

WITHAM-GELLATLY PRAIRIE PLANTING REPORT & RESTORATION PROGRESS; Dec 31, 2015



12/31/2015

Report to the Oregon Department of
Transportation, contract # 30173

Report prepared by Peter Moore
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PREFACE

This report is the result of contract number 30173 between the Institute for Applied Ecology (IAE) and the Oregon Department of Transportation. IAE is a non-profit organization whose mission is the conservation of native ecosystems through restoration, research and education. Our aim is to provide a service to public and private agencies and individuals by developing and communicating information on ecosystems, species, and effective management strategies and by conducting research, monitoring, and experiments. IAE offers educational opportunities through 3-4 month internships.



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Cover photograph: Zac Hales of ODOT seeding at Witham-Gellatly prairie. *Photo by Peter Moore, 22 November 2015.*

SUGGESTED CITATION

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REPORT TO THE OREGON DEPARTMENT OF TRANSPORTATION

INTRODUCTION

Witham-Gellatly is a 20.2 acre upland prairie site located just southwest of Philomath, OR. The site is owned by the Oregon Department of Transportation (ODOT) and was purchased to mitigate for future impacts on Kincaid's lupine (*Lupinus oregonus*) and Fender's blue butterfly (*Icaricia icarioides fenderi*) due to roadside maintenance activities. The site was intensively grazed by cattle for many years and prior to the initiation of restoration activities, was dominated by non-native annual grasses. Kincaid's lupine is present on the site in several small patches and other species of native forbs are scattered throughout. The Institute for Applied Ecology (IAE) entered into a contract with ODOT on January 29, 2013 to provide expert guidance on the restoration process and to prepare and execute a planting plan.

This report covers restoration and planting actions during the period of October to December 2015.

ACTIONS: OCTOBER TO DECEMBER 2015

Task 1: Project Management

During this period, project management and coordination activities included budget management and project execution discussions involving the Program Director and Restoration Ecologist, project coordination, record keeping and quarterly report writing.

The current project has a three-year budget covering the years 2013-2015. Since the first year of planting was postponed by a year (from 2014 to 2015) in order to improve site preparation during 2015, extra funding and a contract extension will be required to complete the remainder of planting and site management in 2016-2017.

A new budget was prepared for ODOT's consideration for the 2016-2017 period, and a meeting was held with Mike Shippey at IAE in October.

Based on a contract period of 1432 days, project management activities are 74% complete. Total hours spent on Task 1: Program Director, 17.5 hours, Restoration Ecologists, 21 hours.

Task 2: Expert Services

During this period, expert services included monitoring progress and weed issues:

Plant observations:

- Kincaid's lupine did not completely senesce, and several lupine patches had small plants with fresh foliage visible in November.
- Plots were established to compare different methods of introducing Kincaid's lupine. Each of four 10m x 4m plots was divided into ten 2 m² sub-plots, and five were randomly assigned to be sown with seed. A 1 m² section of each sub-plot was lightly raked and sown with 100 lupine seeds and covered again with the raked soil. Plot corners were marked with short wooden stakes, and corners of the 2 m² sub-plots were marked with pink whiskers attached to nails driven into the ground (Fig. A5.5). Lupine plugs will be planted in the remaining sub-plots during the spring. Monitoring of seed germination and survival of seedlings and plugs will occur during 2016, to help guide future outplanting at the site.

Weed issues

- The final weed spray treatment (broadcast of glyphosate) of the year was delayed as long as possible to allow for green-up prior to seeding of native forbs. However, because of the dry season, many weeds had not yet sprouted by the time the spray treatment occurred on 5 November. Judging by areas of weeds that were observed sprouting after the treatment occurred, this may have limited the effectiveness of the weed control. However, control of grasses in the drainages looked to be effective.

Gophers

- Gophers continued to be very active during 2015, particularly in the management areas where herbicide treatments were less frequent. Presumably there was more below-ground plant biomass in these areas.
- Luke Painter of OSU requested information about camas pocket gophers for a population study. He is particularly interested in collecting carcasses. He was given Warren Witham's contact details (the neighbor who traps gophers), and the request for carcasses was forwarded to the Cascadia Prairie Oak Partnership list-serve.

Based on a contract period of 1432 days, expert services activities are 74 % complete. Total hours spent on Task 2: Restoration Ecologists, 15 hours.

Task 3: Planting Plan

The planting plan (IAE 2015) was completed in October 2015. The plan will be updated and refined during 2016, prior to the second season of planting.

Planting plan services are 86% complete. Total hours spent on Task 3: Restoration Ecologists, 20 hours.

