

Appendix A

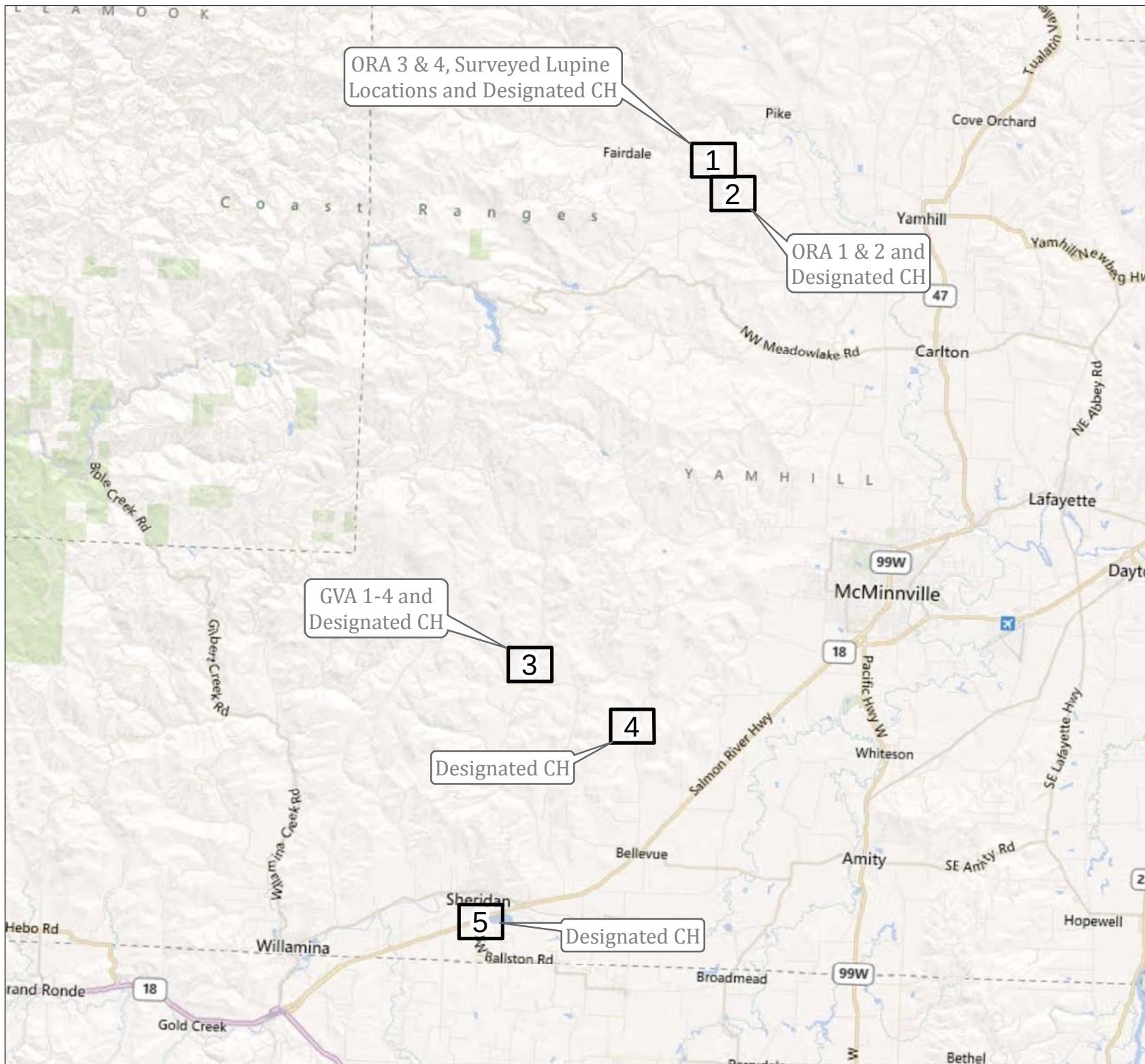
Fender's Blue Butterfly and Kincaid's Lupine Critical Habitat

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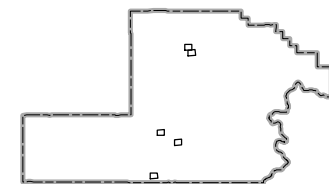
Appendix A

These maps were created using U.S Fish and Wildlife Service known Fender's Blue Butterfly and Kincaid's lupine locations and designated critical habitat (USFWS 2006; Collins pers. comm.). Each map in this appendix isolates a portion of Yamhill County where Fender's blue butterfly and/or Kincaid's lupine critical habitat has been designated. The first map is a sheet index that provides an overview of the site locations as well as a sheet number for individual area maps. The location of these sites within Yamhill County can be identified by correlating the sheet number (e.g., Sheet 3) with the overview map or with the smaller county map(s) in the right-hand corner of the individual sheets. The following acronyms are used in these maps:

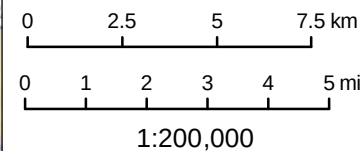
- CH – Critical Habitat
- FBB – Fender's Blue Butterfly Critical Habitat
- GVA – Gopher Valley Area
- KL – Kincaid's Lupine Critical Habitat
- ORA – Oak Ridge Area



Appendix A Sheet Index

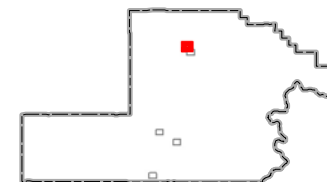


Yamhill County, Oregon

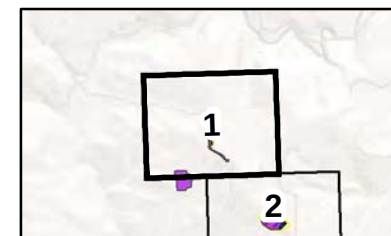


Appendix A Sheet 1

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Yamhill County, Oregon



Legend

- Known Fender's Blue Butterfly Sites
- Designated Critical Habitat for the Fender's Blue Butterfly (USFWS 2006a)
- Designated Critical Habitat for the Kincaid's Lupine (USFWS 2006a)

Roads (by Owner)

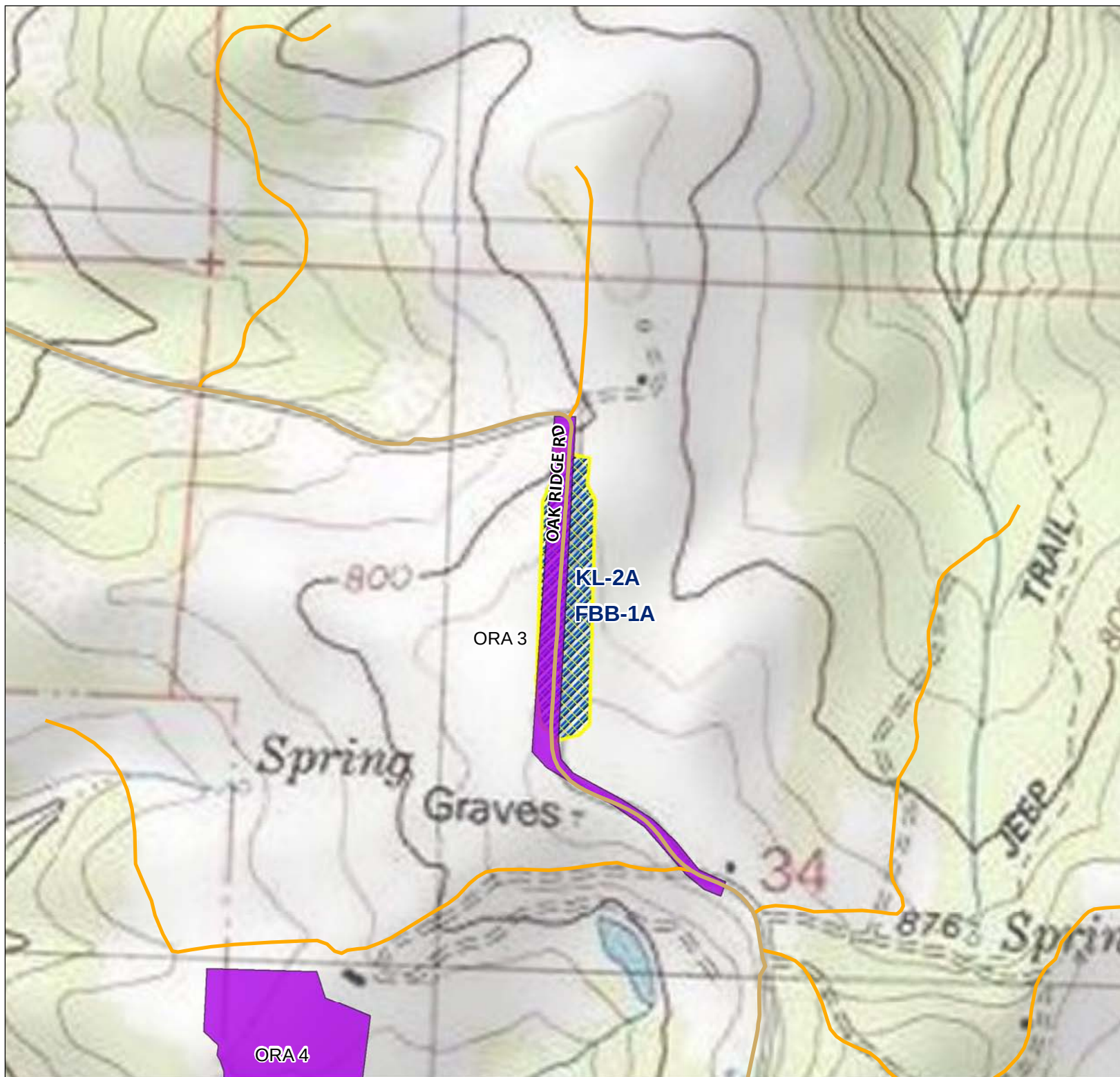
- County Gravel Road
- County Paved Road
- Public
- Private



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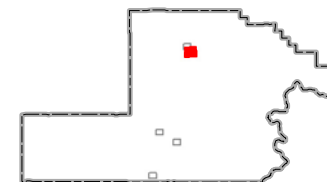
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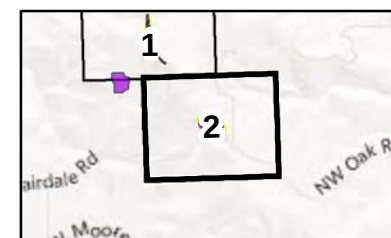


Appendix A Sheet 2

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Yamhill County, Oregon



Legend

-  Known Fender's Blue Butterfly Sites
-  Designated Critical Habitat for the Fender's Blue Butterfly (USFWS 2006a)
-  Designated Critical Habitat for the Kincaid's Lupine (USFWS 2006a)

Roads (by Owner)

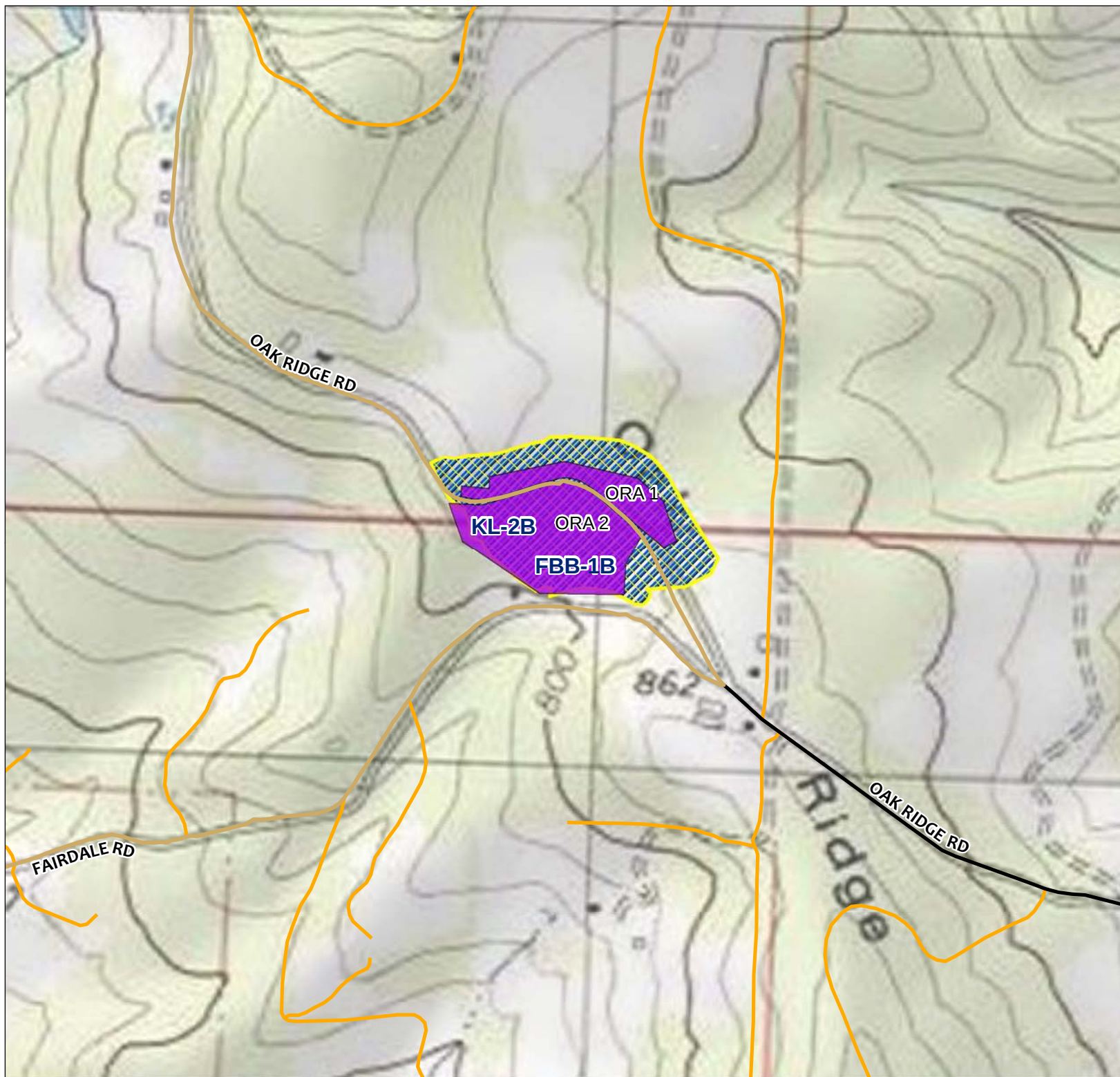
-  County Gravel Road
-  County Paved Road
-  Public
-  Private



