REPORT OF ACTIVITIES CONDUCTED

Endangered species permit number: **TE168189-0**
Permitee: **Michael Clay Green** (report submitted by William Simper, subpermittee)
Species common and scientific name: **Black-capped vireo, *Vireo atricapilla***

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1. PROJECT INTRODUCTION AND OVERVIEW

My thesis research is an attempt to connect natal and breeding dispersal of the Black-capped vireo (*Vireo atricapilla* Woodhouse, BCVI) to the structural composition of habitat and matrix landscapes. The field component of the project involves locating and marking individual birds with unique leg-band color combinations, then resighting or recapturing those birds in subsequent breeding seasons. Banding and recapture locations will provide measurements of inter-patch connectivity that can then be statistically compared to connectivity values generated by applying a set of *a priori* dispersal models to an appropriately classified landcover map.

The first phase of the project was implemented in the spring of 2008. The study sites (sometimes referred to as plots or patches) are fifteen habitat areas known to be occupied by breeding BCVI, having a history of occupancy, or having undergone restoration specifically for the purpose of creating BCVI habitat. All study sites were located in central Texas on portions of the Balcones Canyonlands National Wildlife Refuge (BCNWR) and the Balcones Canyonlands Preserve (BCP). See Appendices B and E for site-specific information.

2. METHODS

Study sites were surveyed from middle of March to the beginning of August 2008. Because the primary objective of the 2008 field season was to mark the greatest number of birds possible, surveys were conducted in accordance with the territory mapping methodology outlined in part S.10 of the Permit conditions (as opposed to the presence/absence protocol outlined in parts S.2 through S.9). If few or no birds were detected during initial surveys of a site, less effort was subsequently devoted to that site in order to maximize limited time and personnel resources. Sites which were more densely populated or which lent themselves to efficient nest searching were given higher priority earlier in the season, while later (i.e. after mid-May when the first set of nests had fledged) the focus shifted to identifying and banding adults and fledged juveniles.

Nests were located by observing the movements and behavior of territorial males. The presence of an accompanying female early in the season or observations of

individuals carrying nest materials or food were the primary clues to finding active nests. Once identified, nests were briefly checked for the presence of eggs or nestlings. Depending on the stage of the nest (eggs or nestlings present), checks would be conducted as often as every other day or up to a week later. The aim of these checks was to determine when the young had developed sufficiently (6 to 8 days after hatching) to safely receive color bands while minimizing the danger of premature fledging. Caution was exercised to ensure that the local environment was free of predators and brood parasites during nest checks and banding activities. All nestlings received a site-specific band combination consisting of two color bands on one leg and a USFWS aluminum band on the other. Additionally, four birds that were determined to be BCVI fledglings were captured late in the season and were banded with appropriate site-specific color combinations.

Adult BCVI were banded by targeted mist-netting. Territorial males were located and observed in order to determine the approximate boundaries of their territories. Net lanes were implemented as centrally within these territories as possible. Recorded playback of BCVI (and sometimes eastern screech owl) vocalizations were used to lure birds into the net. Playback times did not exceed 30 minutes per banding attempt. Adult birds received individual combinations consisting of three color bands and a USFWS aluminum band.

3. SUMMARY OF BANDING RESULTS

Seventy-nine Black-capped vireos were banded or recaptured during the 2008 field season. Birds born in the current year (i.e. nestlings and fledglings) are referred to as ‘hatch year’ or HY birds. Observations of the color and condition of crown feathers, wing coverts, and retrices allow the classification of adult BCVI into two age classes, ‘second year’ (SY) and ‘after second year’ (ASY). SY birds are one year old and are in their first breeding season, while ASYs are two years or older. Table 1 summarizes the total number of birds captured in each sex and age class while Figure 1 and 2 provide totals for each study site.

Table 1. Total BCVI banded in 2008 by sex and age class.

Male	Female	Hatch Year	SY	ASY	Recaptured
41	7	31	28	20	2

Figure 1. Sex of captured BCVI (2008) by study site. Sites are arranged from north to south.

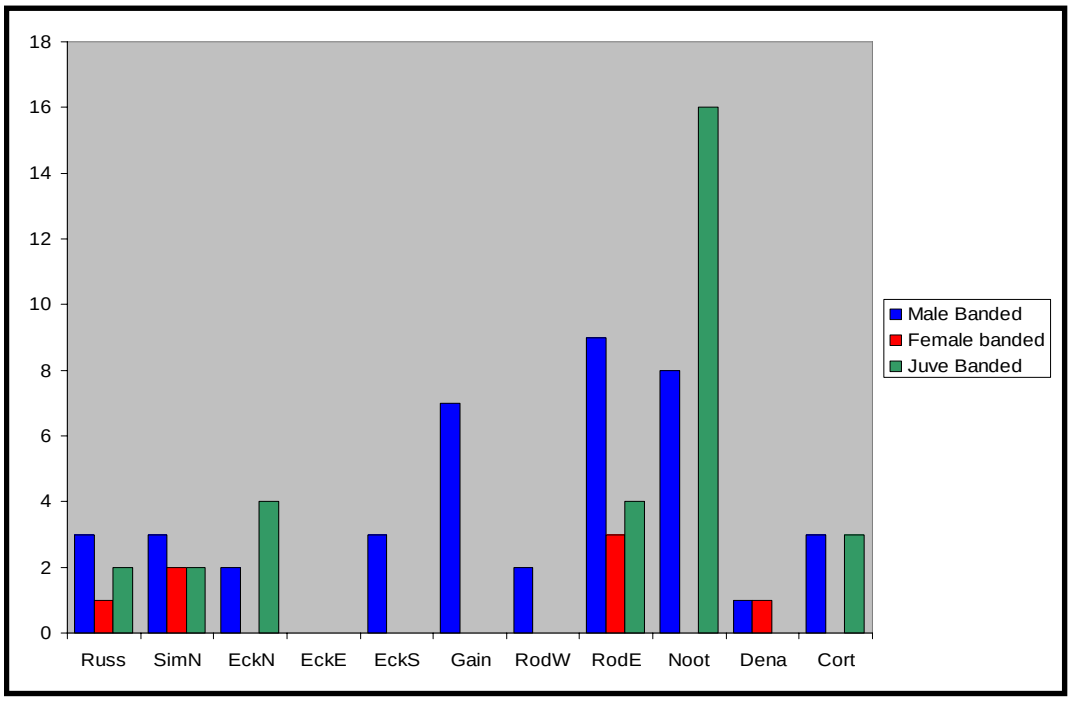
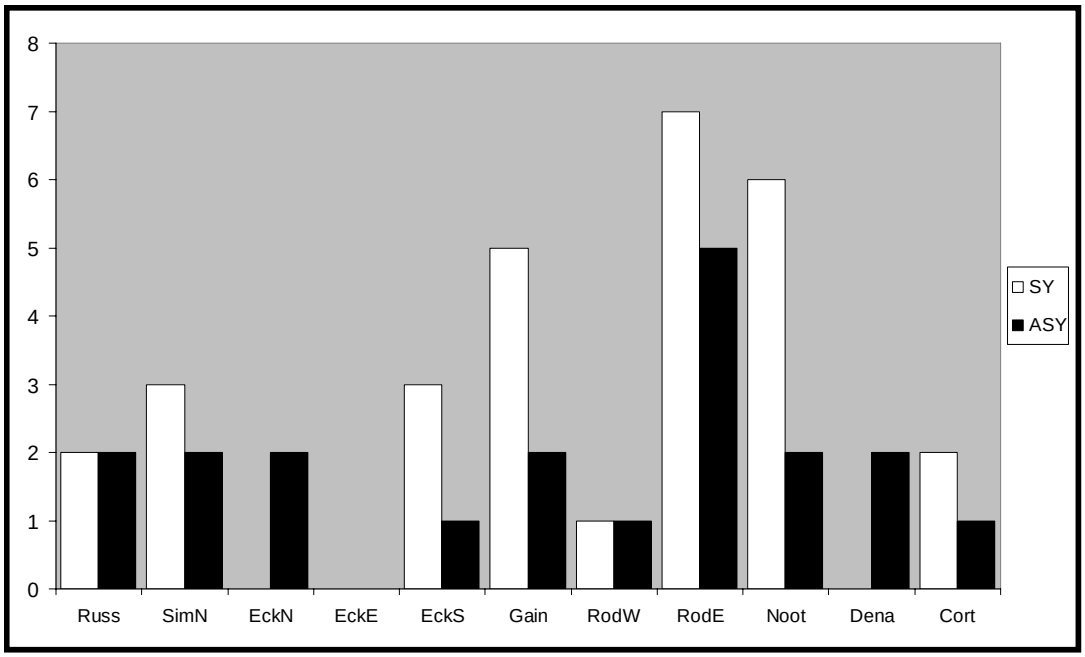


Figure 2. Age class of captured BCVI (2008) by study site. Sites are arranged from north to south.



4. NESTS

Twenty-three nests were located and monitored over the course of the 2008 field season. Of these, eleven remained active long enough to initiate banding of nestlings. The remaining twelve nests either failed prior to banding (ten nests) or were discovered after nestlings were too old to risk inducing a premature fledge (two nests, both successful). Five nests were assumed to be predated (culprit species unknown) when eggs or fledglings abruptly disappeared. Fire ants were observed swarming one nest containing newly hatched nestlings. Two nests were parasitized by brown-headed cowbirds (*Molothrus ater*). One nest was abandoned with no eggs laid, another after the three eggs present had been brooded for at least 17 days (usually a male was observed on the nest). Additionally, seven nests were discovered which were never observed to contain eggs (or to be attended by adults) and were therefore judged to be 'left-overs' from previous seasons.

Nine of the eleven banded nests are believed to have fledged successfully. In order to minimize disturbance and exposure to predators, nests were usually checked only once after nestlings had been banded. The presence of shed pin-feather sheathing (powdery white residue) in an intact nest was taken as an indication of successful fledging. Two nests are known to have failed subsequently to being banded, presumably due to predation. Both of these were located along the exposed edge of preserve access roads. In one case, all four nestlings were missing when the nest was checked by preserve staff three days following banding. The second nest contained the remains of two nestlings (of three that had been banded) when it was checked one week after banding. The condition of the recovered bodies suggests that the birds survived at least one day after being banded (bodies were slightly larger and previously intact tips of alar pin-feathers had begun to unsheathe). The frozen remains of these two nestlings currently reside at Texas State University (Supple Science Building room 253).

5. RECAPTURES

Two previously banded BCVI were recaptured in 2008. The first was a male identified as a SY when it was initially captured in 2005 (making it four years old in 2008). It was recaptured on the same BCNWR tract (Gainer) where it was initially banded and was given a full color band combination (it had previously been banded only with an aluminum band).

The second recaptured BCVI was a female which had been banded as a nestling on the Fort Hood Military Reservation in 2006. Her recapture location was determined to be 49.6 km from her natal site—the third longest recorded cumulative dispersal for this species. Details of this recapture are outlined in the attached file 'Cimprich_et_al.doc' which is under review for publication in the Bulletin of the Texas Ornithological Society.

6. NEGATIVE SURVEY RESULTS

No BCVI were detected on three of the designated study sites-- two on the BCP (Vireo Preserve and Bohls Hollow) and one on the BCNWR (southern Simons tract). However, each of these sites was surveyed only a single time during the breeding season and taped vocalizations were not played during these visits. Thus, a formal claim that these sites were unoccupied by BCVI in 2008 is not justified based on project activities since formal presence/absence protocol was not conducted.

7. OFF-PROPERTY DETECTIONS

BCVI were occasionally detected singing off-property on the far side of preserve boundaries. On the accompanying site maps, these registrations are marked along boundary lines at points which are approximately orthogonal to these detections. Table 2 gives the number of detected birds and their positions relative to preserve boundaries.

Table 2. Number and approximate locations of off-property BCVI detections.

Study Site	Num. BCVI partially off-property	Num. BCVI completely off-property	Direction / fenceline crossed
Russell	3	1	north, south, east
Simons (north)	1	0	north
Eckhardt (south)	2	0	west
Gainer	3	1	north, south
Rodgers (west)	0	1	north
Cortana	1	0	north

8. PLANS FOR 2009 FIELD SEASON

The 2009 field season will consist primarily of resighting and/or recapturing marked birds. Sites will be surveyed by following predefined study routes, identifying singing males and observing them until a positive identification of their band status can be made. Effort will be made to recapture any marked SY birds in order to reband these returning individuals with unique adult color combinations (as opposed to communal site-specific juvenile combinations). To the extent practicable, the breeding status of marked birds will be ascertained. As time and circumstances permit, some banding of unmarked adult BCVI or of young present in nests which are discovered incidentally may be performed. All sites in which BCVI are not detected will be surveyed in accordance with the requirements of presence/absence surveys specified in Permit conditions S.2-S.9.

9. APPENDICES

A. PERMIT INFORMATION

US Fish and Wildlife Service
Endangered Species Recovery Permit: **TE168189-0**

Federal Bird Banding Permit (USGS BBL): **23546, 23546-A**

Texas Parks and Wildlife Scientific Permit: **SPR-0106-005**

Texas State University
Institutional Animal Care and Use Committee: **0814_0304_16**

Balcones Canyonlands National Wildlife Refuge
USFWS Special Use Permit: **21561-75648**

Travis County Natural Resources and Environmental Quality Division
Scientific Research Permit: **03-2007**

City of Austin Balcones Canyonlands Preserve: **07-001**

B. SITES

The accompanying file, 'BCVI Study Sites 2008.xls', gives the operational name, approximate location, and a physical description of each study site. The USGS 7.5 min topological Quad map on which site appears is listed. The coordinates of the northwest and southeast corners of a rectangle enclosing each site are provided in decimal degrees. Such an arbitrary boundary will include off-property areas and therefore this information is only provided to aid in locating the sites on a map. Study sites represent habitat areas and in most cases constitute only portions of preserve tracts.

Estimates of territory numbers for each site are informal, conservative, and do not include those which were believed to be completely off-property. These estimates were based on contemporaneous detections and occasional resightings of banded birds and reflect only the observations of project workers (rather than information from preserve biologists).

C. FIELD ASSISTANTS

JPA Juan Pablo Assmus jp_assmus@cable.net.co

BD	Beitiris Devolld	bd1128@txstate.edu
EH	Erick Hetzel	erickhetzel@hotmail.com
TH	Tiffany Hollon	thollon@mail.utexas.edu
TS	Tracy Sibole	tracysibole@yahoo.com
GZ	Greg Zimmerman	gz1005@txstate.edu

D. SURVEY RECORDS

The accompanying file 'BCVI Survey Summary 2008.xls' gives a day by day breakdown of site visits and associated information such as weather conditions and field assistants present. In mid-May, a notebook containing survey data from the first half of the field season was lost (BCVI position information was only recorded as references to separate GPS records, i.e. waypoint labels); therefore information for this period regarding start and end times, weather data and number of birds detected are either absent or reconstructed from ancillary records or memory (site visits for this time period were reconstructed from GPS records). Banding related information was not affected and is in the process of being submitted to the USGS Bird Banding Laboratory.

E. MAPS

Location data used for bird registrations, nests, and banding sites were recorded using handheld GPS receivers (Garmin eTrex Legend and Rino 120) configured for Universal Transverse Mercator projection, NAD 83, and with WAAS enabled. Accuracy in the field varied (some map registrations along tract boundaries may erroneously appear to be off-property) but was adequate to the needs of this project.

Registrations referencing recorded observations which were lost with the missing field notebook (i.e. points taken prior to May 15) were included in the accompanying maps and plotted as a BCVI contact as long as the waypoint in question was not an obvious outlier. However, this data may include some 'non-observation' points such as field landmarks or potential mist-netting sites. These erroneous points constitute a minority of map registrations. Territory boundaries were not included on maps.

Registrations correspond to those described in the International Bird Census Committee (1970); however symbology follows the individual map legends. Types of

registration include simple contact, vocal utterance (except song), singing bird, contact not precisely located (‘area’), contemporary contact (‘ctr’), presence of a female (‘fem’), off-property detection (‘off’), nest location (‘nest’), and banding location.

Attached map files marked ‘Registration’ contain point location data. Files marked ‘Route’ simply show site and study routes used in 2008.

RRH: SHORT COMMUNICATIONS

LONG-DISTANCE DISPERSAL RECORDS FOR THE BLACK-CAPPED VIREO

DAVID A. CIMPRICH[1], CHARLES W. SEXTON[2], P. KELLY MCDOWELL[2], GREG LASLEY[3], AND WILLIAM S. SIMPER[4]

[1]*The Nature Conservancy, P.O. Box 5190, Fort Hood, TX 76544-0190*

[2]*Balcones Canyonlands National Wildlife Refuge, 24518 FM 1431, Marble Falls, TX 78654*

[3]*305 Loganberry Ct., Austin, TX 78745-6527*

[4]*Department of Biology, 601 University Drive, Texas State University, San Marcos, TX 78666*

[1]*Corresponding author. dcimprich@tnc.org*

ABSTRACT.---Information on dispersal of the endangered Black-capped Vireo (*Vireo atricapilla*) is limited due to the inherent difficulty of relocating marked individuals in subsequent breeding seasons. We report on three relatively long-distance dispersals for this species. All three birds (two males and one female) were banded as nestlings on Fort Hood Military Reservation in Coryell County, Texas, and recaptured on Balcones Canyonlands National Wildlife Refuge in Williamson and Burnet Counties where they appeared to be attempting to breed. Upon recapture, these birds were 75.2, 78.1, and 49.6 km, respectively, from their natal sites. To our knowledge, these are the longest known dispersal movements for this species and they suggest movements of this magnitude may not be unusual. Our observations also suggest that source populations separated by as much as 78 km are likely not genetically isolated.

