2016

Establishment and Survival of Prairie and Oak Savanna Plants in the Duwamish Hill Preserve

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Duwamish Hill Preserve is a park in Tukwila, WA, which has undergone restoration since 2004. The most prominent feature of the site is a 40million year old hill of unique rocky bald habitat. To the west and northwest of the hill are a series of constructed habitats, blending the science of restoration ecology and artistry of landscape architecture. Each of the four habitats (oak savanna, prairie, wet meadow, emergent wetland) has four cells. Native Pacific Northwest species were planted across cells in their appropriate habitats, with 6 species in particular occurring in both savanna and prairie habitats, allowing for comparisons between the two: Fragaria virginiana var. platypetala (Virginia strawberry), Dodecatheon hendersonii (broad- leaved shooting star), Viola adunca (early blue violet), Carex inops (Long-stolon sedge), Camassia quamash (common camas) and C. leichtlinii subsp. Suksdorfii (great camas). These species were counted and mapped on several occasions to track survival since installation in November 2015. Counts of Xerophyllum tenax (bear grass) and Quercus garryana (Garry oak) also occurred in the savannah habitat. Although many other species are common to both habitats, this sub-selection comprises what was established enough for a census to be performed in March-May, 2016, the time window for this study. Results of the census allow for the comparisons of survivorship shown below, and will be used in the future for stewardship of the park and as reference for a proposed TEK Lab (Traditional Ecological Knowledge). Overall survival across the site was 72% of what was installed, with an overall flowering rate of 67% for F. virginiana, D. hendersonii, V. adunca, and the two Camas spp.

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1. Introduction

The Duwamish Hill Preserve is a unique blend of artistry and science. Each of the four habitat types contains four cells, such that different treatments can be applied to the cells in the future, and the effects studied (Alford, 2016). It would have been ideal for scientific study to make the cells identical to each other in size and shape, species selection and density, but that would not necessarily have created a successful park space. The result is a compromise, which still warrants study to assess how successful constructed landscapes like this can be in an urban landscape.

The Preserve is a sterling example of collaborative design, in which the local community was engaged in the design process. As has been demonstrated in other successful parks, "…community engagement is well worth the additional resources and effort" (Aboelata et al, 2011). The meandering paths provide visual interest, and open areas allow for a diversity of activities. The use of large, unfinished logs as benches adds to the natural feel of the space, and "benches that provide a good view of surrounding activities are used more than benches with less or no view of others" (Gehl, J., 2011).

The success of the park will be measured not only in whether the plants survive and thrive, but if they provide suitable habitat for other creatures such as pollinators, while also providing an active, popular destination for humans. This observational study focused on a small selection of the installed species, on a short time frame.

2. Methods

2.1 Study Area

The Duwamish Hill Preserve is located at 3800 S 115th St, Tukwila, WA 98168. The park has been undergoing phased restoration since 2004. The hill itself was restored in Phase 1, and is a unique Rocky Bald habitat. The study area for this project comprises the 1.9 acres of the Phase 2 restoration, in the flatlands to the west and northwest of the hill. Phase 2 consists of several constructed habitats commonly found in the Pacific Northwest: Oak Savannah, Prairie, Wet Meadow, and Emergent Wetland. These are labeled in Figure 1 as PH2-4, PH2-6, PH2-7, and PH2-8, respectively.

Only PH2-4 (Oak Savanna) and PH2-6 (Prairie) were included in this study.

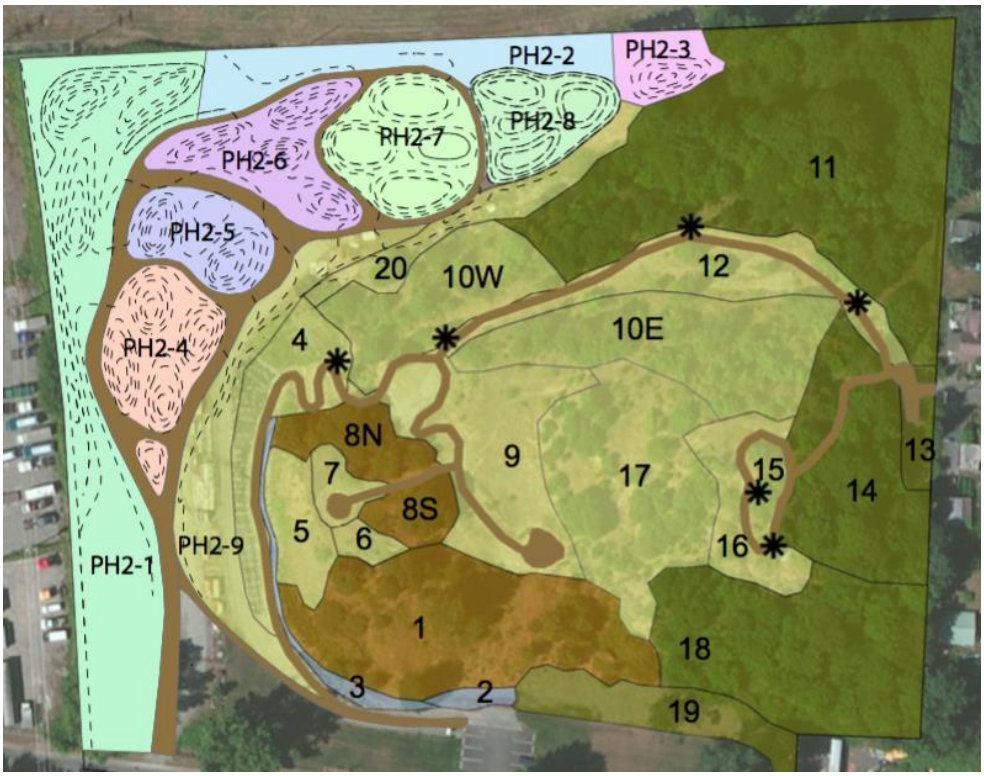

Figure 1: Habitat Management Units of Phase 2 (PH2-#). Census was performed in PH2-4 and PH2-6.

2.2 Target Species

Several of the species planted across both Savannah and Prairie habitats were readily identifiable at this point in the growing season:

- *Dodecatheon hendersonii* (broad-leaved shooting star) - DOHE
- *Fragaria virginiana var. platypetala* (Virginia strawberry) - FRVIP
- *Viola adunca* (early blue violet) - VIAD
- *Carex inops* (Long-stoloned sedge) – CAIN9
- *Camassia quamash* (common camas)
- *C. leichtlinii subsp. Suksdorfii* (great camas)

There are also two species unique to the Savannah habitat cells that were counted and measured to provide baseline data for future monitoring efforts:

- *Quercus garryana* (Garry oak) – QUGA
- *Xerophyllum tenax* (bear grass) – XETE

The plants were sourced from a variety of nurseries in Oregon and Washington (see Appendix G).

2.3 Study Design

A low wire exclosure fence was installed around each cell about 45 days after plant installation, each with a gate. Using the gate as a starting/ending point, the fence stakes were used as anchors for string, to divide the cell into easily managed quadrats (Elzinga, Salzer, & Willoughby, 1998 & 2001), roughly 5’ wide (the width between stakes, ~1.54m), with varying lengths depending on cell shape.

Figure 2: Fencing around cells, and quadrat strings between stakes.

The “Full 90 Percent” submittal document produced by SvR Design Company has the rough outline of each habitat and the cells within (see Appendix B). The cells within each habitat were labeled 1-4 clockwise from each southernmost cell.

Outlines extracted from the SvR plans were printed on Rite in the Rain waterproof paper, and used to demarcate quadrat layout and plant locations. The stakes were counted and numbered clockwise from each gate, noting which stakes were used for creating the quadrats. Quadrats were created by running a string across the fence stakes roughly west to east in PH2-4, and roughly north to south in PH2-6 (see Appendix E). Plants were noted on the paper maps in roughly the location and arrangement as found in each quadrat (see Appendix F).

The assumed number of installed individuals below also comes from the SvR document. QUGA and XETE were planted exclusively in the Oak Savanna, but totals for the other species were divided between the two habitats:

- QUGA: 10
- XETE: 128
- FRVIP: 200
- DOHE: 117
- VIAD: 200
- CAIN9: 117
- CAMAS: 1300

Due to such low sample population numbers, a full census of each target species was required to provide meaningful data. The first census took place on March 16, 17, and 18, 2016. This count was the longest in duration, as it was the first attempt at laying out the quadrats and performing species identification and counting. Measurements were taken of the length and central width of each quadrat, to allow for rough estimates of area and planting density.

A “Duwamish Alive!” volunteer weeding event occurred on 4/16/2016, so a pre-weeding census occurred 4/14, with a post-weeding census 4/17, to capture any accidental damage done to the installation. The volunteers only worked in PH2-6-Prairie habitat, so only those cells were recounted at that time.

A final census was performed over 5/14 and 5/15, to capture any springtime mortality and evidence of flowering, as well as selected measurements as time allowed.

In summary, PH2-4 received 3 counts, and PH2-6 received 4 counts.

- 3/16-3/18: Census 1, PH2-4 and PH2-6
- 4/14: Census 2 (pre-weeding census), PH2-4 and PH2-6
- (4/16: weeding work party in PH2-6)
- 4/17: Census 3 (post-weeding census), PH2-6 only
- 5/15: Census 4, PH2-4 and PH2-6

3. Results

Some counts showed an increase in individual numbers because they were missed in earlier counts. As noted, Census 3 was only performed in PH2-6, so for charting purposes, the number of individuals found in PH2-4 during Census 2 were assumed to still exist in Census 3.

3.1 Overall Survival and Flowering

All species except XETE and DOHE achieved >79% survival. XETE's mortality seemed primarily to be due to herbivory that occurred after plant installation, before the fences were installed (a delay of approximately 45 days). Both habitats achieved 72% survival of installed plants, and 67% flowering (of the four species for which flowers were counted).

Figure 3: Survival of each species overall, compared to original installation numbers (parentheses, above right)

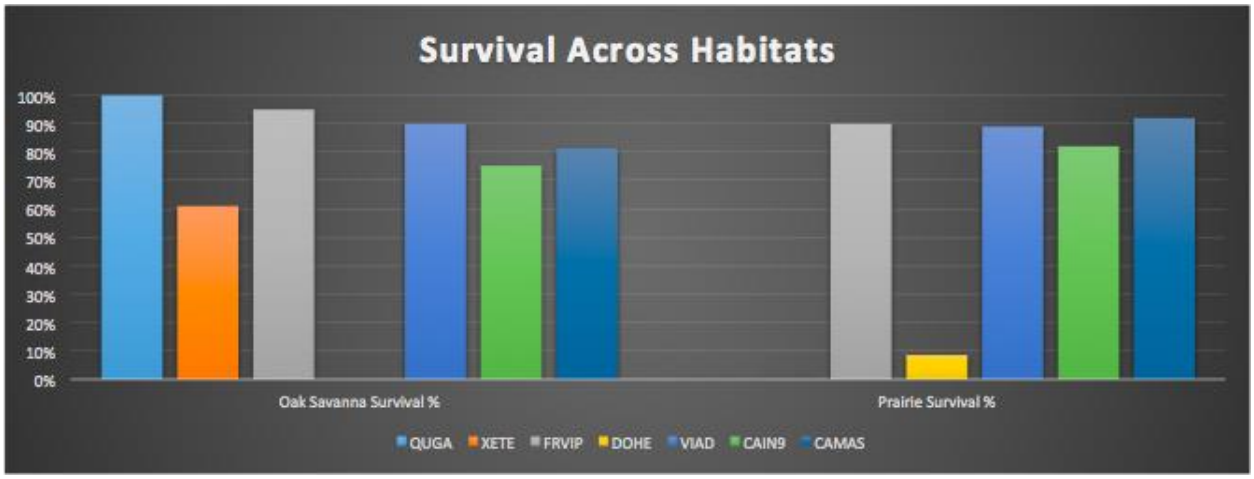

Figure 4: Survival of each species across habitats, compared to original installation numbers (Figure 7).

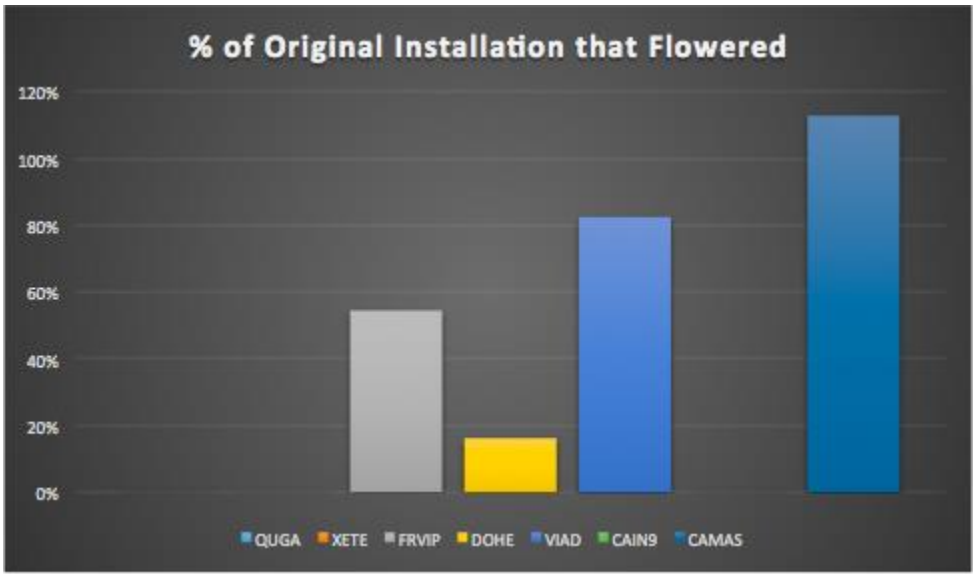

Figure 5: Percentage of the original installation that showed evidence of having flowered by the final census (CAMAS shows >100% due to twin-plantings not being evident until after flowering)

3.2 *Quercus garryana*

Quercus garryana, or Garry oak, is the only oak species native to the states of Oregon and Washington (Lady Bird Johnson Wildflower Center, 2015). Ten *Q. garryana* seedlings were installed across the Oak Savanna habitat. At the end of the observation period, heights for all ten individuals were measured to provide baseline data for future monitoring efforts, and DBH (at 4.5') for the five individuals that were over 2' tall:

Cell	Quadrat	Height (inches)	DBH (inches)
1	4	15	n/a
1	7	15	n/a
1	11	13	n/a
2	4	112	1.5
2	11	101	2
3	3	14	n/a
3	5	18	n/a
4	5	92	1.5
4	8	109	2
4	10	90	1.5

Figure 6: Heights of QUGA from the PH2-4 Oak Savannah habitat

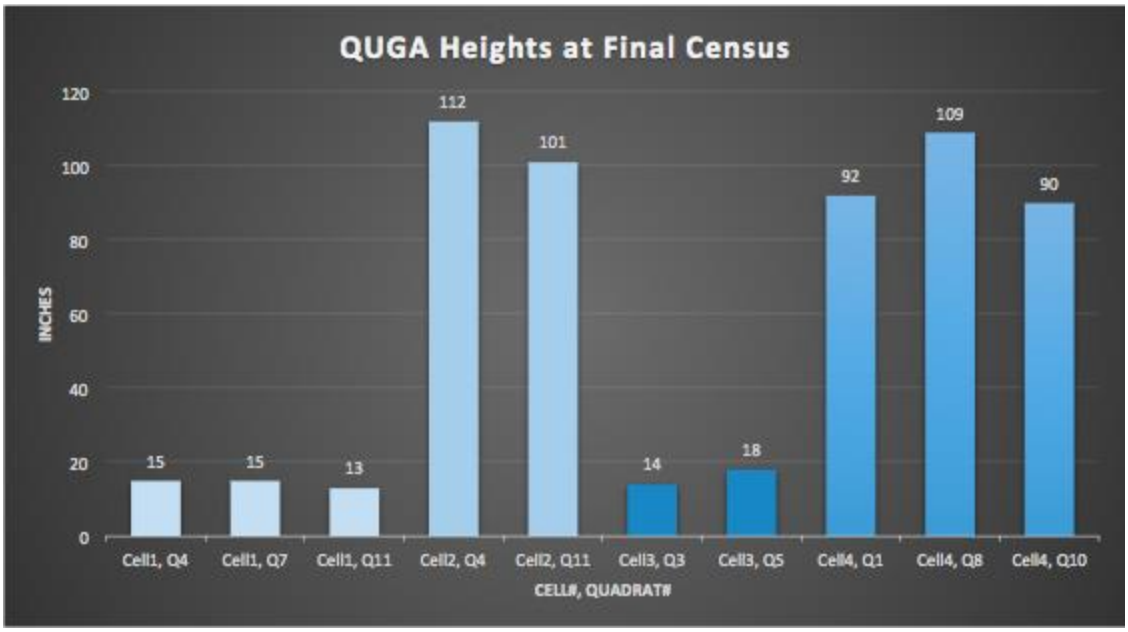

Figure 7: Heights (in inches) of each QUGA individual at the final census in May

3.3 *Xerophyllum tenax*

Xerophyllum tenax, or Bear grass, does not typically bloom until May-August (Lady Bird Johnson Wildflower Center, 2015), and was not seen blooming during this study.

During Census 1 in March, XETE was already suffering from extensive herbivory due to rabbits, due to a 45-day delay between plant installation (November, 2015) and fence construction.

Installed plants according to SvR schematic: 128
Total plants found during final census: 78
Net mortality: 50

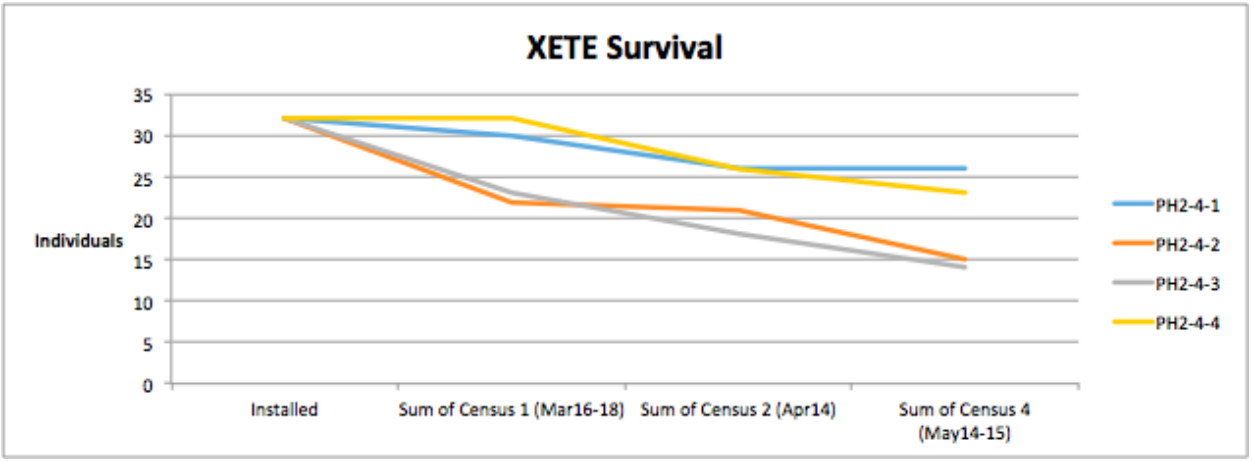

Figure 8: XETE Survival

3.4 *Fragaria virginiana var. platypetala*

Fragaria virginiana var. platypetala, or Virginia strawberry, or even wild strawberry, survived quite well overall. More survived in Oak Savanna than Prairie, but more Prairie individuals showed evidence of having flowered. Fruits were very small, only a couple centimeters in diameter (typical for the species (MacKinnon et al, 2004)), but delicious.