Task 4: Plant Materials Acquisition and Development

The seed order was completed and delivered from nurseries (Appendix 1). Slight modifications were made, based on the availability of different species. Seed was sourced from Heritage Seedlings and Pacific Northwest Natives, the IAE seed store and IAE production beds at the Natural Resources Conservation Service's Corvallis Plant Materials Center. Seed was mixed shortly before sowing (Fig. A5.1).

Native forbs and rushes were sourced from Sevenoaks Native Nursery. The full order of tapertip onion (*Allium acuminatum*) was not available, so the deficit was made up with Oregon geranium (*Geranium oregonum*) and hyacinth brodiaea (*Triteleia hyacinthina*). This was actually a bonus, as both the latter species were earmarked in the planting plan for planting in 2016. Approximately 130 clumps of toughleaf iris (*Iris tenax*) were salvaged from one of IAE's raised beds at Oregon State University, and divided into about 500 divisions, along with small numbers of common yarrow (*Achillea millefolium*), Oregon sunshine (*Eriophyllum lanatum*) and common selfheal (*Prunella vulgaris*) (Appendix 2). Approximately 195 plugs of showy milkweed (*Asclepias speciosa*) were available from another IAE project which is introducing the species throughout the Willamette Valley.

Plant materials acquisition and development is 73% complete. Total hours spent on Task 4: Restoration Ecologists, 25 hours.

Task 5: Plant Installation

ODOT supplied an ATV, "Dew Drop Drill" and operator (Zac Hales) to seed the prairie in November 2015 (Figs A5.2-5.4). The drill was calibrated at approximately 10-11 pounds/acre and approximately 17 acres was drilled during three days (November 12, 13, 20). We experienced initial difficulties with the machine, as the grass/forb mix did not flow very well from the hoppers. This was exacerbated on the steeper ground (approximately 2 acres surrounding the Ookow (*Dichelostema congestum*) zone, Appendix 3) and wet conditions. Seeding on the flatter ground went more smoothly.

The majority (16 acres) of the field was drilled with the upland mix of forbs (17 species; 122 pounds), Roemer's fescue (88 pounds) and sedges/rushes (2 species; 1.4 pounds; Appendix 1). Steeper management zones (2.5 acres) were seeded with the same mix using a hand-crank belly bag. Left-over seed was used to over-seed some of the areas that were drilled at a lower rate. Most of the nineleaf biscuitroot (*Lomatium triternatum*) was also sown by hand, because the large seed and chaff associated with this species might have blocked the drill. A grass perimeter road was sown with Roemer's fescue (*Festuca roemerii*) around the perimeter of the field (0.9 acres; Appendices 1, 4). Drainages and seeps (0.75 acres) were sown by hand with the wetland sedge/rush mix. Kincaid's lupine was sown by hand in plots (see Task 2, Fig. A5.5) and the remaining seed (of the 0.25 pounds available for the plots) was used to expand the largest lupine patch near the eastern fence (Appendix 4).

An 11-person AmeriCorps crew of volunteers assisted IAE staff with the planting of native forbs and rushes (Figs A5.6-5.9). Most of the forb bulbs and divisions were planted within the vicinity of Kincaid's lupine patches, in order to create zones of high nectar species diversity (Appendix 4), as outlined in the planting plan (IAE 2015). Milkweed was mainly planted in the north-east seep. Rush divisions were mainly planted along the three drainages, as well as the south side of the north-east seep (Appendix 4, Figs A5.6, 5.8).

Plant materials acquisition and development is 48% complete. Total hours spent on Task 4: Restoration Ecologists, 64.5 hours, Restoration technician 20.25 hours.

Contingency Task C1: Site Preparation and Weed Control

A large limb of one of the apple trees fell during the summer, and this was cut up and removed on October 15. Fallen branches along the northern boundary of the property were removed on October 27 to improve the terrain for seeding operations.

On November 5, the contractor Habitat Restoration LLC broadcast Rodeo (glyphosate) over most of the field, excluding Kincaid's lupine patches and selected management zones. Relatively dry conditions allowed the three grassy gullies to be treated with glyphosate at the same time. Glyphosate was applied at 0.5 gal/acre in combination with MSO surfactant at 0.25 gal/acre.

Total hours on Task C1: Restoration Ecologist, 10.5 hours; Restoration technician, 27 hours. Activities under Contingency Task C1 are >100% complete, based on the budget allocated to these treatments.