Information on a species' dispersal behavior is requisite to modeling and ultimately predicting the ability of a species to colonize new habitat patches. In addition, direct measurements of dispersal complement molecular studies of gene flow across a species' range. Grzybowski (1995) noted the lack of dispersal information for the endangered Black-capped Vireo (*Vireo atricapilla*) and the acquisition of such data has been cited as a research priority for the species (Grzybowski 1991). However, dispersal events are difficult to document because marked individuals can disperse across large areas making them difficult to relocate (Koenig et al. 1996). This is especially true of natal dispersal (i.e., movements from hatch site to first attempted breeding site). Consequently, collection of such data often requires effort beyond the capabilities of most research programs. From 1987 to 2007, biologists at Foot Hood Military

Reservation (Fort Hood) in Bell and Coryell Counties, Texas, banded 4,247 nestling Black-capped Vireos. Subsequently, 179 of these were observed as adults, yielding information on natal dispersal of the species. We report three noteworthy records that represent the longest natal dispersal movements observed to date. All three cases involved birds banded as nestlings on Fort Hood and recaptured as adults on Balcones Canyonlands National Wildlife Refuge (the Refuge).

Biologists at Fort Hood marked nestling Black-capped Vireos with a single band on each leg: a numbered United States Geological Survey (USGS) aluminum band on the right leg and a colored plastic band on the left leg. Within a given year, all nestlings were marked with a plastic band of the same color, but a different color was used each year. In contrast, adult vireos were marked with a USGS band and a unique combination of several plastic color bands. Thus, it was possible to recognize that any individual wearing only a single color band had been banded as a nestling and its age could be determined by the band's color. However, to determine the exact identity of such birds, it was necessary to capture them and read band numbers.

On 11 April 2007, PKM observed an adult male Black-capped Vireo with a pink band on its left leg and a USGS band on the right on the Gainer tract of the Refuge in southwestern Williamson County, Texas. PKM and CWS saw the bird again two days later in the same area. On 20 April 2007, GL photographed a similarly banded vireo on the Refuge (Figure 1), 0.6 km from the earlier location, also in southwestern Williamson County. On the latter date, it was unclear whether these observations represented the same or separate individuals. The situation was clarified when DAC and CWS captured the two separate male vireos on 24 April 2007, each in the area where originally encountered (Figure 2).

The first male vireo was banded as a nestling on 3 May 2005 on the west side of Fort Hood in Coryell County (Figure 2). We used banding and recapture coordinates along with ArcMap version 9.2 (ESRI Inc. Redlands, California) to determine that the recapture site was 75.2 km from its natal site. The second male was banded as a nestling on 6 May 2005 on the west side of Fort Hood 5.5 km northwest of the natal site of the first male (Figure 2). When recaptured, the second male was 78.1 km from its natal site.

On 6 June 2008, WSS captured a banded female Black-capped Vireo on the Simons tract of the Refuge in eastern Burnet County, Texas. This bird was originally banded as a nestling in the southwestern corner of Fort Hood on 28 May 2006 (Figure 2) and was recaptured 49.6 km from its natal site.

The three Black-capped Vireos recaptured on the Refuge appeared to be breeding residents rather than transient migrants. The two males in 2007 were present on the Refuge for >1 week and exhibited territorial behavior (i.e., each remained within a restricted area, sang frequently, and reacted strongly to the broadcast of conspecific song). Additionally, each was seen in company of a female vireo, although no nesting activity was confirmed. Although the first-encountered male was not resighted after its recapture on 24 April, the second banded male was observed with a female on 1 June 2007 (the date of the last field visit to the site for that season). The June 2008 recapture date of the banded female was after the species' spring migration in March and April yet before its fall migration from August to early October (Grzybowski 1995).

These three observations are the longest reported dispersals of Black-capped Vireos from their natal sites. We have observed other movements within Fort Hood as far as 30 km for individuals banded as nestlings (DAC, unpubl. data). Grzybowski (1995) observed a natal

dispersal of 21 km for this species in Kerr County, Texas. Hopp et al. (1995) noted a movement of 20 km for the closely related White-eyed Vireo (*Vireo griseus*) from its natal site in Massachusetts.

Most of the observed dispersal distance for the three Black-capped Vireos recaptured on the Refuge likely resulted from natal dispersal versus movement between subsequent breeding seasons. All three birds were in their third calendar year of life (i.e., their second possible breeding season) when recaptured on the Refuge. We have no information regarding locations of the three birds during their first possible breeding season. For this reason, it is possible that the distances from their natal sites to where we recaptured them may differ from their initial natal dispersal distance. However, natal dispersal in birds typically involves longer movements than later movements between breeding sites (Greenwood and Harvey 1982, Drilling and Thosmpson 1988, Paradis et al. 1998). Furthermore, we found that the median distance of Black-capped Vireos recaptured on Fort Hood in their second breeding season (n = 40) was only 0.7 km farther from natal sites than for birds recaptured in their first (n = 74). This suggests that the three birds may have spent their first possible breeding season on or near the Refuge.

Analysis of natal dispersal is complicated by the distribution of potential breeding habitat which will rarely be homogenous within the dispersal capabilities of a species and in the case of the Black-capped Vireo is particularly patchy (Grzybowski 1995, CWS unpubl. data). For example, between Fort Hood and the Refuge, only a few small patches of suitable vireo habitat are known and no well-established breeding populations have been detected (CWS, unpubl. data). The Refuge probably harbors the nearest substantial patches of suitable vireo habitat to the south of Fort Hood.

Assuming that the maximum natal dispersal distance for the Black-capped Vireo equals the longest of the three we observed (78.1 km), then dispersing young from Fort Hood, or any other source population, have the potential to colonize suitable habitat across relatively large areas. Regular natal dispersals over such an area could also allow substantial genetic interaction among populations breeding in different parts of the species' range. However, available evidence indicates that gene flow among populations of this species is restricted and lower than that reported for other migratory songbirds (Fazio et al. 2004, Barr et al. 2008). Furthermore, Barr et al. (2008) report considerable genetic differentiation between the populations on the Refuge and Fort Hood. At first, these genetic results appear to conflict with our observation of three dispersals between these sites in just two years. Because we banded only a small percentage of the fledglings produced on both sites (<5% produced on Fort Hood only) and our ability to find them when they were adults was limited, the actual number of dispersers that moved between the two areas could have been much greater than the total we observed. However, G. Athrey and K. Barr (pers. comm.) estimate that even if as many as 20 dispersers per generation moved between these two populations this would not be sufficient to decrease the degree of genetic differentiation between them. This suggests that dispersal between the two populations, and indeed any relatively long-distance dispersal by this species, may be infrequent.

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FIGURE CAPTIONS

FIG. 1. Male Black-capped Vireo at Balcones Canyonlands National Wildlife Refuge, 20 April 2007. This bird was banded as a nestling on Fort Hood Military Reservation, 6 May 2005. Photo by Greg Lasley.

FIG. 2. Natal and apparent breeding sites of Black-capped Vireos banded as nestlings at Fort Hood Military Reservation (FH) and recaptured as adults at Balcones Canyonlands National Wildlife Refuge (BC). Locations for 2 males and 1 female are depicted in blue and red, respectively. Lines of the same colors connect the natal and recapture sites of each individual. Boundaries of Fort Hood and Balcones Canyonlands National Wildlife Refuge are shown in green and county boundaries in black.

Nootsie

Meters
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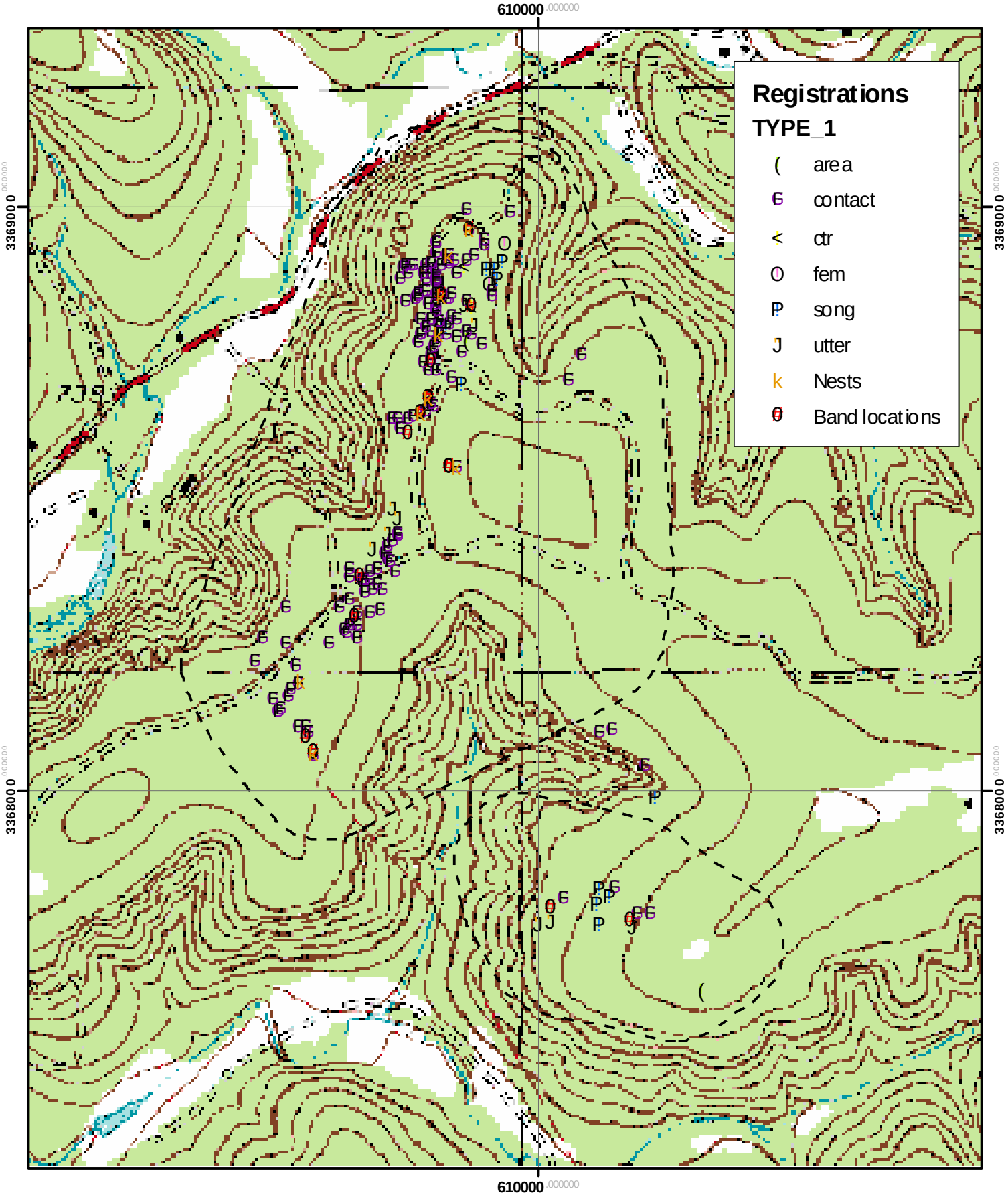

Nootsie

Legend

Study Route

Meters

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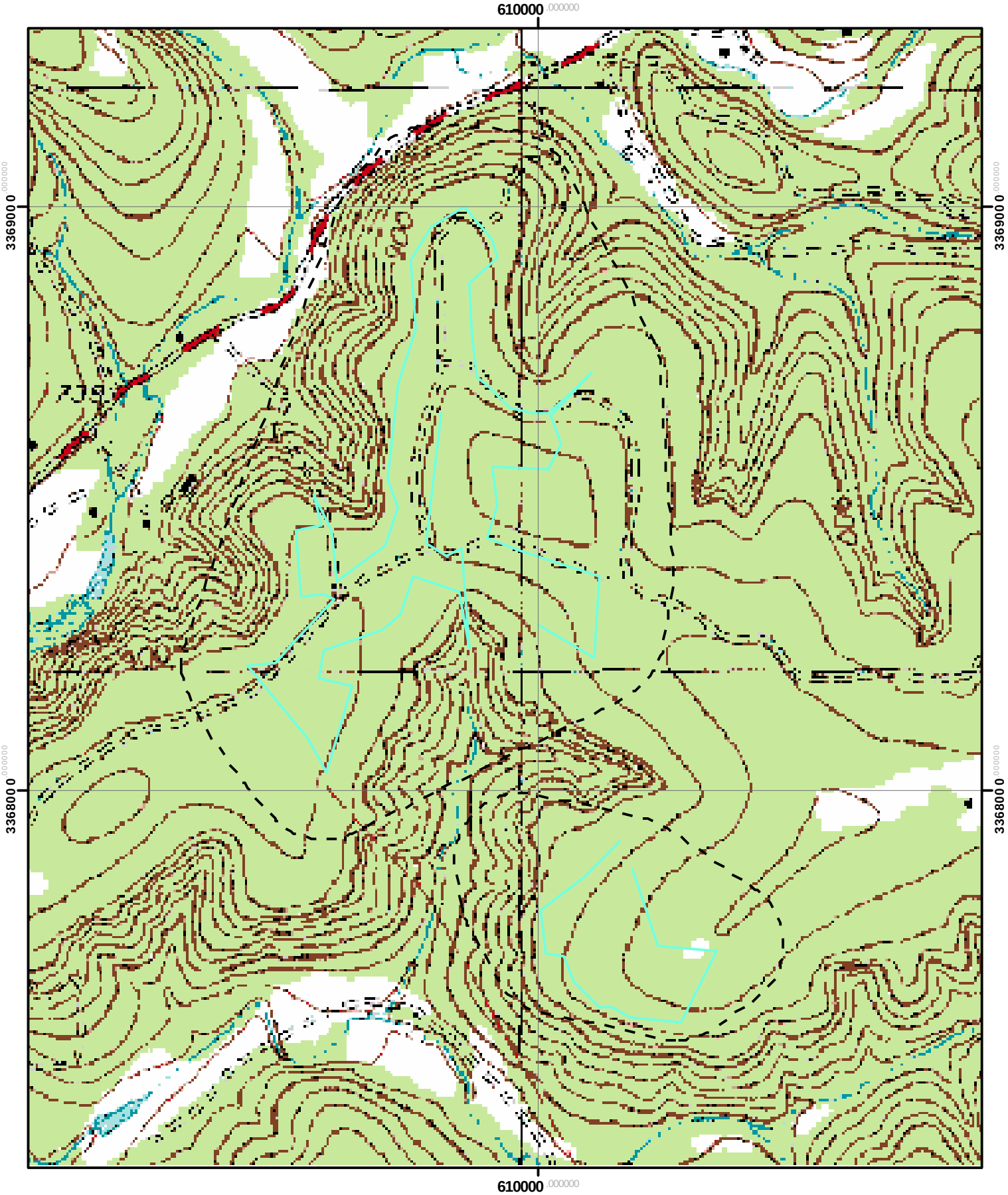