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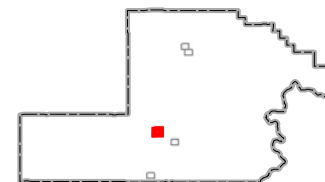
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Appendix A
Sheet 3

Known Fender's Blue
Butterfly and Kincaid's
Lupine Habitat



Yamhill County, Oregon



Legend

- Known Fender's Blue Butterfly Sites
- Designated Critical Habitat for the Fender's Blue Butterfly (USFWS 2006a)
- Designated Critical Habitat for the Kincaid's Lupine (USFWS 2006a)

Roads (by Owner)

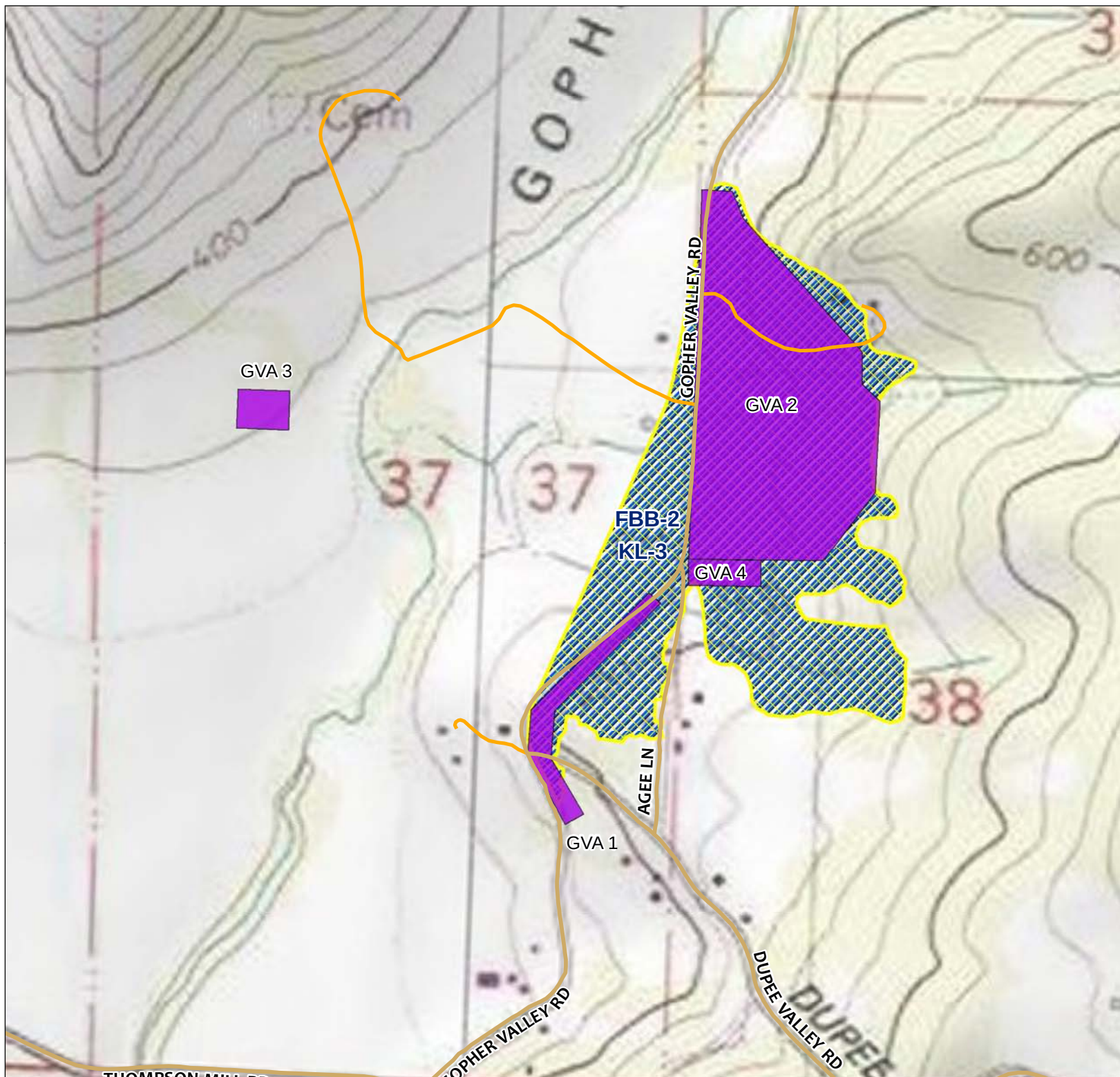
- County Gravel Road
- County Paved Road
- Public
- Private



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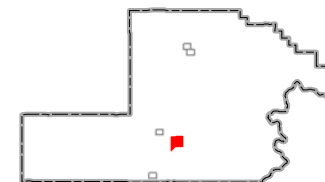
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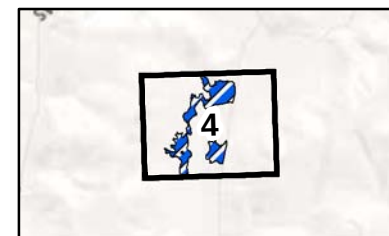


Appendix A
Sheet 4

Known Fender's Blue
Butterfly and Kincaid's
Lupine Habitat



Yamhill County, Oregon



Legend

- Known Fender's Blue Butterfly Sites
- Designated Critical Habitat for the Fender's Blue Butterfly (USFWS 2006a)
- Designated Critical Habitat for the Kincaid's Lupine (USFWS 2006a)

Roads (by Owner)

- County Gravel Road
- County Paved Road
- Public
- Private



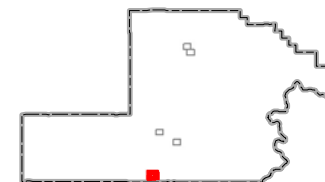
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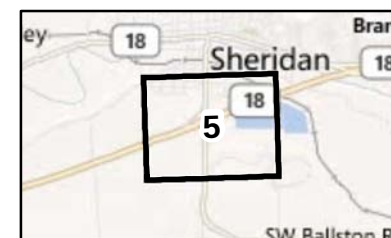
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Appendix A Sheet 5

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Yamhill County, Oregon

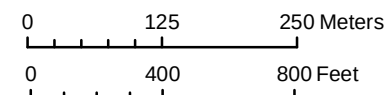


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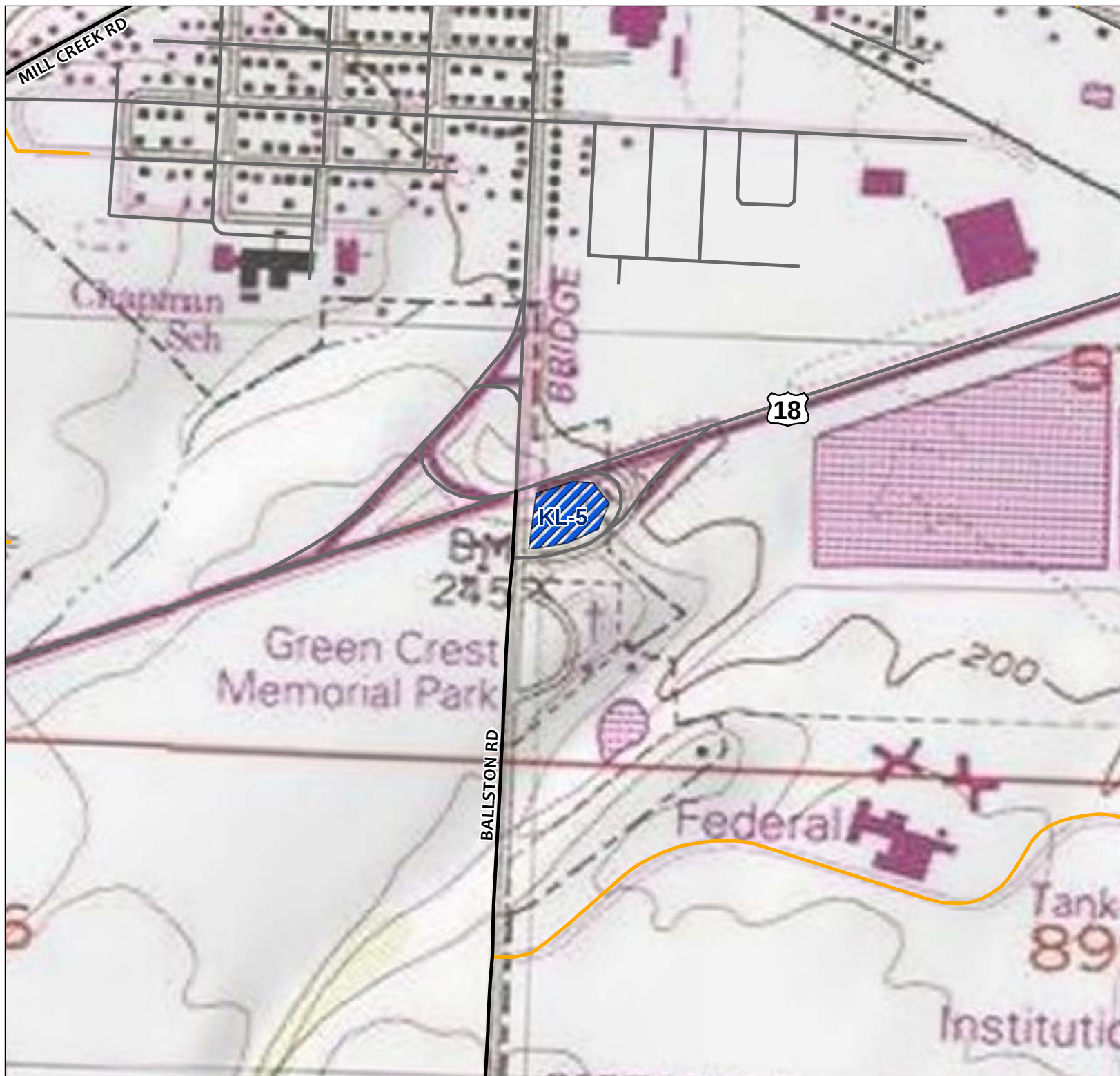
- Known Fender's Blue Butterfly Sites
- Designated Critical Habitat for the Fender's Blue Butterfly (USFWS 2006a)
- Designated Critical Habitat for the Kincaid's Lupine (USFWS 2006a)

Roads (by Owner)

- County Gravel Road
- County Paved Road
- Public
- Private



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Appendix B

Survey Reports

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Appendix B

This appendix contains three survey reports:

- Rare Butterfly Surveys on Yamhill County Roadsides At and Near Documented Kincaid's Lupine Sites – Ross 2011
- Yamhill County Roadside Kincaid's Lupine Site Surveys – Salix Associates 2011a
- Yamhill County Roadside Surveys for Kincaid's Lupine: 2 km Buffer Areas – Salix Associates 2011b

These reports were prepared by outside contractors and are included in the format they were received. See Appendix C for survey locations for the first two reports and Appendix D for the 2 km survey of Kincaid's lupine locations.

**Rare Butterfly Surveys on Yamhill County Roadsides
At and Near Documented Kincaid's Lupine Sites:**

2011 Report to Cardno ENTRIX



14 September 2011

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SUMMARY

Surveys for two rare prairie butterflies - Taylor's Checkerspot (*Euphydryas editha taylori*) (TC), a federal candidate for ESA protection, and Fender's Blue (FB) (*Plebejus icarioides fenderi*), a federally endangered butterfly - were conducted during 2011 on Yamhill County roadsides and at one hillside location where Kincaid's lupine (KL) (*Lupinus oreganus*) was present or was known to be nearby. KL is the larval hostplant for FB and the adults are closely associated with it.

Twelve sites were included, largely in the Oak Ridge and Gopher Valley areas, and were visited multiple times during the flight periods of TC and FB to establish the presence or absence of these two butterflies. TC was not observed at any time, although it may occur elsewhere on Yamhill County properties. FB was documented at 7 sites, but was apparently absent from at least 2 locations where it had been seen in recent years.