FUTURE ACTIONS: 2016/17

IAE actions for 2016/17 will include:

- Finalize new budget and extension to the contract between ODOT and IAE.
- Coordinate production of Kincaid's lupine seed and plugs.
- Plant 500 Kincaid's lupine plugs in test plots in spring 2016.
- Grass-specific herbicide treatments and spot spraying of broadleaf weeds.
- Hand weeding of lupine patches, mowing and weed whacking to reduce the chance of weed seeds maturing.
- Site assessments to monitor restoration progress and lupine establishment.
- Update Planting Plan for 2016/17 planting season.
- Order seed and plugs from nurseries and prepare seed mixes.
- Coordinate with ODOT for access to seed drill and operator.
- Sow upland grasses and supplementary forbs, including 2 pounds of Kincaid's lupine, in fall 2016.
- Plant 9000 nectar bulbs in fall 2016.
- Plant 2400 Kincaid's lupine plugs in spring 2017.
- Quarterly reports and annual planting report.

REFERENCES:

Institute for Applied Ecology. 2015. Witham-Gellatly planting plan, 8 October 2015. 7pp.

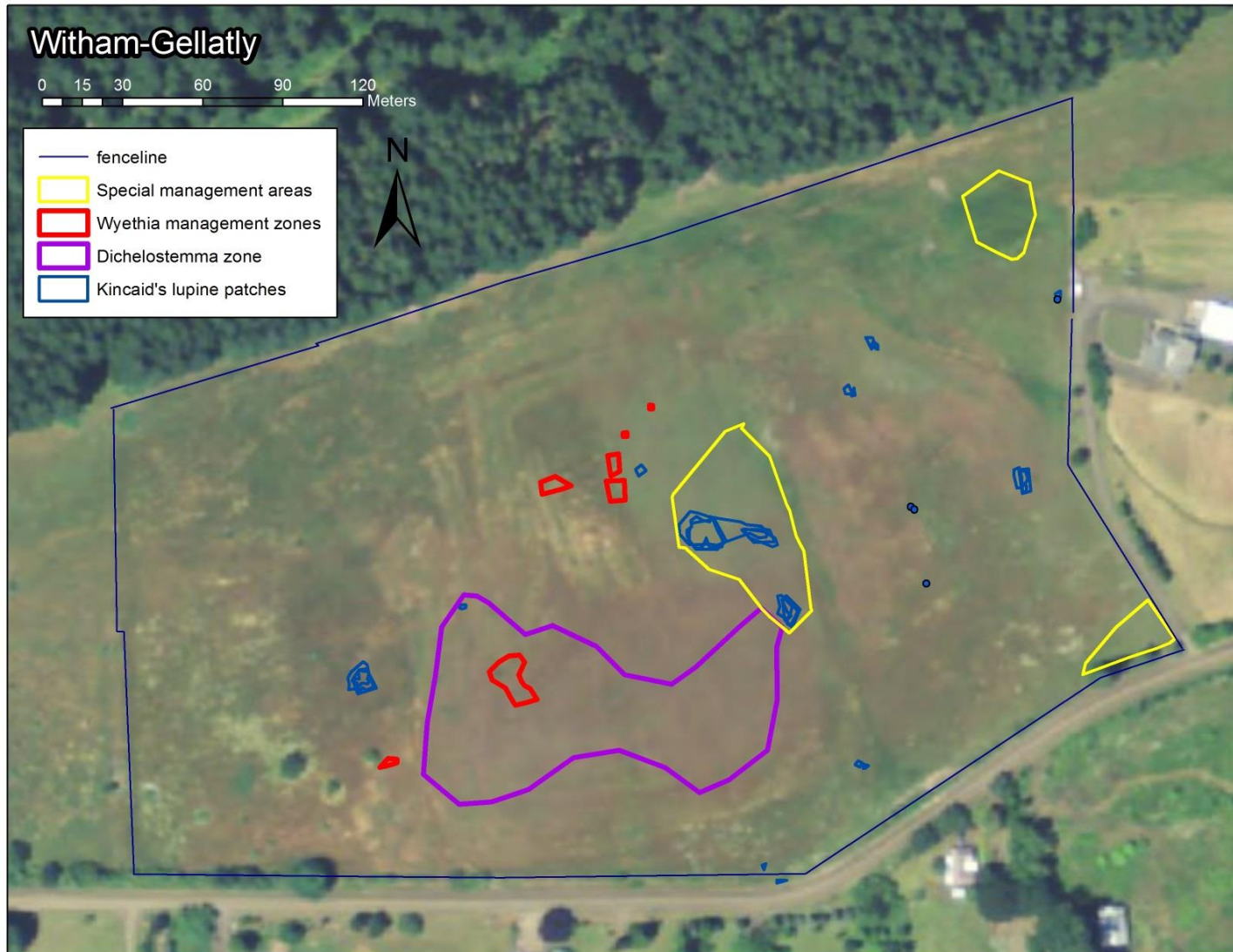
Appendix 1. Quantities seed of native forbs and graminoids sown at Witham-Gellatly in November 2015 (Fender's blue butterfly nectar species are highlighted in pink)