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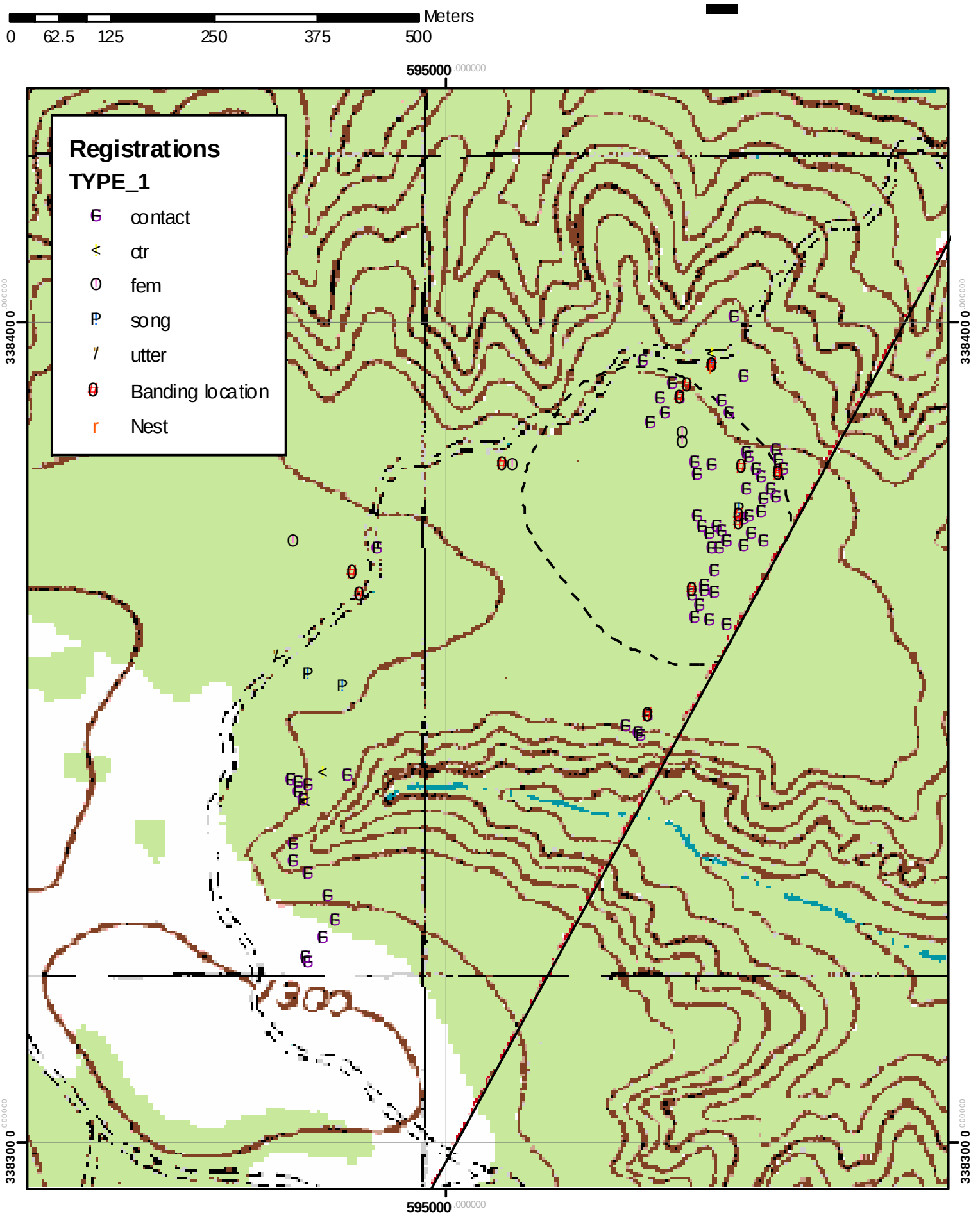

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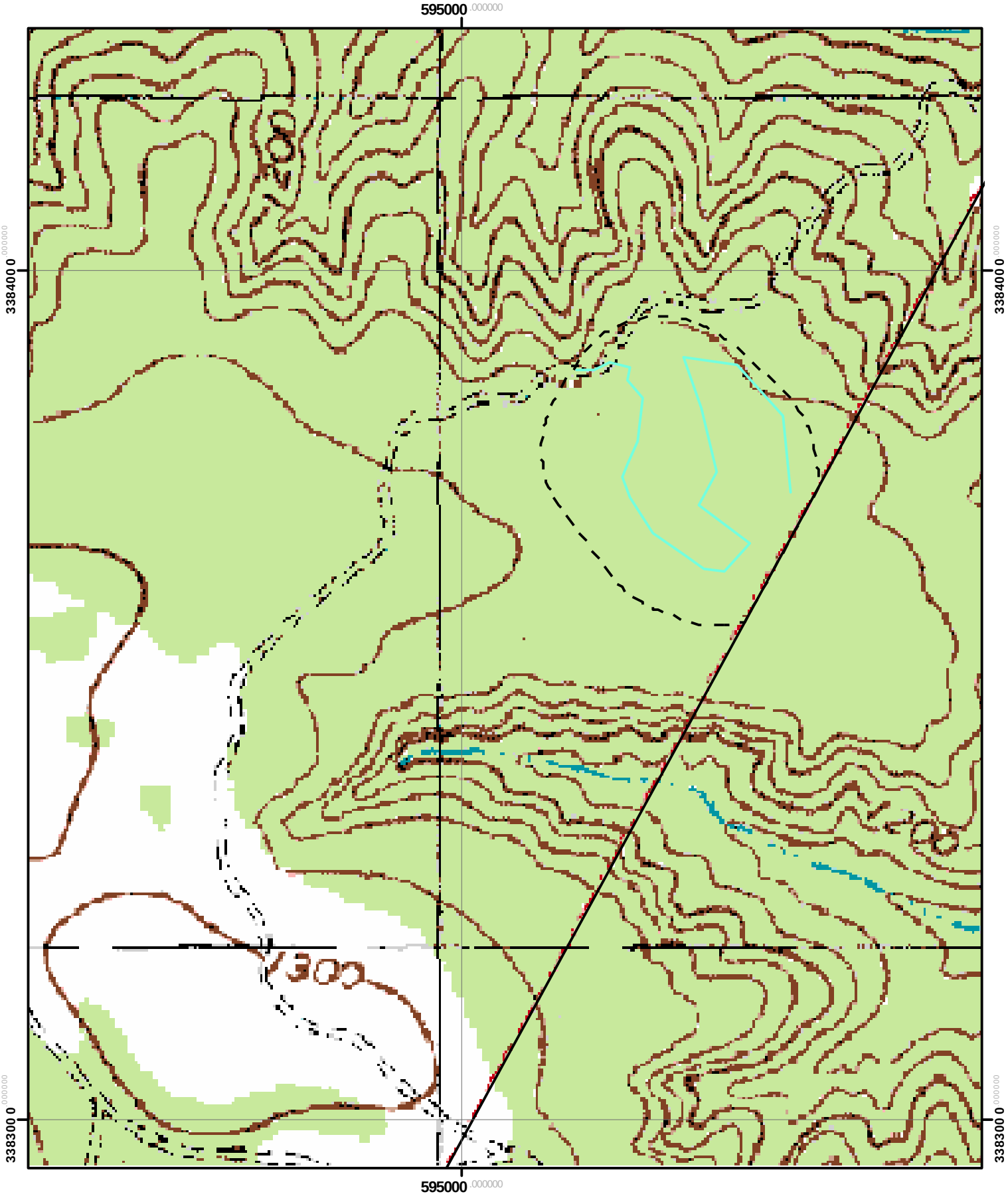

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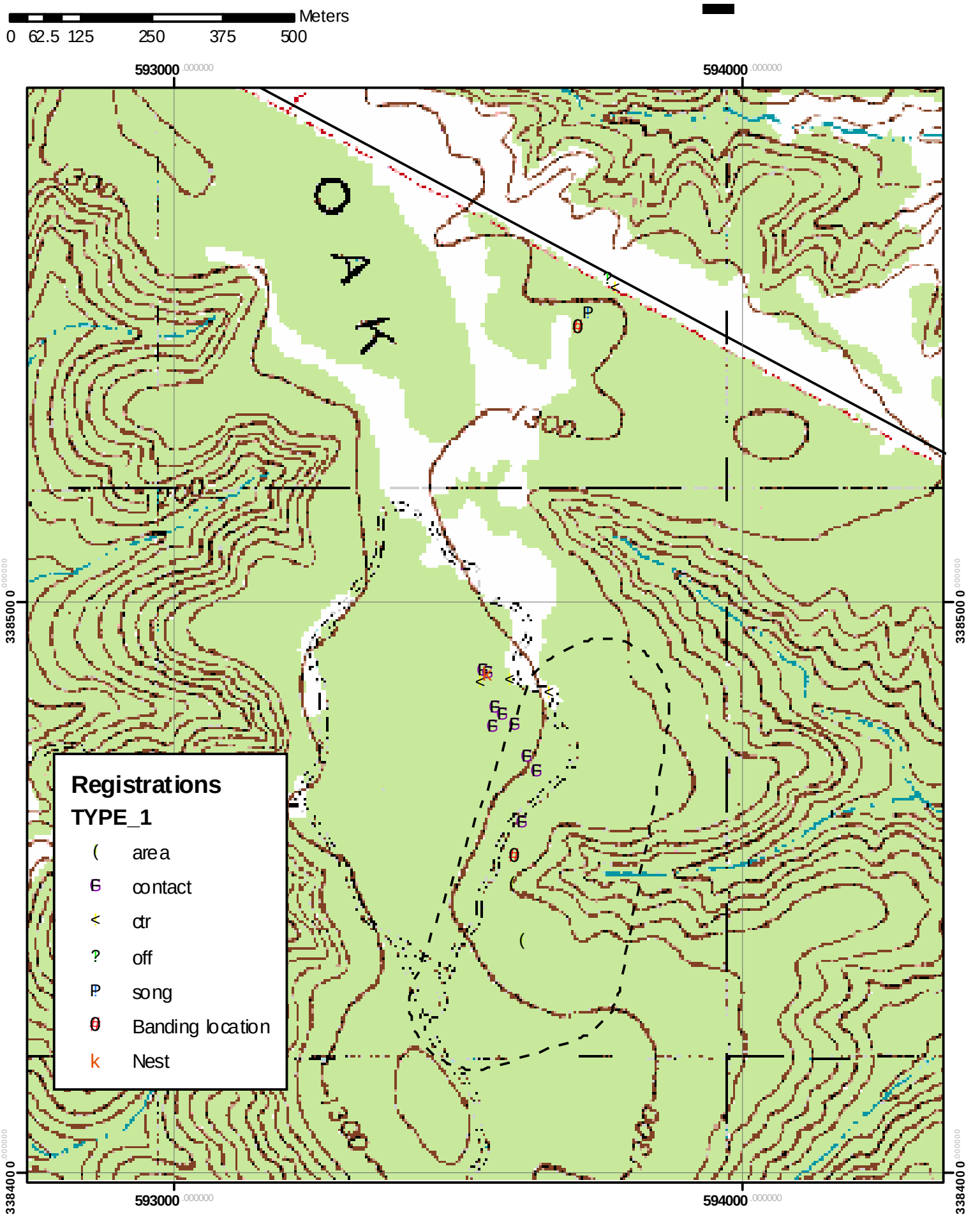

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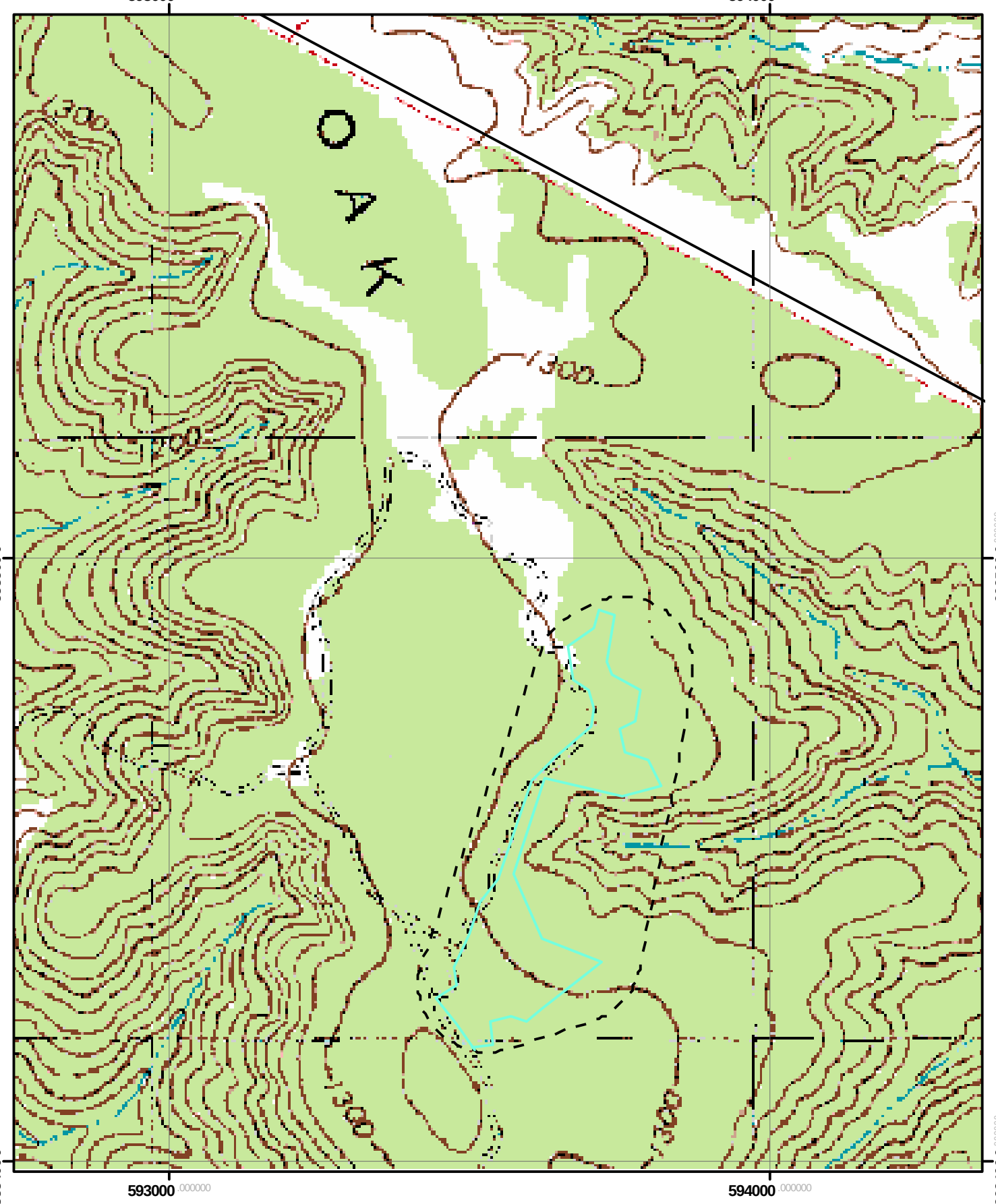
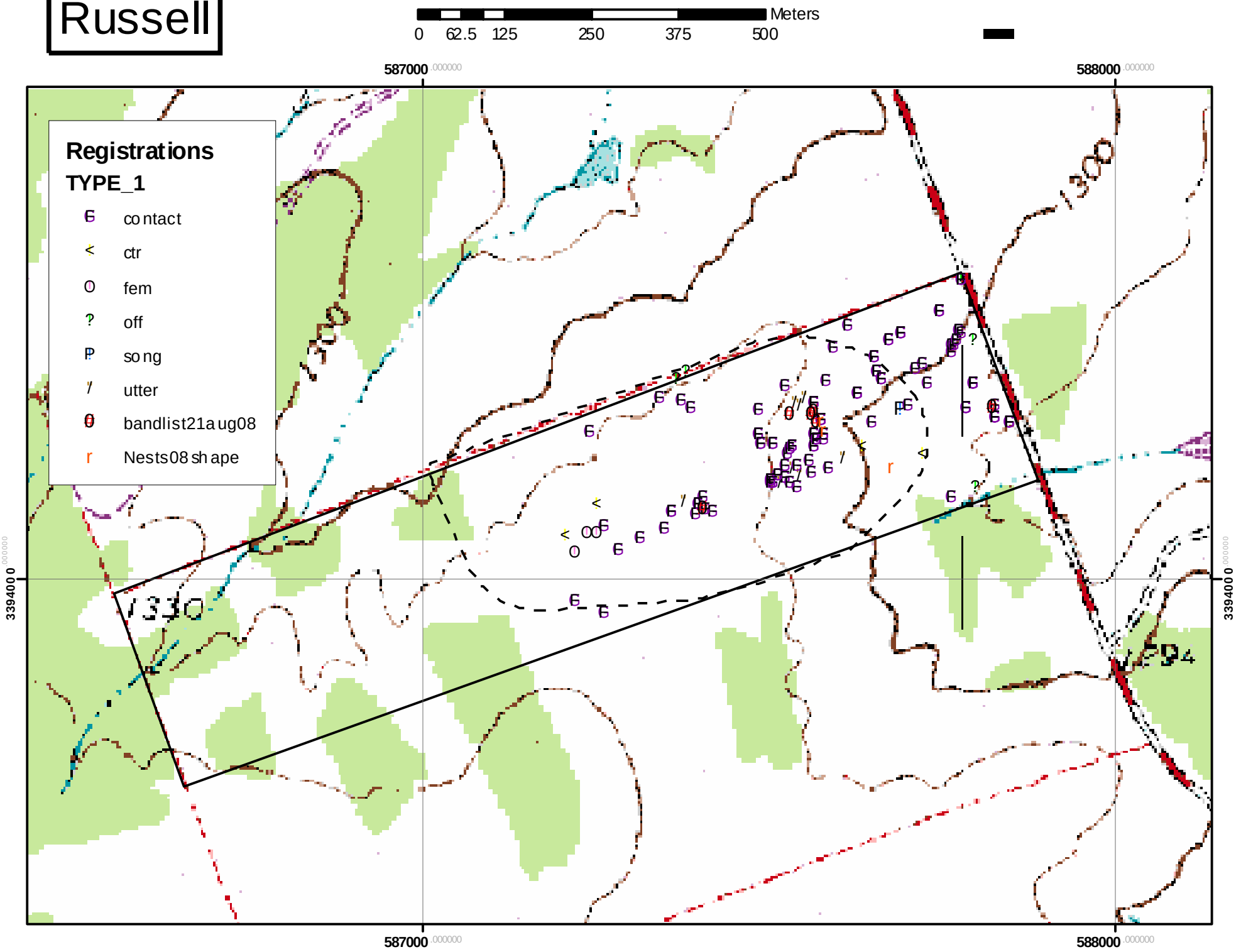