METHODS

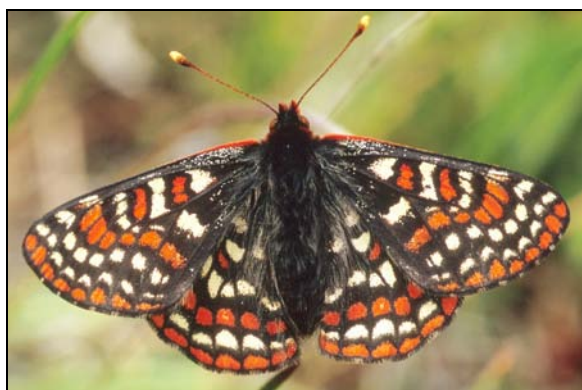
Survey sites were provided after pre-selection and mapping by Cardno ENTRIX. Sites were surveyed one or more times for TC and multiple times for FB. Each survey was conducted during the flight period for each butterfly during conditions conducive to butterfly activity (1000-1600 hours, sunny, >60 degrees F) whenever possible. Surveys were conducted by slowly walking a given roadside (or hillside - Deer Creek Park only) and inspecting the county right-of-way for butterflies. A butterfly net was used to flush perching insects from roadside vegetation and to catch butterflies for in-hand identification on some occasions. When necessary, right-of-ways were entered to check some habitats of interest or to net a given butterfly, but private property was always consciously respected and never entered. GPS coordinates were taken for each site by direct measurement (Garmin GPSmap 60) or by using GOOGLE EARTH. Data collected during surveys included date, site, time of survey, air temperature, cloud cover, wind, habitat quality (based on larval hostplant presence/abundance and adult nectar resources), presence or absence of TC or FB (method of documentation and location descriptor, if present), photographs, potential threats to TC /FB, other butterfly species observed, and additional notes as warranted. Field notes were first recorded on a micro-cassette recorder and later transcribed to a computer file.

RESULTS & DISCUSSION

In a typical year in the Willamette Valley, TC butterflies are active and detectable, where they occur, from mid-late April through mid-late May. Similarly, FB adults normally fly from mid-May through early-mid June. The spring of 2011 was, however, unusually cool, wet, and cloudy, and the flight seasons of virtually all spring-flying species were much delayed. Additionally, most populations exhibited lower than normal abundances. Field survey timing was challenging and had to be highly coordinated with the relatively infrequent and poorly forecasted good weather as it occurred. On some dates with extended good weather, all survey sites were visited. At other times, fair weather was limited and only allowed for a lesser number of sites to be surveyed. Ultimately, all designated Yamhill County sites were able to be well covered for both butterflies.

Taylor's Checkerspot

TC was not observed during the course of these surveys (Table 1), although other Willamette Valley populations of this butterfly were flying during that same time period. While the TC is currently known to use only English plantain (EP) (*Plantago lanceolata*) as a larval hostplant in Oregon, the presence of this widespread weed is not a good predictor of TC occurrence. Thus, while EP was observed at many sites, TC was not necessarily expected to be using those roadside habitats. It should be noted that the presence of KL and FB are also poor indicators of TC presence, since TC and FB have not been observed to be sympatric on a very local scale. Additional surveys will be required to determine the roadside status of TC on a county-wide basis.



Taylor's Checkerspot (left) and English plantain showing larval feeding damage (right).

(Dana Ross, stock photos.)

Table 1. Summary of surveys for Taylor's Checkerspot at Yamhill County sites in 2011.

Part 1. South Yamhill County Sites (Gopher Valley).

Site (Code)	Site (Description)	Date Surveyed	Time	Survey Conditions	Taylor's Checkerspot Observed?	Is the Larval Hostplant English Plantain Present?	Flowers and Other Potential Nutrient Resources
GVA 1	Gopher Valley Rd., vicinity Dupee Valley Rd. N to Agee Lane	May 13	1205 - 1235	Good: 70F; calm to v light wind; v light overcast.	NO	YES	strawberry, iris, vetch, buttercup, dandelion, moist earth
		May 28	1100 - 1130	Marginal: 52F; bright overcast, calm.	NO		
GVA 2	Gopher Valley Rd., Yamhill Oaks TNC	May 13	1110 - 1200	Good: 68F; calm to v light wind; v light overcast.	NO	YES	strawberry, buttercup, rose dandelion, small pink flowers, moist earth
		May 28	1215 - 1235	Marginal: 54F; bright overcast, calm.	NO		
GVA 4	Intersection Gopher Valley Rd. and Agee Lane	May 13	1200 - 1205	Good: 70F; calm to v light wind; v light overcast.	NO	YES	buttercup, dandelion, moist earth
		May 28	1235 - 1240	Marginal: 54F; bright overcast, calm.	NO		
GVA 5	Deer Creek Park (site added 5/25)	May 28	1140 - 1210	Marginal: 54F; bright overcast, calm.	NO	YES	various; unspecified
GVA 6	Muddy Valley Rd. (site added 5/25)	May 28	1310 - 1340	Marginal: 58F; bright overcast, calm to v light wind.	NO	YES	small pink "geranium", vetch, <i>Hypochaeris</i> , clover, buttercup, lomatium, strawberry, cat's ear lily, camas lily, wild cucumber
Rock Creek	Rock Creek (site added 6/2)	June 3	1520 - 1540	Good: 70F; clear, breezy.	NO	Uncertain	various; unspecified

Part 2. North Yamhill County Sites (Oak Ridge).

Site (Code)	Site (Description)	Date Surveyed	Time	Survey Conditions	Taylor's Checkerspot Observed?	Is the Larval Hostplant English Plantain Present?	Flowers and Other Potential Nutrient Resources
OR 1	North side Oak Ridge Rd., near intersection with Fairdale Rd.	May 13	1340 - 1400	Good: 71F; sunny, warm, calm.	NO	YES	fruit tree, trailing blackberry, small white daisy, small pink "geranium", vetch, iris, camas lily
		May 20	1300 - 1330	Good: 74F; 20% clouds, v light wind.	NO		
OR 2	South side Oak Ridge Rd., near intersection with Fairdale Rd.	May 13	1340 - 1400	Good: 71F; sunny, warm, calm.	NO	YES	fruit tree, trailing blackberry, dandelion, white clover, small white daisy, vetch, camas lily
		May 20	1300 - 1330	Good: 74F; 20% clouds, v light wind.	NO		
OR 3	North Oak Ridge Rd.	May 13	1405 - 1425	Good: sunny, warm, calm.	NO	YES	fruit tree, strawberry, iris, vetch, trailing blackberry, small pink "geranium", "a few weedy flowers", wild cucumber, <i>Prunella</i> sp.
		May 20	1335 - 1405	Good: 75F; 20% clouds, v light wind.	NO		
OR 5	Old Moores Valley Rd.	May 13	1435 - 1445	Good: 69F; sunny, warm, calm.	NO	NO	dandelion, a few other "small weeds"
		May 20	1415 - 1425	Good: 70F; 20% clouds, v light wind.	NO		
OR 6	Moores Valley Rd.	May 13	1450 - 1505	Good: 70F, sunny, calm.	NO	LOW	"a small white-flowered weed"
		May 20	1430 - 1455	Good: 71F; 20% clouds, v light wind.	NO		
OR 7	Hacker Rd.	May 13	1520 - 1540	Good: 70F, 30% clouds, but in full sun, light wind.	NO	YES	strawberry, buttercup, vetch, lomatium, iris, fruit tree, camas lily, rose, trailing blackberry, wild cucumber, small pink "geranium"
		May 20	1225 - 1245	Good: c. 70F; 40% clouds, sunny, warm, v light wind.	NO		

Fender's Blue

FB was documented at seven of the target sites (Table 2) and at one new site during the course of these surveys. FB observations were made only in the vicinity of KL, but the butterfly was not found everywhere that KL was present. The presence of KL (and similar native prairie lupines) is the best predictor of FB occurrence. The 2011 flight period for Yamhill County FB populations was consistent with the very late flights observed at other Willamette Valley sites.



Fender's blue male (left) and female (right).



Kincaid's lupine.

Table 1. Summary of surveys for Fender's blue at Yamhill County sites in 2011.

Part 1. South Yamhill County Sites (Gopher Valley).

Site (Code)	Site (Description)	Date Surveyed	Time	Survey Conditions	Fender's Blue Observed?	Is the Larval Hostplant Kincaid's Lupine Present?	Flowers and Other Potential Nutrient Resources
GVA 1	Gopher Valley Rd., vicinity Dupee Valley Rd. N to Agee Lane	June 3	1405 - 1425	Good: 67F; clear, v light wind	NO	YES	<i>Vicia</i> , " <i>Wyethia</i> ", <i>Hypochaeris</i> , <i>Orthocarpus</i> , <i>Eriophyllum lanatum</i> , <i>Prunella</i> , oxeye daisy, iris, clover, cat's ear lily
		June 17	1455 - 1530	Good: 70F, 95% clear, light wind	NO		
		June 25	1140 - 1150	Good: 64F; clear, calm	NO		
GVA 2	Gopher Valley Rd., Yamhill Oaks TNC	June 3	1330 - 1400	Good: 67F; clear, v light wind	YES	YES	<i>Vicia</i> , clover, wild cucumber, buttercup, blue- eyed grass, clover, cat's ear lily, camas lily, rose and others
		June 6	1245 - 1330	Good: 65F; hazy sun	YES		
		June 17	1440 - 1450	Good: 70F, 95% clear, light wind	YES		
GVA 4	Intersection Gopher Valley Rd. and Agee Lane	June 3	1400 - 1405	Good: 67F; clear, v light wind	NO	NO	<i>Vicia</i> , clover, oxeye daisy and others
		June 17	1450 - 1455	Good: 70F, 95% clear, light wind	NO		
		June 25	1135 - 1140	Good: 64F; clear, calm	NO		
GVA 5	Deer Creek Park (site added 5/25)	June 3	1435 - 1455	Good: 70F; clear, v light wind	NO	YES	<i>Hypochaeris</i> , <i>Vicia</i> , <i>Prunella</i> , " <i>Wyethia</i> ", oxeye daisy, clover, camas lily, blue-eyed grass, Himalayan blackberry
		June 6	1200 - 1230	Good: 65F, sunny, v light wind	NO		
		June 17	1400 - 1425	Good: 70F, 95% clear, light wind	NO		
		June 25	1100 - 1130	Good: 64F; clear, calm	NO		

Part 1. South Yamhill County Sites (Gopher Valley) (continued).

Site (Code)	Site (Description)	Date Surveyed	Time	Survey Conditions	Fender's Blue Observed?	Is the Larval Hostplant Kincaid's Lupine Present?	Flowers and Other Potential Nutrient Resources
GVA 6	Muddy Valley Rd. (site added 5/25)	June 6	1030 - 1130	Fair: intermittent sun, low 60 F	NO	NO	<i>Vicia</i> , <i>Hypochaeris</i> , <i>Orthocarpus</i> , <i>Prunella</i> , cinquefoil, rose, oxeye daisy, flax, lomatium, wild cucumber, clover, Himalayan blackberry, moist earth
		June 25	1020 - 1045	Good: 63F; clear, calm	NO		
Rock Creek	Rock Creek (site added 6/2)	June 6	1440 - 1510	Good: 67F; sun, light wind	NO	NO	<i>Hypochaeris</i> , <i>Vicia</i> , <i>Sidalcea</i> , <i>Prunella</i> , flax, "wild carrot", Himalayan blackberry, clover, wild rose, "death camas", columbine
		June 25	1225 - 1240	Good: 65F, sunny	NO		

Part 2. North Yamhill County Sites

Site (Code)	Site (Description)	Date Surveyed	Time	Survey Conditions	Fender's Blue Observed?	Is the Larval Hostplant Kincaid's Lupine Present?	Flowers and Other Potential Nutrient Resources
OR 1	North side Oak Ridge Rd., near intersection with Fairdale Rd.	June 3	1110 - 1135	Good: 67F; 95% clear, v light wind	NO	YES	<i>Vicia</i> , clover, oxeye daisy, "little white daisy", flax, moist earth
		June 17	1215 - 1225	Good: 70F; sunny, warm, clear	YES		
OR 2	South side Oak Ridge Rd., near intersection with Fairdale Rd.	June 3	1110 - 1135	Good: 67F; 95% clear, v light wind	YES	YES	<i>Vicia</i> , clover, oxeye daisy "little white daisy", trailing blackberry, iris, moist earth
		June 17	1215 - 1225	Good: 70F; sunny, warm, clear	YES		
OR 3	North Oak Ridge Rd.	June 3	1140 - 1205	Good: 67F; 95% clear, v light wind	NO	YES	<i>Vicia</i> , columbine, oxeye daisy, trailing blackberry, clover, small pink "geranium", wild cucumber, strawberry
		June 17	1140 - 1210	Good: 70F; sunny, warm, clear	YES		
OR 5	Old Moores Valley Rd.	June 3	1045 - 1100	Good: 65F; 95% clear, v light wind	NO	YES	<i>Sidalcea</i> , <i>Brodiaea</i> , vetch, dandelion, trailing blackberry, oxeye daisy, clover, Oregon sunshine
		June 14	1400 - 1420	Good: bright overcast, warm	YES		
		June 17	1235 - 1245	Good: 70F; sunny, warm, clear	YES		
OR 6	Moores Valley Rd.	June 3	1025 - 1040	Good: 65F; 95% clear, v light wind	NO	YES	clover, oxeye daisy, <i>Brodiaea</i>
		June 14	1425 - 1445	Good: bright overcast, warm	YES		
		June 17	1250 - 1305	Good: 70F; sunny, warm, clear	YES		
OR 7	Hacker Rd.	June 3	1220 - 1240	Good: 68F; clear, light wind	YES	YES	<i>Vicia</i> , <i>Hypochaeris</i> , <i>Brodiaea</i> , <i>Sidalcea</i> , <i>Rosa</i> , wild cucumber, camas lily, clover, small pink "geranium", oxeye daisy, moist earth
		June 14	1320 - 1340	Good: bright overcast, warm	YES		
		June 17	1100 - 1120	Good: 70F; sunny, warm, clear	YES		

Conservation recommendations for each site are given below based on these surveys. Taylor's checkerspot was never observed and appears to be a non-issue for these sites.