Installed plants according to SvR schematic: 200
Total plants found during final census: 185
Net mortality: 15

Total individuals found in final census showing evidence of flowers/fruits: 107

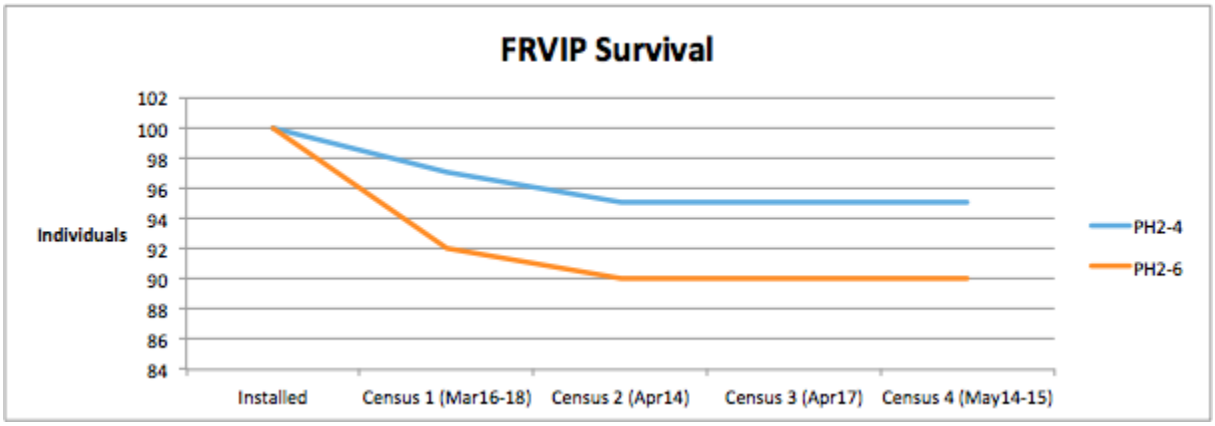

Figure 9: FRVIP Survival

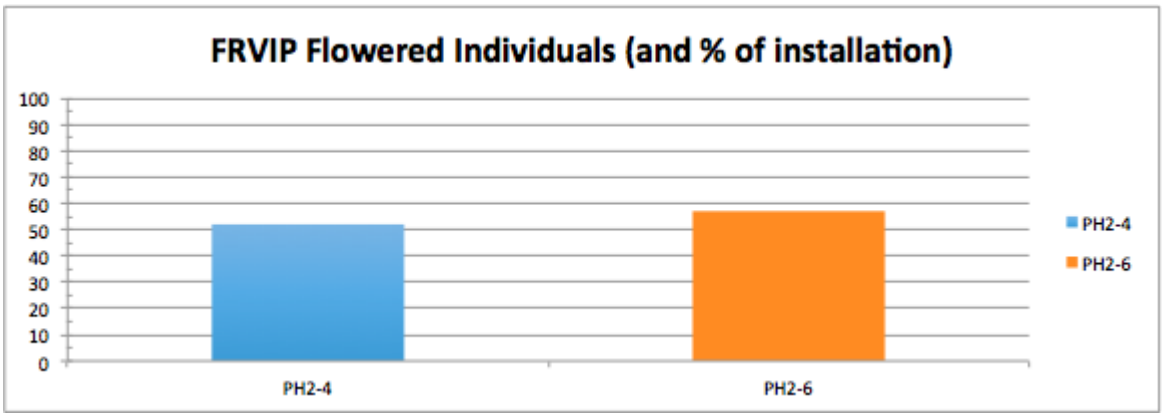

Figure 10: FRVIP Flowering

3.5 *Dodecatheon hendersonii*

D. hendersonii is a deciduous perennial (MacKinnon et al, 2004), and of special value to Bumble Bees (Lady Bird Johnson Wildflower Center, 2015). The DOHE were in full bloom during census 3, but nearly all had senesced by census 4, which is expected behavior, but startling to witness. Only 5 individuals still had any green left to their leaves during the final census, all of which were in the Prairie habitat. “Survival” and “mortality” are a bit inaccurate, or at least premature, as it won’t be known until 2017 whether the individuals that “died” return. DOHE is a

Installed plants according to SvR schematic: 117
Total plants found during final census: 5
Net mortality: 112

Total individuals found in final census showing evidence of having flowered: 19

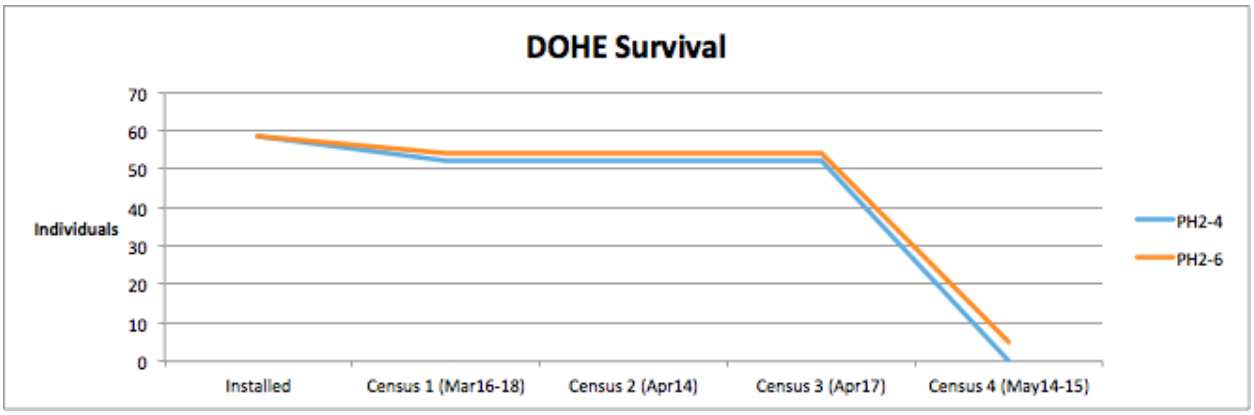

Figure 11: DOHE Survival

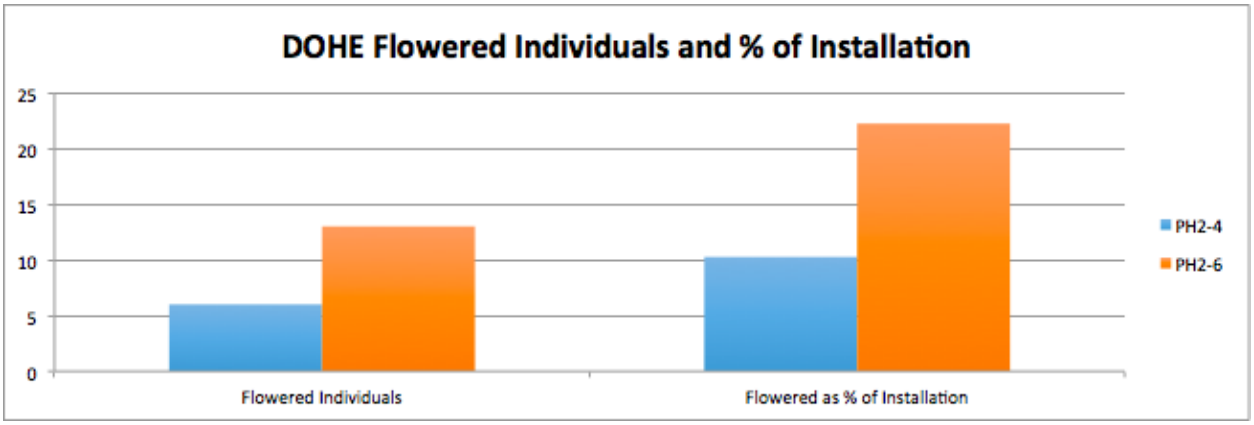

Figure 12: DOHE Flowering

3.6 *Viola adunca*

Viola adunca, or early blue violet, a perennial wildflower of meadows and open areas, was supposedly extirpated from Seattle's urban spaces (Jacobson, 2001). VIAD did pretty well overall in the Preserve, though most flowers had senesced by the time of the final census. A few individuals went missing between Census 2 and Census 3, likely due to weeding activity. VIAD seemed especially prone to being overtaken by weedy species, which may have contributed.

Installed plants according to SvR schematic: 200
Total plants found during final census: 179
Net mortality: 21

Individuals found in final census showing evidence of having flowered: 165

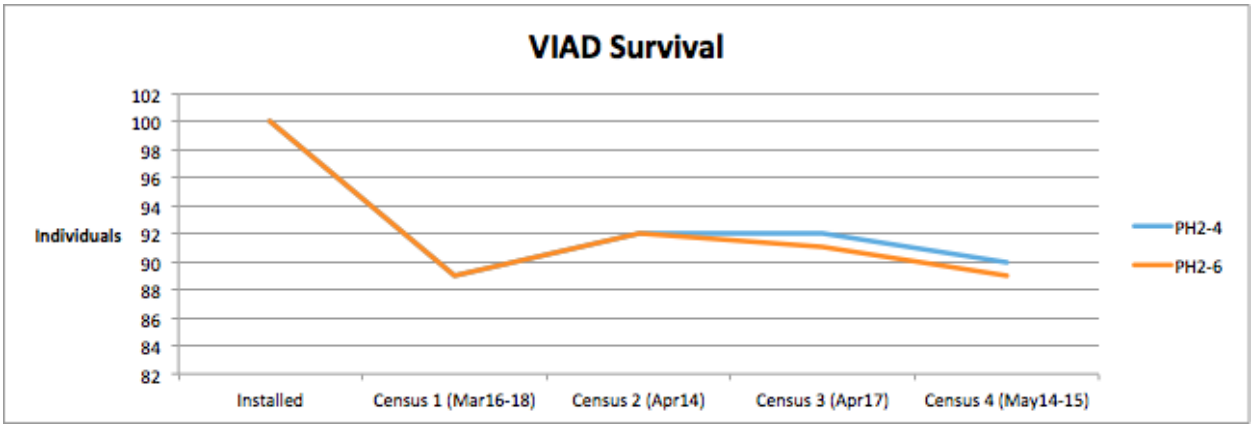

Figure 13: VIAD Survival

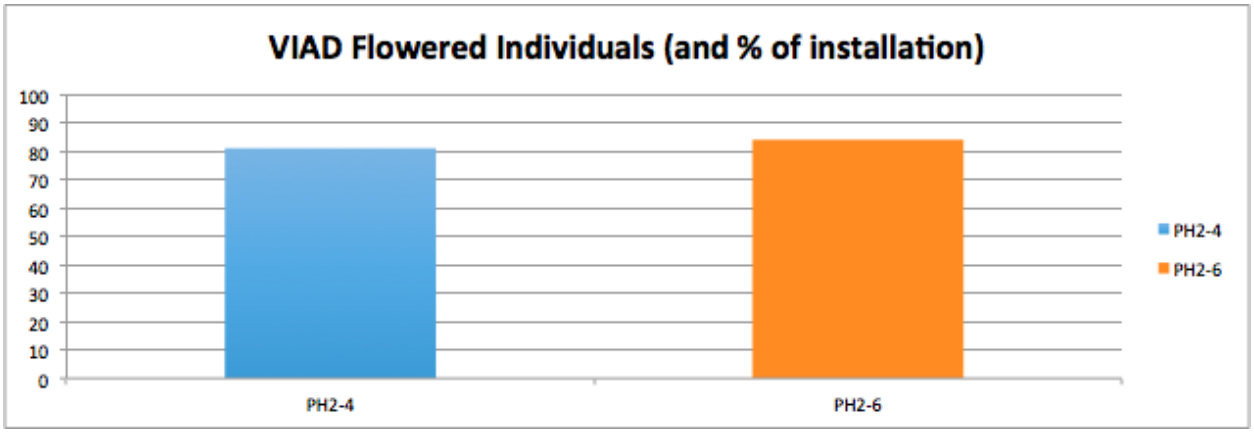

Figure 14: VIAD Flowering

3.7 *Carex inops*

Carex inops, or Long-stoloned sedge, grows in low, dense tufts (MacKinnon et al, 2004), making it hard to spot in most of the cells, especially once NASQ had taken over (section 4.1). Most CAIN9 individuals seemed to struggle for survival, though the ones in the Prairie habitat seemed more robust overall. Most mortality occurred in the Oak Savanna.

Installed plants according to SvR schematic: 117
Total plants found during final census: 92
Net mortality: 25

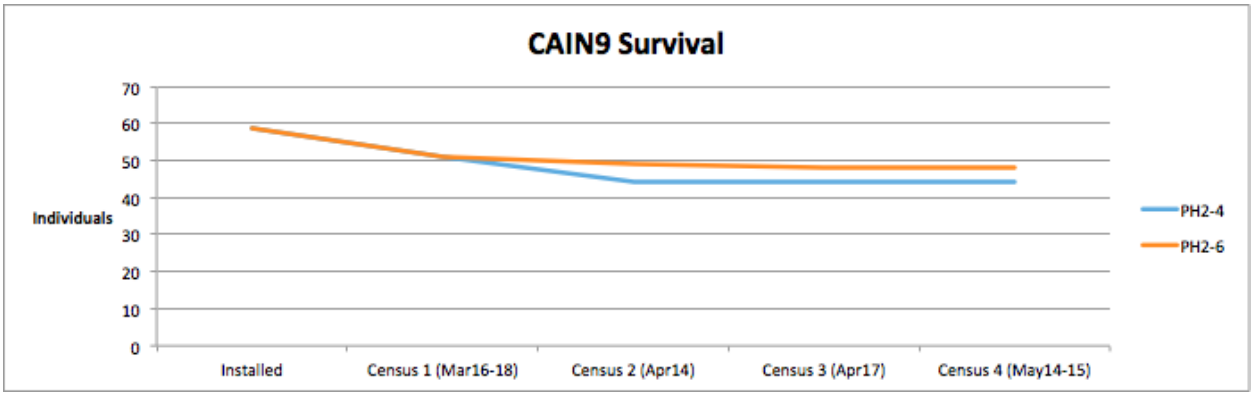

Figure 15: CAIN9 Survival

3.8 *Camassia quamash* and *C. leichtlinii subsp. Suksdorfii*

Camassia quamash (common camas) and *C. leichtlinii subsp. Suksdorfii* (great camas) were installed together in clusters, and are extremely difficult to tell apart in the field (especially prior to blooming), so were counted as one for the census. Once flowered, they should be distinguishable by tepals of great camas twisting together to cover and protect the fruit (MacKinnon et al, 2004). It should be noted that the number of flowered individuals exceeded earlier counts of installed plants. This is suspected to be due to occurrences of two bulbs being installed in a single location, such that the sprouts were counted as one plant, but which later produced two flowers.

Some CAMAS mortality is suspected to be from crow activity, pulling the bulbs up and out of the ground.

During the final census, the height of the dominant individual within each cluster of plants was also measured.

Installed plants according to SvR schematic: 650 of each, or 1300 total
Total plants found during final census: 1127
Net mortality: 173

Individuals found in final census showing evidence of having flowered: 924
Maximum height: 27”
Average height: 20”

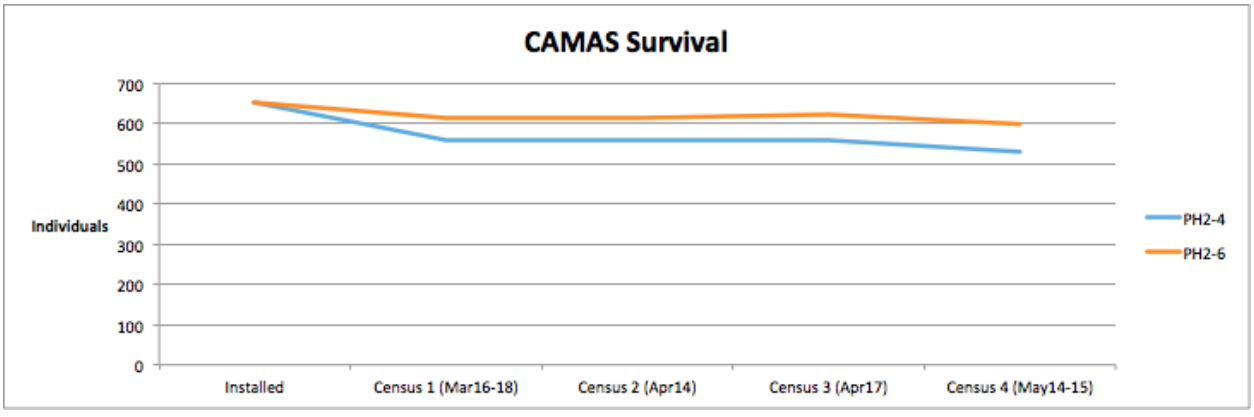

Figure 16: CAMAS Survival

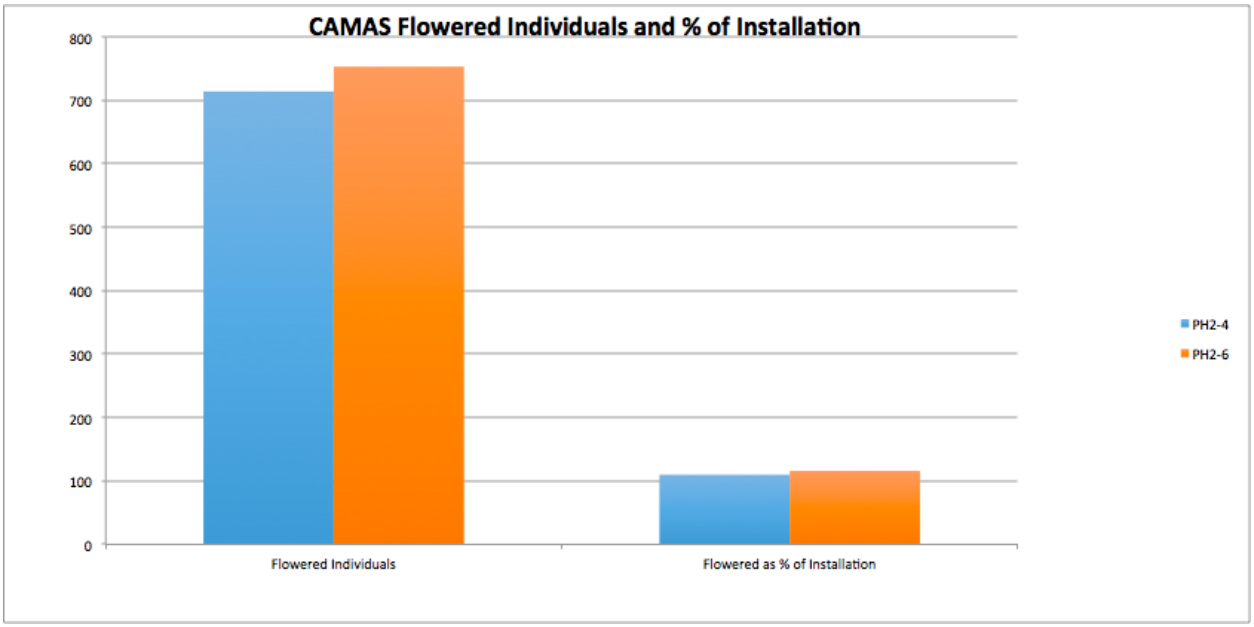

Figure 17: CAMAS Flowering

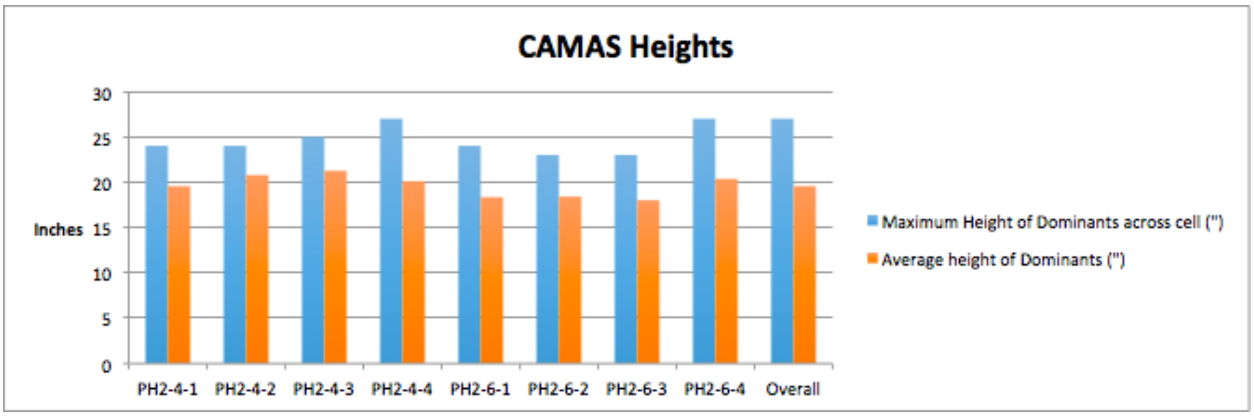

Figure 18: CAMAS Heights

3.9 Overall Cell Area and Density

Measurements were taken with a 50m Keson fiberglass measuring tape. The length of each quadrat was measured along the string from stake to stake. The width was taken at the approximate middle, as the tape was stretched perpendicular to the quadrats, between the stakes noted below:

Cell	Starting Stake	Ending Stake
PH2-4, cell 1	1	16
PH2-4, cell 2	28	10
PH2-4, cell 3	19.5	3
PH2-4, cell 4	9.5	25.5
PH2-6, cell 1	gate	8
PH2-6, cell 2	7.5	21.5
PH2-6, cell 3	17	39
PH2-6, cell 4	4	24

Figure 19: Stakes between which the overall length of the cell (and individual quadrat widths) was measured.

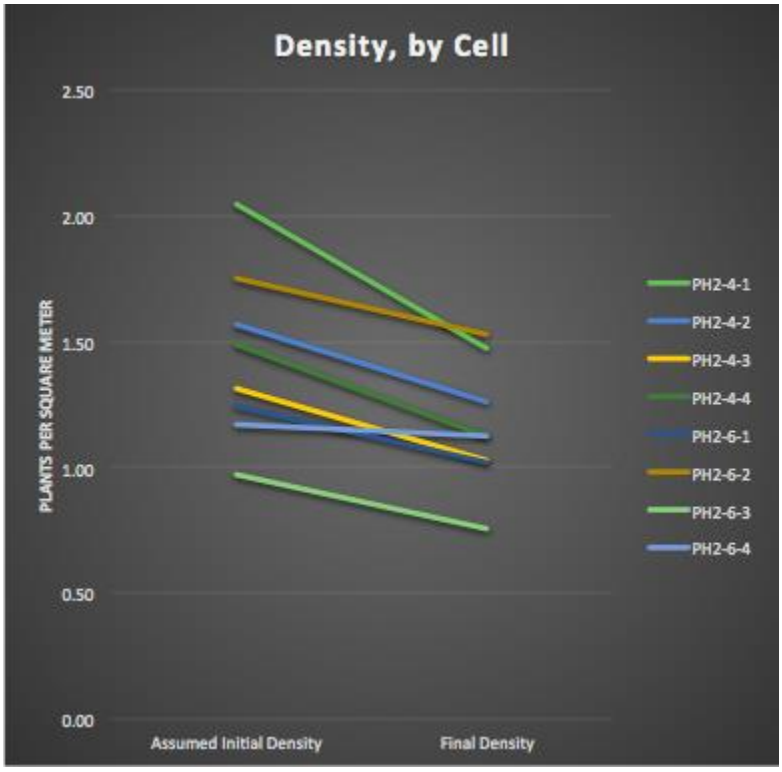

Figure 20: Density, by each cell in the Oak Savanna (PH2-4) and Prairie (PH2-6) habitats. Density dropped, as one would expect, but to different degrees in each cell.

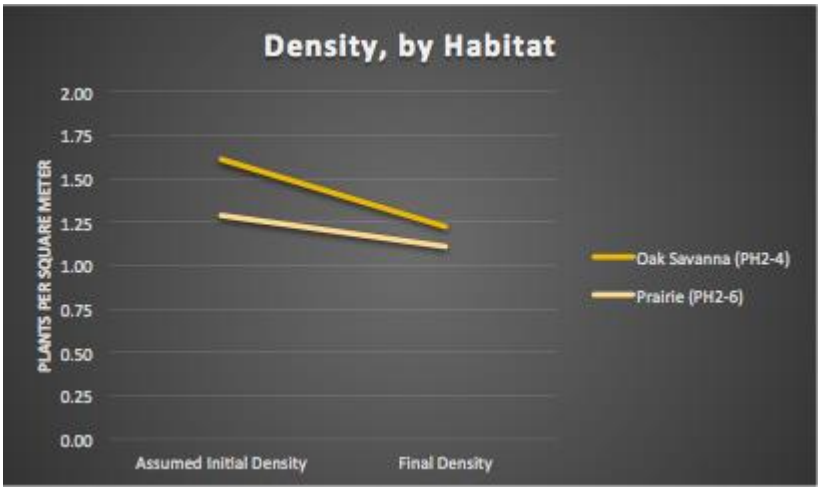

Figure 21: Density, overall, for each habitat.