Russell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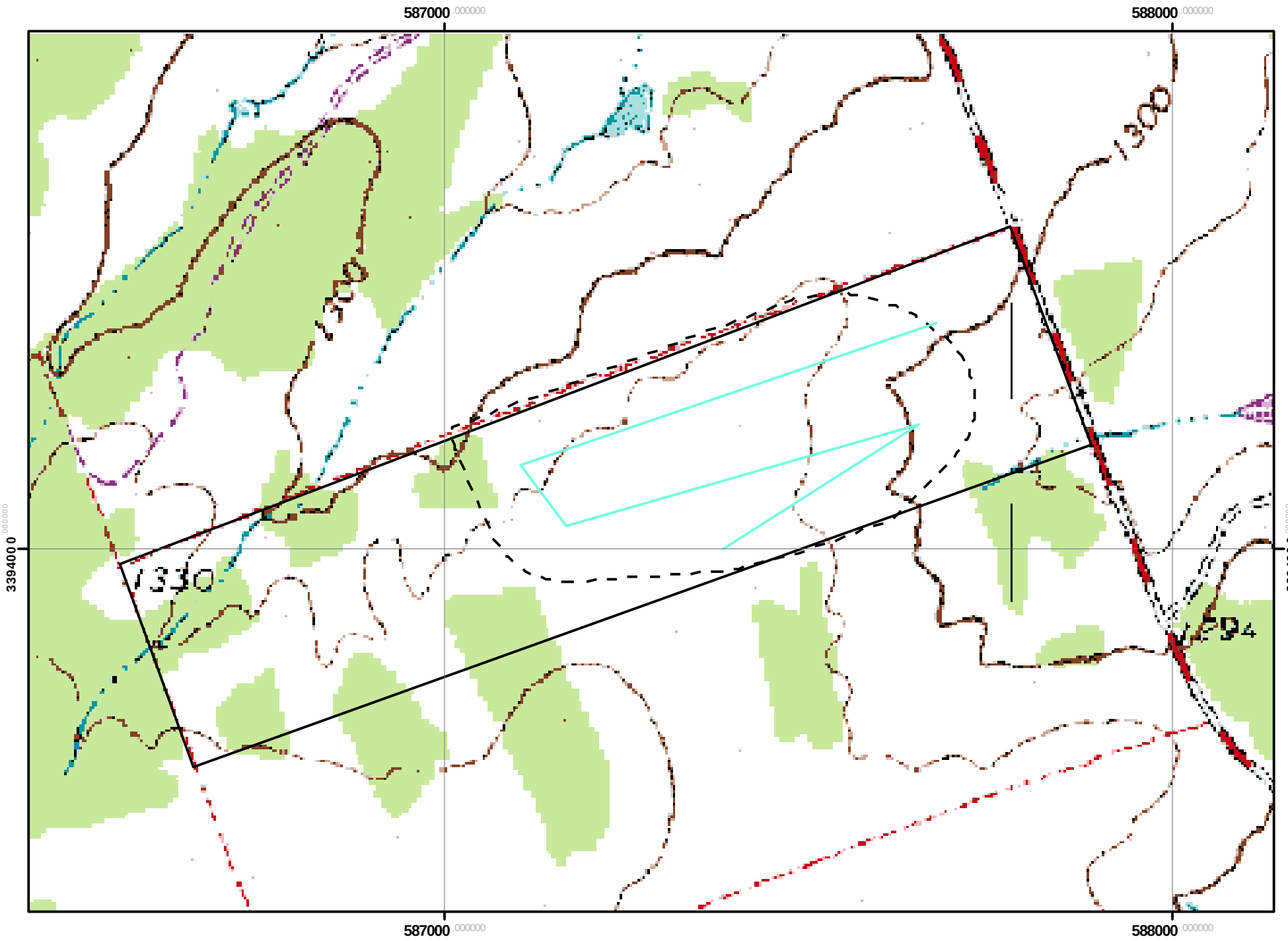
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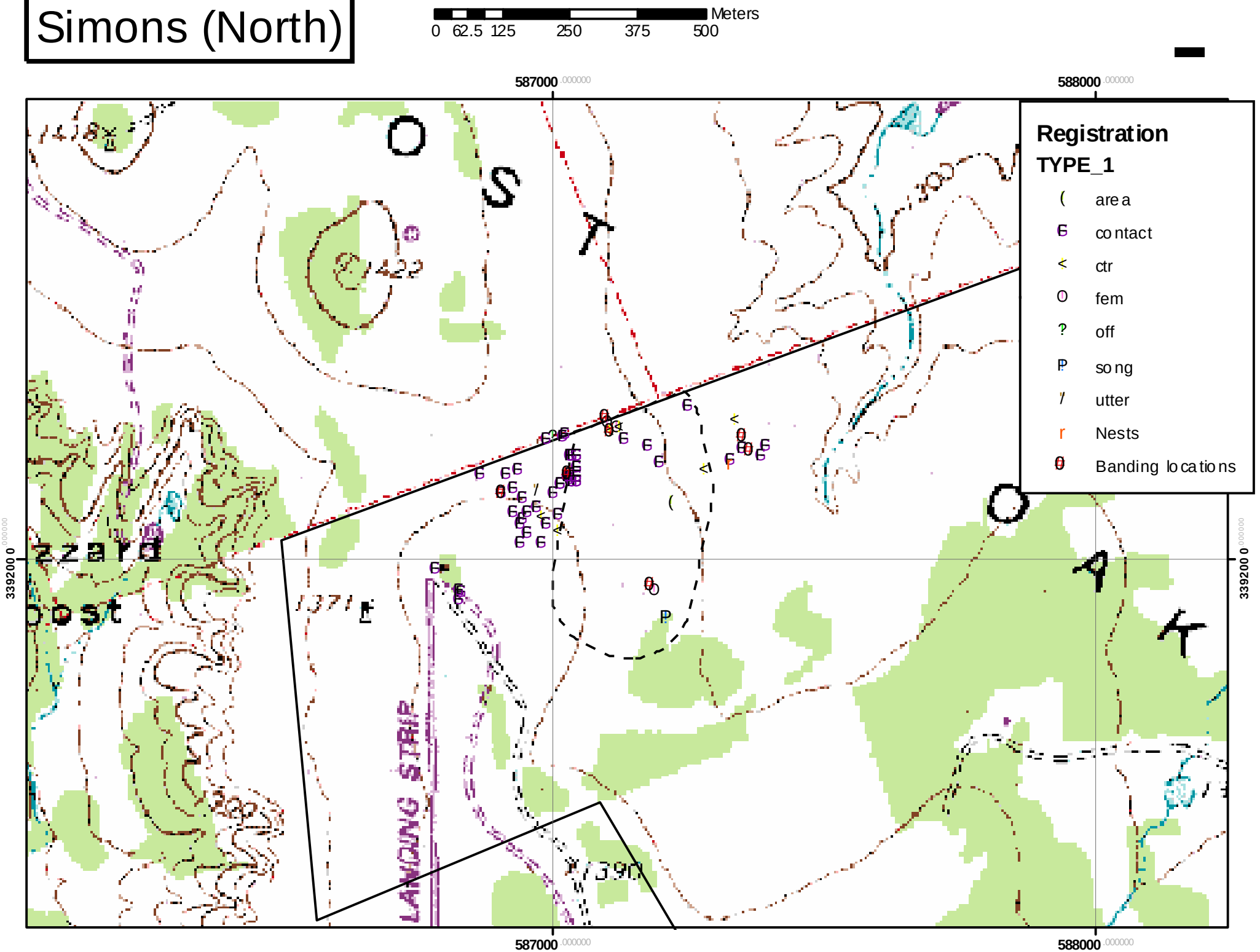
Simons (North)



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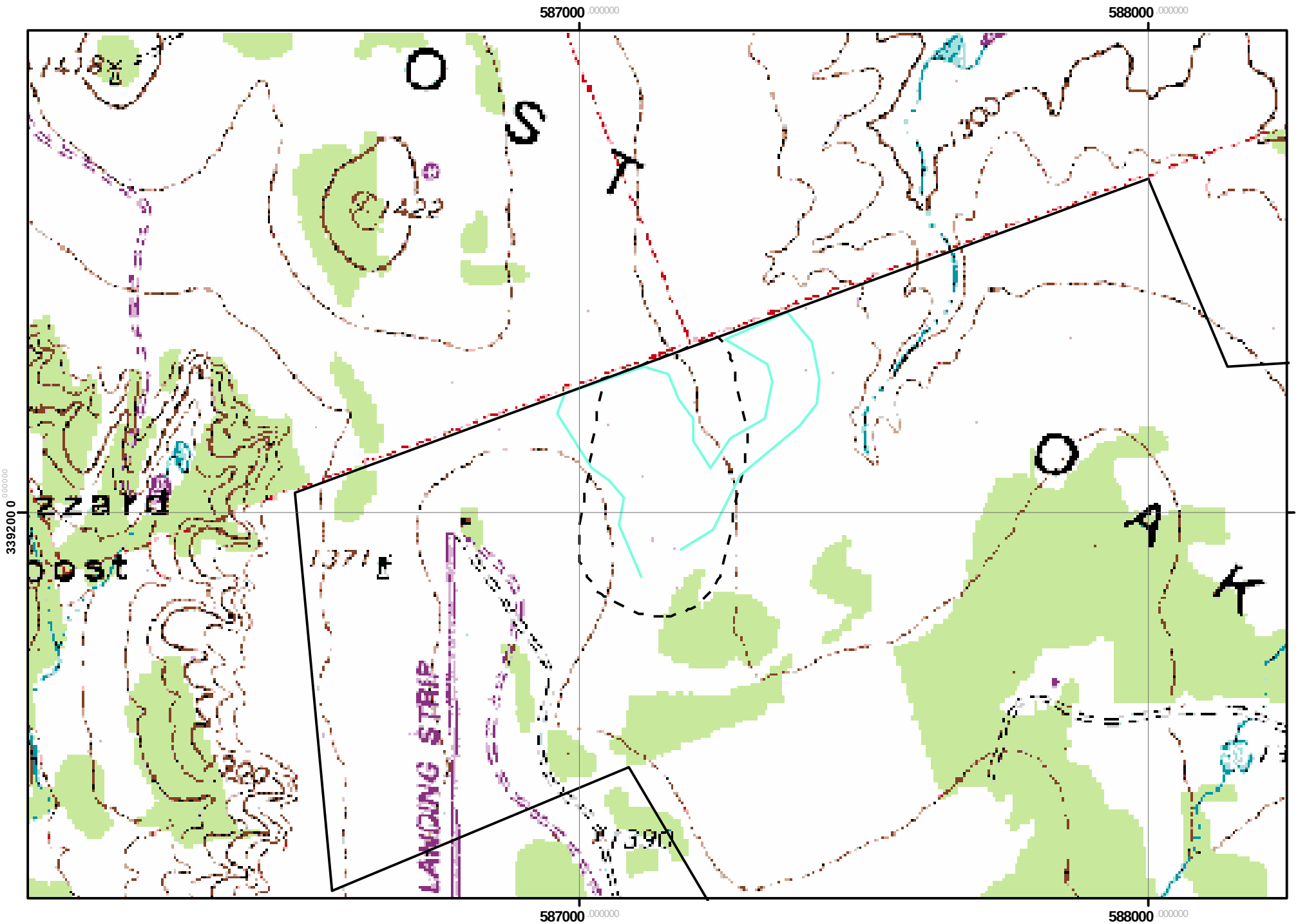


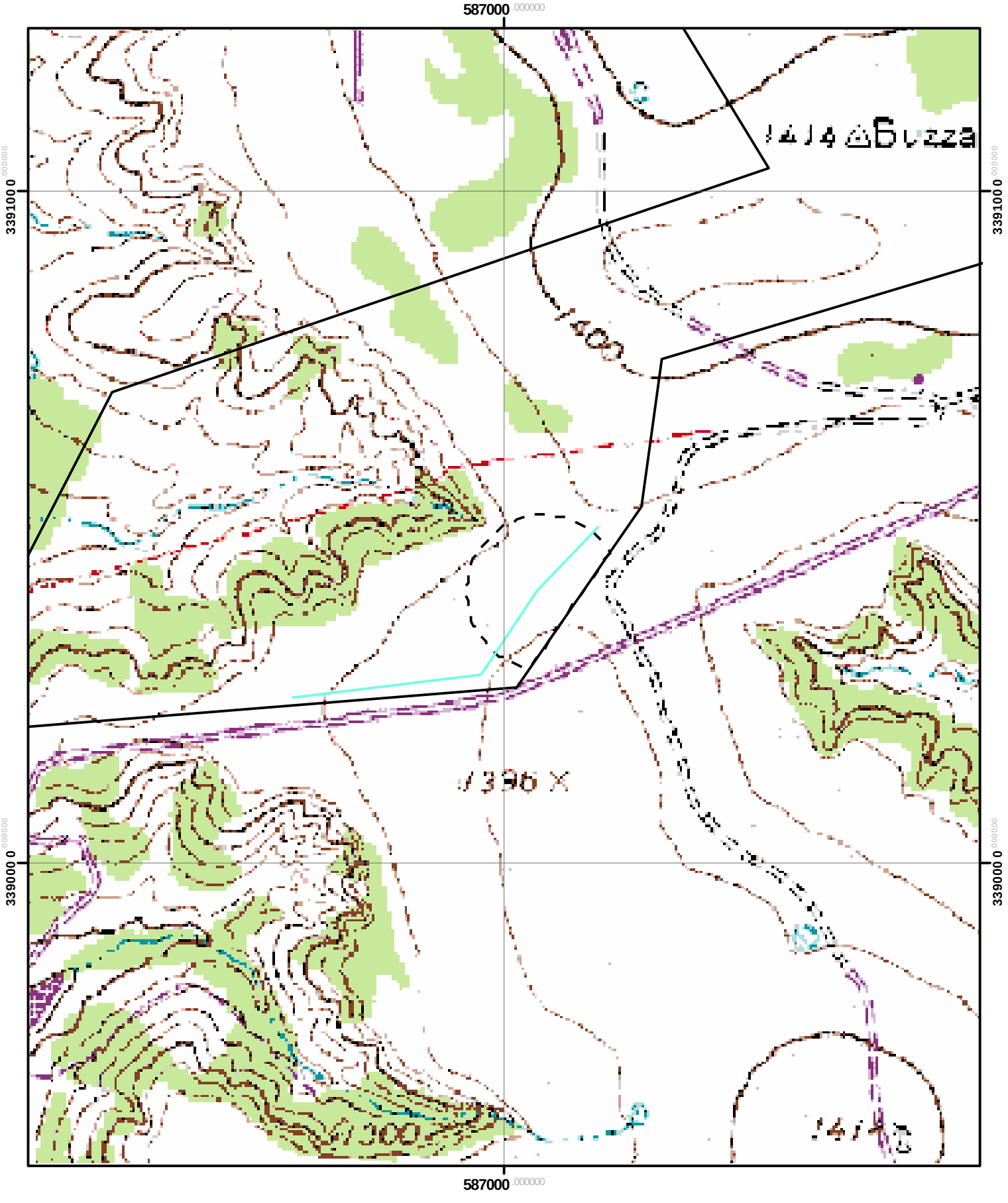
Simons (south)

