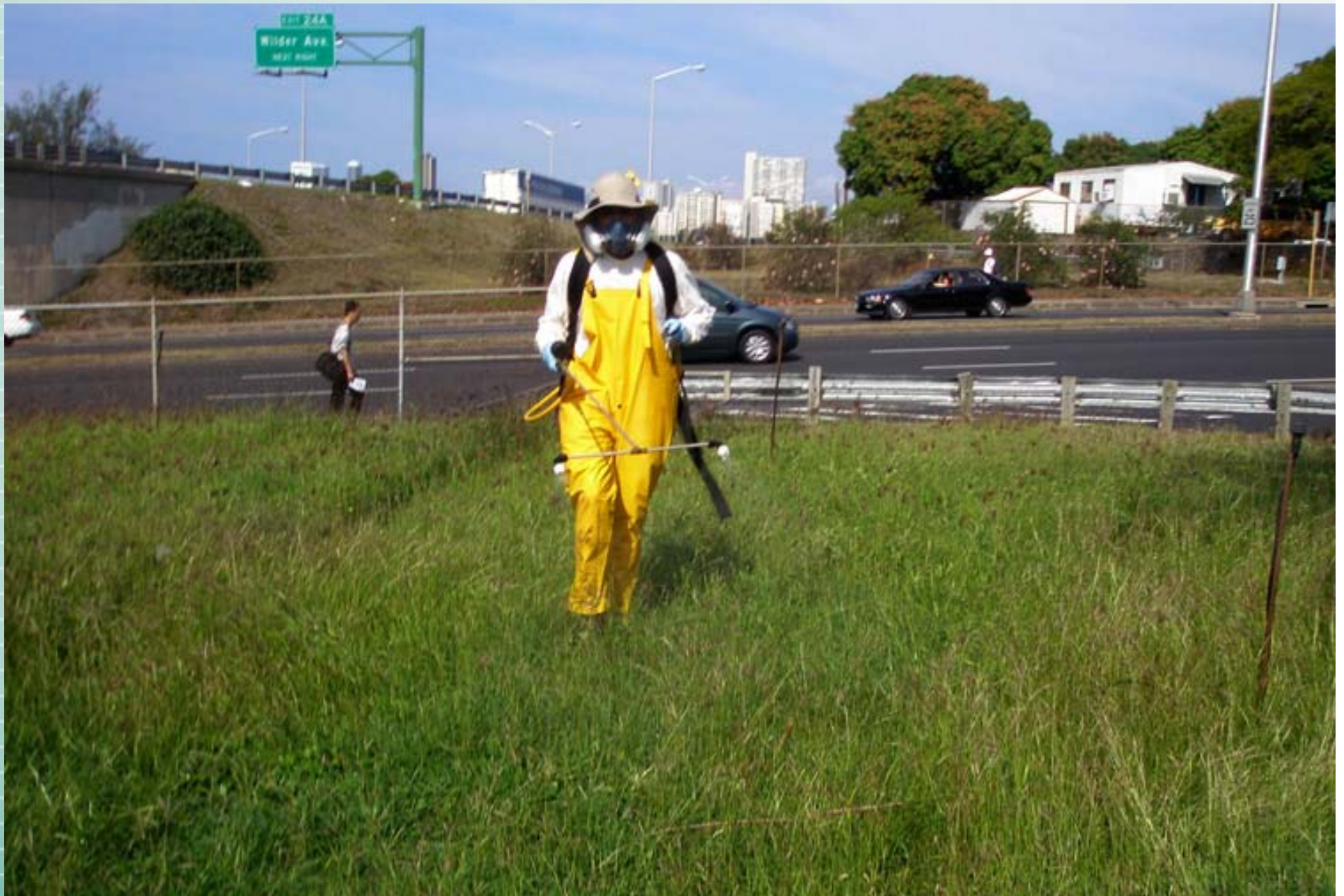
Recommendations for all new DOT contracts Involving native plant installations on roadways

- 1. Include 6-9 months dedicated to weed eradication**
- 2. Induce multiple weed flushes with irrigation, deep soil wetting essential**
- 3. Kill weeds with mixture of systemic herbicides for both grass, broadleaf and sedge plants**
- 4. Anticipate 3-5 spray applications**
- 5. Why?**



Problems with poor site preparation





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Problems with poor site preparation





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Eradicating weeds prior to planting Native Hawaiian plants – existing ground cover



Univ. Ave. West bound on-ramp to H1



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Rainfall provided ground cover activation prior to irrigation installation