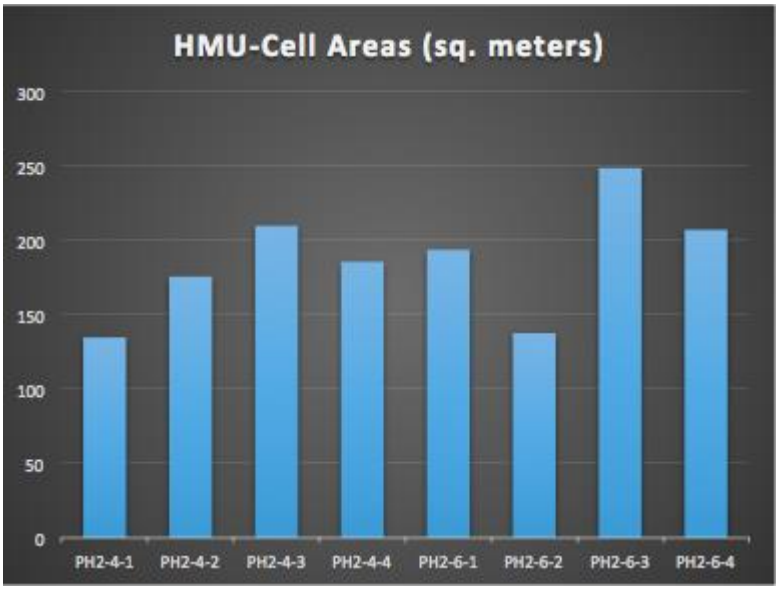

Figure 22: Area (in square meters) of each cell in the Oak Savanna (PH2-4) and Prairie (PH2-6) habitats.

Sum of Area (sq. m) (width * average of lengths)	
Row Labels	Total
PH2-4-1	135
PH2-4-2	176
PH2-4-3	210
PH2-4-4	186
PH2-6-1	194
PH2-6-2	138
PH2-6-3	249
PH2-6-4	207
Grand Total	1493

Figure 23: Cell areas

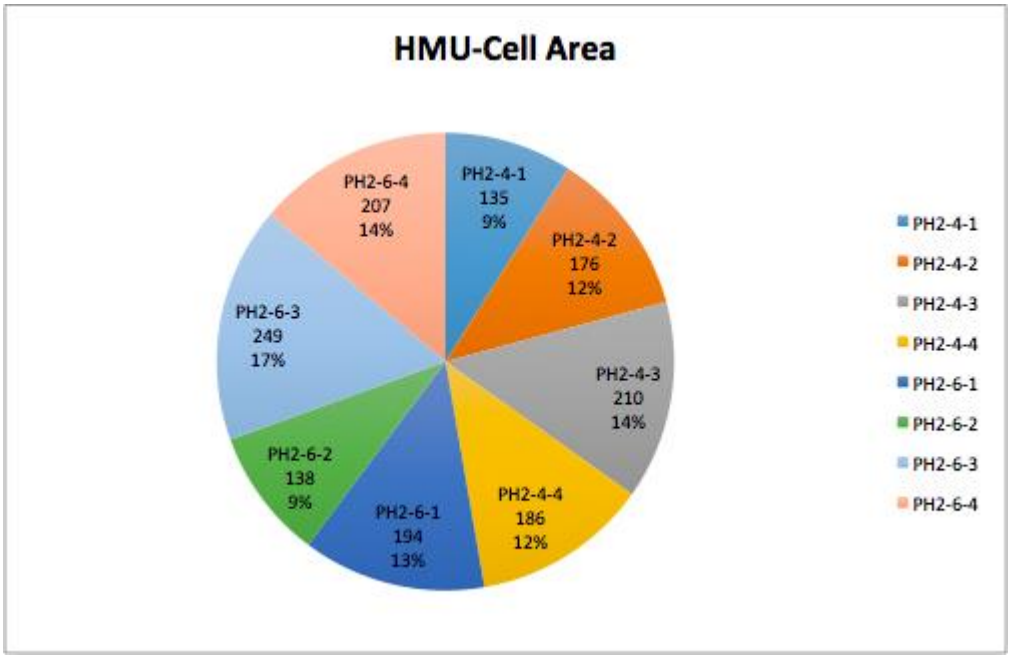

Figure 24: Site-wide distribution of Cell Areas

4. Other Observations and Notes

4.1 *Navarretia squarrosa*

A native annual called *Navarretia squarrosa*, or skunk bush, had surprisingly taken over the site between Census 3 and Census 4. NASQ was not planted, or even known to be present. The mounds of Phase 2 were created using only onsite soils, so it must have existed in the seed bank of the urban fill on the site.

Figure 25: Approaching PH2-4 from the south on March 2, 2016

Figure 26: Approaching PH2-4 from the south on May 14, 2016

4.2 Public Interface

Visitors to the site might argue that much of the potential serenity is ruined by its proximity to a shooting range just to the north, the “Seattle Police Athletic Association” at 11030 E Marginal Way S, Tukwila, WA 98168. During the first census in March, a local resident, who identified himself as Quinault, expressed his concern over the existence of the shooting range. Indeed, there was a constant booming and banging of gunfire during all of the census field days. During the second census in April, the Seattle Police Department was training its officers in May Day riot control methods, shouting “Move Back! Move Back!”

The authoritarian presence of the police and the jarring sound of gunfire are strange, disturbing backdrops to the serene park space, which is historic Salish land of deep cultural significance. “The most important variables other than noise exposure level relate to people's attitudes about the noise, such as fear of possible danger, stated sensitivity, and the belief that the noise is preventable” (Suter, 1991). Before being restored as a park, the land was zoned for industrial activity, and the shooting range pre-dates the restoration efforts. It remains to be seen whether or not something can be done to mitigate the noise, but the park would undoubtedly be more successful if so. Simply enclosing the shooting range to muffle the noise might not be enough, as “the meaning of a sound plays an important role in determining its effects on annoyance, performance and possibly health” (Cohen, 1981). It is likely that the park would need to be relocated, which would need both community and local government support.

4.3 Pollinators

At least one Bumble Bee was observed making use of the Camas.

Figure 27: Bumble Bee visiting a Camas

5. Discussion

Applying scientific rigor on top of an already existing site is difficult. The methods used provide a decent baseline measurement of how well these particular species performed since November, but a complete census of *all* the installed species would of course be even better. The most significant lesson learned was how *long* it takes to collect field data. Even with such a limited set of species, it was rather difficult to complete all necessary counts on the chosen days with only one counter. As the park is a public space, the quadrat strings could not be left installed, so were set up and taken down for each count, which added time. Taking measurements of the width and length of the quadrats would have been vastly more efficient with a second person. The final census was additionally delayed by the sudden appearance of NASQ, obscuring some of the target species, and making it more treacherous to walk back and forth.

The originally proposed study design had been to just count the number of each species in each quadrat, but a field decision was made to mark relative locations on the maps. This ended up being essential in the recounts, when some of the smaller plants became increasingly hard to find as larger varieties took over the site. With the general location and pattern of each cluster of target plants known, they were more easily relocated and confirmed as alive or dead.

I had also originally planned to generate new maps on each count and recount, but on Dr. Bakker's suggestion I took my existing maps, scanned and reprinted, and marked any changes with colored pencils. This sped up the process considerably and I don't think I would otherwise have completed my recounts in the allotted time.

Mistakes were made in Census 1, in which some plants (whole Camas patches in particular) were missed, and others were over-counted. FRVIP was especially troublesome, as it had already established clones from stolons, which were at first counted as installed individuals. Once the mistake was realized the data was corrected.

6. Suggestions for Future Research

The Savanna and Prairie habitats are both composed of mound forms that do not seem vastly different to the naked eye. It would be interesting to further study specific differences between them, such as moisture retention, sun exposure, or wind. As noted, CAIN9 seemed to have better survival and overall vigor in Prairie, which could use explanation. There might also be differences in survival or flowering due to the clustered planting methods called for in SvR's planting schematic.

There was not any apparent tracking of which plants, from which nursery, were installed where. It might be interesting to examine whether or not certain nursery stock faired better in different microclimates on the site.

The original study design had called for census of *Juncus acuminatus* (Tapertip rush) in the wet meadow and emergent wetland habitats. This plan was scrapped for lack of time and resources, but could be useful data to gather in the future. It was observed that the wet meadow was nearly clear of standing water during Census 3, but had re-flooded by Census 4. The flooding was due to some flaw in the programming or sensors of the irrigation system, such the sprinklers had run continuously for an unknown period of time. A call to Tukwila Parks was made and an on-call tech came out to shut off the water.

A local resident asked if there were plans to install amphibians to "eat all the mosquitoes the meadow and wetland habitats will breed." Pacific chorus frogs already live on the site and the adjacent site, and there have been some signs of long-toed salamanders. However, it is clear that there are opportunities for public education or informational signage. The local community could perhaps be engaged in citizen science activities to catalogue the amphibious community.

The shooting range, if it remains, would provide opportunities for social scientists to explore its effects on visitors to the site. The noise of the gunfire might also have effects on potential pollinators or other wildlife in the preserve.

7. Conclusion and Acknowledgements

My goal for this project was to blend the disciplines of Environmental Science and Urban Ecological Design. In this, some measure of success was achieved, but overall depth of investment in each discipline was likely hampered by attention paid to the other. The study would have benefitted from having started months earlier, and prior to plant installation, so that scientific rigor could be applied to plant sources and their eventual installation on site. Hopefully the data collected, and methods developed, will be of some use to site stewards in the future.

The largest lesson learned during this project was the tremendous time investment required by the fieldwork. Trying to perform a census in a public space exacerbated this, of course, as the quadrat strings had to be set up and removed each time. I did very much enjoy puzzling out how to capture the data in a meaningful, and repeatable way.

While performing the science of collecting data for each census, I was able to reflect on my classes in Landscape Architecture, the elements of the site that work, and those that do not. Initially, the Oak Savanna and Prairie cells amounted to little more than mounds of dirt. The frequent rumble of the light rail train in the distance reminds the visitor of the park's urban context, and the constant gunfire of the shooting range across the street shatters whatever tranquility might have existed. Over the few months of the study, though, as the little sprouts grew and flowered, and bees and birds made more frequent visits, the dirt mounds came alive. Even so, and even as the weather improved, visitors to the site were rare. The shooting range is open to the public, so it is possible that the same locals I wish I saw at the park were instead visiting the range. It will be interesting to see if any momentum can be gained for better soundproofing, or better yet, relocating the range entirely.

In the end, the Duwamish Hill Preserve is a lovely park, with a fine selection of appropriately selected native plants. Most of the plants in my study survived the first few months very well. I look forward to returning to witness their continued success.

I would like to express great gratitude to my capstone advisor, Jon Bakker, and the other members of his Terrestrial Restoration Ecology Lab, for endless advice and support; The UW's School of Environmental and Forest Sciences for a generous grant; Brooke Alford, Tukwila Parks and Recreation, Forterra, SvR, and all the volunteers and donors who made the Duwamish Hill Preserve a reality.

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Appendix A – List of Figures

Appendix B – Planting Schematics

from SvR's "Full 90percent" document

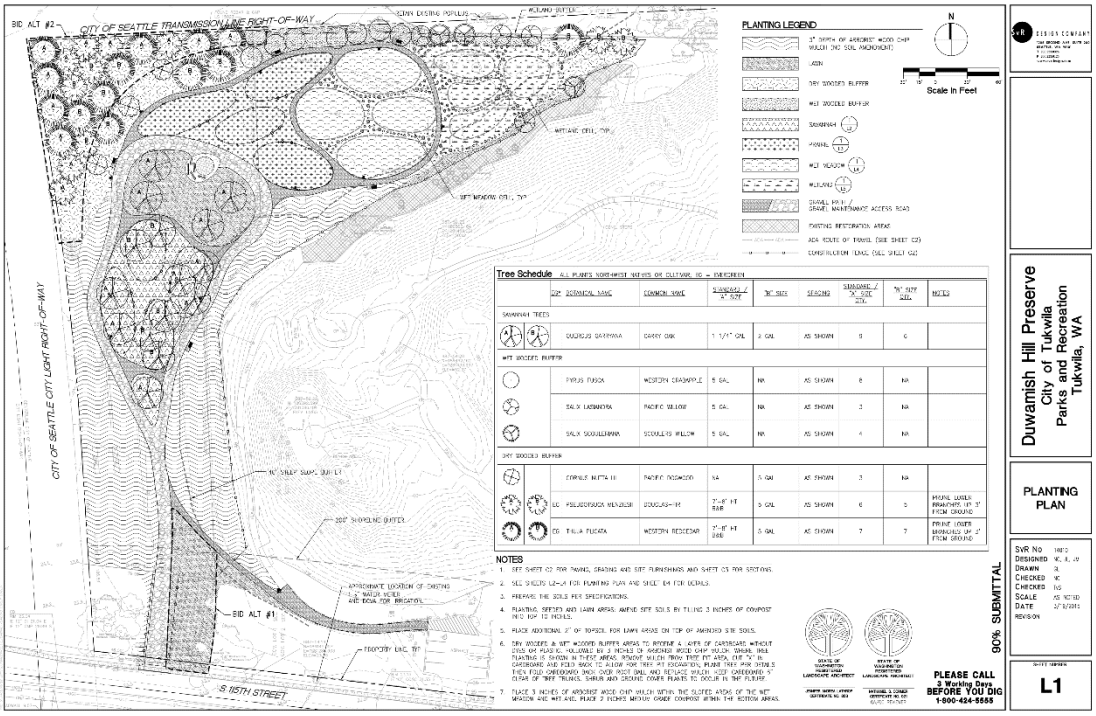


Figure 28: Overall Planting Schematic

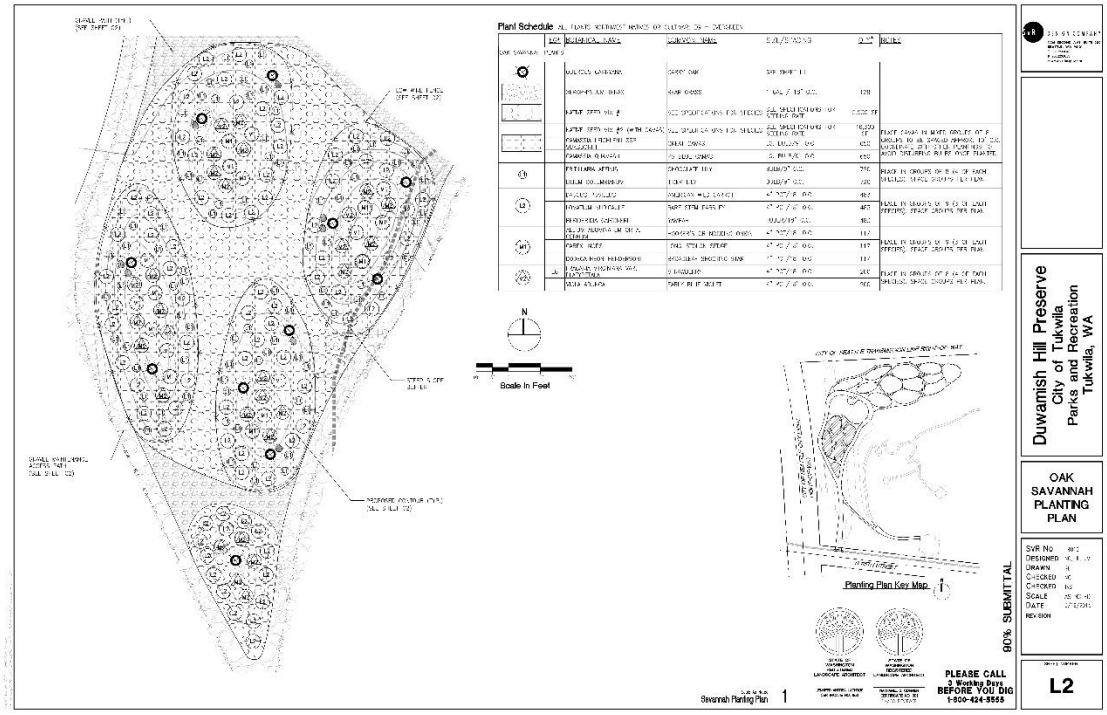


Figure 29: Oak Savanna Planting Plan

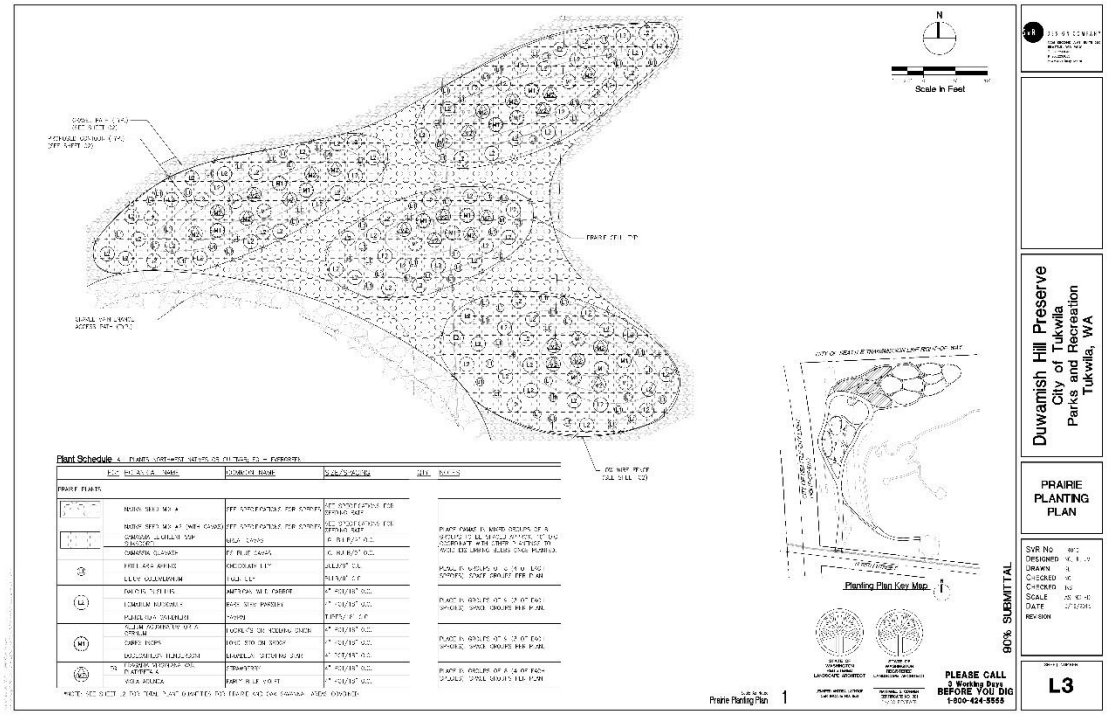


Figure 30: Prairie Planting Plan

Appendix C – Plant Sources

The below is extracted from the full plant list source prepared for Tukwila Parks and Recreation by Paul Brothers Inc., 8601 SE Revenue Rd Boring, OR 97009.