GVA 1

While FB was not observed in 2011, it was historically present on KL at the intersection of Gopher Valley Road and Dupee Valley Road. Careful management of KL habitat there should result in the re-colonization of plants by FB from adjacent areas. Management recommendations, at a minimum, include the removal or reduction in stature of adjacent, encroaching trees and shrubs that may crowd or shade out KL, and a no-spray policy in the vicinity of KL plants.

GVA 2

FB present. Several large roadside patches of KL support a population of FB in combination with additional KL that occurs on adjacent private lands. Manage recommendations are as for GVA 1.

GVA 4

FB was not observed, but was documented very nearby in GVA 2. FB likely uses nectar resources within this site. Assuming that the condition of the habitat reflects current roadside management policies, no changes are recommended.

GVA 5

FB was not observed in 2011, yet had been observed there in recent years. KL there will probably be naturally re-colonized by FB in the near future. KL need only be kept free from tree and shrub encroachment at this time.

GVA 6

FB was not observed. Since the nearest KL is not known to host a FB population, there are no conservation concerns at this time. If FB does colonize adjacent KL in the future, roadside management policies will need to adapt to the potential use of roadside habitats by FB adults.

Rock Creek

FB was not observed. Yamhill County roadsides are currently a mix of unsuitable, heavily shaded, riparian and forested habitats, or, are essentially closely mowed grass as an extension of the front lawns and yards of property owners. Very little County roadside there has any likelihood of being used by FB.

OR 1

FB present. Roadside KL serves as a vital part of the local FB population that includes OR 2 and adjacent private lands. Threats to KL and FB include direct mortality by contact with passing vehicles (trampling, road kill) and road maintenance activities (gravel augmentation, trampling). Trees, shrubs and weeds should be carefully managed to reduce encroachment and competition issues with KL. A no-spray policy should be considered, if not already in place, and should include adjacent private lands if possible.

OR 2

FB present. Roadside KL is a vital part of the local FB population that includes OR 1 and adjacent private lands. Threats and management recommendations are as per OR 1.

OR 3

FB present. Several sizeable patches of KL on the west side of the road (and adjacent private land) support a small, but thriving FB population. KL is also present on the east side of the road in lower abundance. Threats and management recommendations are as per OR 1.

OR 5

FB present. While quite narrow in width, this section of County roadside supports a modest number of KL plants and some FB. Several female FB were observed there, suggesting that the site may be an important one for reproduction. Trampling by cattle or vehicles were noted during a late June survey. Threats and management recommendations are as per OR 1.

OR 6

FB present. The north hillside/bluff supports a number of KL and dependent FB that are likely part of a larger population on adjacent private lands (tree farm to north). One robust patch of KL on the south side of the road was observed to be freshly trampled in late June by a recently created path. Cattle or vehicles may have been responsible for the damage. Threats and management recommendations are as per OR 1.

OR 7

FB present. Robust patches of KL on the north side of the road were occupied by a small population of FB. Threats and management recommendations are as per OR 1.

Yamhill County Roadside Kincaid's Lupine Site Surveys

Executive Summary

Cardno ENTRIX (CE) requested that Salix Associates (SA) survey eleven roadside sites in Yamhill County, Oregon to document the presence of Kincaid's Lupine (*Lupinus oreganus*, formerly *L. sulphureus* ssp. *kincaidii*) (Table 6). Documentation of additional federally-listed and other native species present at each site was requested, as well as GPS tracks of surveyed areas and photos. The GPS tracks and photos are being submitted digitally, separate but concurrent with this report.

Kincaid's Lupine was documented at 9 of the 11 county road right-of-way (ROW) sites (Tables 4 and 5). One of the two "negative" sites was very small, and between two other sites. The other site was where Kincaid's Lupine had not been documented previously, and was not necessarily expected. It was, however, the closest county ROW to a known lupine site on private land.

In addition to confirming Kincaid's Lupine at 9 of the sites, a checkermallow was noted within several site boundaries (Table 5) that possibly is the federally-listed (as Threatened) Nelson's Checkermallow. Confirmation of checkermallow species should be done when they are in flower (this year, late June to mid-July). Plants observed at the time of the survey were not yet in bud.

Methods

Survey site boundaries were provided to Salix Associates at low resolution on USGS topo maps and aerial photos. Ten of the eleven sites lie within county road rights-of-way, and surveyors were requested to use best judgment in determination of right-of-way (ROW) widths in the field to define limits of those 10 survey sites because the site boundaries provided included large areas extending outside county road rights-of-way. As per direction from CE, no surveys were conducted on lands outside of county road rights-of-way, except for one site (GVA 5), which lies within a county-owned Deer Creek Park. SA also used best judgment in the field in determining survey area limits at ends of the ROW to best include potential habitat likely intended to be included within the original mapping.

All lupine surveys were conducted by Bruce Newhouse in the first week of June 2011 by walking each side of the ROW within each survey area. Occasional surveying was done into a ROW in wide areas (i.e., perpendicular to a road) to increase detectability. Because of the protracted cool, wet spring, the Kincaid's Lupine observed during the survey was not yet at anthesis, but some was in flower and most was in bud and easily visible to the surveyor.

The GIS files submitted with this report closely delineate the boundaries of the sites surveyed, and show the walking routes of the surveyor. They also contain waypoints recorded at rare plant sites.

In addition to Kincaid's Lupine, notation of observation of the following plants was requested.

Table 1. Additional federal- and/or state-listed species to be noted if seen during surveys.

Latin Name	Common Name
<i>Castilleja levisecta</i>	Golden Paintbrush
<i>Delphinium leucophaeum</i>	Pale Larkspur; White Rock Larkspur
<i>Delphinium pavonaceum</i>	Peacock Larkspur
<i>Erigeron decumbens</i>	Willamette Valley Daisy

<i>Howellia aquatilis</i>	Howellia
<i>Lomatium bradshawii</i>	Bradshaw's Desert Parsley; Bradshaw's Lomatium
<i>Sidalcea nelsoniana</i>	Nelson's Checkermallow

Tables 4 and 5 show the rare plant results from the survey.

In addition to rare plants, a list of all other native plants seen at each site was made, and is included here as Table 7. An analysis of native vegetation by site is contained in the following two sections.

Analysis of Native Vegetation at Kincaid's Lupine Sites

Table 7 contains a comprehensive native species list by site. The following table is a summary of native vegetation species from that list by structural and reproductive type for each surveyed site.

Table 2. Native vegetation types observed by survey area.

Sites:	GVA*					ORA					
Native Species Groups:	1	2	4	5	6	1	2	3	5	7	TOT
Trees	3	3	1	4	2	1	4	0	1	4	6
Shrubs	2	7	2	6	3	2	8	0	1	6	12
Forbs	10	22	12	13	10	4	17	8	4	22	51
Graminoids	0	8	4	0	2	1	0	1	0	2	13
Ferns/Sporophytes	3	3	0	2	2	1	1	0	0	1	3
TOTAL SPECIES OBSERVED:	18	43	19	25	19	9	30	9	6	35	85

*GVA 6 was deleted from this analysis because there is no Kincaid's Lupine present at the site. Although no Kincaid's Lupine is present at GVA 4, it lies between two nearby sites and contains some similar habitat – so it is included.

Vegetation Species Summary at Kincaid's Lupine Sites

The following table lists the native vascular plant species seen most commonly during the surveys by category, and overall. As with the last table, the area surveyed along roadsides near GVA 6 was not included.

Table 3. Most common native vascular plant species observed on all sites combined.

	Seen at the most sites:
Trees	Oregon White Oak, Suksdorf's Hawthorn, Douglas-fir, Cascara
Shrubs	Snowberry, Pacific Serviceberry, Poison-oak
Forbs	Kincaid's Lupine, Pacific Iris, Wild Cucumber, American Vetch
Graminoids	Foothill Sedge, Spreading Rush (usually lower on slopes, in ditch bottoms)
Ferns/Sporophytes	Bracken
OVERALL	Kincaid's Lupine (9 sites), Snowberry (8), Oregon White Oak (7), Bracken (7), Pacific Iris (6), Poison-oak (6), Pacific Serviceberry (6), American Vetch (6), Wild Cucumber (6)

Kincaid's Lupine was found primarily in open areas: either in prairie, savanna, or in gaps in more forested areas. In general, the less open areas are becoming shaded from increased shrub and tree establishment and growth.

Two other lupine species were noted in or near survey sites: Many-leaved Lupine (*Lupinus polyphyllus*) and Small-flowered Lupine (*Lupinus polycarpus*). They are readily distinguished from Kincaid's Lupine without technical botanical analysis. Many leaved lupine is much larger and grows in moist to fairly wet areas. Small-flowered Lupine is much smaller, and has much smaller flowers and inflorescences. It generally grows in areas with little competition from vegetation, such as road shoulders. Many-leaved Lupine is not listed in the species table as it is not within the survey area. It occurs within the wet area in the original borders provided for area ORA 7, however, those borders were drawn too far to the west and did not encompass the Kincaid's Lupine population that was intended to be included.

General Kincaid's Lupine Distributions

The following table contains descriptions and provides some details on Kincaid's Lupine distribution within each site.

Table 4. Site descriptions and general lupine distribution.

Site	Site Summary	Kincaid's Lupine Distribution
GVA 1	Surveyed ROW is both sides of a large arc of Gopher Valley Road south of Agee Rd. and north of Dupee Rd. The (generally) east side (above road) borders rural, sparsely used areas. The west side (below road) mostly borders residences and agricultural lands, and is a more manicured ROW.	In 3 areas on east side of road.
GVA 2	Surveyed ROW is both sides of Gopher Valley Road, just north of Agee Road. The west side borders some agriculture and TNC preserve lands, and the east side borders TNC lands.	In 3 areas on east side of road, and in one area near south end of west side.
GVA 4	Small area of both sides of Gopher Valley Road between Agee Rd. and GVA 2.	None found.
GVA 5	Upland, natural area in southwest corner of wetland restoration site in Deer Creek Park. Slender-leaved Peavine and <i>Sidalcea</i> sp. observed in this area may have been planted.	Mostly in large patches along southern, uphill edge of site.
GVA 6	As GVA 6 is on inaccessible private land, direction was given to survey the nearby ROW of Muddy Valley Road. The south end (set in the field) of the surveyed ROW was bordered by scraped, herbicided and mowed ROW, and the north end by the Maysara Winery driveway.	None found.
ORA 1	Surveyed ROW is on the north side of Oak Ridge Road, in the southern of two areas surveyed along the road. Plants seen in suitable habitat on adjacent land appearing to be outside the ROW. Generally, opposite GVA 2.	In some large areas, with much more outside ROW to north.
ORA 2	Surveyed ROW is on the south side of Oak Ridge Road, in the southern of two areas surveyed along the road. Plants seen in suitable habitat on adjacent land appearing to be outside the ROW. Generally, opposite GVA 1.	Mostly in three large areas.
ORA 3	North of ORA 1 and 2. Large bend of Oak Ridge Road,	The only LUPORE found on the east side is

	and straight section north of bend. Barking dogs abutting ROW just inside fences somewhat inhibit surveying.	very close to the bend. Several pops found on west side. Pop at south end partially mowed adjacent to road, but apparently surviving. Pops near center and in north section are large, and some are in native habitats.
ORA 5	ROW borders agricultural area on Old Moore's Valley Road and contains few native plants.	Plants extend far beyond small area with yellow flags. One pop on west side, and a larger one on east side (nearly twice as long), adjacent to young fir plantation.
ORA 6	High, steep slope on northeast side of NW Moore's Valley Road, and level area on southwest side of road. Area where habitat and LUPORE exist is southeast of assigned site, so the survey area was shifted accordingly. Assigned site contains some Many-leaved Lupine on north side of road in moist field, which may have led to problem in mapping.	Mostly on steep slope above road to NE, one large patch on flatter terrace on SW side.
ORA 7	ROW borders agricultural area on both sides of Hacker Road. Much Himalaya Blackberry present, especially on south side.	Scattered on both sides of road

Kincaid's Lupine and Checkermallow Observation Data

All the Kincaid's Lupine in the Willamette Valley very like contains some genes of Spurred Lupine (*L. arbustus*), as has been documented by researchers. The only other species potentially observed on the list of federally listed plants provided for this project is Nelson's Checkermallow (Table 1). Checkermallows (*Sidalcea* sp. or spp.) observed during the survey were not yet in flower (or in bud), so determination to species was not feasible. Meadow Checkermallow (*S. campestris*) appears very similar to Nelson's Checkermallow and occurs in the area of the survey, but is distinguishable in flower.