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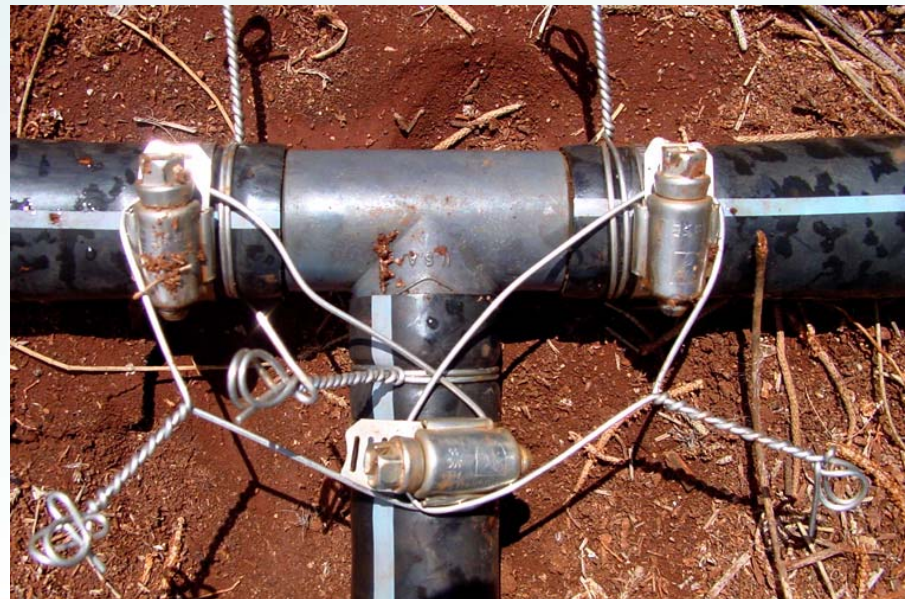


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Temporary irrigation w/poly pipe – tips for blowout proof connections



Dual irrigation system- temp. overhead and permanent surface drip





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Eradicating weeds prior to planting Native Hawaiian plants

**Flat – minimum erosion
hazard**

**Slopes increase erosion hazard
schedule weed eradication during
dry season to minimize soil
erosion due to high intensity
rainfall**



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Sites with existing
ground cover

Bermuda grass treatments
prior to grubbing or major
soil disturbances



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Herbicide tank-mix to eliminate existing weeds prior to planting native Hawaiian plants along road way rights-of-way

Herbicide Trade Name	Active Ingredient	Amount per acre*	Sprayer applies 100 gallon/acre			Weeds controlled
			50 gallons	100 gallons	200 gallons	
Round ProMax	Glyphosate 48.7%	3 gal	192 fl. oz.	3 gal	6 gal	goosegrass, foxtails, castorbean.
Fusilade DX	Fluazifop-p-butyl 24.5%	24 fl. oz	12 fl. oz.	24 fl. oz	48 fl. oz	guineagrass, torpedograss, bermudagrass
Element 3A or Garlon 3A	Triclopyr 44.4%	64 fl. oz.	32 fl oz	64 fl. oz	128 fl .oz	morning glory, plantain, wedelia
Milestone	Aminopyralid 40.6%	3.5 fl. oz	1.75 fl. oz.	3.5 fl. oz	7.0 fl. oz.	horseweed, sleeping grass, Spiny amaranth, clovers
MSO concentrate	Methylated seed oil	1.0 gal	64 fl. oz.	128 fl oz	256 fl oz.	wetting/penetrating agent

* With Sprayer gallonage to deliver 100 GPA

This mixture applied to beginning of 6-9 month weed eradication procedure



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Herbicide tank-mix to eliminate existing weeds prior to planting native Hawaiian plants along road way rights-of-way

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Element 3A or Garlon 3A	Triclopyr 44.4%	64 fl. oz.	32 fl oz	64 fl. oz	128 fl .oz	morning glory, plantain, wedelia
MSO concentrate	Methylated seed oil	1.0 gal	64 fl. oz.	128 fl oz	256 fl oz.	wetting/penetrating agent

* With Sprayer gallonage to deliver 100 GPA

This mixture applied at middle applications in the 6-9 month weed eradication procedure



Herbicide tank-mix to eliminate existing weeds prior to planting native Hawaiian plants along road way rights-of-way

Herbicide Trade Name	Active Ingredient	Amount per acre*	Sprayer applies 100 gallon/acre			Weeds controlled
			50 gallons	100 gallons	200 gallons	
Round ProMax	Glyphosate 48.7%	3 gal	192 fl. oz.	3 gal	6 gal	goosegrass, foxtails, castorbean.
Fusilade DX	Fluazifop-p-butyl 24.5%	24 fl. oz	12 fl. oz.	24 fl. oz	48 fl. oz	guineagrass, torpedograss, bermudagrass
MSO concentrate	Methylated seed oil	1.0 gal	64 fl. oz.	128 fl oz	256 fl oz.	wetting/penetrating agent

* With Sprayer gallonage to deliver 100 GPA

This mixture applied as the last spray prior to planting native species



- 1. The sprayer must be calibrated to deliver 100 gallons of spray to 1 acre (43,560 ft²)**
- 2. Required to use directly use the recommended herbicides mixture as provided in this protocol.**
- 3. Calibration of hand held spray gun required for legal use of recommended herbicide mixture**



Video of calibration



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Attributes of failure with native plants on the roadways

- 1. Lack of sufficient time and effort to eradicate weeds prior to planting.**
- 2. Excessive irrigation during establishment followed by complete shut off at the end of contract period.**
- 3. Unavailable or unknown means of chemical weed control during establishment**
- 4. Belief that native plants need less care and growth inputs than other types of commonly used landscape plants for establishment and long term persistence.**



For more information on topics covered

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