Species	**Size**	**Qty**	**Source**
Quercus garryana	1 ¼"	10	Alpine Nursery, 8601 SE Revenue Rd; Boring, OR 97009
Quercus garryana	2 gal	6	Beaverlake Nursery, 21200 S. Ferguson Rd; Beaverlake, OR 97004
Xerophyllum tenax	1 gal	128	Storm Lake Growers, Monroe, WA
Fragaria virginiana platypetala	4"	208	Trillium Gardens, PO box 803; Pleasant Hill, OR
Dodecatheon hendersonii	4"	108	Seven Oaks Native Nursery, Albany, OR
Viola adunca	4"	208	Trillium Gardens, PO box 803; Pleasant Hill, OR
Carex inops	4"	108	Trillium Gardens, Eugene, OR
Camassia quamash	Lg bulb	828	Seven Oaks Native Nursery, Albany, OR
Camassia leichtlinii	Lg bulb	828	Seven Oaks Native Nursery, Albany, OR

Appendix D – Target Species Pictures

Figure 31: *Quercus garryana*

Figure 32: *Xerophyllum tenax*

Figure 33: ***Fragaria virginiana var. platypetala***

Figure 34: ***Dodecatheon hendersonii***

Figure 35: ***Viola adunca***

Figure 36: ***Carex inops***

Figure 37: *Camassia quamash* and *C. leichtlinii subsp. Suksdorfii*

Appendix E – Quadrat Measurement Data

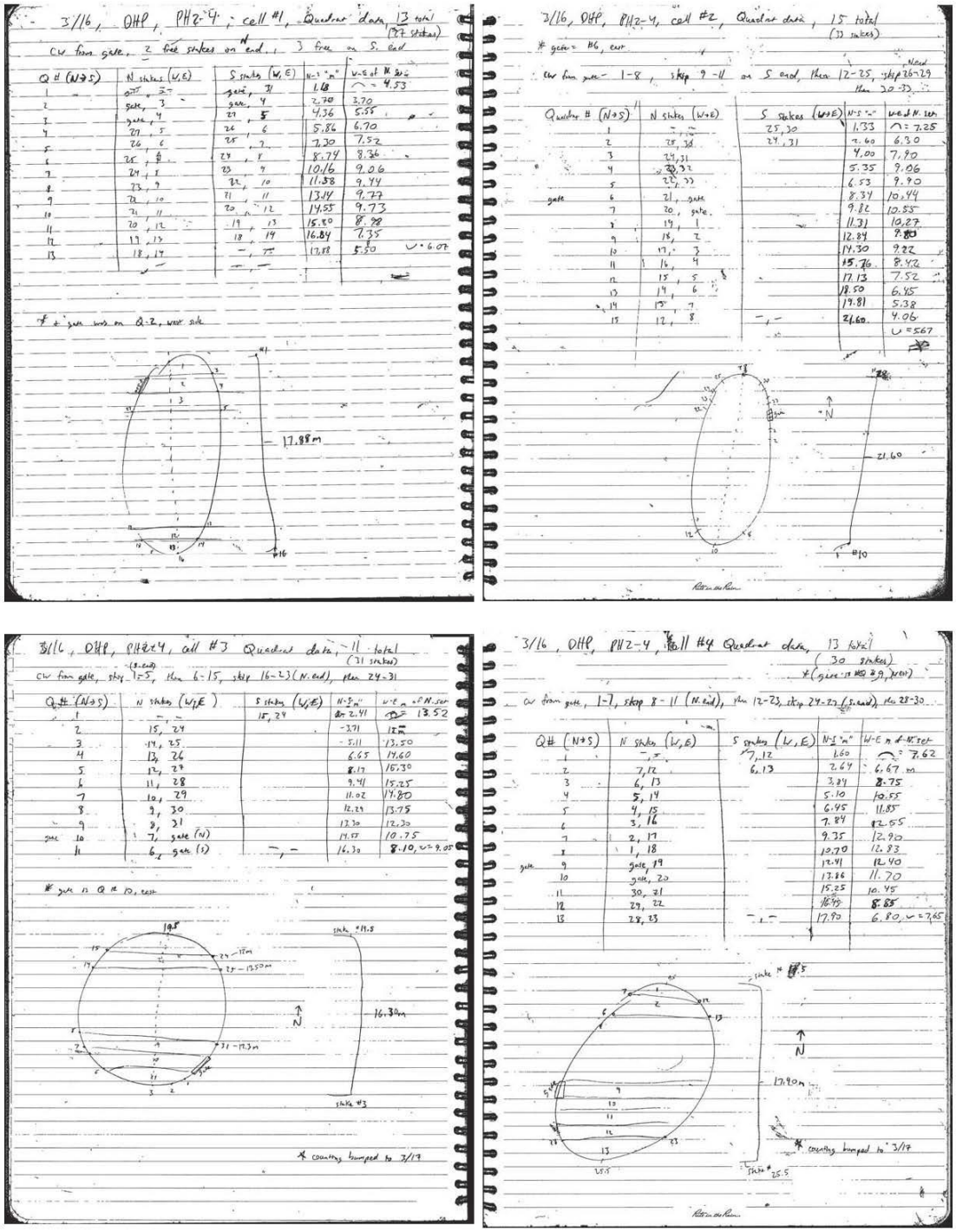


Figure 38: Quadrat data and notes for PH2-4 (Oak Savanna)

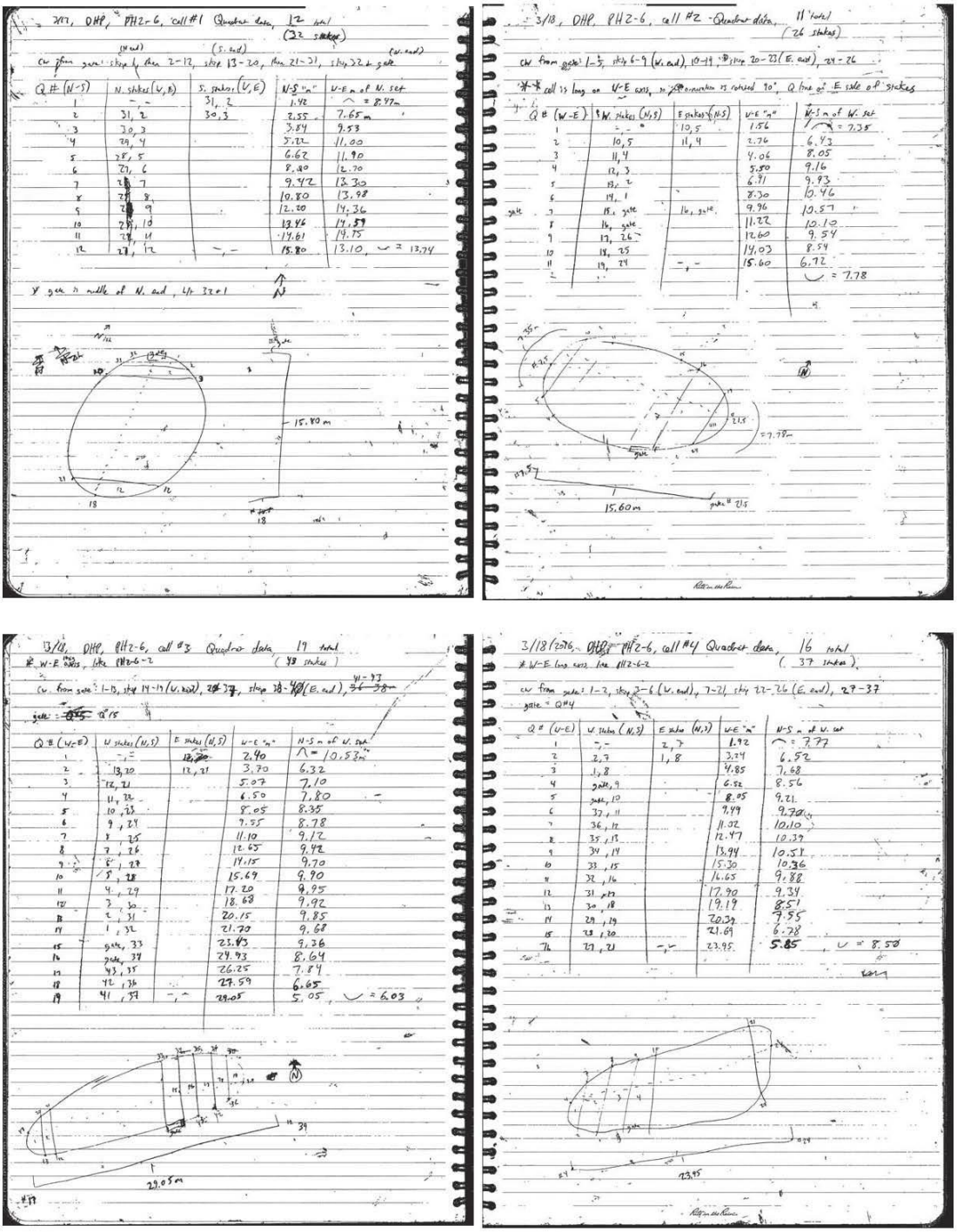


Figure 39: Quadrat data and notes for PH2-6 (Prairie)

Appendix F – Blank Recount Maps

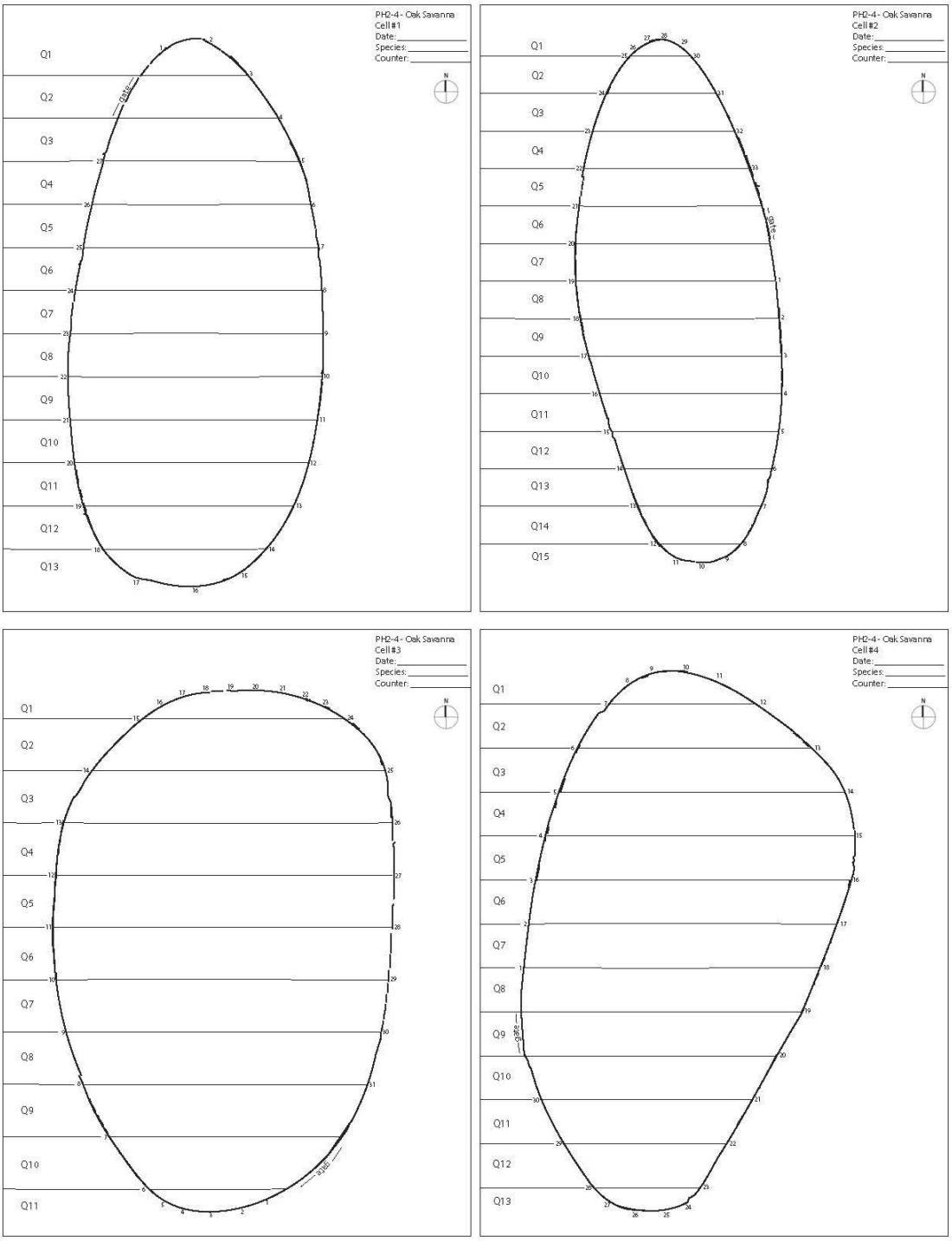


Figure 40: Blank recount maps for PH2-4 (Oak Savanna)

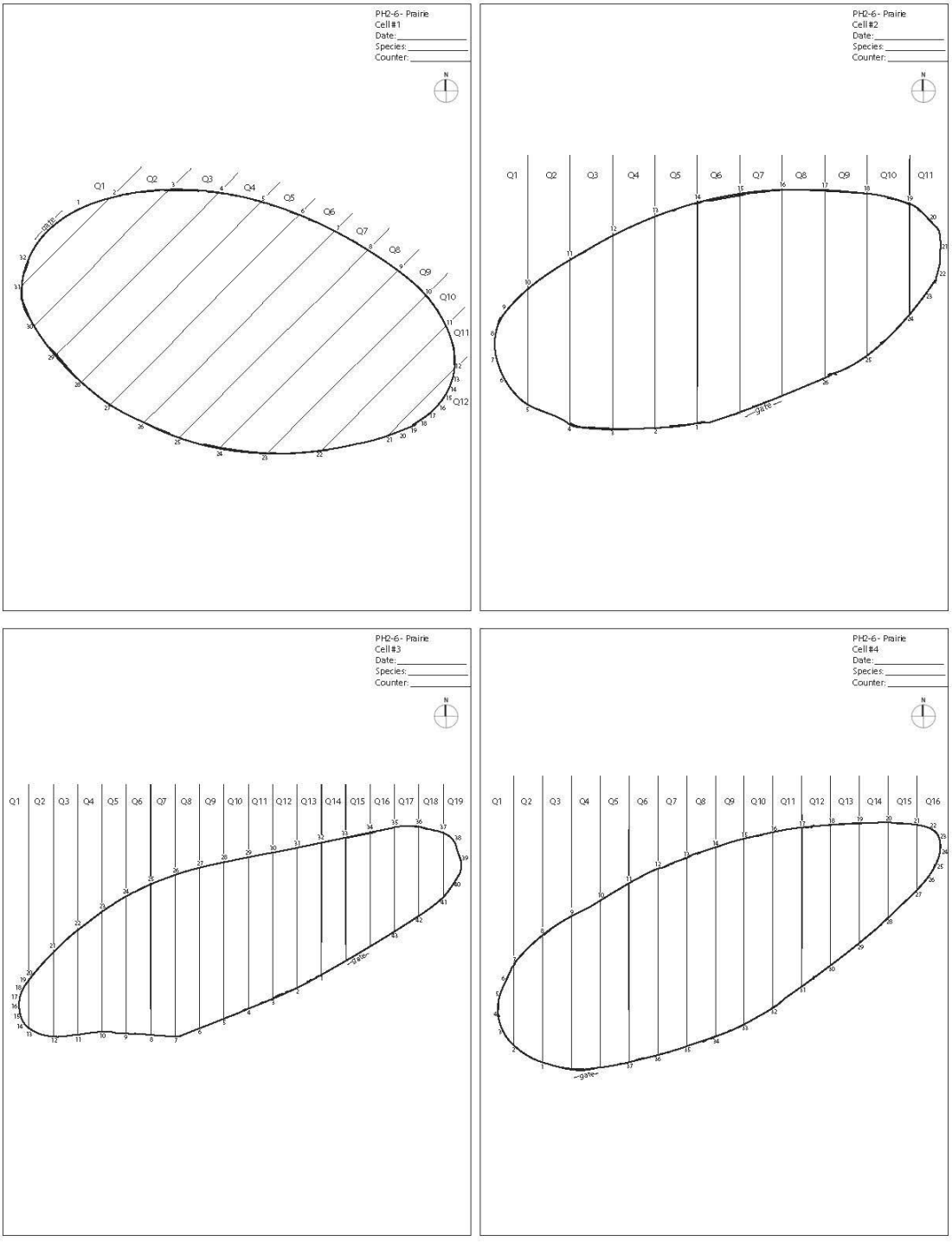
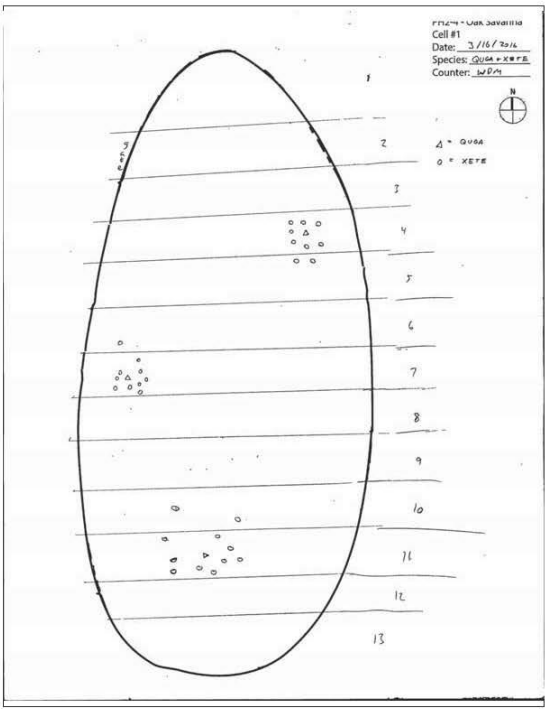


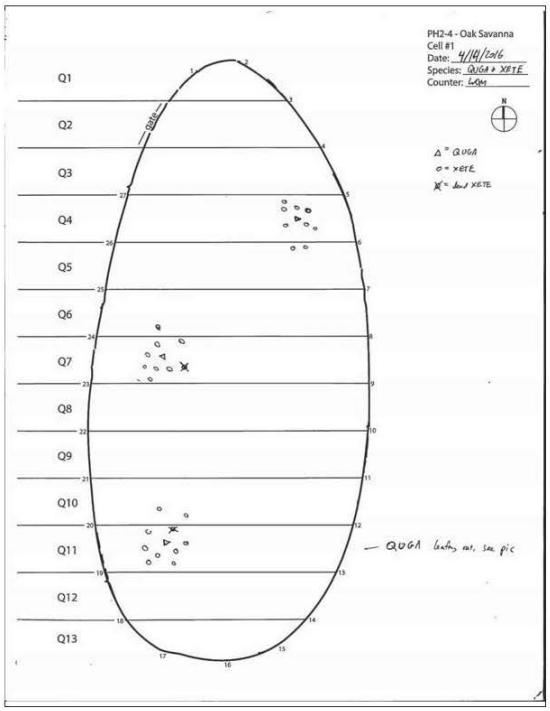
Figure 41: Blank recount maps for PH2-6 (Prairie)

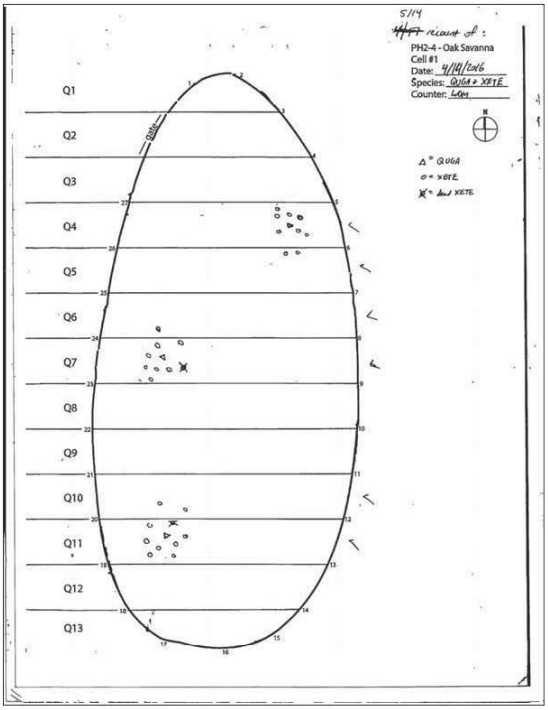
Appendix G – Census Maps

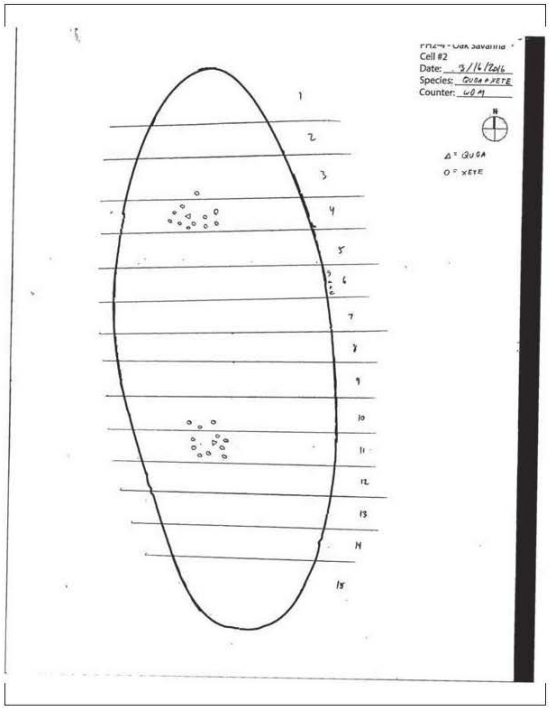
(Grouped by Species, ordered by Habitat, Cell, and Census Date)