Legend

Study Route

Meters

0 55 110 220 330 440



Vireo Preserve

Legend

Study Route

Meters

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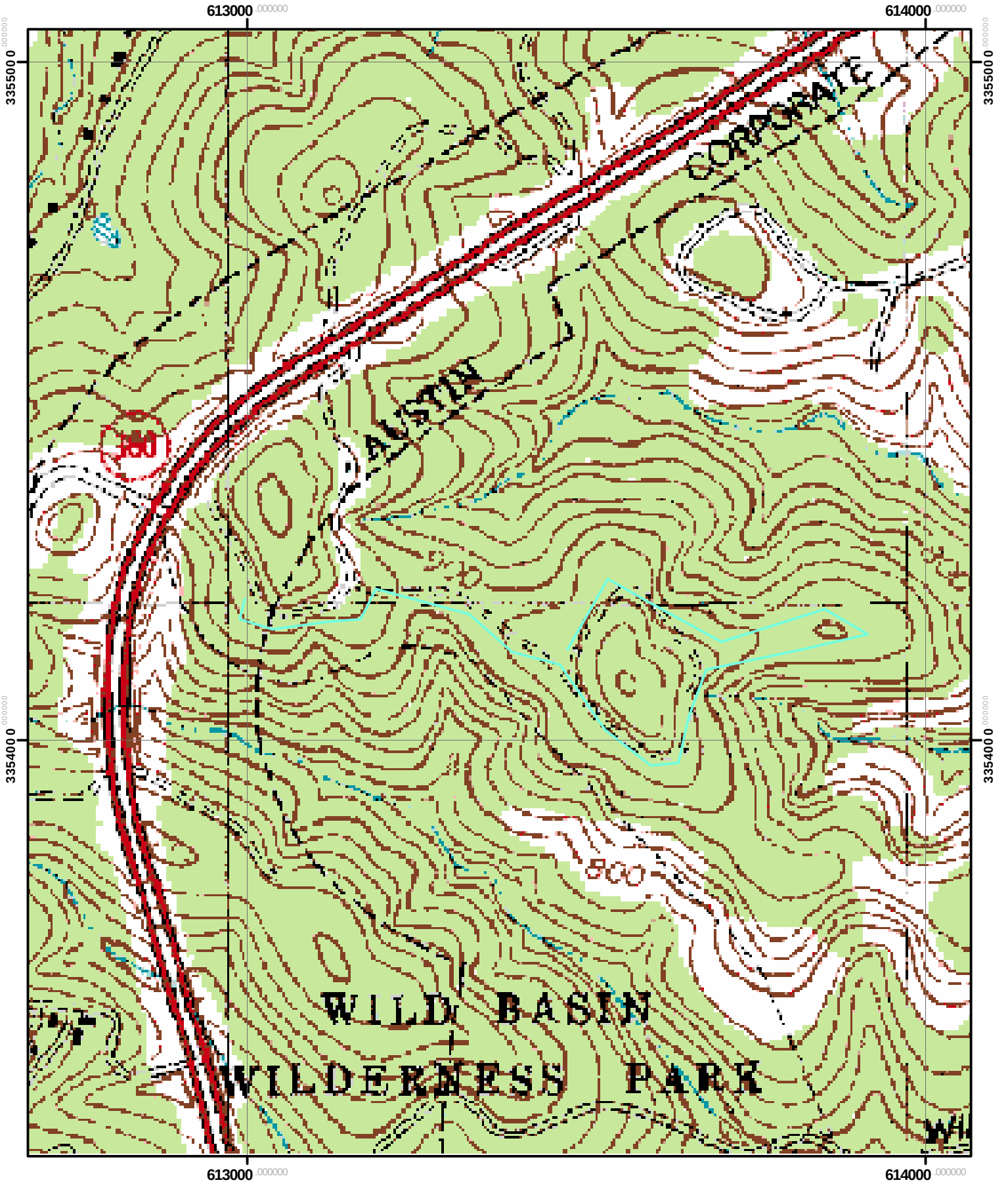

Bohls Hollow

Legend

Study Route

Meters

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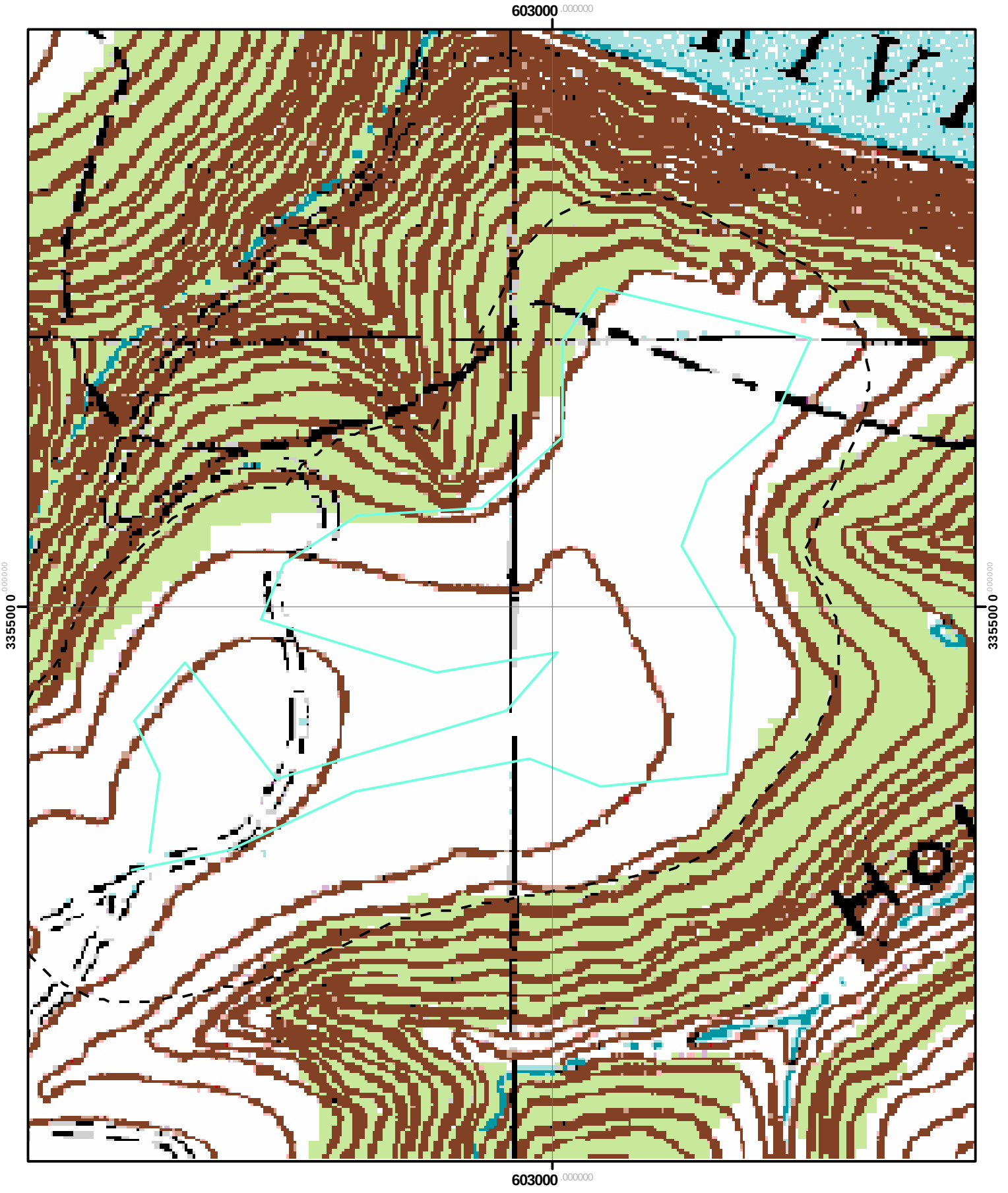

Cortana

Meters
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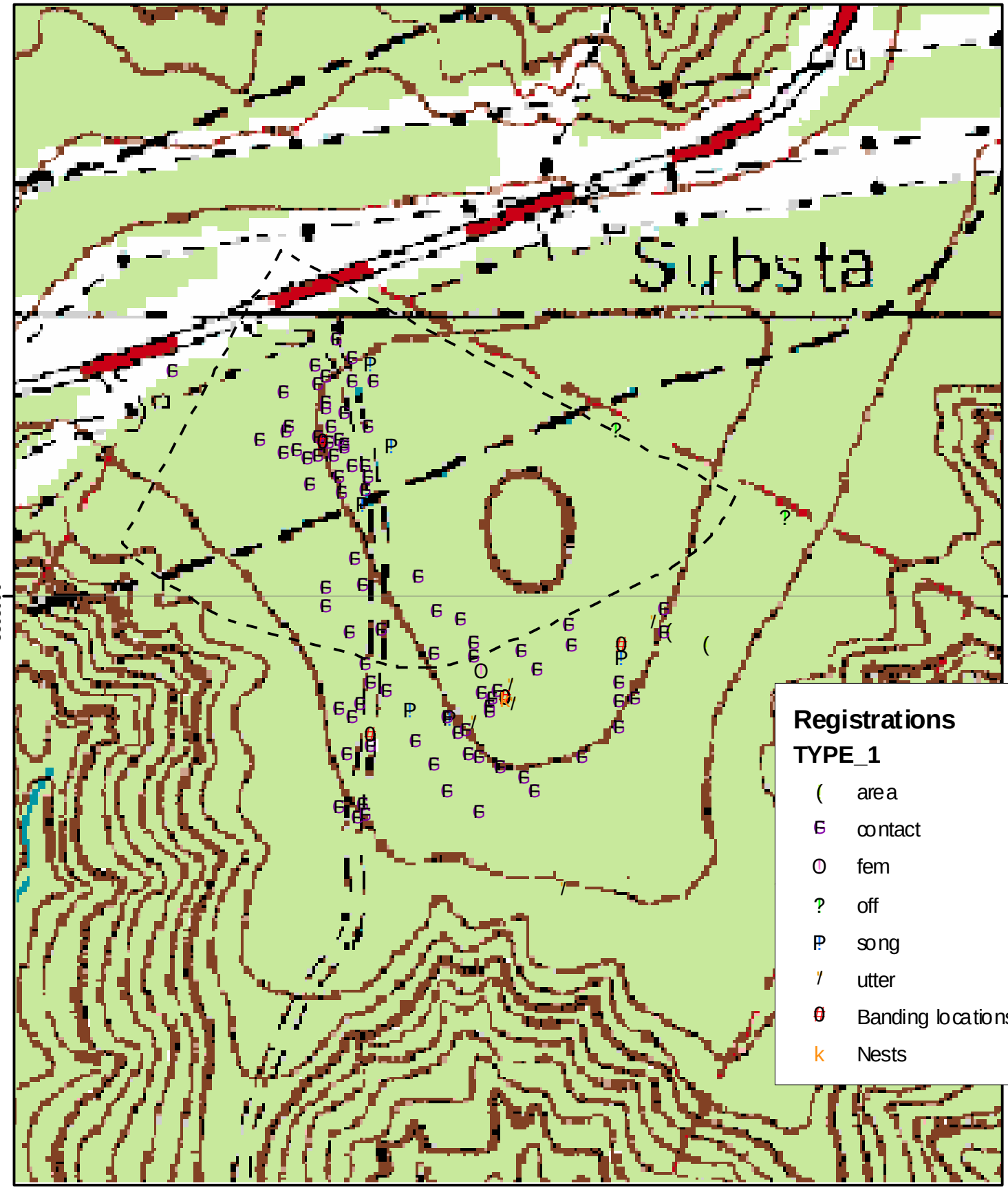

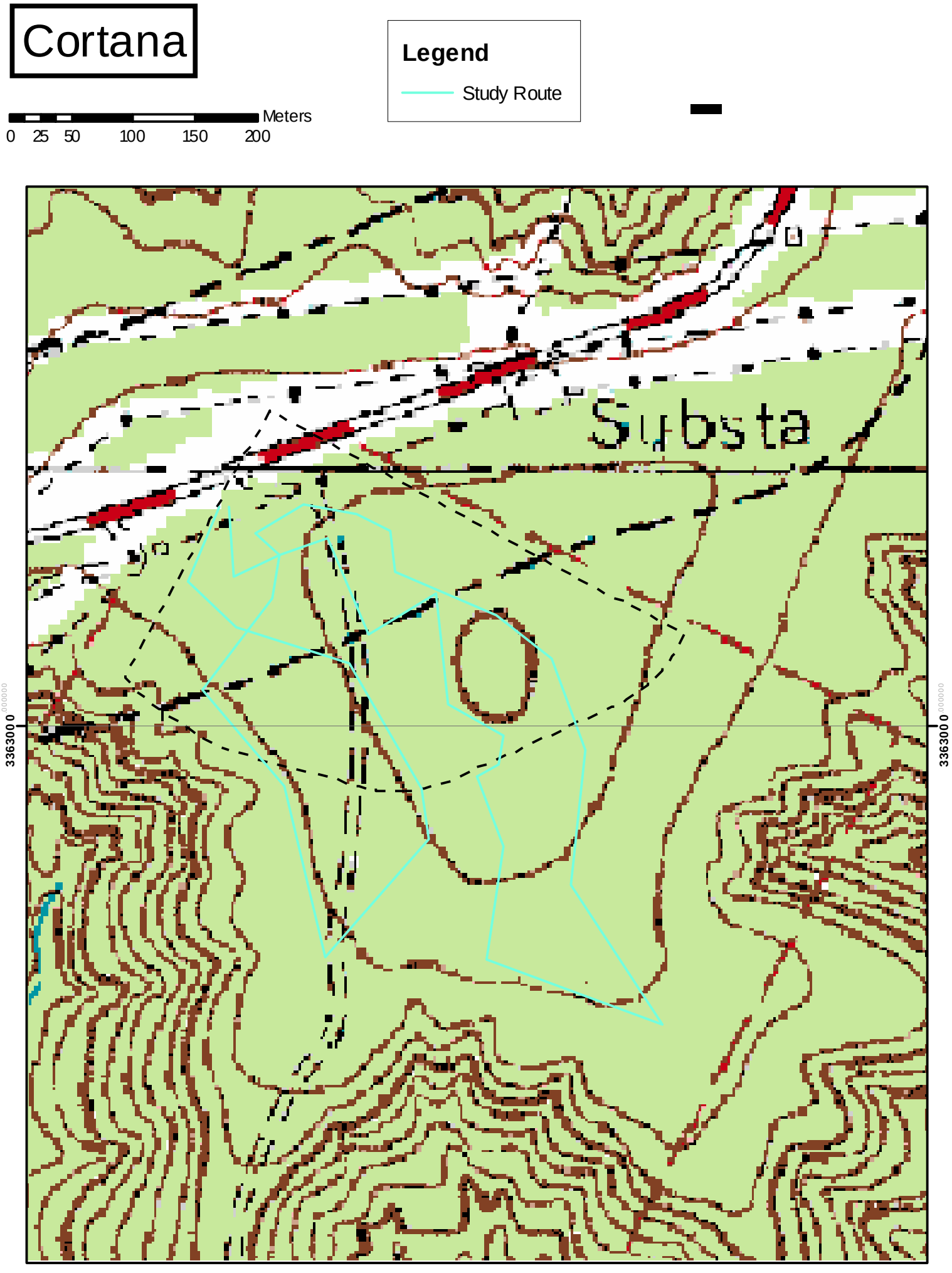
Cortana
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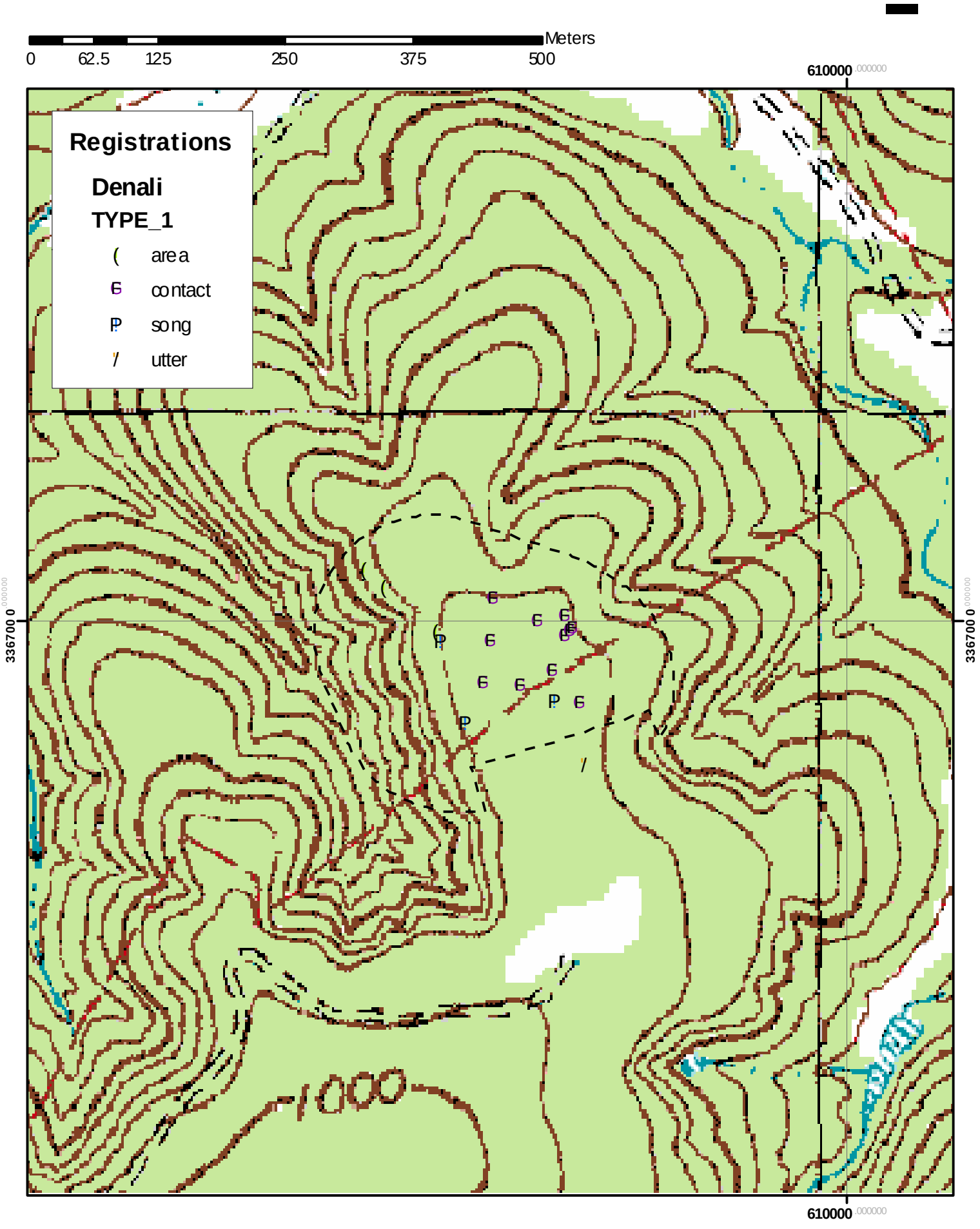
Denali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Denali