The letters in the "Pop." (Population, or rare plant site) column below correspond to the rare plant site letters mapped in the GIS files and photographs accompanying this report. For example, LUPORE Site A is mapped as such in the GIS file, and photos are labeled using that identifier.

Table 5. Rare plant information by site and population.

Site	Species	Pop.	Side	Approximate size of area or number of LUPORE plants*
GVA 1	LUPORE	A	E	4 clumps
		B	E	3 clumps and several larger patches
		C	E	2 large clumps
	<i>Sidalcea</i> sp.	A	E	No notes taken. Photo taken.
GVA 2	LUPORE	A	E	Many small patches at south end of QUEGAR patch.
		B	E	Large area in gap (10' x 20')
		C	E	Continuation of B
		D	E	Dominant in 100 ft. linear x 8 ft. up-down bank area; many plants. N end is under QUEGAR.
		E	W	10 ft. x 6 ft. patch. About 100 ft. S of large QUEGAR, 100 ft. N of center of rd. intersection
	<i>Sidalcea</i> sp.	A	E	Several plants, mostly one patch

		B	E	Two plants
GVA 4	Sidalcea sp.	A	E	No notes taken.
GVA 5	LUPORE	A	NA	About 8 plants in 5m x 5m area adjacent to hedgerow, and a few seedlings to NW.
		B	NA	About 200 plants in 50 ft. arc SE to S to SW, reaching to PSEMEN
	Sidalcea sp.	A	NA	One plant
		B	NA	One plant
		C	NA	One large plant
GVA 6	LUPORE			None
	Sidalcea sp.	A	E	In ditch bottom and just above it; 6 patches and one just south about 5 ft. upslope
ORA 1	LUPORE	A	N	In CYTSCO, under PSEMEN. 1 large plant in flower, 1 young plant about 20 ft. to east upslope
		B	N	About 7 roadside plants under PSEMEN branch tips, and about 30 plants scattered 50 ft. east along road.
		C	N	About 70 plants, ending at overhanging AMEALN, about 75 ft. east-west x 6 ft. north-south. Another 5 plants under AMEALN. Another ~50 plants in gap east to QUEGAR overhand, just before bend in road. Many more plants outside ROW.
		D	N	1 small plant under left edge of AMEALN overhang, and another 2 small plants just before bend in rd.
		E	N	About 55 plants in about 75+ ft.; ends at end of hedgerow.
ORA 2	LUPORE	A	S	One large patch and one clump, then tap, then hundreds. Much outside ROW.
		B	S	About 150 plants scattered; some very large patches.
		C	S	About 8 flowering plants, about 20 non-flowering in 6 ft. x 20 ft. area at eastern edge of QUEGAR.
		D	S	About 12 flowering and 15 non-flowering plants in 8 ft. x 40 ft. area. Last (western-most) 3 are on west side of trail down into forest.
ORA 3	LUPORE	A	E	12 flowering and 3 non-flowering near small QUEGAR; all mid-bank, 6 ft. up-down x 25 ft. long
		B	S	About 48 plants, many mowed, but surviving.
		C	W	Two plants in ditch, 2 ft. x 10 ft.
		D	W	40 plants, mostly on ditch foreslope and bottom, some back; about 30 ft. long; then gap; then another 66. Ends just past AMEALN overhang, about 100 ft. north of driveway.
		E	W	100+ plants in LOMDIS patch; difficult to survey because of large, aggressive dog on other side of fence. Large plants behind gate. Some very young plants in mud on road shoulder. Another 200 or so plants north of gate in open.
		F	W	9 plants under north side of MALDOM.
		G	W	About 100 clumps in dense, short BERAQU, IRITEN, PTEAQU; some on other side of ROW fence
		H	W	About 15 clumps in 3 ft. x 8 ft. gap; much more outside ROW fence. About 50 clumps in next gap, about 15 ft. x 20 ft. area
ORA 5	LUPORE	A	W	About 125 clumps, ending about 55 ft. north of yellow flags in dense part
		B	E	About 230 clumps on an 8 ft. slope (up-down), and a few outside ROW fence.
	Sidalcea sp.	A	W	Three along fenceline, spaced about 1.5 m. SIDMALVIR in flower just

				across road.
ORA 6	LUPORE	A	NE	About 26 clumps in 15 ft. x 25 ft. area., gap of about 20 ft., more plants (did not count)
		B	SW	About 15 clumps, 3 ft. wide strip x about 15 ft. long
ORA 7	LUPORE	A	S	3 large clumps in about 25 ft., and 1 small plant 15 ft. east of east end
		B	N	1 clump under CYTSCO, in bud, and one clump about 12 ft. to east, and a third another 15 ft. east
		C	N	16+ patches, in about 6 ft. x. 30 ft., near/under RHAPUR; +1 large patch 15 ft. east of east end, on road edge.
		D	N	About 38 clumps/patches. About 75 ft. east-west, by 8 ft. up-down perpendicular. Some at road edge.
		E	N	About 25 clumps/patches, some at top of bank. About 30 ft. east-west by 20 ft. north-south.
		F	S	4 clumps, roadside.
	Sidalcea sp.	A	S	One large clump, about 25 ft. to west another small clump; another small clump 10 ft. west of there, and another one about 6 ft. west of there.
		B	N	About 12 clumps, mostly in ditch bottom.

*The number of plants is difficult to determine, as plants are somewhat clumpy, but may be rhizomatous. It is difficult to tell if a “clumpy patch” is one or more individual plants, so “number of plants” here should be interpreted very generally as “number of clumps.”

Site Data

Table 6 (next page) provides some specific information on the times and conditions during the surveys, the location and specific site data. The approximate UTM centroid of each surveyed polygon was derived in the office by locating the approximate middle point of a survey area polygon. It always lies within the polygon. It is not a GIS-derived centroid, which often lies outside the polygon of interest.

List of Native Vascular Plants by Site

Following Table 6 below, Table 7 contains a list of all native plant species found within the boundaries of each site. Plant nomenclature in the table follows the Oregon Flora Project: <http://www.oregonflora.org/checklist.php>. Most notably, Kincaid’s Lupine (formerly *L. sulphureus* ssp. *kincaidii*) now is recognized as *Lupinus oreganus* by the OFP. Note that six-letter plant codes used in this document can be correlated with the Latin name column in Table 7 by identifying the first three letters are the genus name followed by the first 3 letters of the species name. Thus, the first species, *Crataegus suksdorfii*, can be abbreviated as CRASUK.

Table 6. Site data and survey details.

Site ID	Date	Time begin:	Time end:	Weather	Temp. ° F	Location/description	Habitat (all are altered)	Approx. svy. length* ft.	Approx. UTM centroid - E	Approx. UTM centroid - N
GVA 1	6/1/11	1535	1625	Rain	<55	Gopher Valley roadsides from Dupee to Agee Lane	E side: shrubby w/gaps; W side: prairie w/scattered trees	2400	470530mE	5002762mN
GVA 2	6/1/11	1540	1645	Cloudy	<55	Just N of GVA4. Borders TNC preserve on E side.	Trees, shrubs, prairie, wet ditch	3092	470729mE	5003196mN
GVA 4	6/1/11	1528	1540	Cloudy	<55	Between GVA1 and 2, at int. of Gopher Valley Rd. and Agee	Shrubby, some recent power line clearing	280	470715mE	5002922mN
GVA 5	6/2/11	1805	1840	Part sun/clouds	<55	SW corner of Deer Creek Park	Upland prairie	600	469280mE	5001258mN
GVA 6	6/2/11	1856	1930	Cloudy, cool	<55	Muddy Valley roadsides near GVA6	Shrub, prairie	3800	474905mE	4998787mN
ORA 1	6/2/11	1240	1316	Part sun/clouds	<60	N. side of Oak Ridge Rd., south section	Shrub, prairie	1100	477875mE	5021588mN
ORA 2	6/2/11	1317	1340	Cloudy	<60	S. side of Oak Ridge Rd., south section	Prairie	1010	477863mE	5021579mN
ORA 3	6/2/11	1415	1546	Part sun/clouds	<60	Oak Ridge Rd., north section	Prairie, residential, etc.	5200	477060mE	5022616mN
ORA 5	6/2/11	1612	1630	Mostly cloudy	<60	NW Old Moore's Valley Rd.	Prairie, agriculture	820	475788mE	5019709mN
ORA 6	6/2/11	1643	1705	Mostly sunny	<60	NW Moore's Valley Road	Prairie, shrubs	560	476690mE	5020103mN
ORA 7	6/2/11	1051	1200	Drizzle	<60	Hacker Road	Prairie, shrubs	1930	479772mE	5024764mN
							TOTAL FEET:	20,792	(3.94 mi.)	

Notes:

*Generally, this is the sum of two sides of a road (the ROW survey length), with the road segment being half as long. Exceptions: ORA1 and ORA2 are separate sides of the same road segment, and GVA5 is a section of a park not on a roadside (but the long axis is shown doubled in length).

Table 7. List of native vascular plants by site.

		GVA					ORA							
Latin name	Common Name	1	2	4	5	6	1	2	3	5	6	7	Comments	
TREES														
Crataegus suksdorfii	Suksdorf’s Hawthorn	1	2		5	6			3			7		
Fraxinus latifolius	Oregon Ash		2			6							Damp to wet portions of sites.	
Prunus virginiana var. demissa	Chokecherry				5	6						7	Many in flower.	
Pseudotsuga menziesii var. menziesii	Douglas-fir	1			5		1		3					
Quercus garryana var. garryana	Oregon White Oak		2	4	5	6	1	2	3			7		
Rhamnus purshiana	Cascara	1				6			3		6	7		
SHRUBS														
Amelanchier alnifolia	Pacific Serviceberry	1	2		5	6	1		3			7		
Berberis aquifolium	Tall Oregongrape								3			7		
Cornus sericea	Creek Dogwood					6							Damp to wet portions of site.	
Corylus cornuta var. californica	California Hazel				5				3					
Holodiscus discolor	Oceanspray								3					
Oemleria cerasiformis	Osoberry		2				1		3			7		
Physocarpus capitatus	Ninebark		2											
Ribes divaricata	Straggly Gooseberry				5									
Rosa nutkana var. nutkana	Nootka Rose		2	4	5	6			3			7		
Salix hookeriana	Hooker’s Willow		2											
Symphoricarpos albus var. laevigatus	Snowberry	1	2	4	5	6		2	3		6	7		
Toxicodendron diversilobum	Poison-oak		2		5	6	1	2	3			7		
FORBS														
Achillea millefolium	Yarrow						1		3			7		
Apocynum androsaemifolium var. androsaemifolium	Spreading Dogbane		2						3					
Aquilegia formosa	Red Columbine				5				3					
Calochortus tolmiei	Tolmie’s Mariposa Lily		2	4										
Calystegia atriplicifolia ssp. atriplicifolia	Night-blooming Morning Glory										6	7		
Camassia leichtlinii var. suksdorfii	Tall Camas						1			5		7		
Camassia quamash var. maxima	Common Camas			4										
Clarkia amoena	Farewell-to-Spring											7	Not in flower, but fairly certain of ID.	