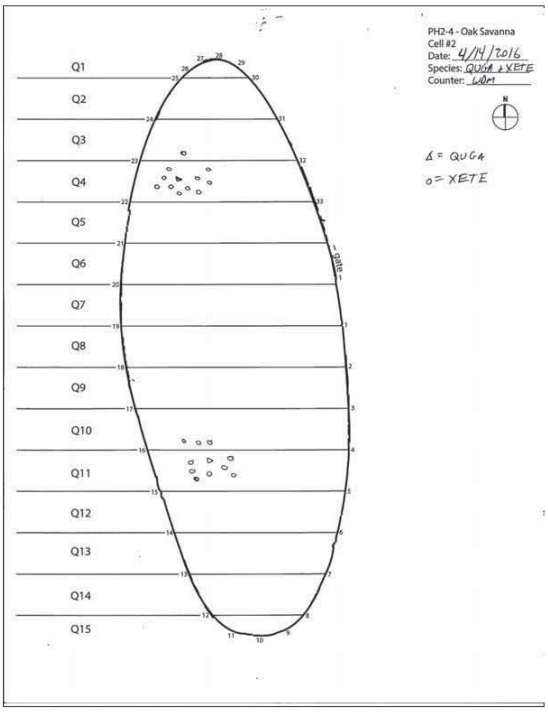
QUGA and XETE

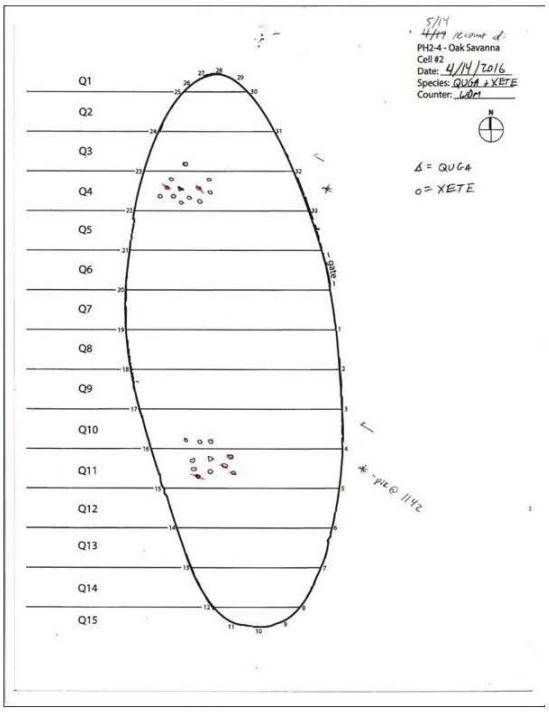


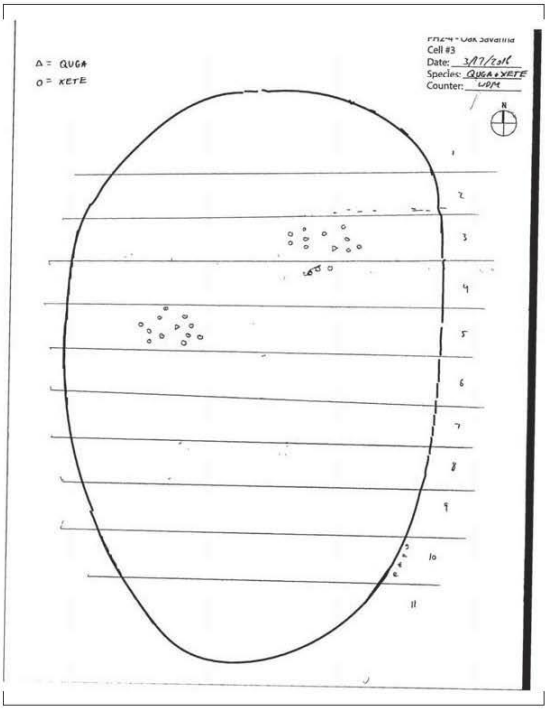


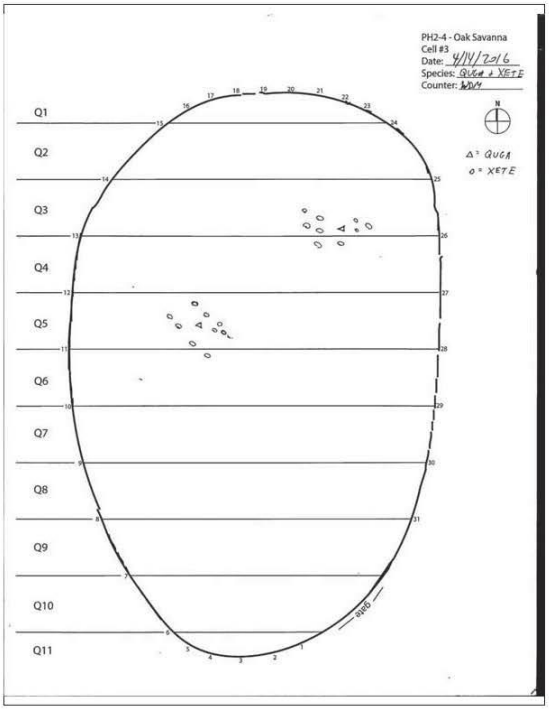


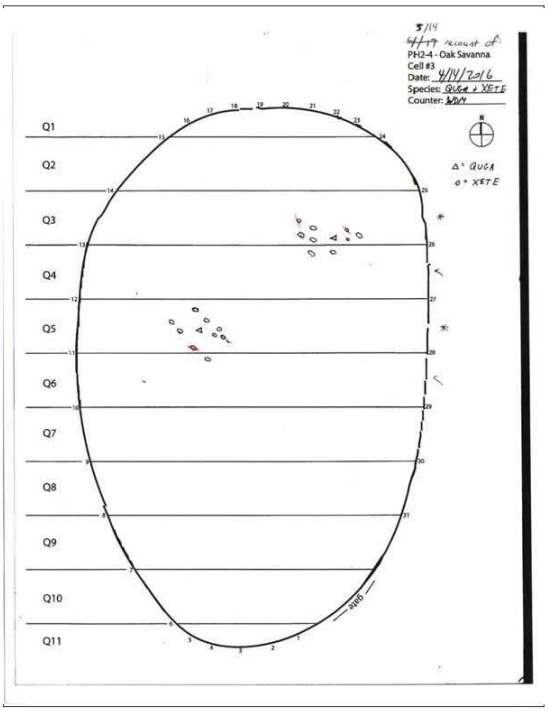


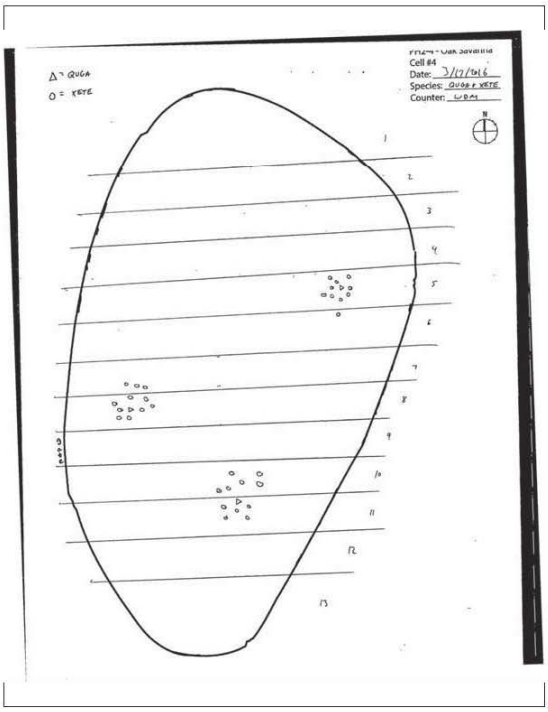

PH2-4 - Oak Savanna
Cell #2
Date: 4/14/2016
Species: QUGA + XETE
Counter: WDM
Δ = QUGA
o = XETE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

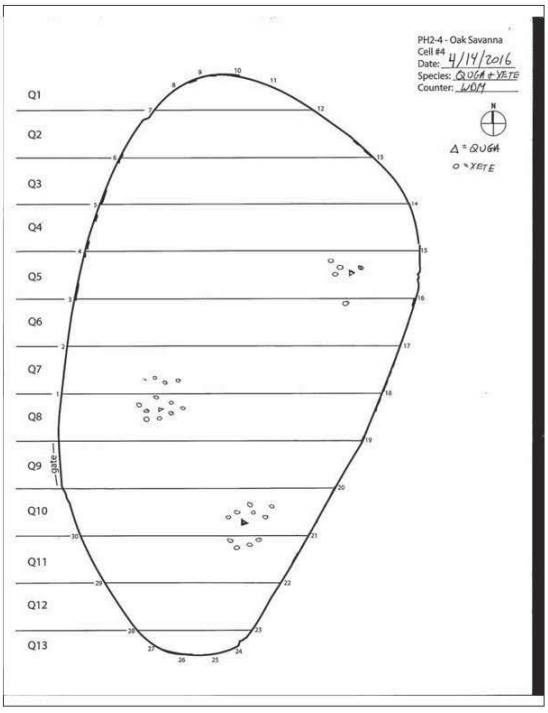

PH2-4 - Oak Savanna
Cell #2
Date: 4/14/2016
Species: QUGA + XETE
Counter: WDM
Δ = QUGA
o = XETE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

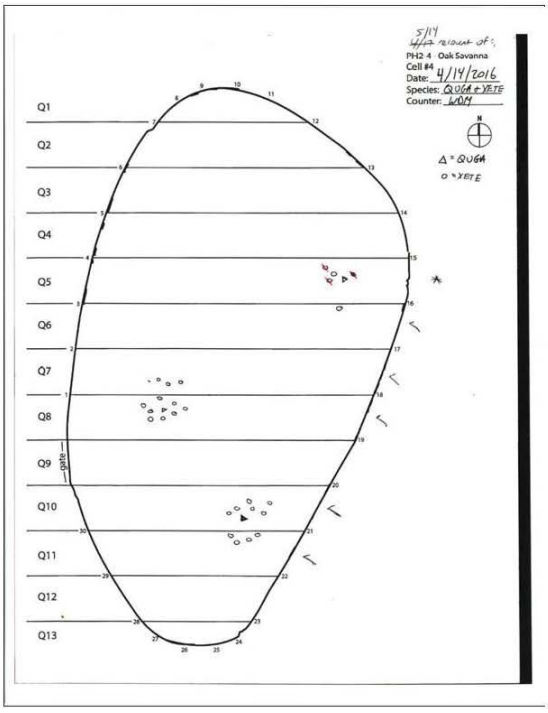

Δ = QUGA
o = XETE
Cell #3
Species: QUGA + XETE


PH2-4 - Oak Savanna
Cell #3
Date: 4/14/2016
Species: QUGA + XETE
Counter: WDM
Δ = QUGA
o = XETE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11


5/19
4/19 recount of:
PH2-4 - Oak Savanna
Cell #3
Date: 4/14/2016
Species: QUGA + XETE
Counter: WDM
Δ = QUGA
o = XETE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
gate

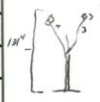

Δ = QUGA
O = XETE
Cell #4
Date: 3/17/2016
Species: QUGA + XETE
Counter: WDM


PH2-4 - Oak Savanna
Cell #4
Date: 4/14/2016
Species: QUGA + XETE
Counter: WDM
Δ = QUGA
o = XETE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
gate

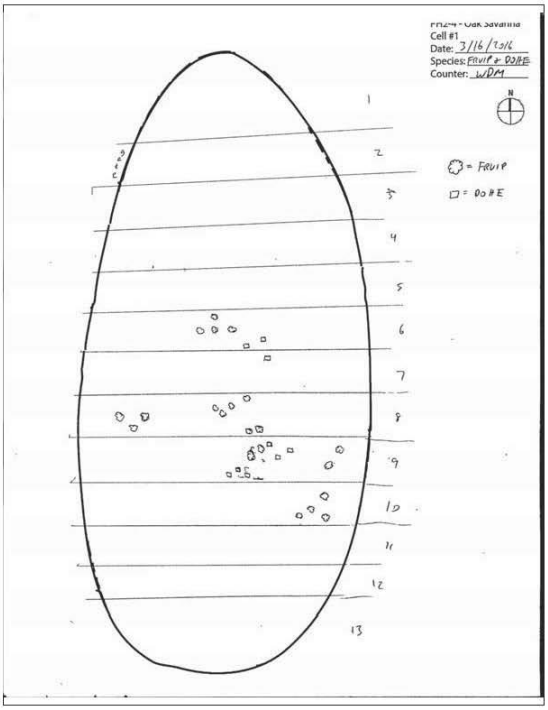

5/19
4/19 recount of:
PH2-4 Oak Savanna
Cell #4
Date: 4/14/2016
Species: QUGA + XETE
Counter: WDM
Δ = QUGA
o = XETE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
gate

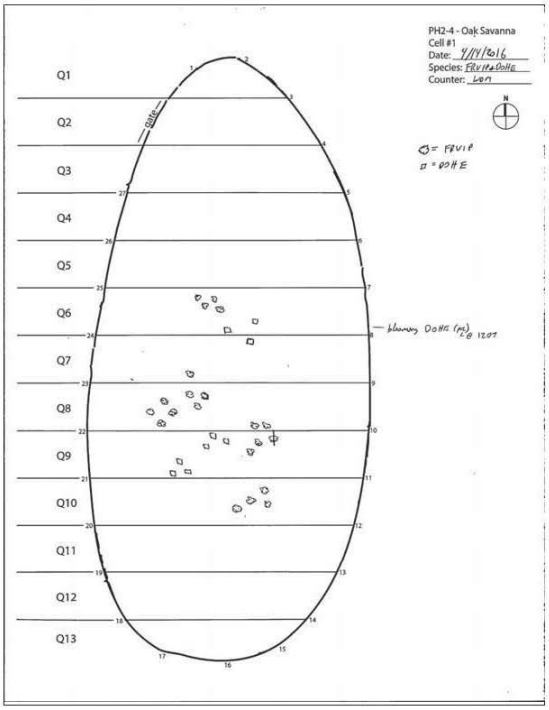
5/14/2016
WDM

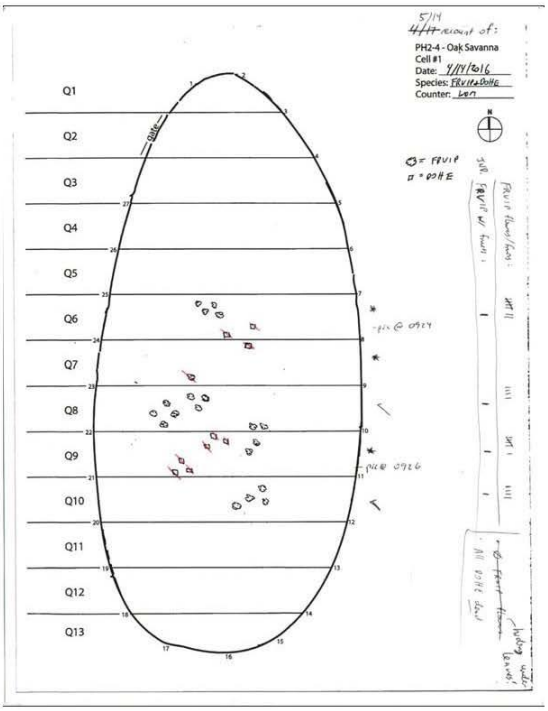
QUGA Measurements				DBH (@ 4.5')		
Individual #	Habitat-Cell	Quadrat	Height	~~DRC~~		
1	PH2-4-1	4	15"	/		
2	PH2-4-1	7	15"	/		
3	PH2-4-1	11	13"	/		
4	PH2-4-2	4	112"	1.5"		
5	PH2-4-2	11	101"	2"		
6	PH2-4-3	3	14"	/		
7	PH2-4-3	5	18"	/		
8	PH2-4-4	5	92"	1.5"	pic@ 1535 of snail!	
9	PH2-4-4	8	109"	2"		
10	PH2-4-4	10	90"	1.5"		

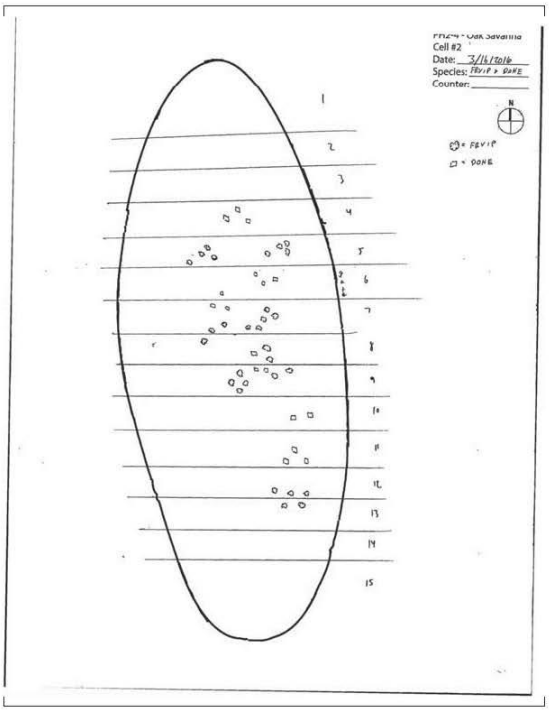


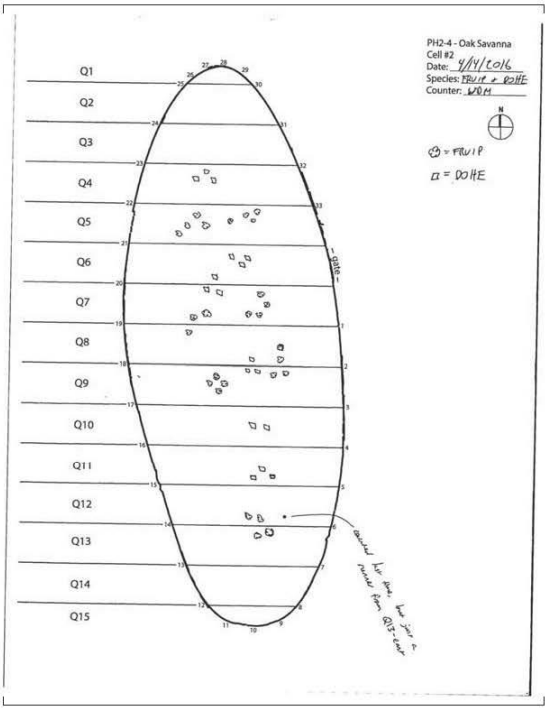
FRVIP and DOHE

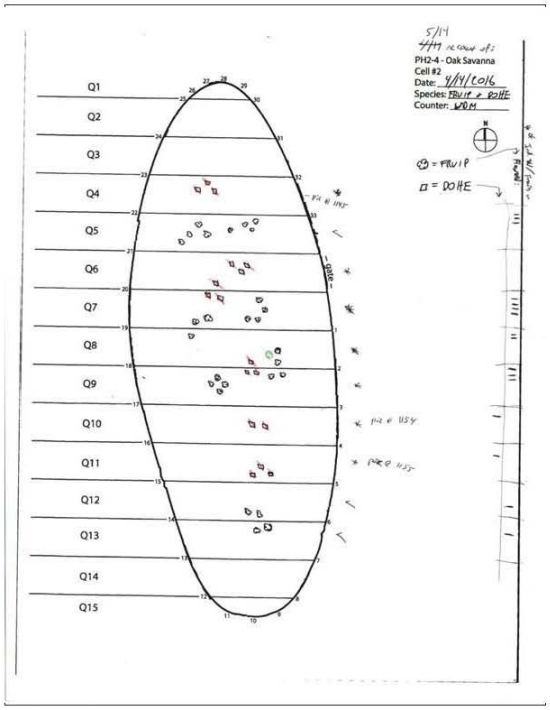


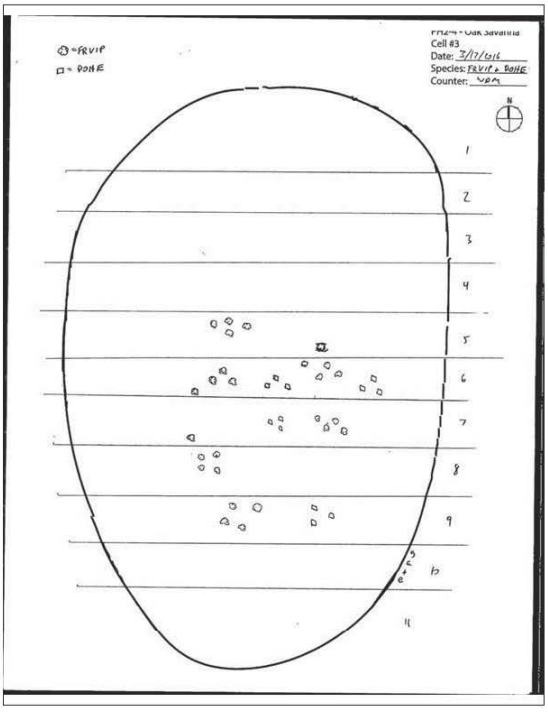


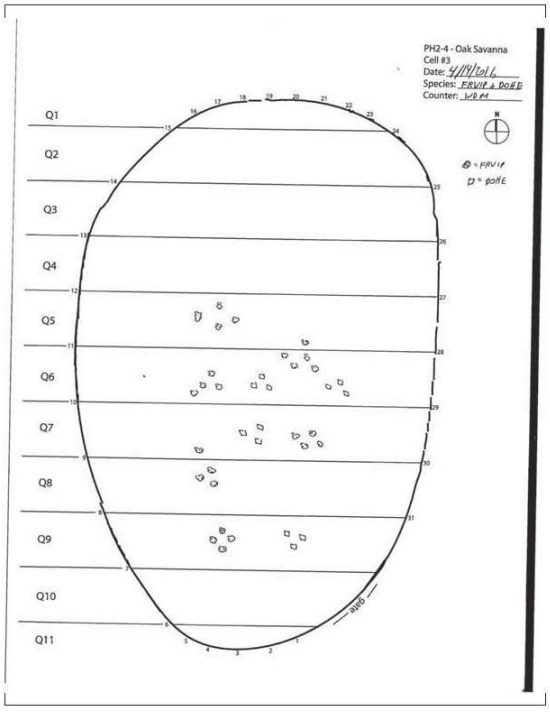


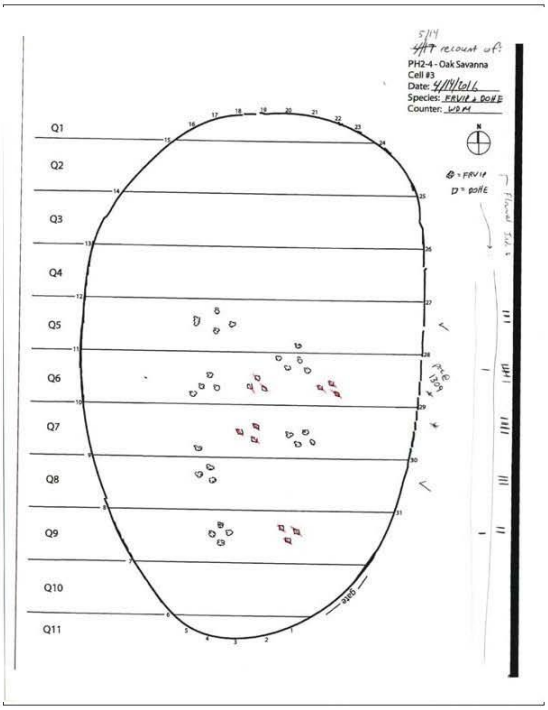


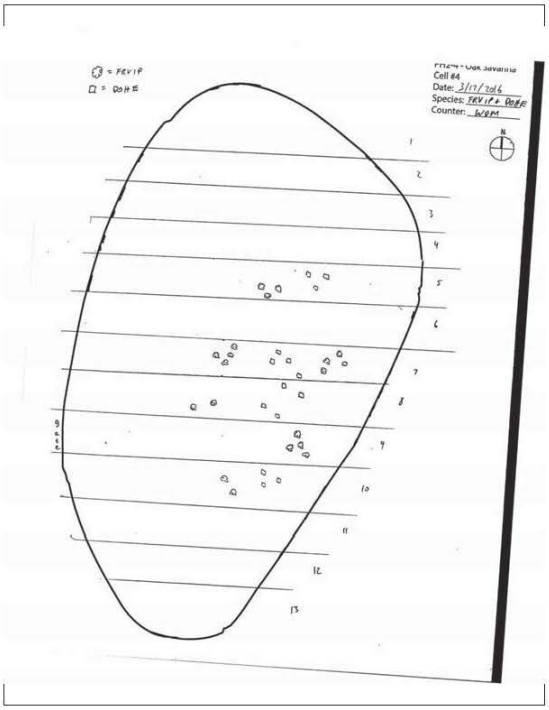

PH2-4 - Oak Savanna
Cell #2
Date: 4/14/2016
Species: FRUIT + DOHE
Counter: WDM
= FRUIT
= DOHE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