Legend

Study Route

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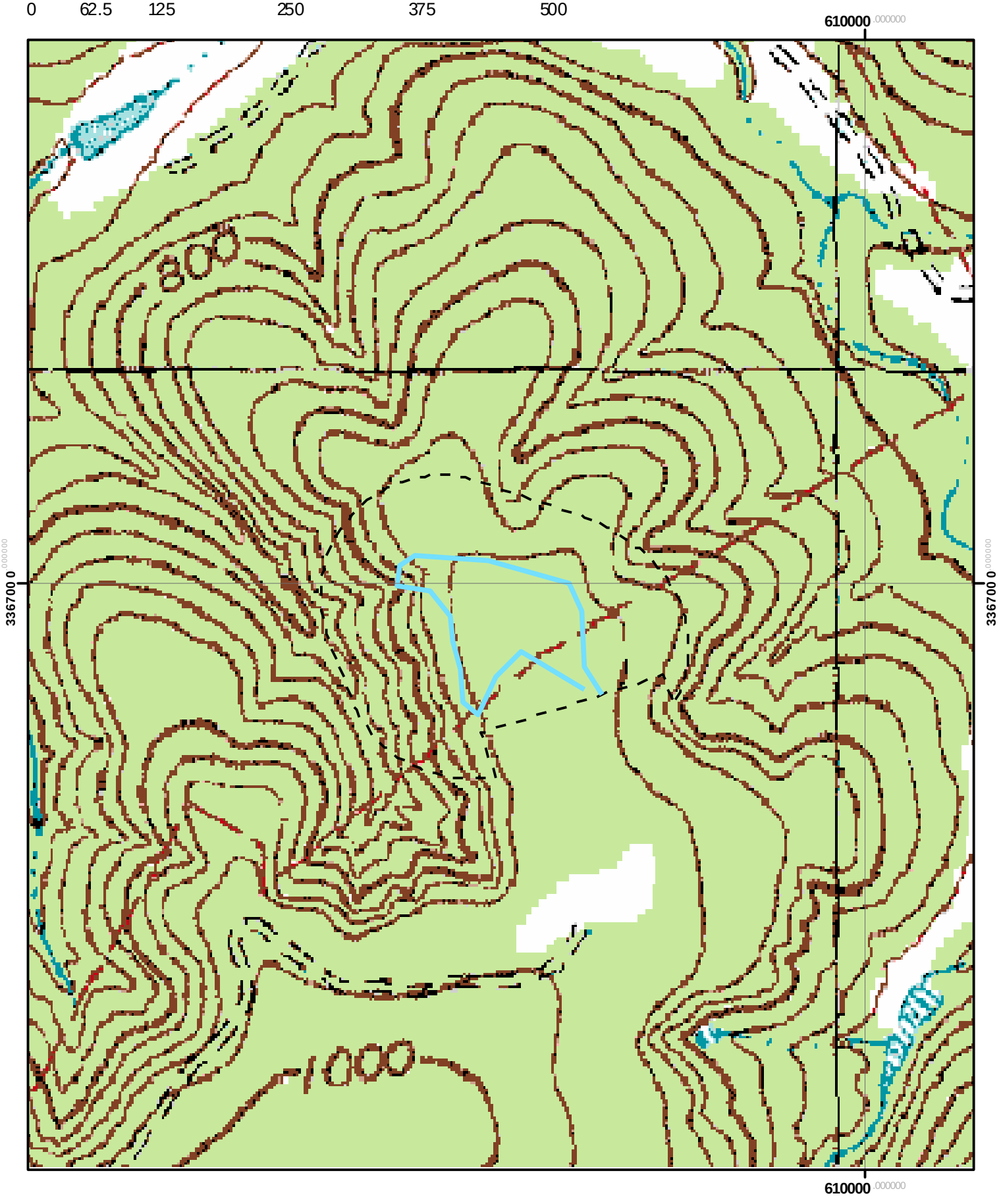
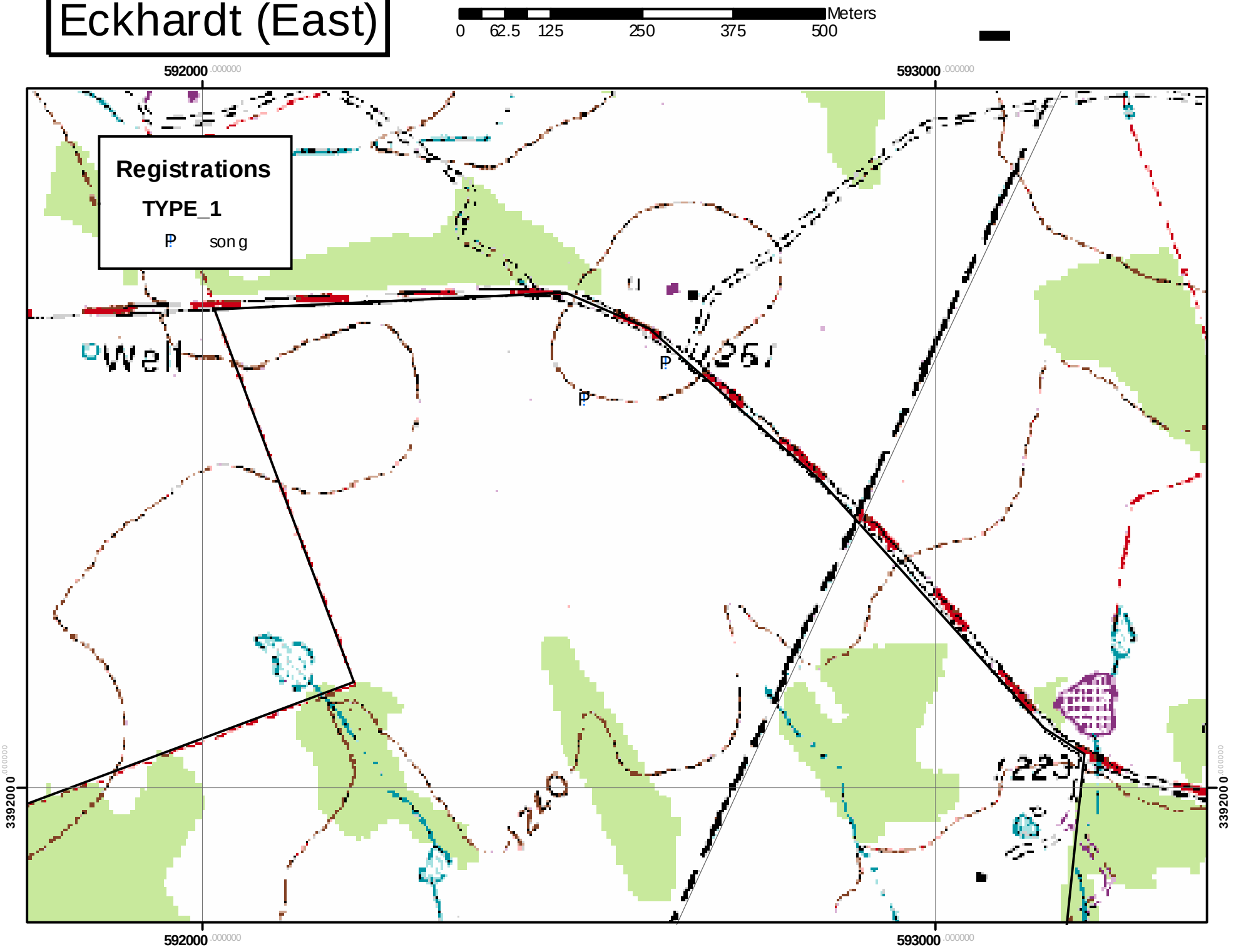
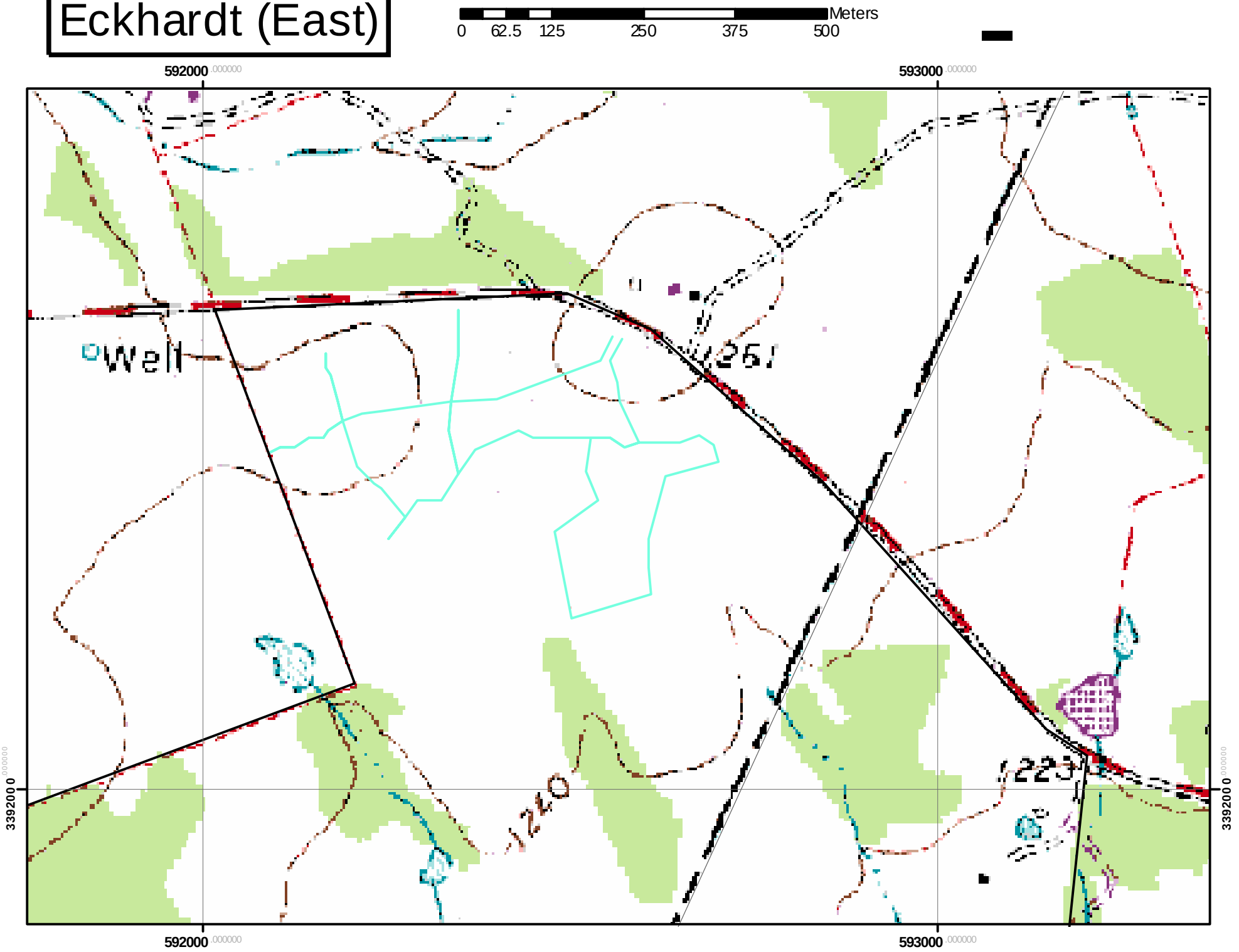


Eckhardt (East)



Eckhardt (East)



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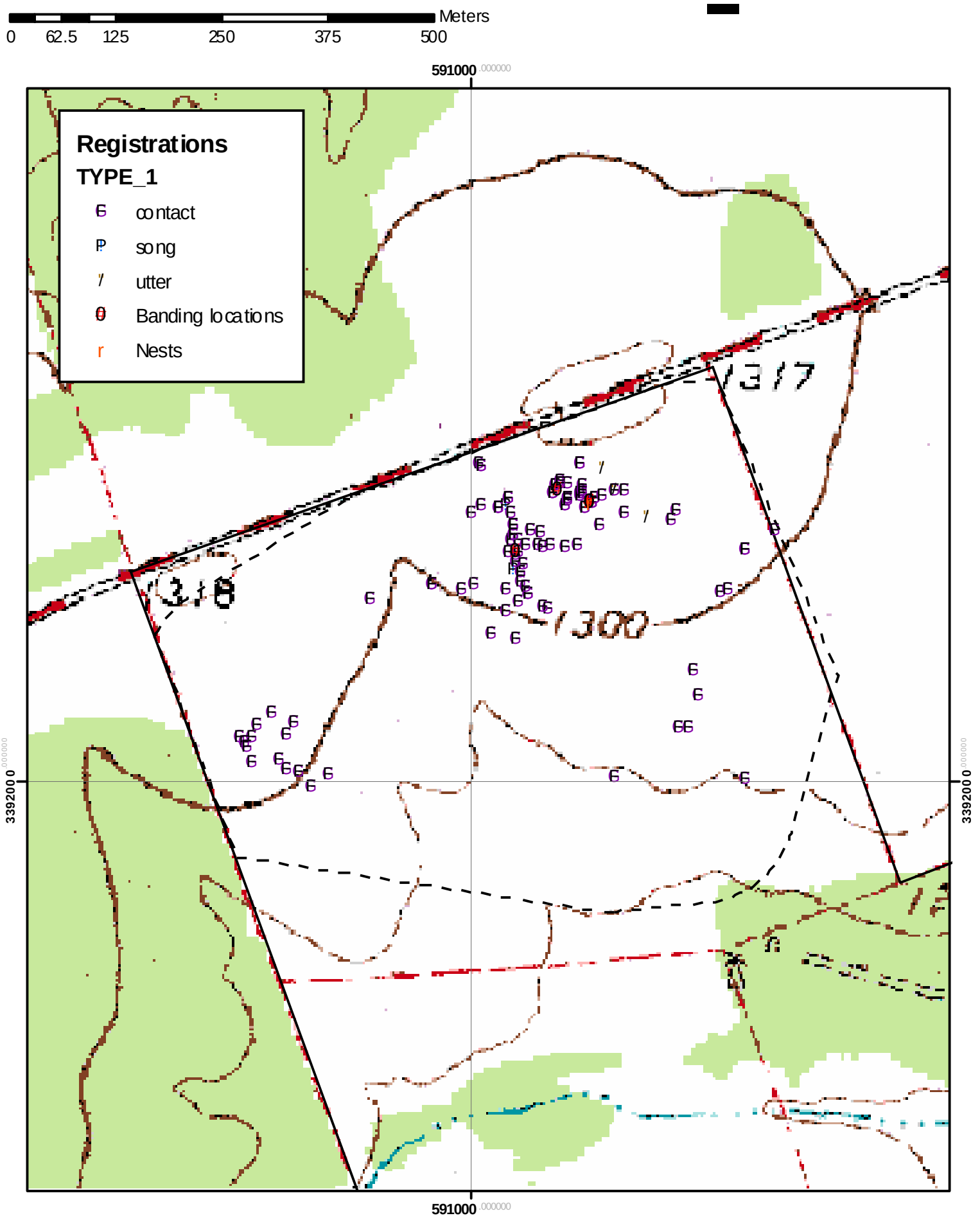