		GVA					ORA							
Latin name	Common Name	1	2	4	5	6	1	2	3	5	6	7	Comments	
Comandra umbellata ssp. californica	Bastard Toadflax		2						3					
Dichelostemma congesta	Ookow											7		
Drymocallis glandulosa	Sticky Cinquefoil								3				Var. not determined	
Epilobium brachycarpum	Annual Willowherb						1			5				
Epilobium ciliatum	Common Willowherb			4									Likely ssp. glandulosum	
Epilobium densiflorum	Dense-flowered Willowherb													
Eriophyllum lanatum	Oregon Sunshine		2				1			5		7		
Fragaria vesca ssp. bracteata	Woodland Strawberry								3					
Fragaria virginiana ssp. platyphylla	Broadpetal Strawberry	1	2		5	6			3			7		
Galium aparine	Cleavers		2											
Geum macrophyllum	Large-leaved Avens		2	4										
Heracleum lanatum	Cow Parsnip	1	2	4	5	6						7		
Iris tenax	Pacific Iris		2	4			1	2	3			7		
Lathyrus holochlorus	Thinleaf Peavine		2		5								Federal Species of Concern.	
Ligusticum cf. apiifolium	Celery-leaved Lovage				5				3				Not yet in flower.	
Lomatium dissectum	Fern-leaved Lomatium	1			5	6	1		3					
Lomatium nudicaule	Barestem Lomatium		2			6						7		
Lotus micranthus	Field Lotus								3			7		
Lotus purshianus	Spanish Clover					6						7		
Lupinus oreganus	Kincaid's Lupine	1	2		5		1	2	3	5	6	7	Formerly L. sulphureus ssp. kincaidii. Federally Listed Threatened, State Listed Threatened.	
Lupinus polycarpus	Small-flowered Lupine								3					
Marah oreganus	Wild Cucumber	1	2			6			3	5	6	7		
Mimulus guttatus	Yellow Monkeyflower					6								
Oenanthe sarmentosa	Water Parsley			4										
Perideridia cf. gairdneri ssp. borealis	Gairdner's Yampah			5										
Potentilla gracilis ssp. gracilis	Graceful Cinquefoil		2			6						7		
Poteridium occidentale	Annual Burnet	1								5	6			
Prunella vulgaris var. lanceolata	Native Self-heal		2		5	6								
Prunus virginiana var. demissa	Chokecherry													
Ranunculus orthorhynchus	Straight-beaked Buttercup		2											
Ranunculus uncinatus	Disappointing Buttercup		2											
Rubus ursinus	Trailing Blackberry	1				6	1		3	5		7		

		GVA					ORA							
Latin name	Common Name	1	2	4	5	6	1	2	3	5	6	7	Comments	
Rumex salicifolius	Willow-leaved Dock		2					2						
Sanicula crassicaulis	Pacific Snakeroot	1		4	5				3					
Sidalcea malviflora ssp. virgata	Rosy Checkermallow													
Sidalcea sp.	Checkermallow, unidentified		2	4	5	6						7	<i>S. campestris</i> or <i>S. nelsoniana</i> . Not in bud. <i>S. nelsoniana</i> is Federally Listed Threatened and State Listed Threatened. <i>S. campestris</i> does not have federal status, but is a state Candidate.	
Sisyrinchium idahoense	Idaho Blue-eyed Grass		2											
Solidago sp.	Goldenrod									5		7	Likely <i>S. lepida</i> var. <i>salebrosa</i> or <i>S. elongata</i> .	
Symphyotrichum hallii	Hall’s Aster						1					7		
Symphyotrichum subspicatum	Douglas’ Aster	1	2									7		
Tellima grandiflora	Fringecups			4	5				3			7		
Vicia americana var. americana	American Vetch	1	2		5		1	2				7		
Wyethia angustifolia	Mule’s Ears				5									
GRAMINOIDS														
Bromus sitchensis	Sitka Brome					6							The only flowering native grass present.	
Carex densa	Dense Sedge		2	4										
Carex leptopoda	Slender-footed Sedge		2											
Carex leporina	Hare Sedge									5				
Carex obnupta	Slough Sedge					6								
Carex pachystachya	Thick-headed Sedge		2											
Carex tumulicola	Foothill Sedge		2				1	2				7		
Juncus bufonius	Toad Rush		2	4										
Juncus effusus ssp. pacificus	Soft Rush			4		6								
Juncus ensifolius	Dagger-leaved Rush		2											
Juncus occidentalis	Western Rush		2			6						7		
Juncus patens	Spreading Rush		2	4		6	1							
Scirpus microcarpus	Small-fruited Bulrush					6								
FERNS/SPOROPHYTES														
Equisetum arvense	Field Horsetail	1			5									
Equisetum telmateia var. braunii	Giant Horsetail	1	2											
Polypodium glycyrrhiza	Licorice Fern													
Polystichum munitum	Sword Fern		2				1							

		GVA					ORA							
Latin name	Common Name	1	2	4	5	6	1	2	3	5	6	7	Comments	
Pteridium aquilinum	Bracken	1	2		5		1	2	3			7		

Yamhill County Roadside Surveys for Kincaid's Lupine: 2 km Buffer Areas

Executive Summary

Cardno ENTRIX (CE) requested that Salix Associates (SA) conduct driving surveys of 55 miles of county roadside buffer areas outward from the eleven roadside sites previously surveyed in Yamhill County, Oregon and three additional sites. The purpose of the surveys was to document the presence or absence of Kincaid's Lupine (*Lupinus oreganus*, formerly *L. sulphureus* ssp. *kincaidii*).

Kincaid's Lupine was documented in 7 previously undocumented county road right-of-way (ROW) areas, consisting of the 21 individual sites shown on Table 1. These sites are in addition to the "original" sites documented and submitted in the previous report (June 2011).

Methods and Results

SA was enlisted to conduct drive-by surveys of all county roadsides highlighted within the 2 km buffer shown on maps produced by CE. Bruce Newhouse of SA was the primary surveyor and Melissa Klungle of CE was driver, route planner and assistant for the surveys. Both sides of each designated road in each buffer were driven slowly on the far right edge of the pavement, with emergency flashers on. Portions of these areas that were walked for the previous set of more detailed surveys were excluded – they were driven by at normal speed without surveying.

Driving was deliberately slow in high probability habitat areas. Whenever a Kincaid's Lupine was seen, the vehicle was stopped, and the surveyor and driver searched for additional plants on foot in both directions and across the road. In a few cases, difficult-to-see extensions of a population were observed in an area that had just been driven by without detection.

Because of the lateness, surveys occurred slightly past the "window" allowing highest detectability, leaving the possibility (or likelihood) that some lupine plants are present that were not seen. Most Kincaid's Lupine plants observed were past anthesis, and flowers were either not present, present but only at the top of a raceme or partially present but partly brownish in color. Some of the lupine populations observed consisted of one or a few vegetative plants partially concealed by surrounding vegetation.

As directed for the survey, one GPS point was recorded for populations less than 5m in length, and two points were recorded for starting and ending points of longer populations.

The GIS files submitted with this report show the vehicular route and delineate the extent of the surveys. They also contain waypoints recorded at Kincaid's Lupine sites. There is some distortion in the base mapping used for the southern portion of Rock Creek, so the GPS track for that area may appear "off." Also, photos are submitted concurrently for nearly all the sites. B. Newhouse photos are in the format "Site A date road YAMH.jpg" and M. Klungle photos are named differently and have an MK in the file name.

Two other species of lupines were seen during this survey: Broadleaf Lupine (*L. latifolius*) and Many-leaved Lupine (*L. polyphyllus*). The former species was observed in numerous western portions of the Oak Ridge area, in particular. It can occupy habitats similar to those where Kincaid's Lupine might occur, however, it can be

separated from that species using differences in flower parts (banner index, banner shape) and leaf hairs. It generally grows in association with conifer forests, but can overlap with Kincaid's Lupine on edges or in gaps in mixed forest habitats. Kincaid's Lupine and Broadleaf Lupine grow together at the Oak Ridge Road Site A location listed in Table 1. Many-leaved Lupine is larger in all its parts, has lateral branches not ending in racemes, and grows in moist to somewhat wet areas. It was observed in several moist locations during the survey, primarily in ditches. The flower color of Many-leaved Lupine can range from white to muddy pink-purple to blue-purple, but all the plants observed were white (or very pale).

Although lupine counts were not a part of the project, the areas generally with the most Kincaid's Lupine plant present are the combined clusters of sites on Panther Creek Road and on Beaver Creek Road, the Oak Ridge Road Site A near the Old Moore's Valley Rd. intersection, and the two sites on Meadow Lake Road. No Kincaid's Lupine was seen at the Rock Creek site, so that area either was surveyed too late in the day, or plants are senescent and overgrown and extremely difficult to see.

Table 1. Additional Kincaid's Lupine (LUPORE) sites documented in 2 km buffer survey. With one exception, sites are listed in order of documentation in the field.

New LUPORE site road names	WP#	Site ID	Notes
2011-06-29			
Tupper Rd	2 & 3	A	East end Tupper Rd. on north side. 5m long, from guy wire to utility pole.
	4	B	
Oakridge Rd.	5	A	LUPORE to left of flowering LUPLAT. More LUPLAT across road.
2011-06-30			
Panther Creek Rd.	2	A	Many of the plants in the six Panther Cr. Road sites are under the edge of young, roadside Douglas-fir trees.
	3	B	
	1	C	
	4	D	
	5	E	
	6	F	
Meadow View Rd.	7	A	This is a "known" site that was added after the initial SA survey, so the entire roadside within the 2 km buffer area was searched.
	8	B	This may be part of the previously known site.
	9	C	
Moore's Valley Rd.	10	A	SE extension of known site from previous inventory (ORA 6).
Hibbard Rd. (Old Moore's Valley Rd.)	11	A	
Old Moore's Valley Rd.	12	A	Very close to (at) 4-way intersection with Meadow Lake Road.
	13	B	Southern extension of previously surveyed site (ORA 5)
	14	C	Southern extension of previously surveyed site (ORA 5)
Beaver Cr. Rd.	15	A	
	16	B	
	17	C	
Gopher Valley Rd.	18	A	About 5 clumps

Appendix C

Known Habitat for Fender's Blue Butterfly

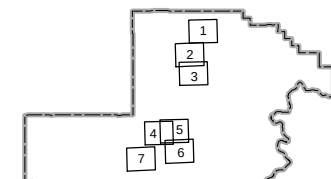
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Appendix C

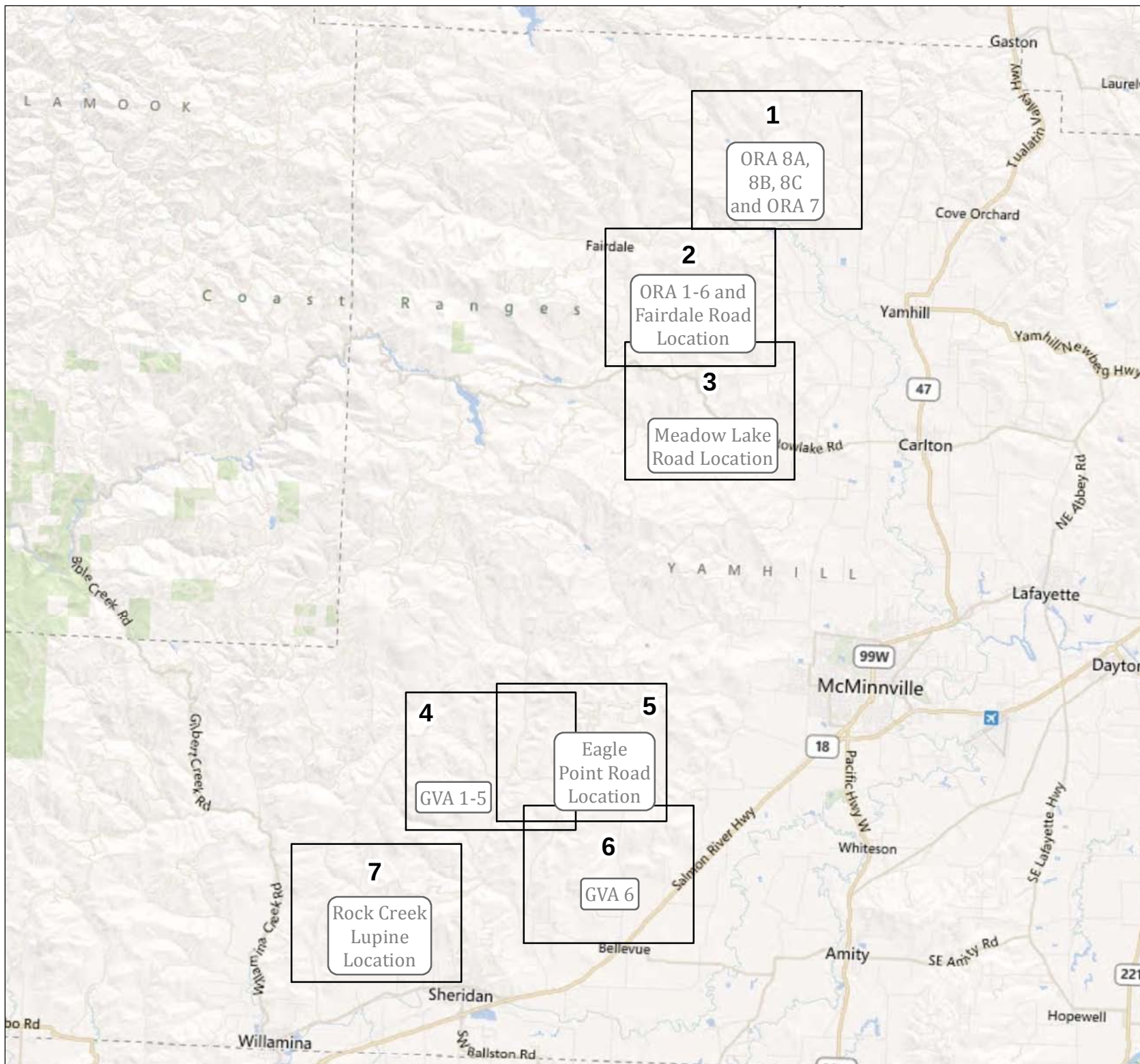
These maps were created to identify U.S. Fish and Wildlife Service known locations of Fender's blue butterfly. Each map in this appendix isolates a portion of Yamhill County where known Fender's blue butterfly habitat is present. The first map is a sheet index that provides an overview of the site locations as well as a sheet number for individual area maps. The location of these sites within Yamhill County can be identified by correlating the sheet number (e.g., Sheet 1) with the overview map of the County on the sheet index or the right-hand corner of the individual map. The following acronyms are used in these maps:

- GVA – Gopher Valley Area
- ORA – Oak Ridge Area

Appendix C Sheet Index



Yamhill County, Oregon



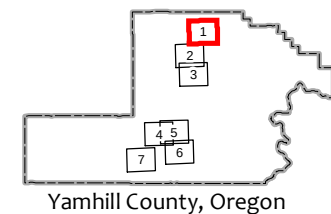
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0 1 2 3 4 5 mi