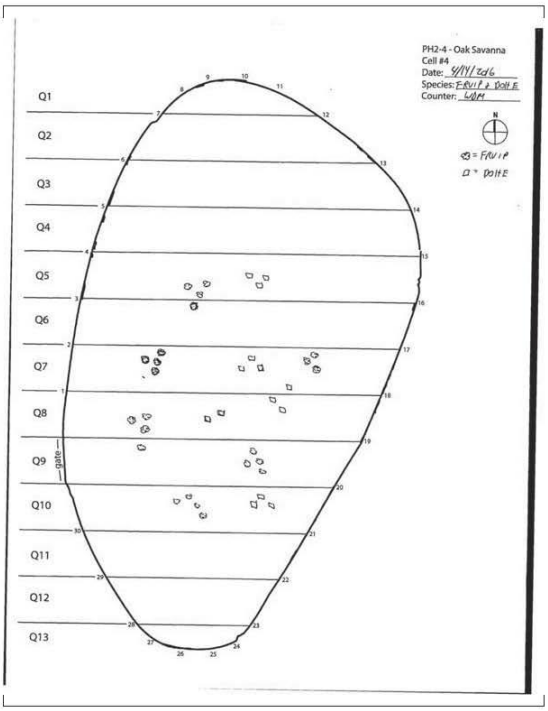

5/14
PH2-4 - Oak Savanna
Cell #2
Date: 4/14/2016
Species: FRUIT + DOHE
Counter: WDM
= FRUIT
= DOHE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

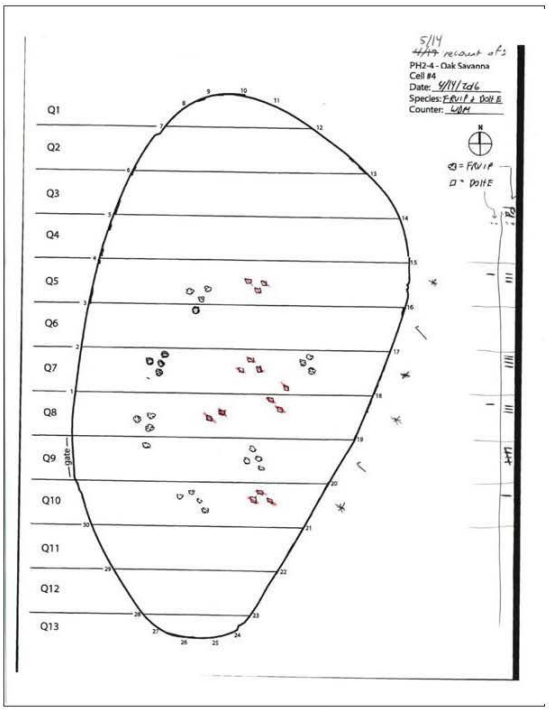

= FRUIT
= DOHE
Cell #3
Date: 3/17/2016
Species: FRUIT + DOHE
Counter: WDM

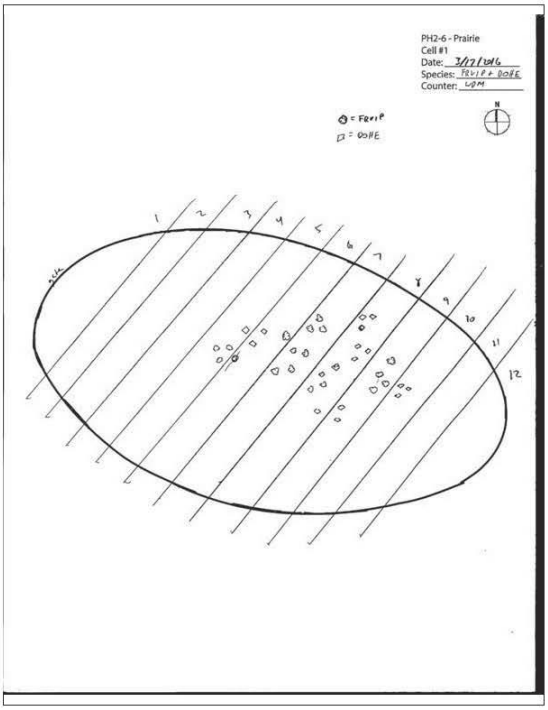

PH2-4 - Oak Savanna
Cell #3
Date: 4/19/2016
Species: FRUIT + DOHE
Counter: WDM
= FRUIT
= DOHE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11

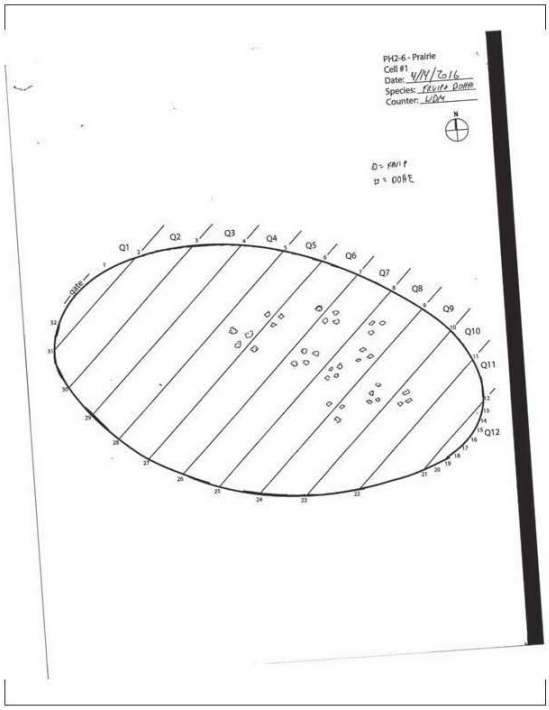

5/14
recount w/
PH2-4 - Oak Savanna
Cell #3
Date: 4/19/2016
Species: FRVI P & DOHE
Counter: WBM
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
gate

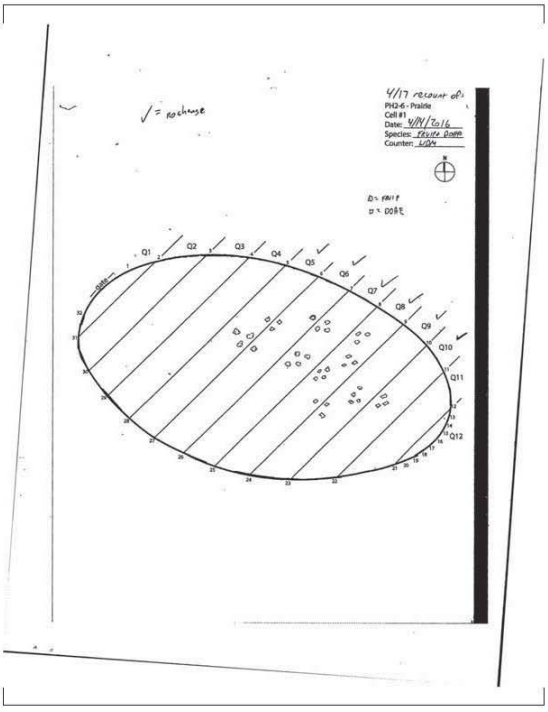

Cell #4
Date: 3/17/2016
Species: FRVI P & DOHE
Counter: WBM

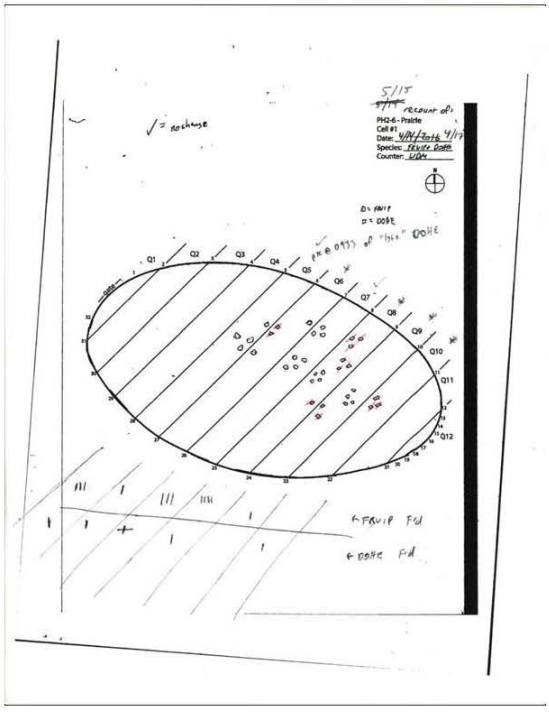

PH2-4 - Oak Savanna
Cell #4
Date: 4/19/2016
Species: FRVI P & DOHE
Counter: WBM
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
gate

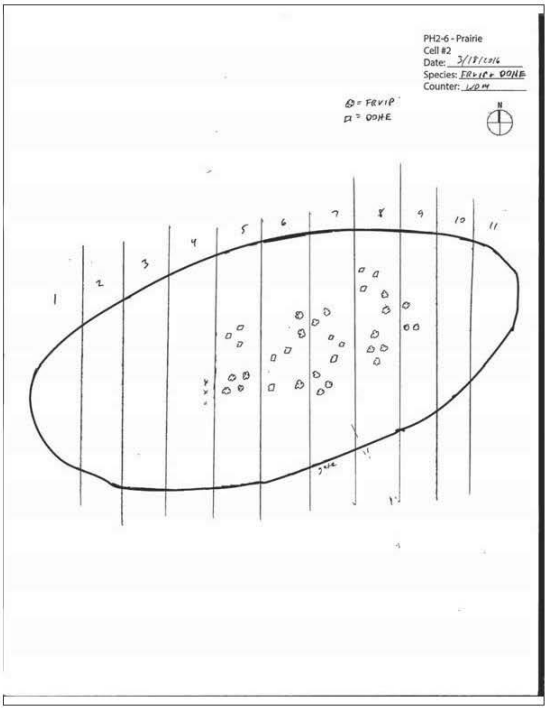

5/14
recount w/
PH2-4 - Oak Savanna
Cell #4
Date: 4/19/2016
Species: FRVI P & DOHE
Counter: WBM
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
gate

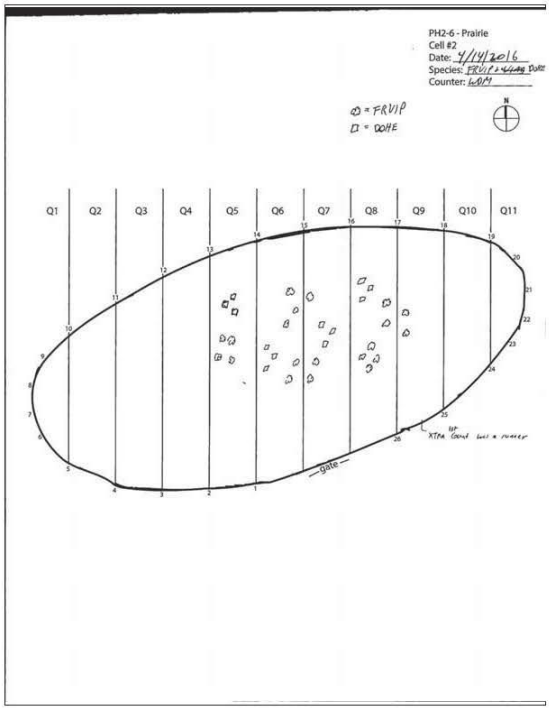

PH2-6 - Prairie
Cell #1
Date: 3/17/2016
Species: FRUIT + DATE
Counter: LDM
= FRUIT
= DATE

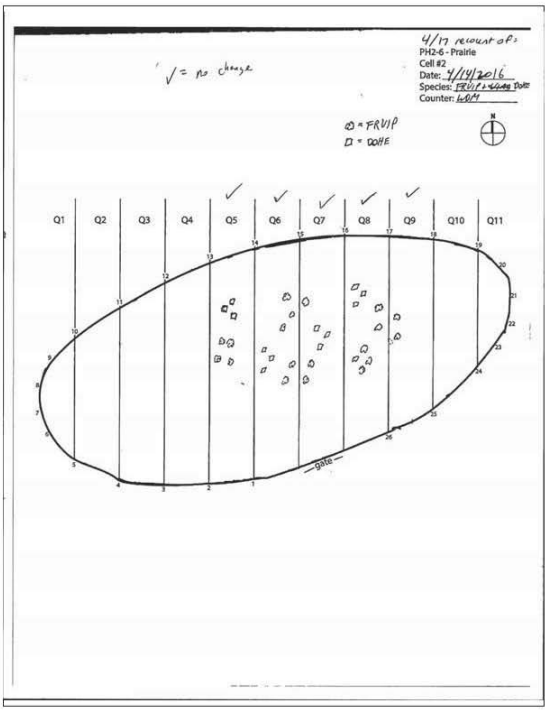

PH2-6 - Prairie
Cell #1
Date: 4/19/2016
Species: FRUIT DATE
Counter: LDM
= FRUIT
= DATE

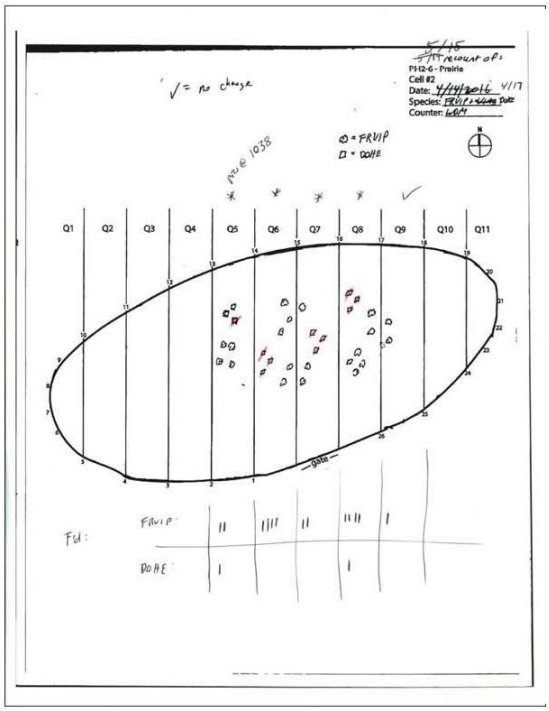

√ = recheck
4/17 recount of:
PH2-6 - Prairie
Cell #1
Date: 4/19/2016
Species: FRUIT DATE
Counter: LDM
= FRUIT
= DATE

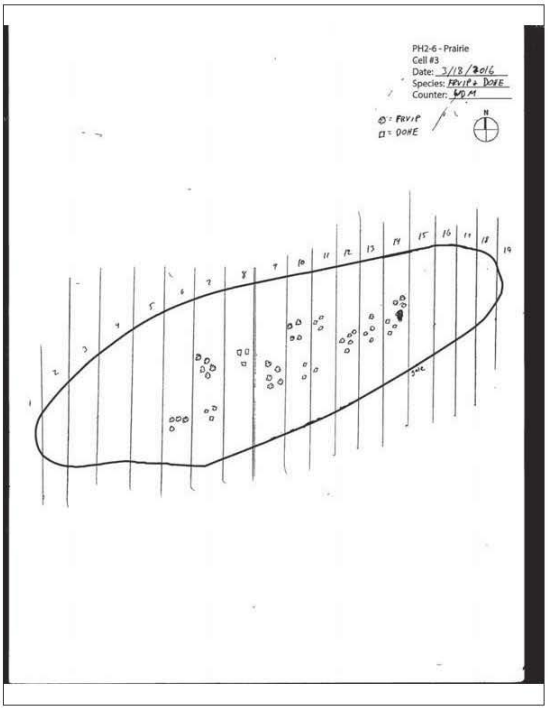

√ = recheck
5/15
recount of:
PH2-6 - Prairie
Cell #1
Species: FRUIT DATE
Counter: LDM
= FRUIT
= DATE
← FRUIT Fd
← DATE Fd

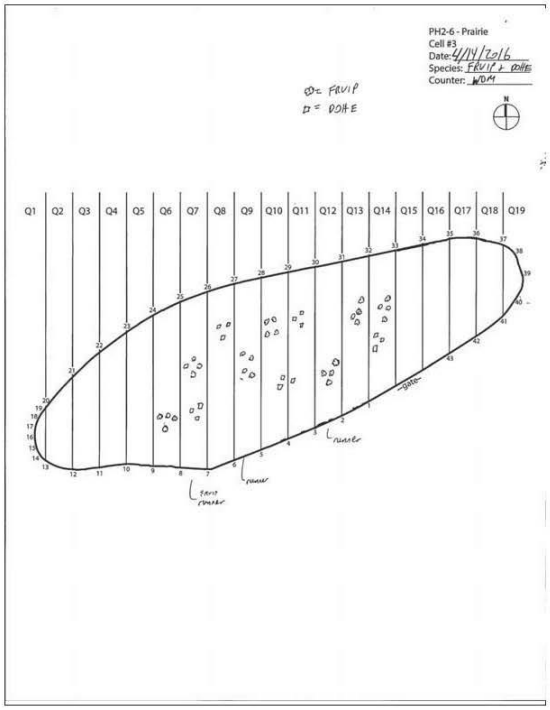

PH2-6 - Prairie
Cell #2
Date: 3/18/2016
Species: FRVIP DOHE
Counter: LGM
= FRVIP
= DOHE
N
1
2
3
4
5
6
7
8
9
10
11

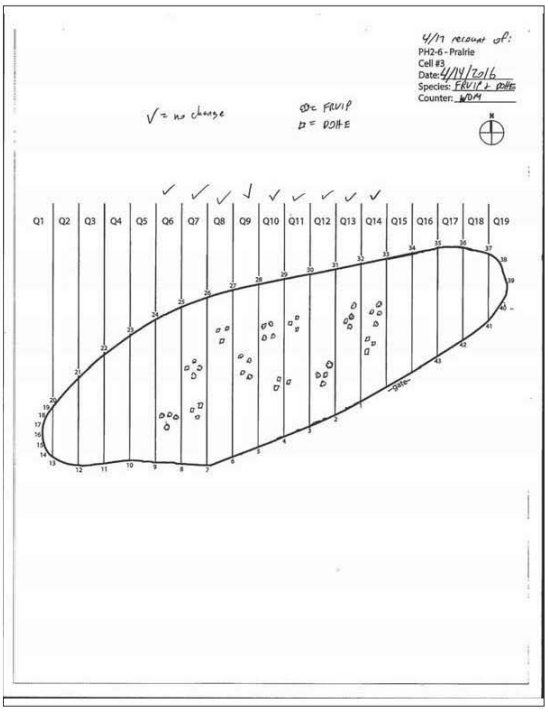

PH2-6 - Prairie
Cell #2
Date: 4/14/2016
Species: FRVIP + 4 Other Spp
Counter: LGM
= FRVIP
= DOHE
N
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Gate

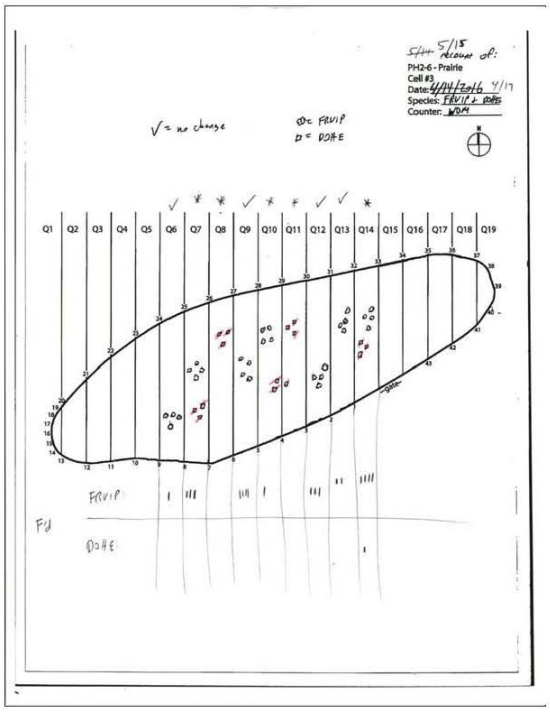

4/17 recount of:
PH2-6 - Prairie
Cell #2
Date: 4/14/2016
Species: FRVIP + 4 Other Spp
Counter: LGM
√ = no change
= FRVIP
= DOHE
N
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Gate

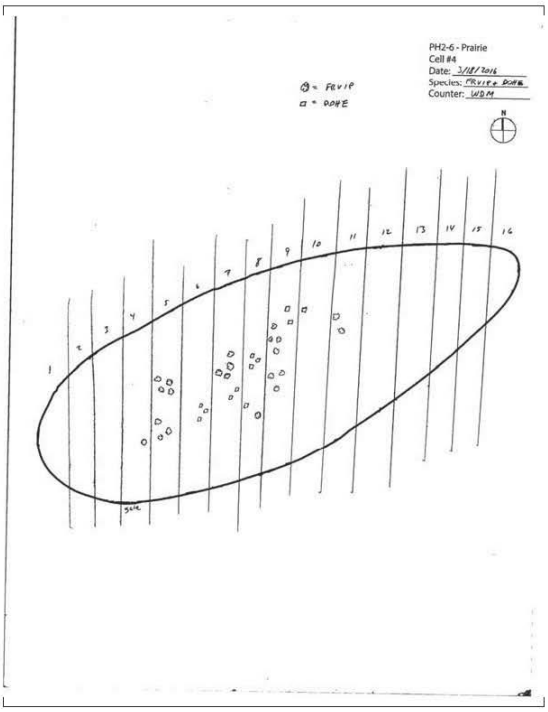

5/15
recount of:
PH2-6 - Prairie
Cell #2
Date: 4/14/2016 4/17
Species: FRVIP + 4 Other Spp
Counter: LGM
√ = no change
= FRVIP
= DOHE
N
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Gate
Fld:
FRVIP
DOHE

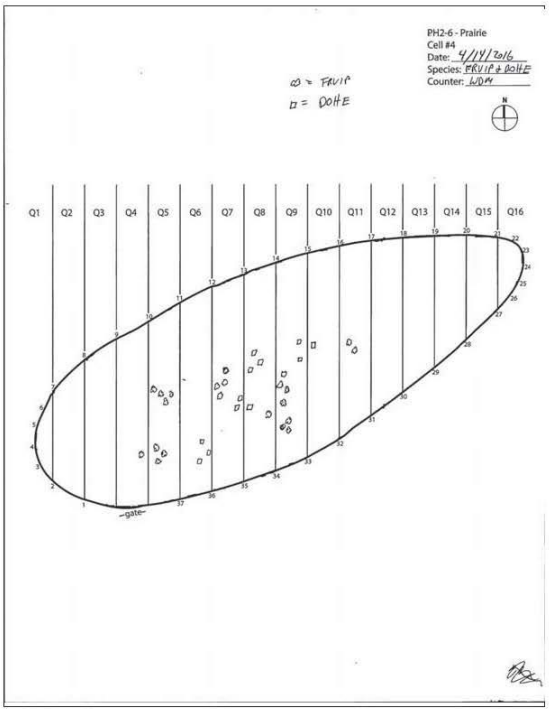

PH2-6 - Prairie
Cell #3
Date: 3/18/2016
Species: FRVIP + DOHE
Counter: WDM
= FRVIP
= DOHE
N