Scientific Name	Common name	Annual/ Perennial	Type	Upland mix		Wetland mix		Grass perimeter road	
				lbs/ acre	total lbs	lbs/ acre	total lbs	lbs/ acre	total lbs
<i>Allium amplexans</i>	narrowleaf onion	Perennial	Forb	0.04	0.7				
<i>Asclepias speciosa</i>	showy milkweed	Perennial	Forb	0.12	2.2				
<i>Camassia quamash</i>	common camas	Perennial	Forb	0.06	1.0				
<i>Clarkia amoena</i>	farewell to spring	Annual	Forb	0.21	3.8				
<i>Collinsia grandifolia</i>	giant blue eyed Mary	Annual	Forb	0.21	3.8				
<i>Collomia grandiflora</i>	gramd collomia	Annual	Forb	0.77	13.9				
<i>Eriophyllum lanatum</i>	Oregon sunshine	Perennial	Forb	0.34	6.0				
<i>Iris tenax</i>	toughleaf iris	Perennial	Forb	0.95	17.1				
<i>Lomatium nudicaule</i>	barestem biscuitroot	Perennial	Forb	0.05	0.9				
<i>Lomatium triternatum</i>	nineleaf biscuitroot	Perennial	Forb	0.42	7.6				
<i>Lotus unifoliolatus</i>	American bird's-foot trefoil	Annual	Forb	1.00	18.0				
<i>Lupinus oregonus</i>	Kincaid's lupine	Perennial	Forb		0.3				
<i>Madia elegans</i>	common madia	Annual	Forb	0.60	10.7				
<i>Plectritis congesta</i>	shortspur seablush	Annual	Forb	0.07	1.2				
<i>Potentilla gracilis</i>	slender cinquefoil	Perennial	Forb	0.31	5.5				
<i>Prunella vulgaris</i>	common selfheal	Perennial	Forb	0.54	9.7				
<i>Sidalcea virgata</i>	dwarf checkerbloom	Perennial	Forb	0.82	14.7				
<i>Wyethia angustifolia</i>	narrowleaf mule's ears	Perennial	Forb	0.30	5.3				
<i>Carex tumulicola</i>	splitawn sedge	Perennial	Sedge	0.07	1.29				
<i>Carex unilateralis</i>	one-sided sedge	Perennial	Sedge			3.9	3.9		
<i>Festuca roemeri</i>	Roemer's fescue	Perennial	Grass	4.88	87.8			5.0	5.5
<i>Juncus tenuis</i>	poverty rush	Perennial	Rush	0.004	0.1	0.3	0.3		
Total				11.8	211.6	4.2	4.2	5.0	5.5
Total acres				18.0		1		1	