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Appendix C Sheet 1

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Legend

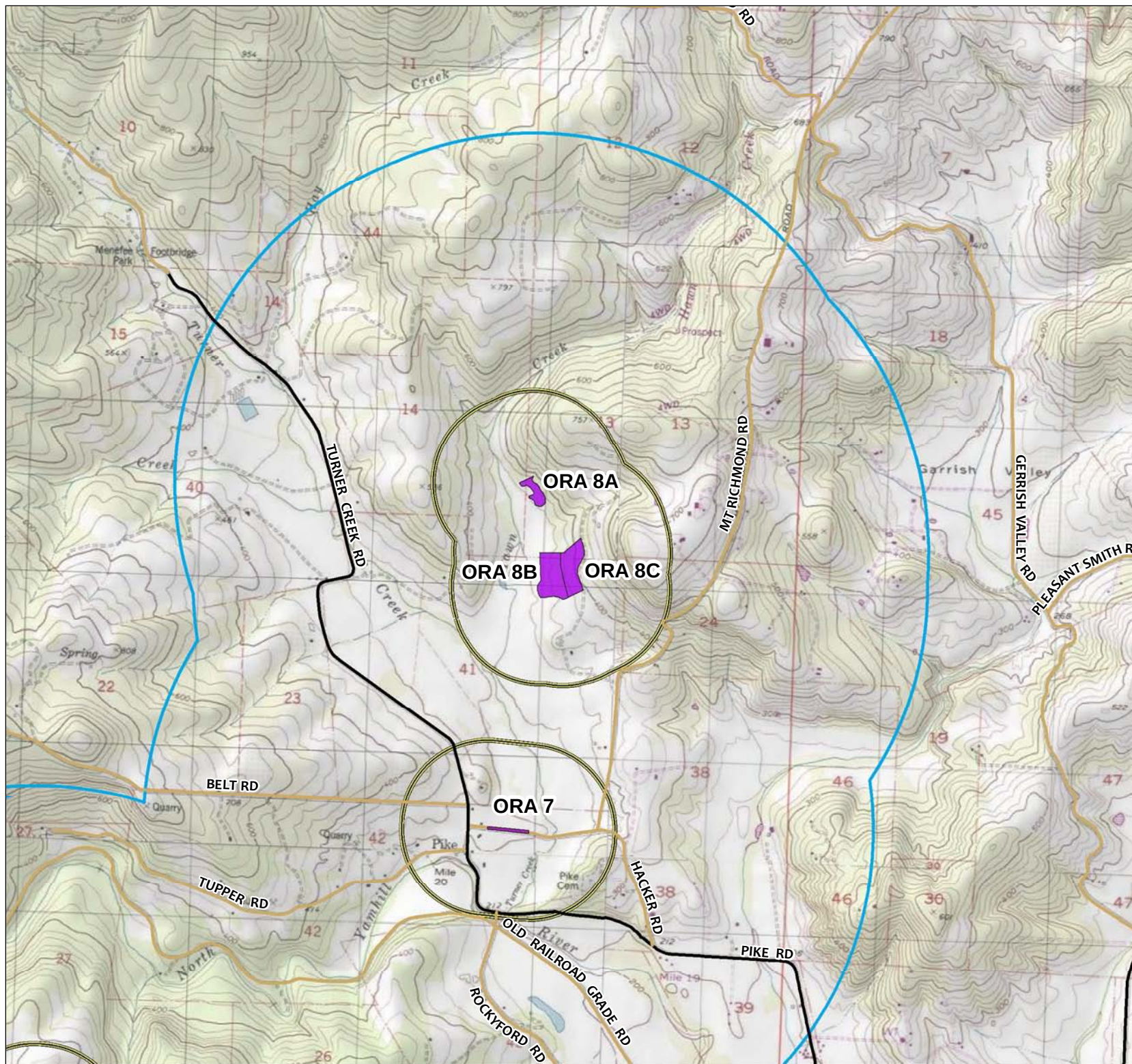
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- 1/2 km Nectar Zone
- 2 km Dispersal Zone
- County Roads
 - Gravel Road
 - Paved Road



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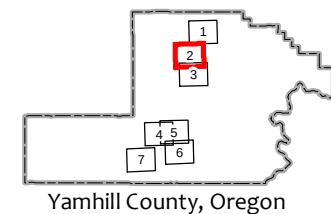
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Appendix C Sheet 2

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Legend

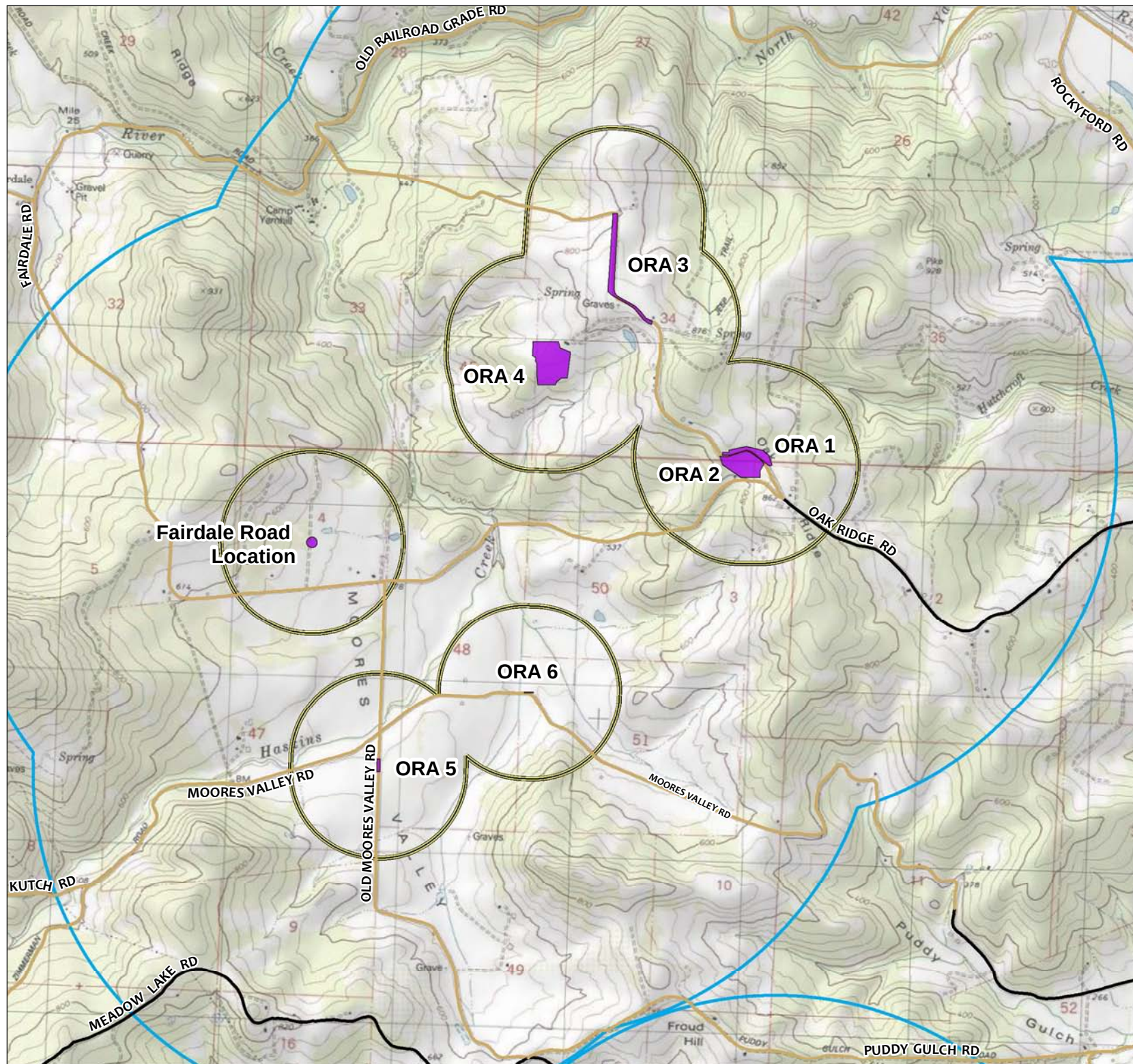
-  Known Fender's Blue Butterfly Sites
-  1/2 km Nectar Zone
-  2 km Dispersal Zone
- County Roads
 -  Gravel Road
 -  Paved Road



0 0.5 1 km

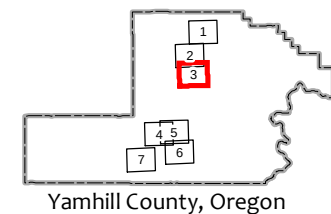
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Appendix C Sheet 3

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Legend

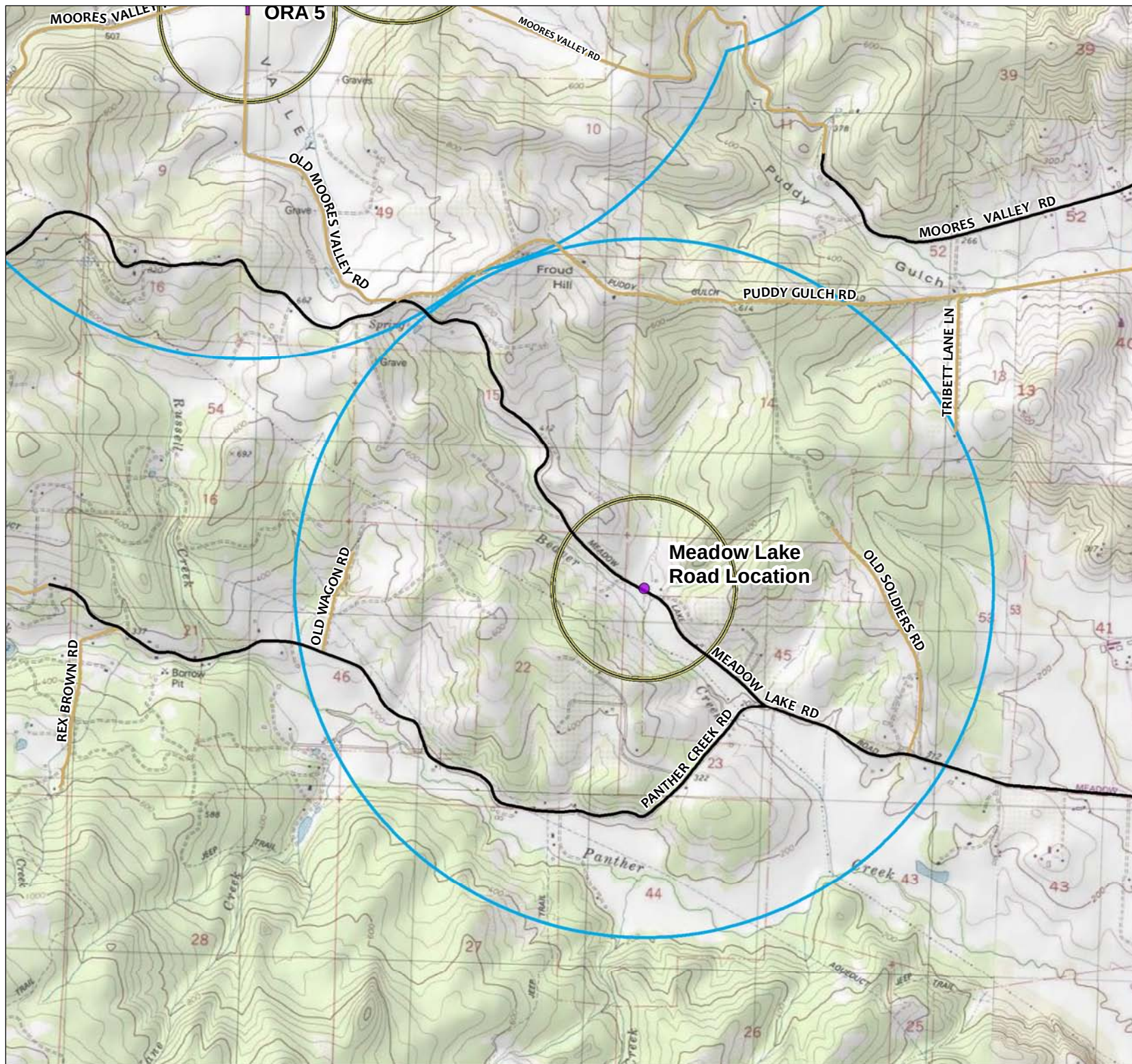
-  Known Fender's Blue Butterfly Sites
-  1/2 km Nectar Zone
-  2 km Dispersal Zone
- County Roads
 -  Gravel Road
 -  Paved Road



0 0.5 1 km

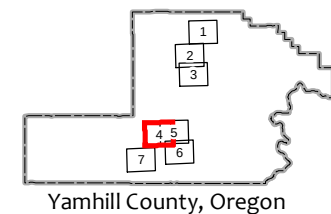
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Appendix C Sheet 4