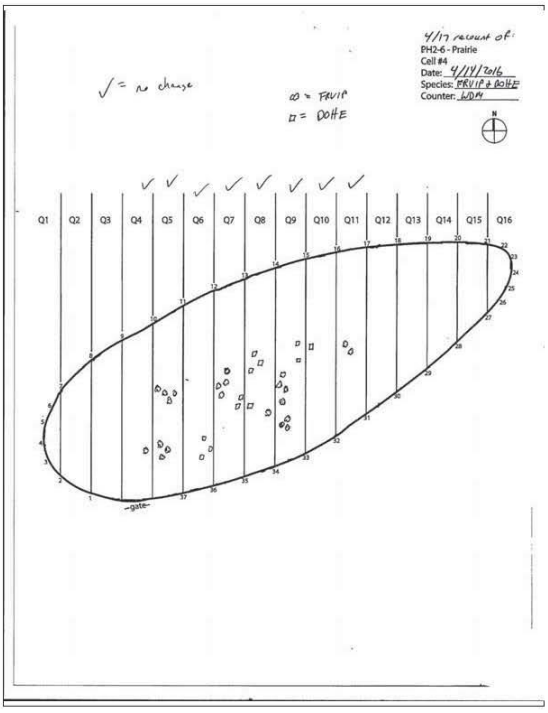

PH2-6 - Prairie
Cell #3
Date: 4/14/2016
Species: FRVIP + DOHE
Counter: WDM
= FRVIP
= DOHE
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19

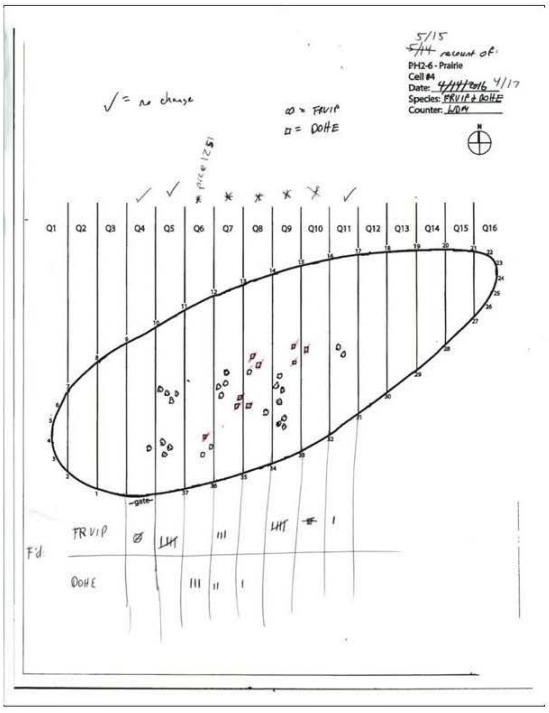

4/17 recount of:
PH2-6 - Prairie
Cell #3
Date: 4/14/2016
Species: FRVIP + DOHE
Counter: WDM
√ = no change
= FRVIP
= DOHE
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19


5/4 5/15 recount of:
PH2-6 - Prairie
Cell #3
Date: 4/14/2016 4/17
Species: FRVIP + DOHE
Counter: WDM
√ = no change
= FRVIP
= DOHE
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19
FRVIP
DOHE

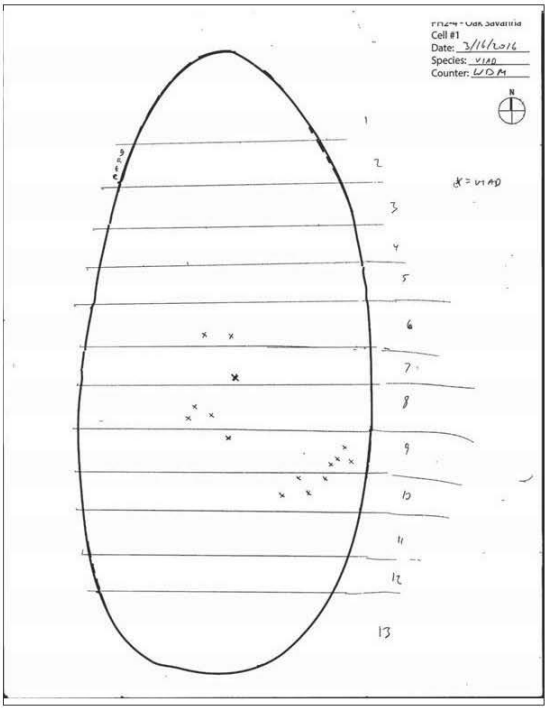

PH2-6 - Prairie
Cell #4
Date: 3/18/2016
Species: FRVIP & DOHE
Counter: WDM
⌀ = FRVIP
□ = DOHE
N
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
gate

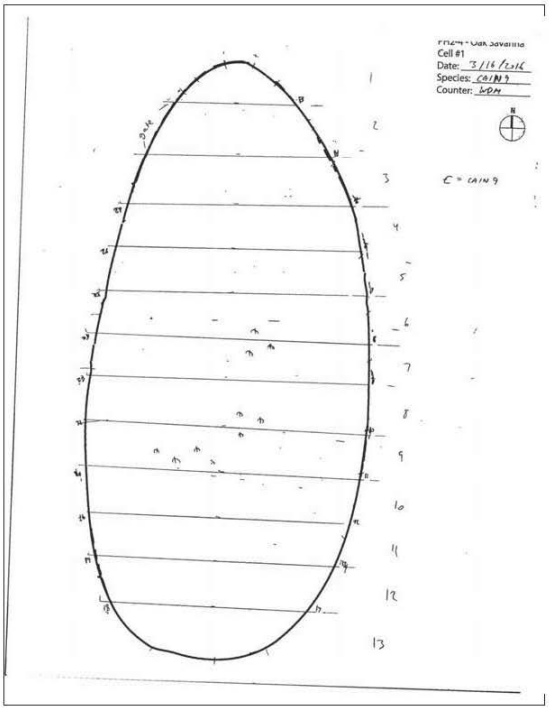

PH2-6 - Prairie
Cell #4
Date: 4/14/2016
Species: FRVIP & DOHE
Counter: WDM
⌀ = FRVIP
□ = DOHE
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
gate

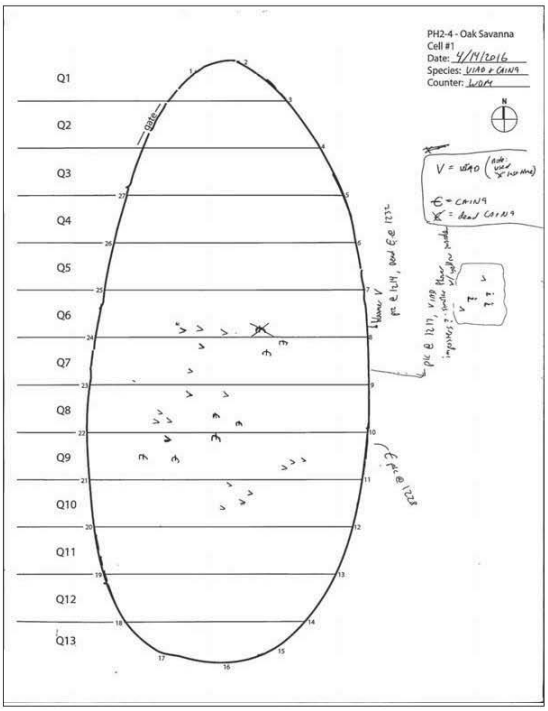

4/17 recount of:
PH2-6 - Prairie
Cell #4
Date: 4/14/2016
Species: FRVIP & DOHE
Counter: WDM
√ = no change
⌀ = FRVIP
□ = DOHE
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
gate

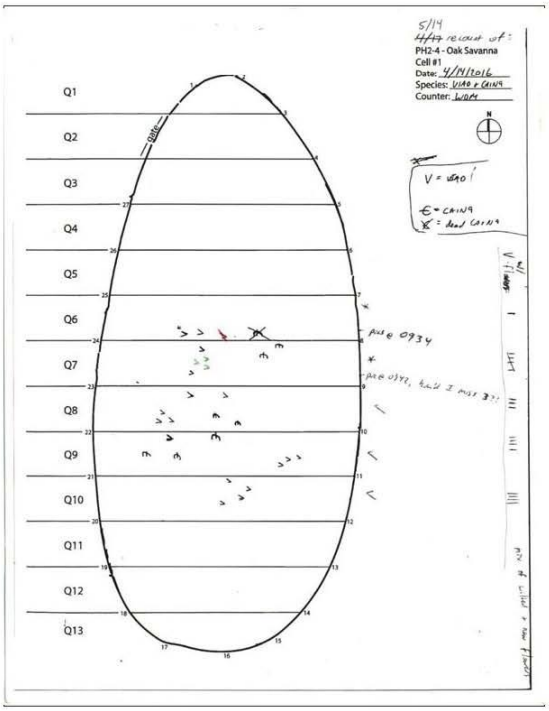

5/15
~~5/14~~ recount of:
PH2-6 - Prairie
Cell #4
Date: 4/14/2016, 4/17
Species: FRVIP & DOHE
Counter: WDM
√ = no change
⌀ = FRVIP
□ = DOHE
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
gate
FRVIP
DOHE

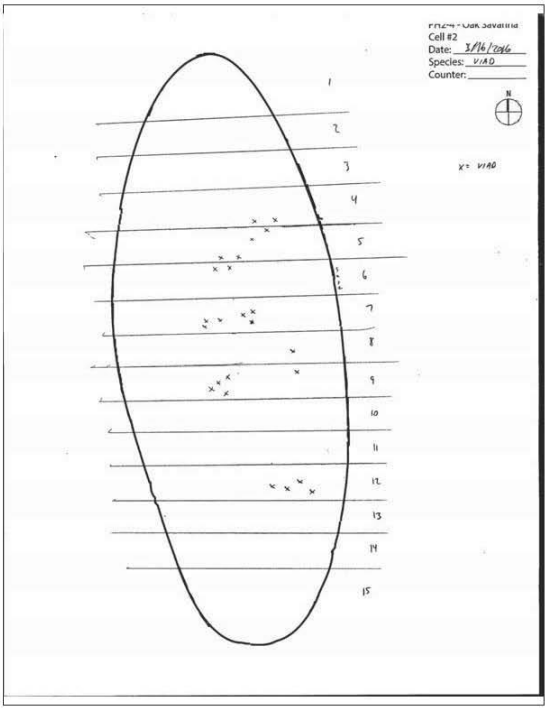
VIAD and CAIN9

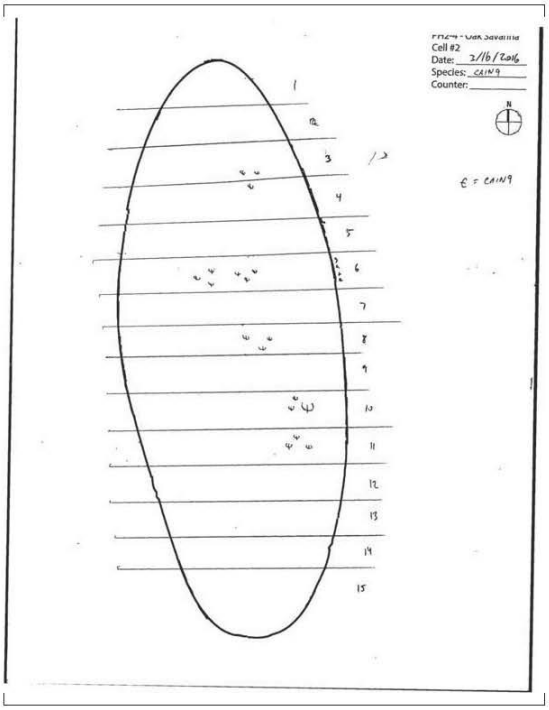


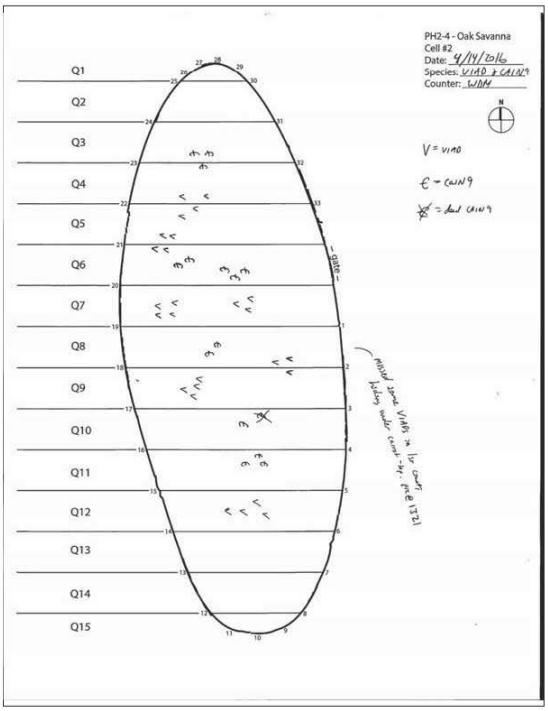


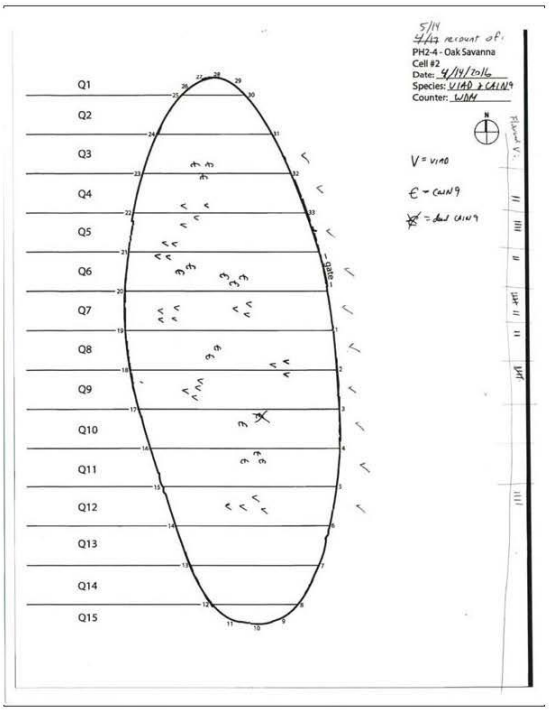


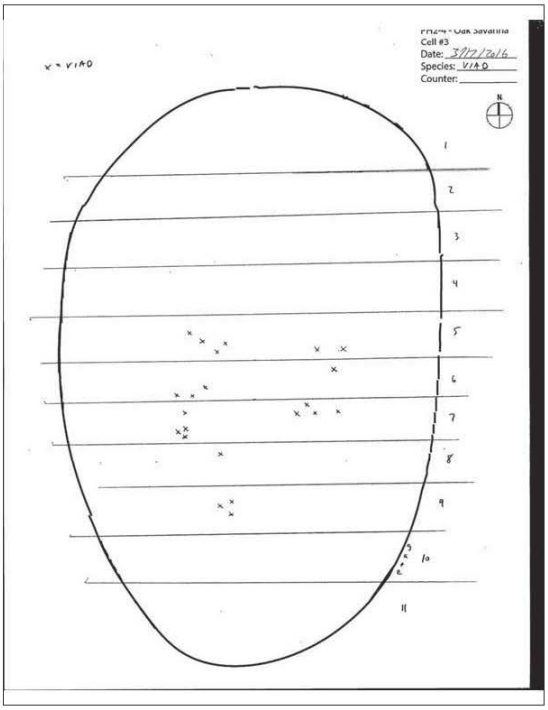


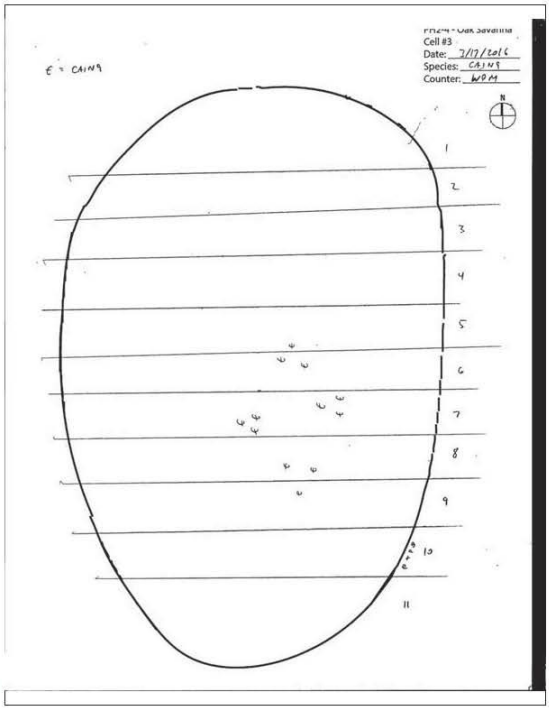

PH2-4 - Oak Savanna
Cell #2
Date: 3/16/2016
Species: VIAD
Counter:
x = VIAD

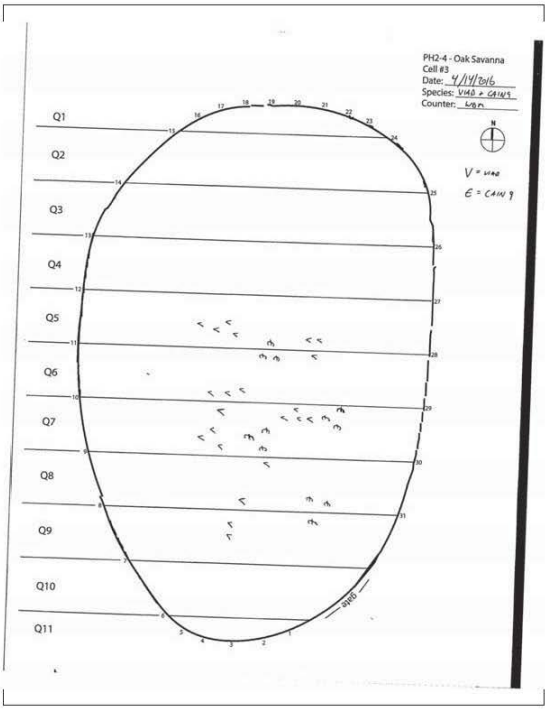

PH2-4 - Oak Savanna
Cell #2
Date: 3/16/2016
Species: CAIN9
Counter:
€ = CAIN9

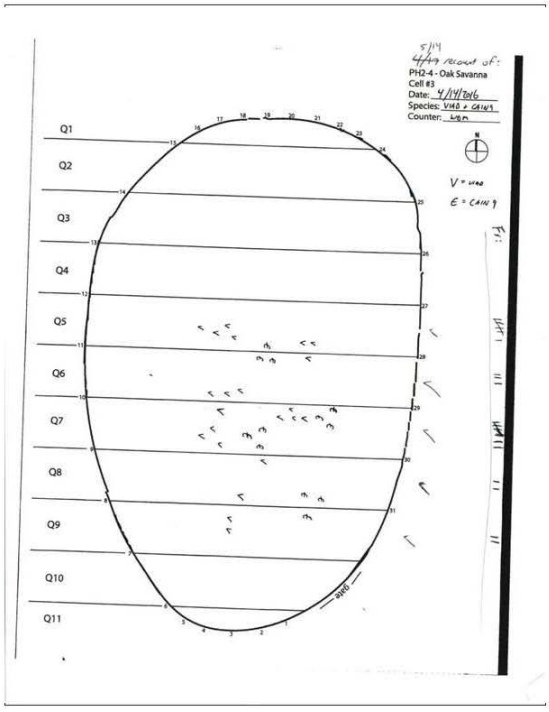

PH2-4 - Oak Savanna
Cell #2
Date: 4/19/2016
Species: VIAD & CAIN9
Counter: WDH
V = VIAD
€ = CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

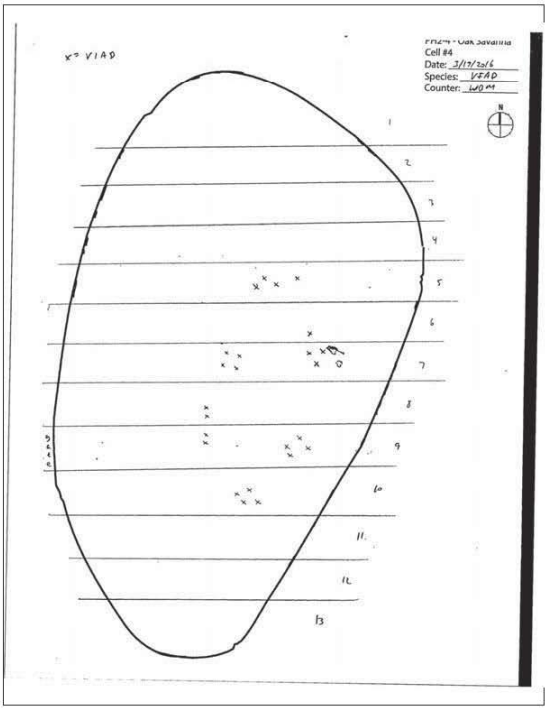

5/19
recount of:
PH2-4 - Oak Savanna
Cell #2
Date: 4/19/2016
Species: VIAD & CAIN9
Counter: WDH
V = VIAD
€ = CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