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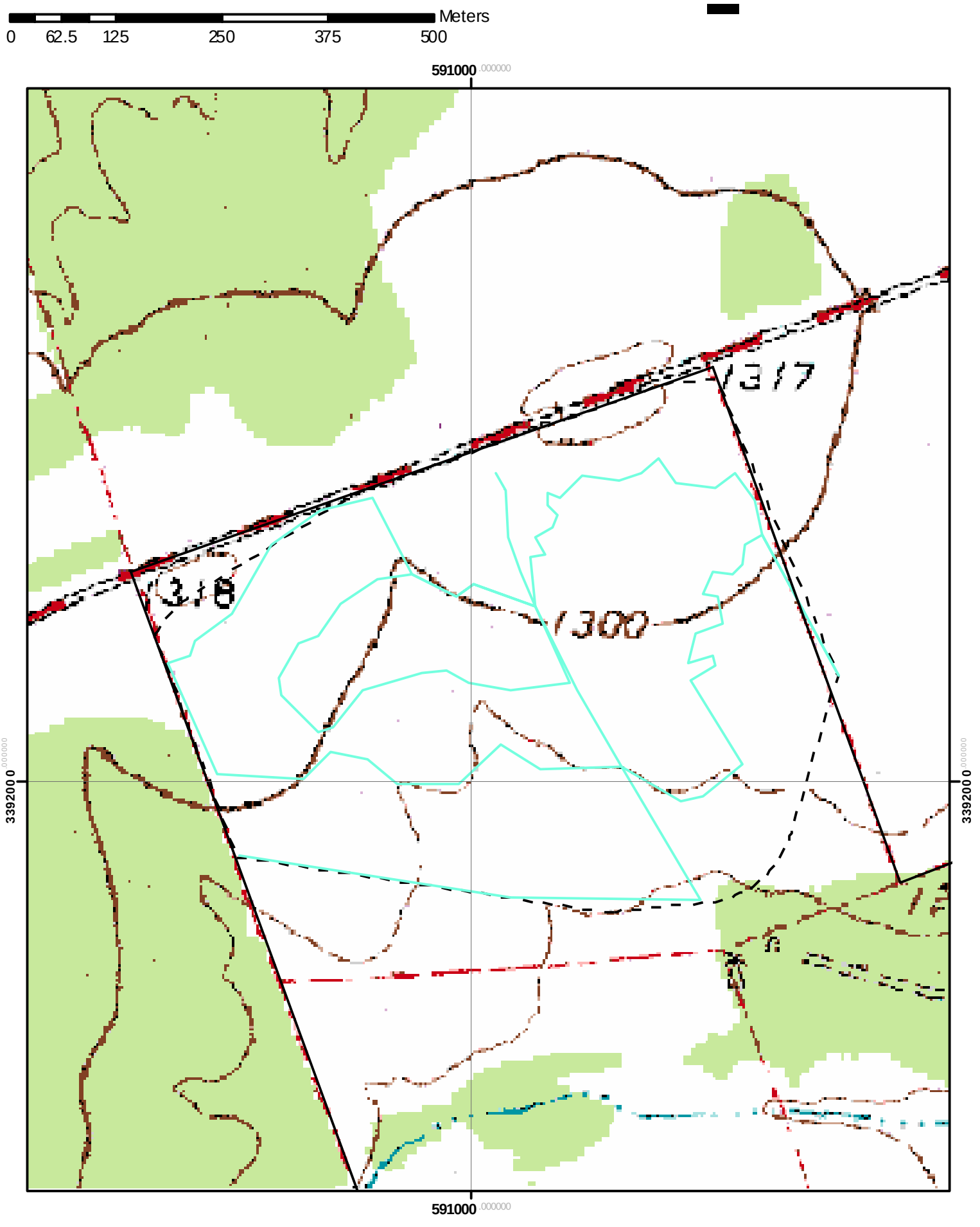
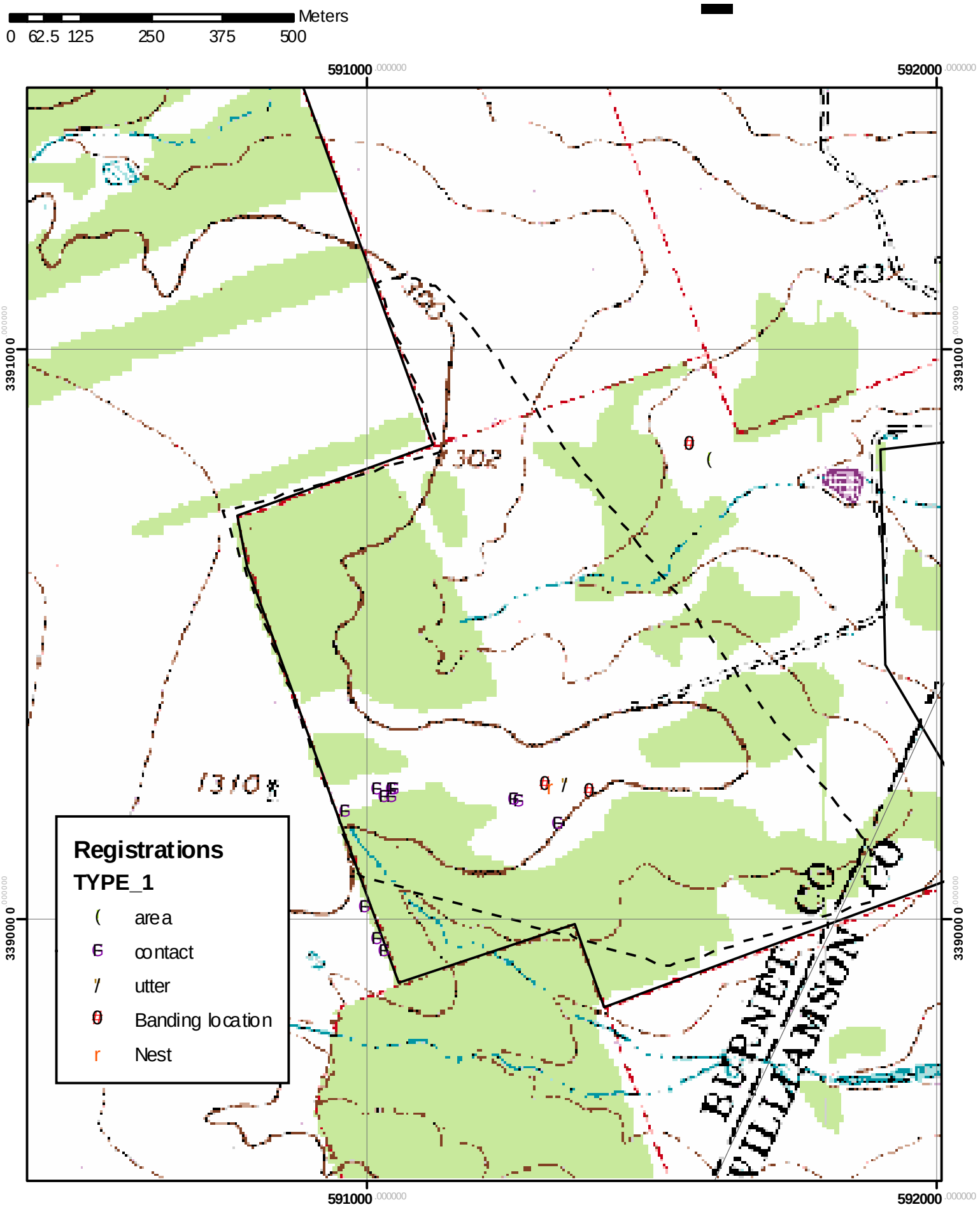
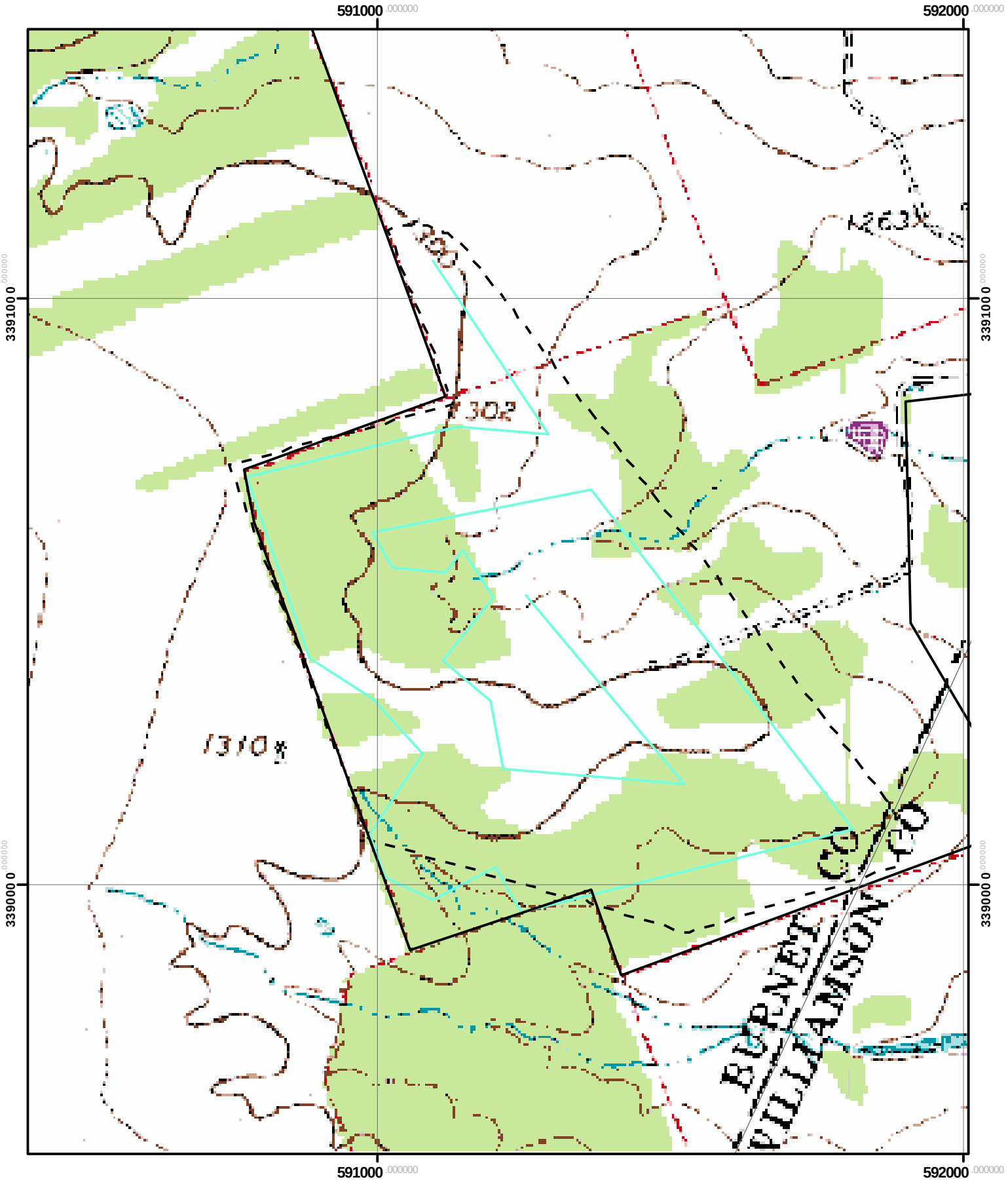


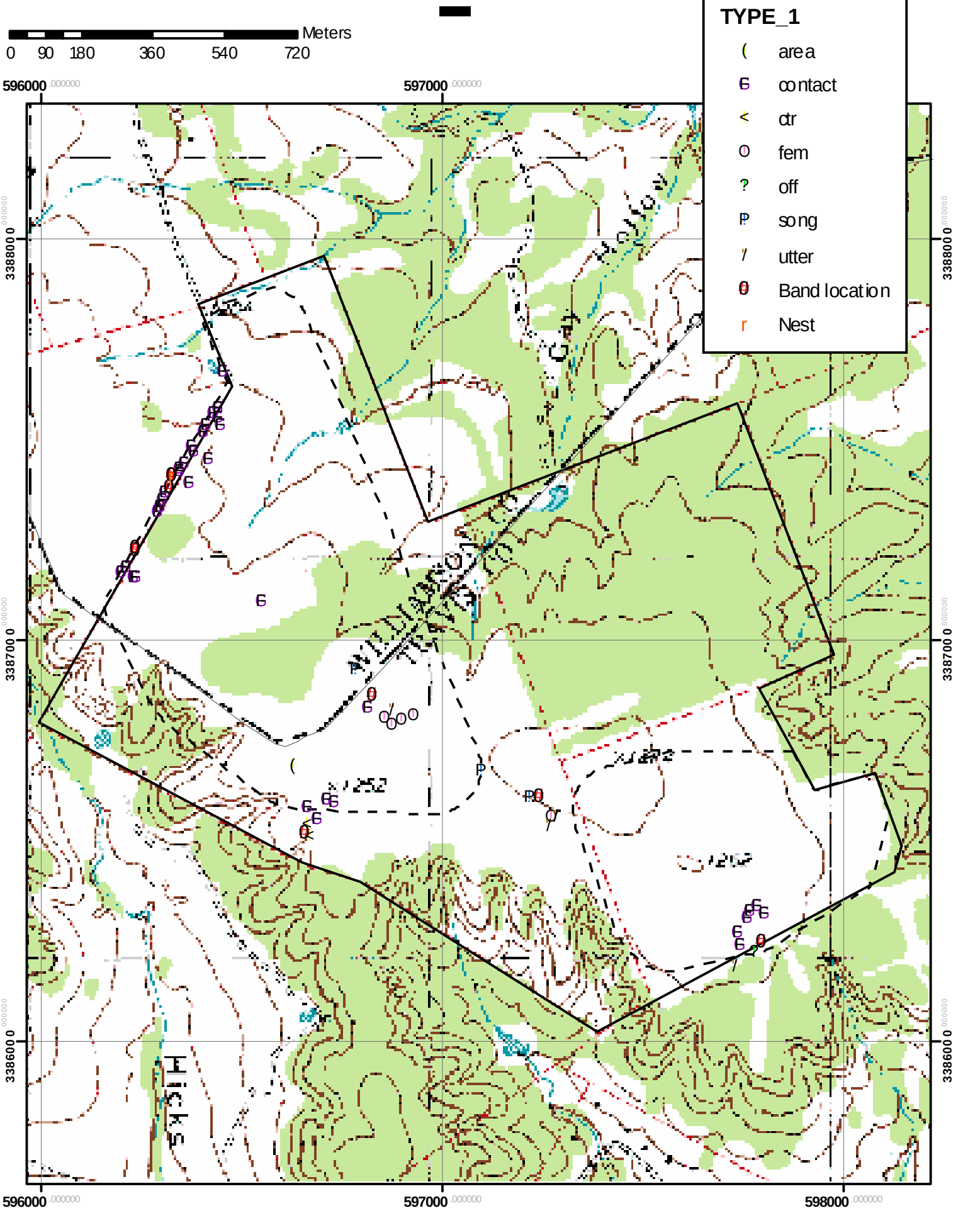
Eckhardt (south)



Eckhardt (south)



Gainer


Meters
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Registrations
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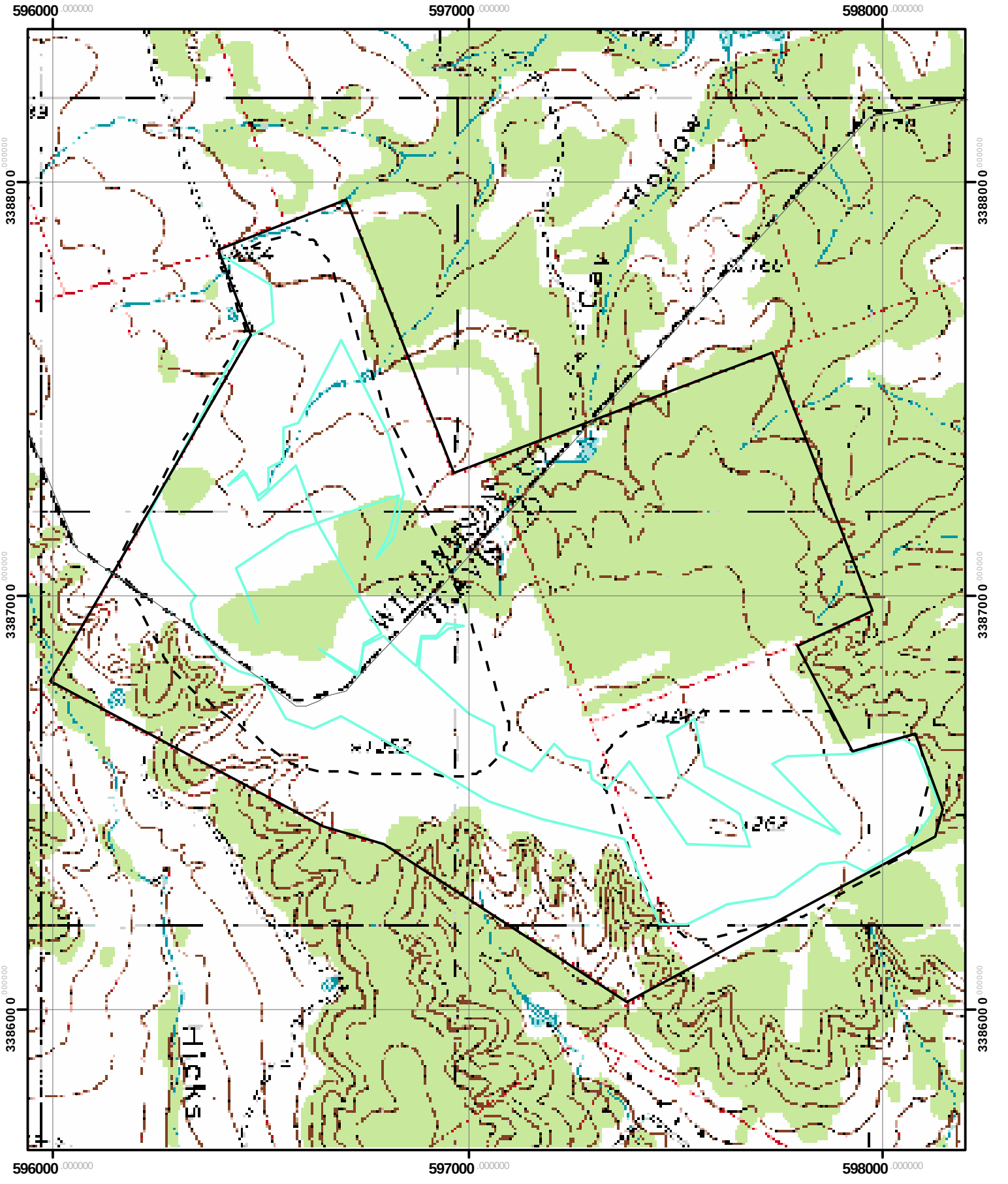
Hicks