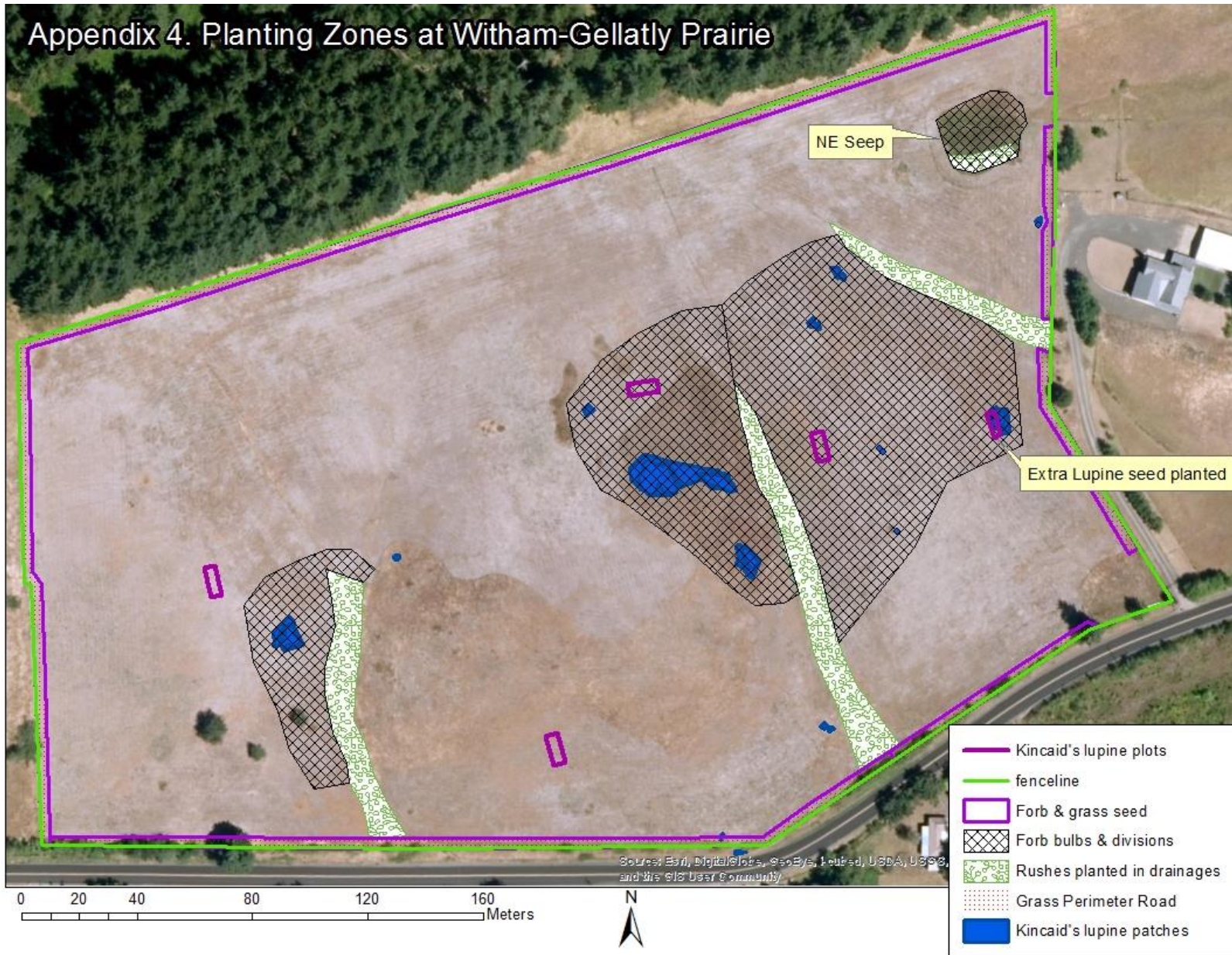
Appendix 2. Quantities of bulbs and divisions of native forbs and rushes planted at Witham-Gellatly in December 2015 (Fender's blue butterfly nectar species are highlighted in pink)

Scientific Name	Common name	Type	Number
<i>Achillea millefolium</i>	common yarrow	bare root	25
<i>Allium acuminatum</i>	tapertip onion	bulb	575
<i>Allium amplexans</i>	narrowleaf onion	bulb	1,200
<i>Asclepias speciosa</i>	showy milkweed	plug	195
<i>Calochortus tolmiei</i>	Tolmie star-tulip	bulb	1,500
<i>Camassia quamash</i>	common camas	bulb	1,500
<i>Eriophyllum lanatum</i>	Oregon sunshine	bare root	10
<i>Geranium oregonum</i>	Oregon geranium	crown	245
<i>Iris tenax</i>	toughleaf iris	plants	500
<i>Juncus effusus</i>	common rush	bulb	2,000
<i>Juncus patens</i>	spreading rush	plug	2,000
<i>Prunella vulgaris</i>	common selfheal	bare root	10
<i>Triteleia hyacinthina</i>	hyacinth brodiaea	bulb	350
Total			10,110

Appendix 3 Management zones at Witham-Gellatly



Appendix 4. Planting Zones at Witham-Gellatly Prairie



Appendix 5. Photographs of restoration activities at Witham-Gellatly, November-December 2015.



Fig. A5.1 Forb seed prior to mixing and seeding at Witham-Gellatly, 11 November 2015.



Fig. A5.2 Peter Moore (IAE) adding forb and grass seed to the "dew drop drill" hopper, 22 November 2015.



Fig. A5.3 Zac Hales (ODOT) sowing seed with the "dew drop drill", 22 November 2015.



Fig. A5.4 Witham-Gellatly after drilling seed, 22 November 2015.



Fig. A5.5 Kincaid's lupine plot to compare success of seeding or planting plugs, 22 November 2015.



Fig. A5.8 Andy Neill (IAE) planting rushes.



Fig. A5.6 AmeriCorps crew planting rushes, 14 December 2015.



Fig. A5.7 Planting bulbs.



Fig. A5.9 AmeriCorps crew after a day's planting at Witham-Gellatly, 14 December 2015.