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Legend

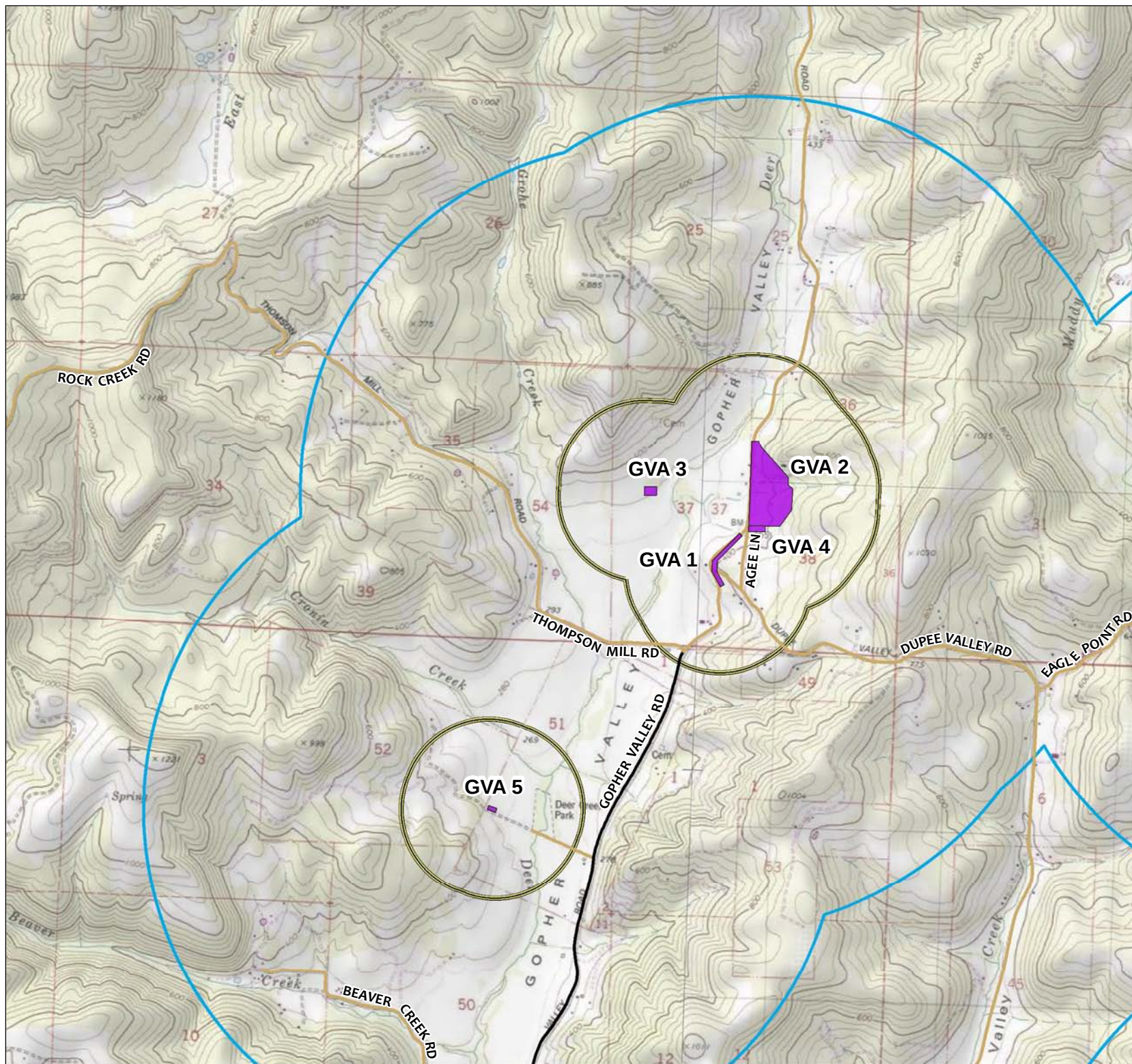
-  Known Fender's Blue Butterfly Sites
-  1/2 km Nectar Zone
-  2 km Dispersal Zone
- County Roads
 -  Gravel Road
 -  Paved Road



0 0.5 1 km

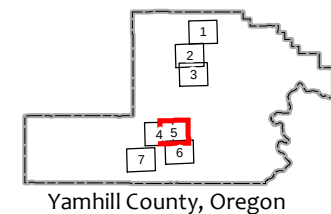
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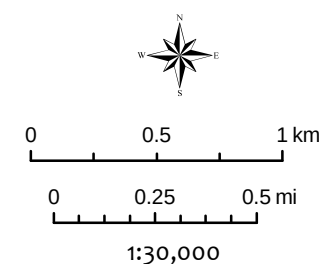
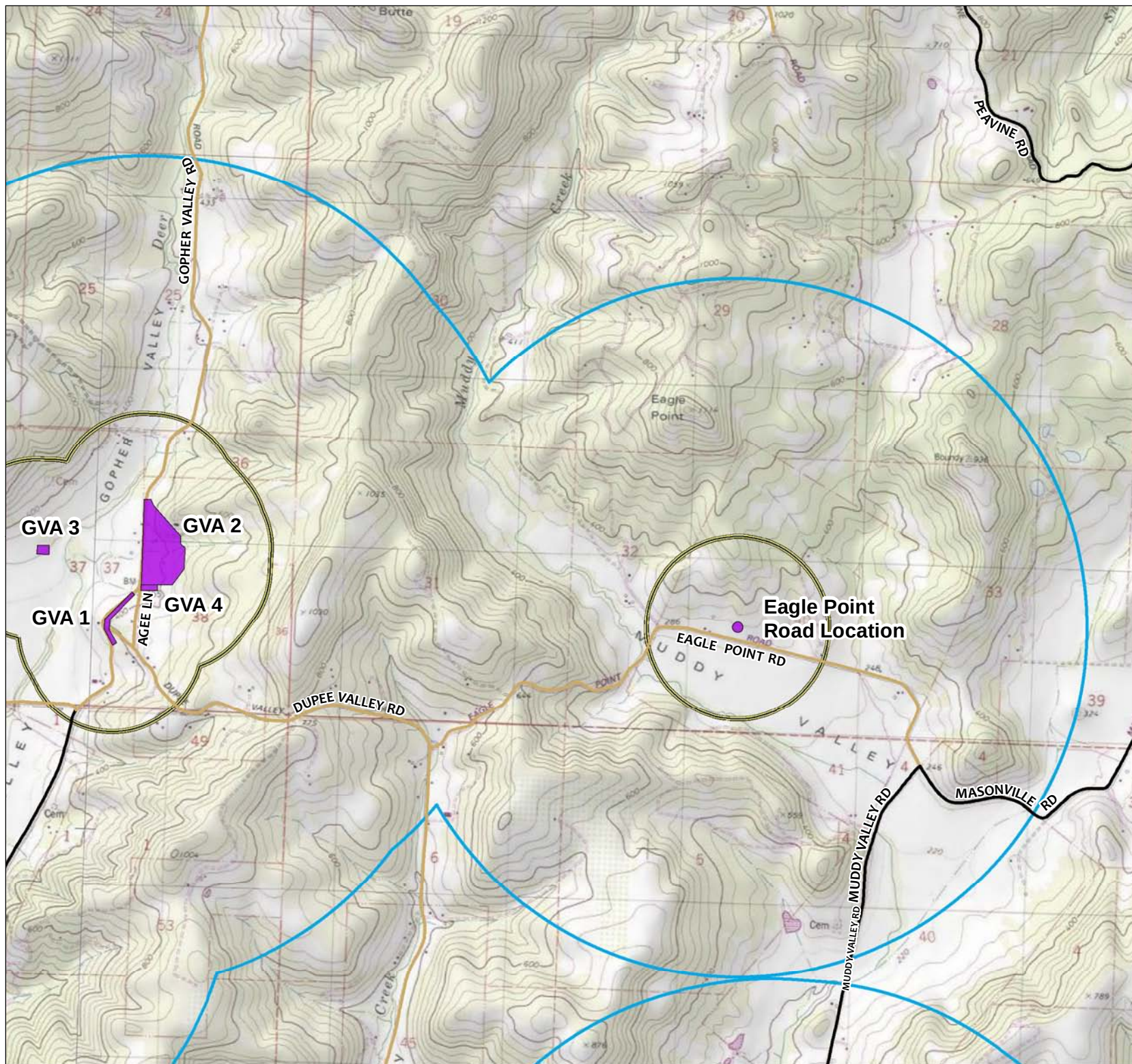
Appendix C Sheet 5

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



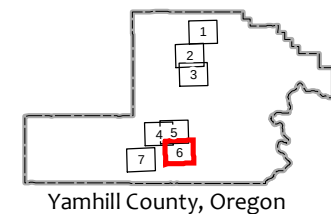
Legend

-  Known Fender's Blue Butterfly Sites
-  1/2 km Nectar Zone
-  2 km Dispersal Zone
- County Roads
 -  Gravel Road
 -  Paved Road



Appendix C Sheet 6

Known Fender's Blue Butterfly and Kincaid's Lupine Habitat



Legend

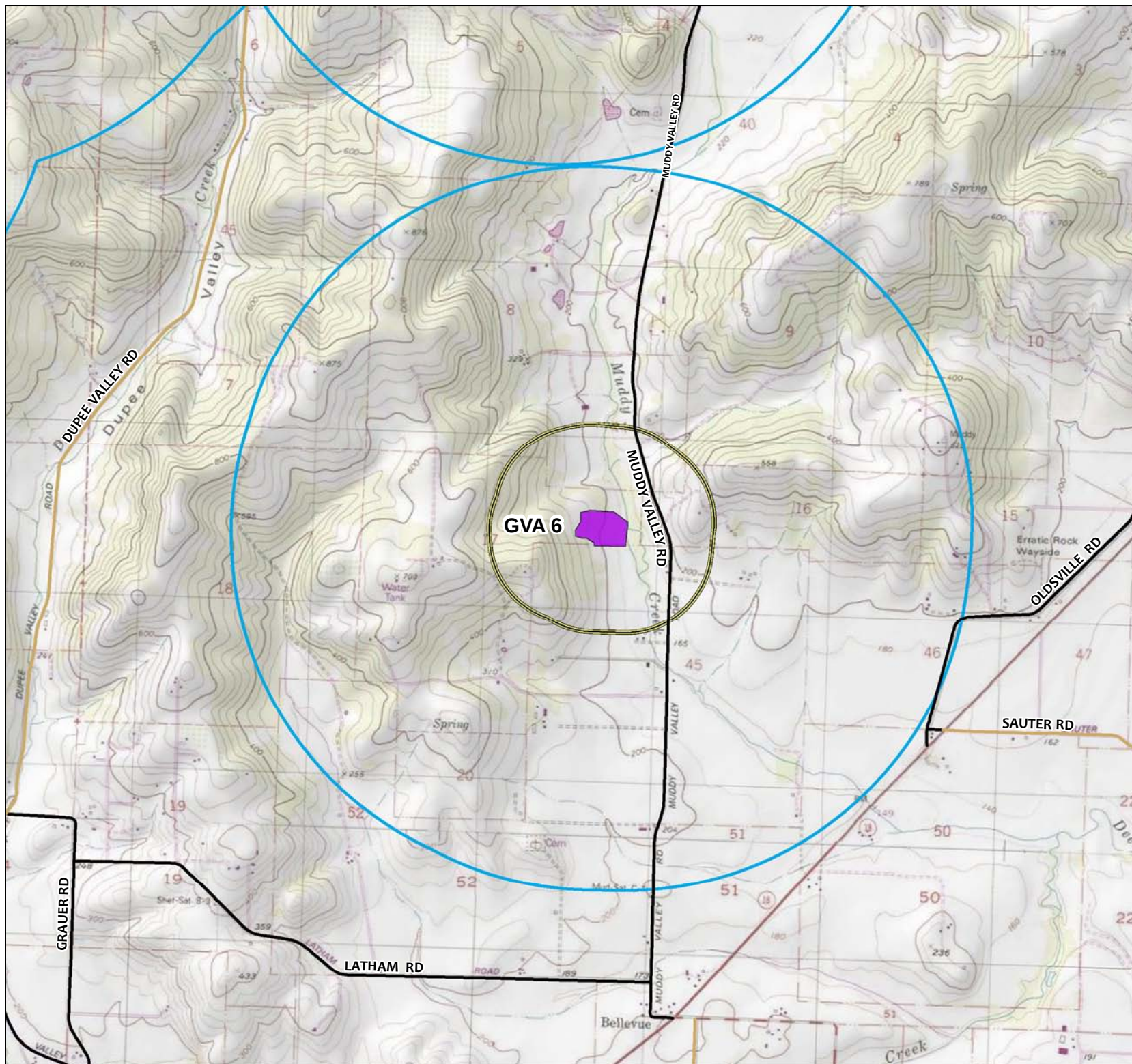
-  Known Fender's Blue Butterfly Sites
-  1/2 km Nectar Zone
-  2 km Dispersal Zone
- County Roads
 -  Gravel Road
 -  Paved Road



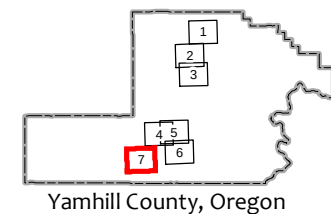
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0 0.25 0.5 mi

1:30,000



Known Fender's Blue
Butterfly and Kincaid's
Lupine Habitat



Legend

- Known Fender's Blue Butterfly Sites
- 1/2 km Nectar Zone
- 2 km Dispersal Zone

County Roads

- Gravel Road
- Paved Road



0 0.5 1 km

0 0.25 0.5 mi

1:30,000