Gainer


Legend
Study Route
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3386000
Hicks

Study site	Abbr.	Managing authority	County	USGS 7.5 min Quad	Northwest corner (approx. decimal degrees) Lattitude	Longitude	Southeast corner (approx. decimal degrees) Lattitude	Longitude	Area (approx. acres)	Total site visits	Estimated Number of Territories	Site description
Russell	Russ	BCNWR	Burnet	Bertram	30.679048	-98.089603	30.676811	-98.08274	63.3	17	7	Patches of oak shinnery mixed with open land.
Simons (north)	SimN	BCNWR	Burnet	Bertram	30.660285	-98.09344	30.656924	-98.086923	45.2	18	8	Very dense oak shinnery surrounded by grassland.
Simons (south)	SimS	BCNWR	Burnet	Bertram	30.643596	-98.097033	30.641601	-98.090451	23.7	1	0	Open area with occasional short trees and shrubs.
Eckhardt (north)	EckN	BCNWR	Burnet	Bertram	30.656807	-98.045401	30.661023	-98.054371	96.9	14	6	Very dense oak shinnery (head height) with occasional tall individual trees.
Eckhardt (east)	EckE	BCNWR	Burnet	Bertram	30.662821	-98.039228	30.660629	-98.032486	60.1	2	1	Recently restored (burned 2007) very dense oak shinnery (*Q. sinuata*) mixed with tall trees.
Eckhardt (south)	EckS	BCNWR	Burnet	Bertram	30.648907	-98.05354	30.638829	-98.041368	185.9	8	5	Large diverse, area partly composed of closed canopy forest (tall), open canopy forest, thick oak shinnery (short) and surrounded by open areas.
Gainer	Gain	BCNWR	Travis, Williamson	Nameless	30.617734	-97.999097	30.60384	-97.977614	363.2	16	12	Large diverse area partly composed of closed canopy forest (short), open canopy forest, thick oak shinnery (tall); community composition and structure slightly different than EckS (more closed canopy overall); southern portion burned 2007
Rodgers (west)	RodW	BCNWR	Travis	Travis Peak	30.586263	-98.02092	30.59898	-98.028387	94.2	5	4	Large area composed of both closed canopy juniper woodlands (*J. asheii*) or recently burned (2007) thick oak shinnery (*Q. sinuata*).
Rodgers (east)	RodE	BCNWR	Travis	Travis Peak	30.586175	-98.011167	30.580129	-98.004128	52.5	10	13	Open restored areas of dense but low oak shinnery with occasional tall trees.
Nootsie	Noot	BCP (Travis County)	Travis	Jollyville	30.449118	-97.858548	30.435919	-97.849884	255.9	26	12	Mixture of thick oak shinnery and closed canopy juniper forest.
Denali	Dena	BCP (Travis County)	Travis	Jollyville	30.430844	-97.85973	30.429207	-97.856515	16.8	10	2	Fairly open area with patches of shrubs and clumps of trees of varying height.
Cortana	Cort	BCP (City of Austin)	Travis	Jollyville	30.395264	-97.862103	30.392386	-97.857692	41.7	16	3	Fairly open mix of patches of dense oak shinnery and some closed canopy forest (tall).
Vireo preserve	Wild	BCP (City of Austin)	Travis	Austin West	30.314852	-97.824044	30.312214	-97.815025	77.6	1	0	Mostly composed of closed canopy juniper forest with occasional open shrubland areas.
Bohls Hollow	Bohl	BCP (City of Austin)	Travis	Bee Cave	30.325138	-97.933246	30.318839	-97.926157	63.7	1	0	Mostly open grassland with occasional shrubs and trees. Burned in 2007.

				Time		Weather			No. Birds Detected				
Date	Day	Field Asst	Site	Start	End	Temp (F)	Cloud %	Wind	Male	Female	Juve	Nest	Comments
3.21.2008	Fri	na	**EckN**						2	0	0	0	First BCVI detections at EckN, SimN, Rodgers (which?)
3.21.2008			**SimN**						2	0	0	0	
3.22.2008	Sat	JPA	**Russ**						3	1	0	0	
3.22.2008			**EckS**						0	0	0	0	
3.22.2008			**Gain**						0	0	0	0	
3.23.2008	Sun	JPA	**EckS**						0	0	0	0	
3.23.2008			**SimN**						2	0	0	0	
3.23.2008			**SimS**						0	0	0	0	
3.24.2008	Mon	JPA, EH, TH	**SimN**						1	0	0	0	
3.24.2008			**Russ**									0	
3.24.2008			**EckN**									0	
3.28.2008	Fri	GZ	**Gain**									0	
3.29.2008	Sat	JPA	**EckS**									0	
3.29.2008			**Gain**									0	
3.30.2008	Sun	JPA	**Noot**						2	0	0	0	
3.30.2008			**Cort**									0	
4.2.2008	Wed	BD	**Russ**									0	
4.4.2008	Fri	GZ	**EckN**						1	0	0	0	
4.5.2008	Sat	na	**Russ**									1	First bird banded; nest 1 located
4.6.2008	Sun	JPA	**Noot**										
4.7.2008	Mon	JPA, EH, TH	**Russ**										
4.7.2008			**EckN**										
4.9.2008	Wed	BD	**RodE**									1	nest 2 located
4.11.2008	Fri	GZ	**EckN**										
4.12.2008	Sat	KM	**RodE**										
4.13.2008	Sun	JPA	**Gain**										
4.14.2008	Mon	JPA, EH, TH	**Gain**										First Gainer birds banded
4.16.2008	Wed	na	**SimN**										First Simons bird banded
4.18.2008	Fri	na	**Noot**						4	0	0	0	
4.18.2008			**EckN**										
4.18.2008			**Russ**										
4.19.2008	Sat	na	**Cort**										
4.19.2008			**Dena**										
4.20.2008	Sun	JPA	**EckN**										
4.20.2008			**EckS**										
4.21.2008	Mon	JPA, EH	**Noot**									1	Nest 6 (coffee cup) located
4.23.2008	Wed	na	**Noot**										

				Time		Weather			No. Birds Detected				
Date	Day	Field Asst	Site	Start	End	Temp (F)	Cloud %	Wind	Male	Female	Juve	Nest	Comments
4.25.2008	Fri	na	**Cort**										
4.26.2008	Sat	na	**Noot**									1	Nest 12 located
4.27.2008	Sun	JPA	**EckN**										
4.29.2008	Tue	JPA	**RodE**										Stepped on rattlesnake
4.30.2008	Wed	na	**SimN**									1	Located Nest 11
5.3.2008	Sat	na	**Bohl**						0	0	0	0	
5.3.2008			**Cort**										
5.3.2008			**Noot**										
5.4.2008	Sun	JPA	**Cort**										Banded first nestlings at Nootsie (nest failed by next week)
5.5.2008	Mon	JPA, EH, TH	**SimN**										Rained out of RodE; good crew pics
5.5.2008			**Russ**										
5.6.2008	Tue	JPA	**EckN**										
5.6.2008			**Gain**										
5.7.2008	Wed	BD	**EckN**	07:00	11:30	69	100	windy	5	0	0	0	
5.10.2008	Sat	na	**Cort**										
5.11.2008	Sun	JPA	**Dena**	07:00					2	1	3	0	First fledglings observed (at Denali)
5.11.2008			**Noot**										
5.11.2008			**Cort**										
5.12.2008	Mon	JPA, TH, SS	**RodE**	07:20									Sahotra Sarkar accompanied us; dbgrdgsi
5.12.2008			**Russ**										
5.13.2008	Tue	JPA	**Gain**									1	Nest 14 located; banded nestlings (nest failed by next week)
5.14.2008	Wed	na	**SimN**										banded nestlings at EckN, prob lost fieldbook this date
5.14.2008			**EckN**									1	Nest 15 located
5.14.2008			**Noot**										
5.15.2008	Thu	na	**EckE**	07:18	08:15	70	70	na	2	0	0	0	
5.15.2008			**Russ**	08:27	09:50	66	na	na	4	1	0	0	
5.15.2008			**Noot**	12:00	14:05	70	100	na	2	1	0	0	
5.16.2008	Fri	na	**Dena**	08:42	10:34	68	slight	slight	2	0	1	0	
5.16.2008			**Noot**	11:15	13:49	79	na	windy	5	0	4	0	banded nestlings at Noot
5.17.2008	Sat	na	**SimN**	13:03	13:40	na	na	na	4	0	0	0	
5.17.2008			**SimS**	14:20	15:00	na	na	na	0	0	0	0	
5.18.2008	Sun	JPA	**RodW**	07:53	10:00	67	na	na	2	0	0	0	
5.18.2008			**RodE**	10:10	12:03	na	na	na	2	1	4	1	Nest 18 located
5.19.2008	Mon	JPA, TH	**Noot**	07:28	09:20	68	0	little	1	0	0	0	
5.19.2008			**Dena**	09:41	10:25	na	na	na	1	0	0	0	

				Time		Weather			No. Birds Detected				
Date	Day	Field Asst	Site	Start	End	Temp (F)	Cloud %	Wind	Male	Female	Juve	Nest	Comments
5.19.2008			Cort	10:35	11:30	na	na	na	2	0	0	0	
5.20.2008	Tue	JPA	RodW	08:03	09:50	74	0	none	3	0	0	1	Nest 20 located
5.20.2008			RodE	10:11	11:13	na	na	na	3	1	0	0	
5.21.2008	Wed	na	Gain	06:40	08:44	76	100	slight	5	1	0	0	
5.21.2008			EckN	09:16	09:41	na	na	na	2	0	0	0	
5.21.2008			SimN	09:57	10:28	86	50	slight	3	1	0	0	
5.21.2008			Russ	10:47	11:58	na	na	na	4	0	0	0	
5.22.2008	Thu	JC	Cort	06:56	12:04	74	100	windy	2	0	0	0	with J. Chenowith COA
5.22.2008			Noot	12:34	02:00	91	90	windy	2	0	2	0	
5.24.2008	Sat	na	SimN	01:26	03:36	85	30	windy	3	1	0	0	blbkpisi
5.25.2008	Sun	JPA	RodE	07:37	11:00	74	100	slight	5	1	2		whyeorsi
5.26.2008	Mon	JPA, TH	Dena	07:20	08:05	78	na	na	1	0	0	0	dbsigrgr
5.26.2008		JPA, TH	Noot	08:17	11:00	82	na	na	4	0	0	0	
5.27.2008	Tue	JPA	Russ	08:36	11:26	na	na	na	3	0	0	0	
5.28.2008	Wed	na	Noot	11:00	01:00	93	na	na	3	0	0	0	yesiwhwh
5.29.2008	Thu	na	SimN	06:40	10:45	74	0	na	8	1	0	0	
5.29.2008			EckN	11:06	11:40	na	na	na	1	0	0	0	
5.31.2008	Sat	na	Cort	06:55	10:00	74	50	slight	1	0	0	0	
6.2.2008	Mon	JPA	Noot						3	1	0	0	unsuccessful banding attempts
6.3.2008	Tue	JPA	Gain	07:30	11:00	75	50	very	2	2	2	1	
6.6.2008	Fri	na	SimN	07:55	09:30	84	80	na	2	1	0	0	Fort Hood female recaptured
6.6.2008			EckN	09:40	10:40	na	na	na	2	0	1	0	yerdwhsi feeds banded fledgling
6.6.2008			Gain	10:50	12:00	na	na	na	1	1	0	0	rdgrdbsi
6.7.2008	Sat	na	Noot	08:40		84	60	windy	5	1	0	0	orsigrbl
6.8.2008	Sun	JPA	SimN	07:30	09:30	na	na	na	2	0	0	1	
6.8.2008			RodW	10:00	10:30	na	na	na	0	0	0	0	RodW nest unsuccessful
6.9.2008	Mon	JPA, EH	Dena	07:10		77	na	na	2	0	1	0	
6.9.2008		JPA, EH	Noot	09:30	10:30	na	na	na	1	0	0	0	
6.10.2008	Tue	na	EckE	06:53		74	10	na	0	0	0	0	
6.13.2008	Fri	na	Russ	08:24	12:40	78	70	drizzle	5	0	0	0	
6.14.2008	Sat	na	Wild	07:21	08:40	77	60	none	0	0	0	0	
6.14.2008			Cort	09:00	10:55	86	40	slight	2	1			clues to finding nest at Cort
6.15.2008	Sun	na	Noot	07:31	12:30	77	0	none	7	2	4	0	whsigrrd (Coffee Cup male)
6.15.2008			Cort	01:20	02:00	107	na	na	0	0	0	0	
6.16.2008	Mon	JPA	EckS	07:15	09:30	80	0	slight	3	1	3	1	whwhwhsi; Nest 22 located
6.16.2008			SimN	10:00	11:26	81	0	cloud	1	0	0	0	
6.17.2008	Tue	JPA	EckS	07:22	10:10	71	10	slight	2	1	3	0	blsirdwh
6.17.2008			Russ	10:20	13:10	95	na	na	5	1	1	0	

				Time		Weather			No. Birds Detected				
Date	Day	Field Asst	Site	Start	End	Temp (F)	Cloud %	Wind	Male	Female	Juve	Nest	Comments
6.19.2008	Thu	na	**Russ**	08:30	12:15	na	na	na	2	0	0	1	bksiorbl may have been feeding juve(s)
6.21.2008	Sat	na	**Dena**	08:25	10:15	na	na	na	1	1	0	0	dbpidbsi (SY male? ASY female?)
6.21.2008			**Noot**	11:42	12:40	na	na	na	1	0	0	0	dbsiorrd
6.21.2008			**Cort**	15:30	19:00	na	na	na	3	0	2	0	dbsidbdg feeding 2 fledglings
6.22.2008	Sun	JPA	**RodE**	07:30	10:15	92	5	slight	4	1	2	0	
6.23.2008	Mon	JPA	**Russ**	07:55	09:00	74	10	na	1	1	1	0	banded fledgling
6.23.2008			**SimN**	09:20	12:00	na	na	na	4	0	0	0	
6.24.2008	Tue	JPA, TH	**EckS**	07:30	09:25	74	40	slight	2	1	0	0	
6.24.2008			**RodW**	09:45	10:20	na	na	na	2	1	0	0	
6.24.2008			**RodE**	10:30	11:30	na	na	na	1	0	0	0	rdsioror
6.27.2008	Fri	na	**Dena**	06:45	09:00	82	20	slight	1	1	1	0	
6.27.2008			**Cort**	09:10	10:30	82	na	na	2	0	0	0	second detection of fledglings, wp3
6.29.2008	Sun	JPA	**RodE**	07:00	11:00	na	na	na	2	1	0	1	with TAMU veg crew
6.29.2008			**RodW**	11:30	13:30	na	na	na	1	0	0	0	
6.30.2008	Mon	EH	**Russ**	07:00	10:45	na	na	na	4	0	0	0	
7.1.2008	Tue	JPA	**SimN**	06:55	08:30	62	50	slight	2	0	0	0	mvsidgye
7.1.2008			**Gain**	08:45	11:30	na	na	na	2	0	1	0	mvsimvor feeds fledgling
7.7.2008	Mon	na	**Gain**	09:40	01:20	81	80	slight	5	0	0	0	
7.8.2008	Tue	na	**Cort**	07:40	10:20	75	90	na	1	0	3	1	Nest 22 found; banded 3 nestlings (day 6)
7.8.2008			**Noot**	10:30	11:30	na	na	na	1	0	0	1	
7.11.2008	Fri	na	**Gain**	07:30	11:40	77	70	windy	3	1	1	0	grsiyewh
7.14.2008	Mon	na	**Cort**	11:30	12:00	na	na	na	0	0	0	0	nestlings gone-- lint present
7.14.2008			**Dena**	12:15	13:40	102	35	na	0	0	1	0	
7.16.2008	Wed	na	**Noot**	07:00	12:30	75	95	drizzle	4	1	0	0	dgdbdgsi
7.18.2008	Fri	na	**Gain**	09:28	11:30	92	15	slight	2	0	0	0	
7.19.2008	Sat	na	**Noot**	07:00	10:10	74	15	slight	3	0	0	0	
7.22.2008	Tue	TH, JB	**Noot**	07:00	11:00	na	10	none	1	0	0	0	
7.23.2008	Wed	na	**Gain**	07:40	11:00	86	40	windy	2	0	1	0	dbsiwhye
7.26.2008	Sat	na	**Noot**	07:30	11:00	76	35	slight	2	0	0	0	
7.27.2008	Sun	na	**Russ**	07:30	10:00	74	na	na	3	0	1	0	banded fledgling
7.28.2008	Mon	na	**EckS**	07:15	09:35	74	15	na	2	0	1	0	
7.31.2008	Thu	na	**Dena**	07:00	09:14	79	100	slight	0	0	0	0	caught juve wevi
8.1.2008	Fri	na	**SimN**	06:50	10:45	na	na	na	0	1	3	0	banded fledgling
8.2.2008	Sat	na	**SimN**	06:50	08:30	na	na	na	0	0	0	0	
8.2.2008			**Gain**	09:00	10:45	na	na	na	1	0	0	0	
8.5.2008	Tue	TH	**Noot**			na	na	na	2	0	0	0	yesigrrd ('uno')