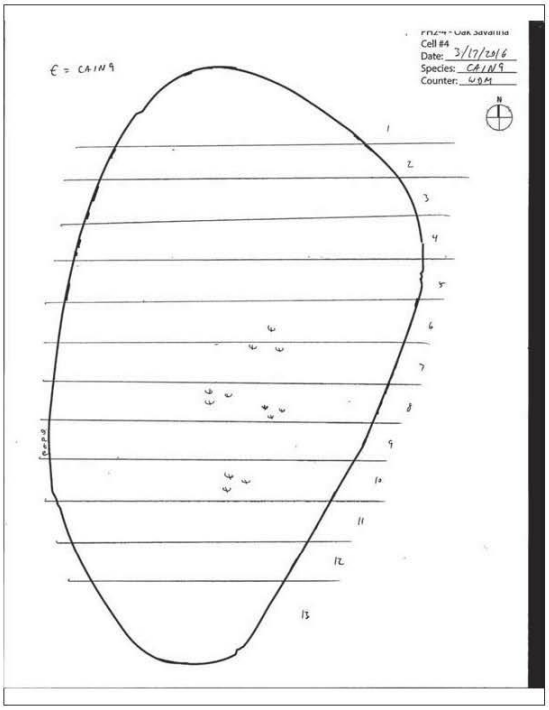

V = VIAD
Cell #3
Date: 7/12/2016
Species: VIAD
Counter:

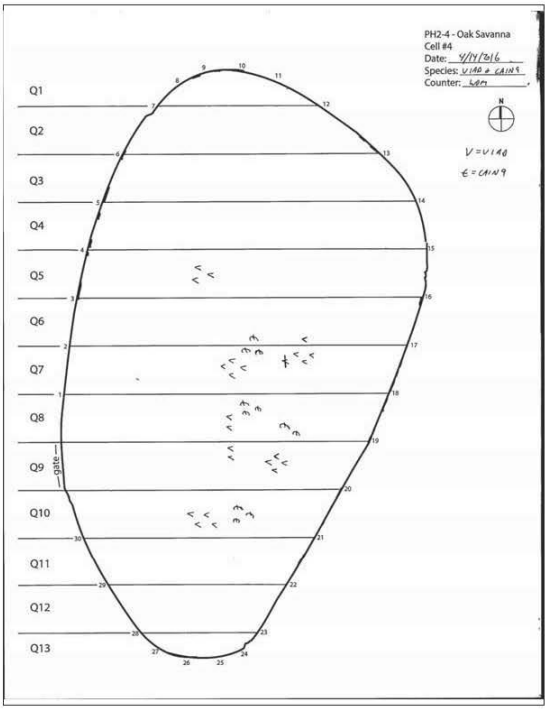

E = CAIN9
Cell #3
Date: 7/19/2016
Species: CAIN9
Counter: WDM

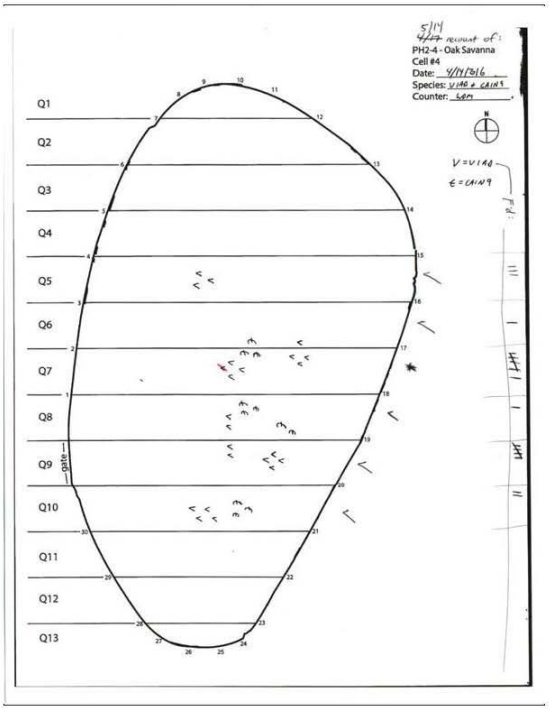

PH2-4 - Oak Savanna
Cell #3
Date: 4/14/2016
Species: VIAD + CAIN9
Counter: MDM
V = VIAD
E = CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
gate

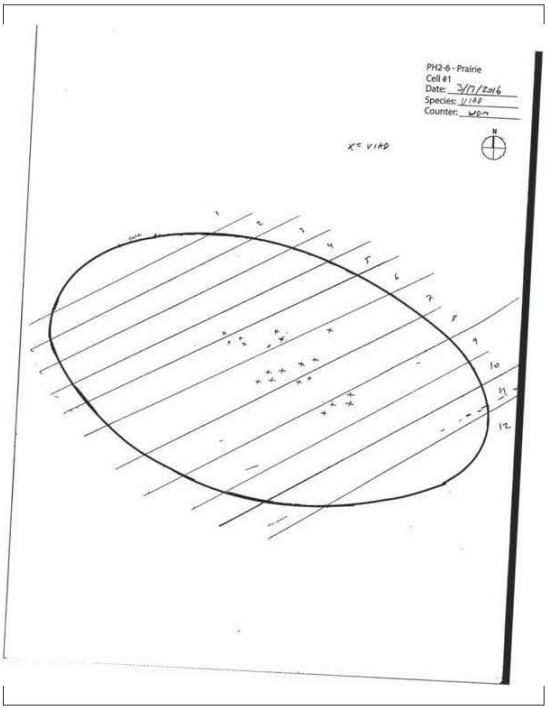

5/14
4/19 recount of:
PH2-4 - Oak Savanna
Cell #3
Date: 4/14/2016
Species: VIAD + CAIN9
Counter: MDM
V = VIAD
E = CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
gate

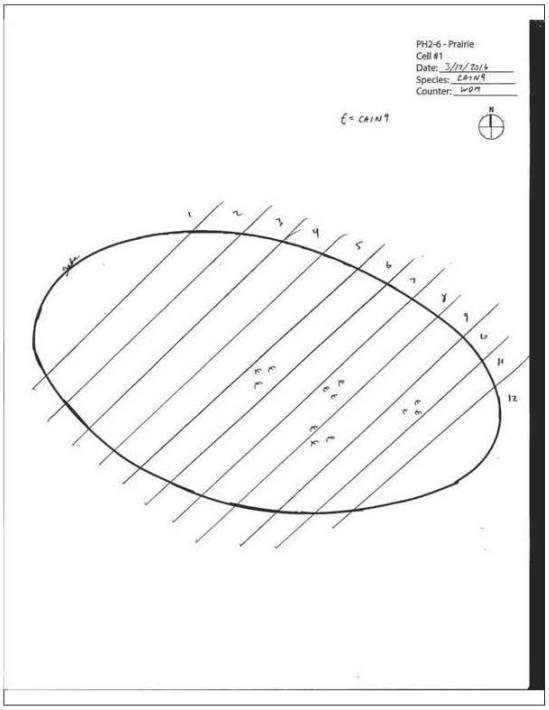

x = VIAD
Cell #4
Date: 3/17/2016
Species: VIAD
Counter: WDM
N

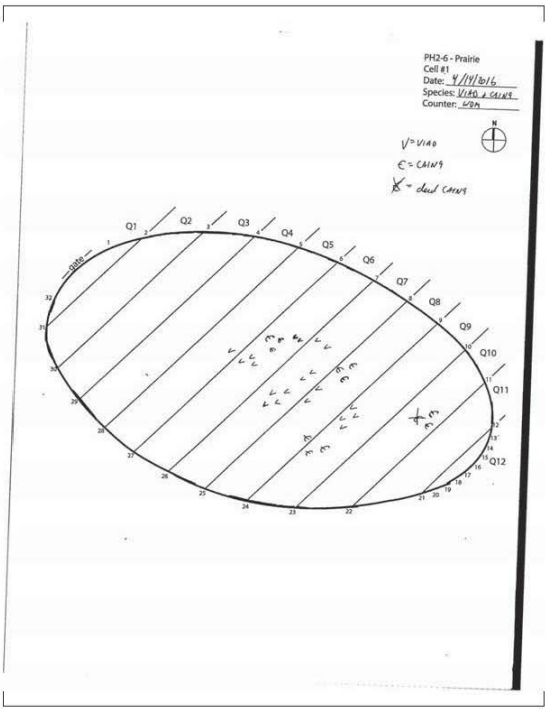

€ = CAIN9
Cell #4
Date: 3/17/2016
Species: CAIN9
Counter: WDM
N

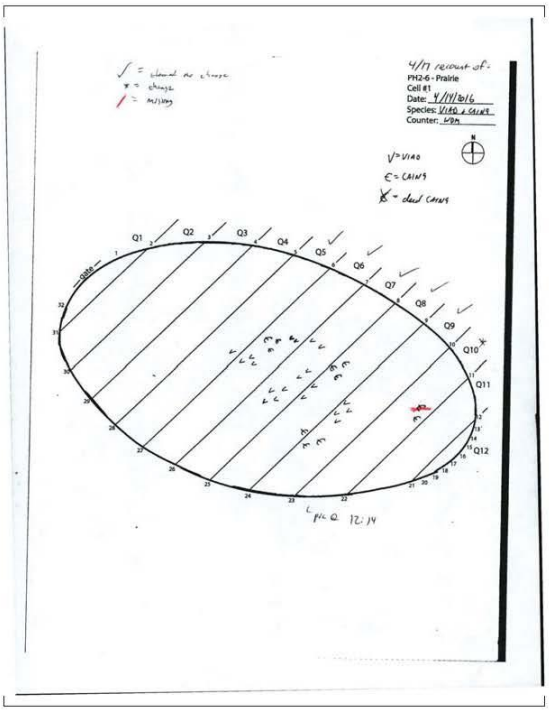

PH2-4 - Oak Savanna
Cell #4
Date: 4/19/2016
Species: VIAD & CAIN9
Counter: SAM
N
V = VIAD
€ = CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
gate
Q10
Q11
Q12
Q13

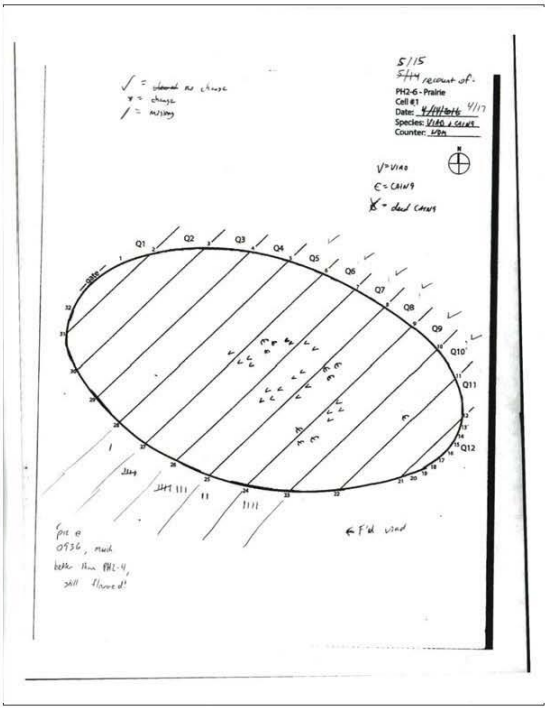

5/19
WDM revised to:
PH2-4 - Oak Savanna
Cell #4
Date: 4/19/2016
Species: VIAD & CAIN9
Counter: SAM
N
V = VIAD
€ = CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
gate
Q10
Q11
Q12
Q13

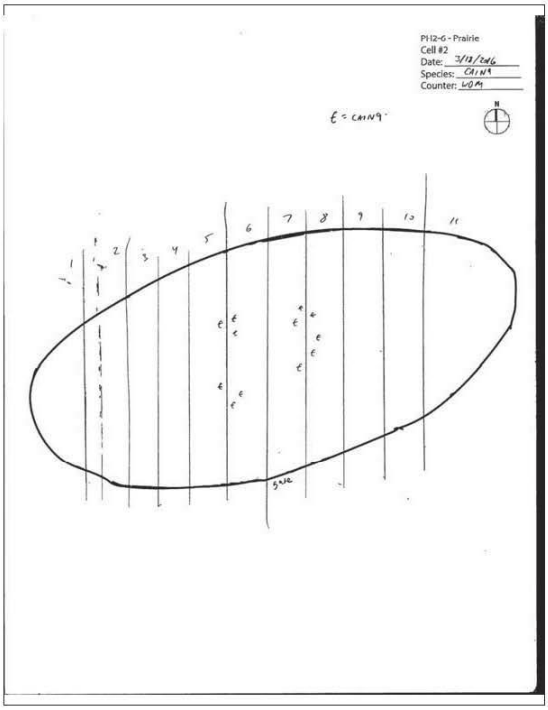

PH2-6 - Prairie
Cell #1
Date: 3/17/2016
Species: VIAD
Counter: WDM
X= VIAD
N

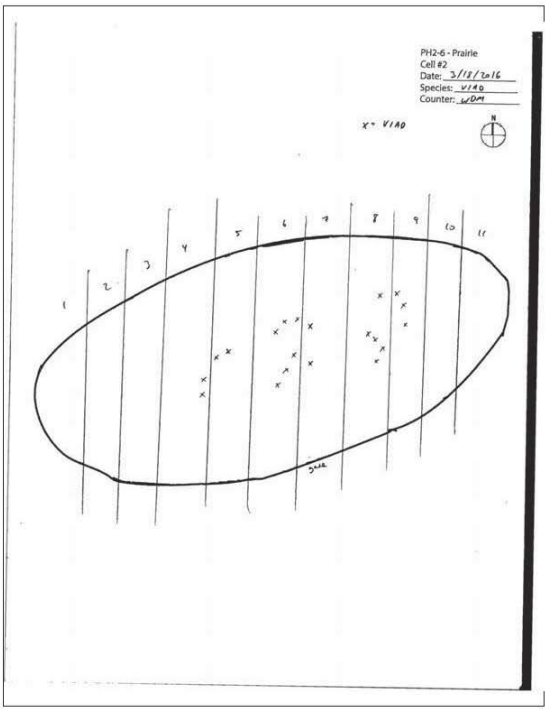

PH2-6 - Prairie
Cell #1
Date: 3/17/2016
Species: CAIN9
Counter: WDM
E= CAIN9
N

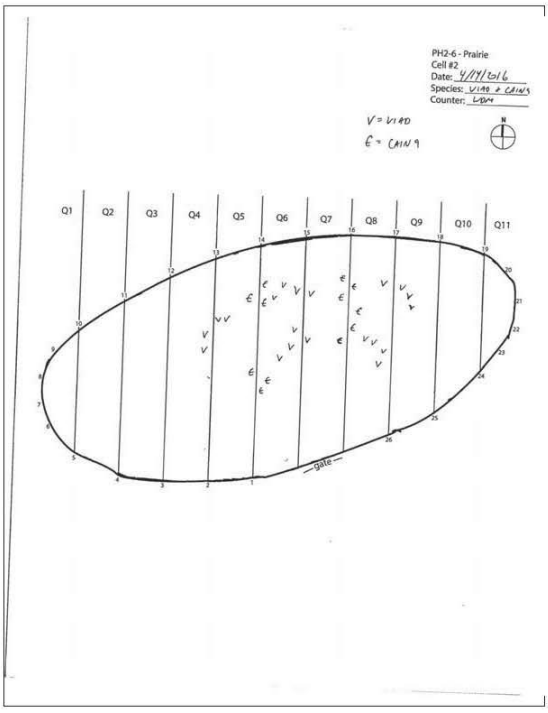

PH2-6 - Prairie
Cell #1
Date: 4/19/2016
Species: VIAD & CAIN9
Counter: WDM
V= VIAD
E= CAIN9
X= dead CAIN9
N
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12

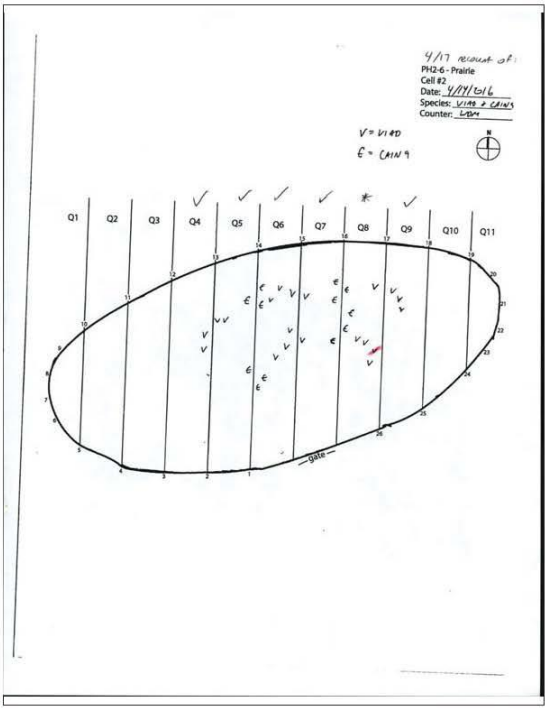

✓ = stayed the same
* = change
/ = missing
4/17 recount of-
PH2-6 - Prairie
Cell #1
Date: 4/19/2016
Species: VIAD & CAIN9
Counter: WDM
V= VIAD
E= CAIN9
X= dead CAIN9
N
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12

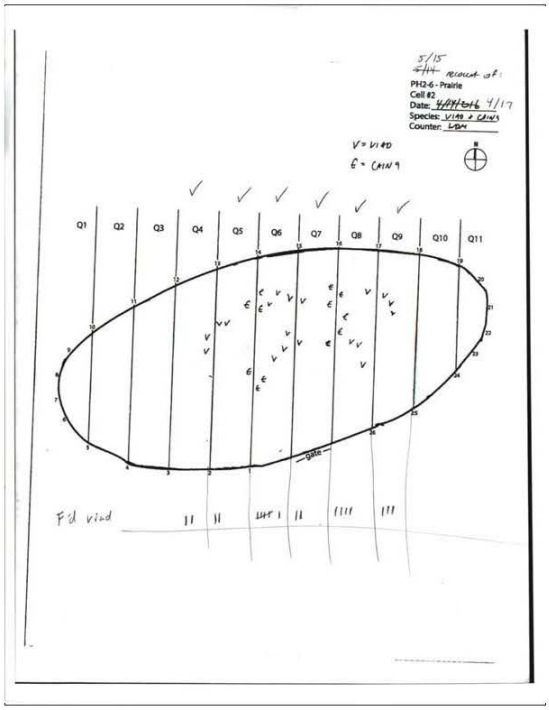

5/15
Fifth recount of-
PH2-6 - Prairie
Cell #1
Species: V140 + CAIN9
Counter: WDM
V= V140
E= CAIN9
X= dead CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Gate
← Fld West

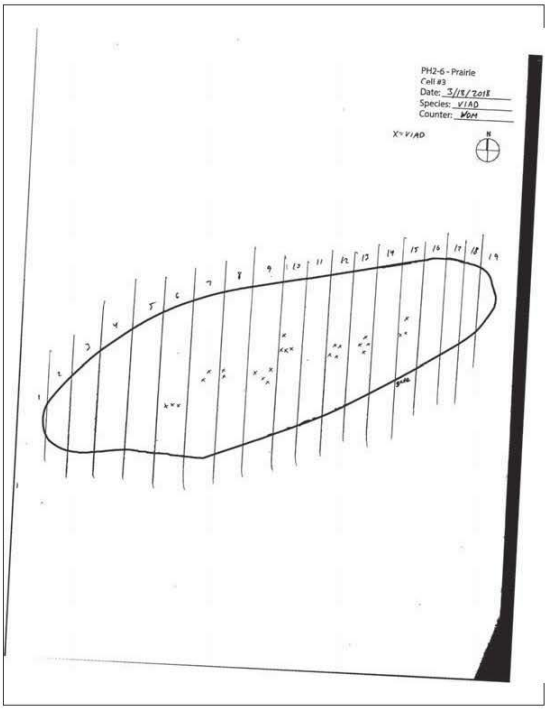

PH2-6 - Prairie
Cell #2
Date: 3/12/2016
Species: CAIN9
Counter: WDM
E = CAIN9
Gate

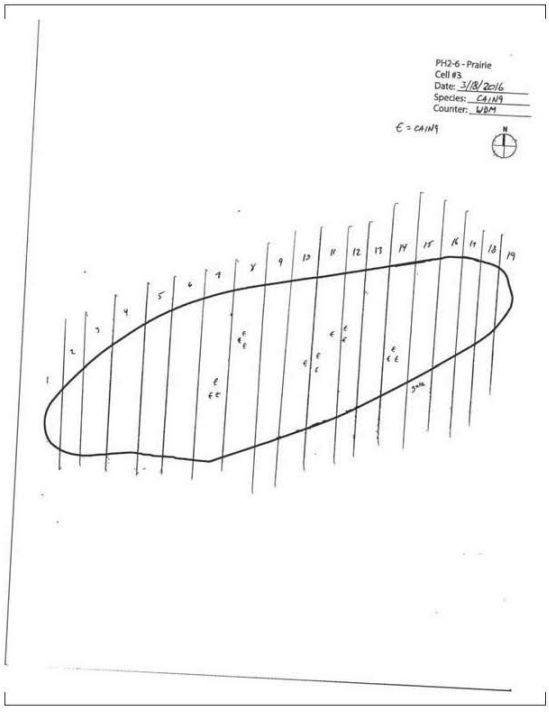

PH2-6 - Prairie
Cell #2
Date: 3/12/2016
Species: V140
Counter: WDM
X= V140
Gate


PH2-6 - Prairie
Cell #2
Date: 4/19/2016
Species: V140 + CAIN9
Counter: WDM
V= V140
E= CAIN9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Gate


4/17 recount of:
PH2-6 - Prairie
Cell #2
Date: 4/19/2016
Species: VIAO & CAIN9
Counter: WBM
V = VIAO
E = CAIN9
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11
Gate

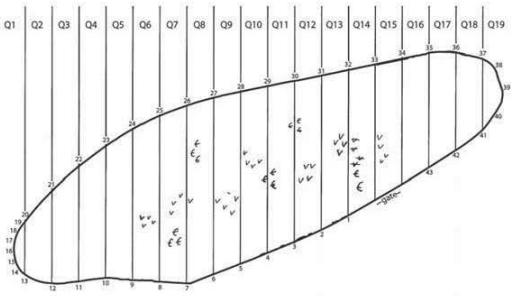

3/15
4/4 recount of:
PH2-6 - Prairie
Cell #2
Date: 4/19/2016 4/17
Species: VIAO & CAIN9
Counter: WBM
V = VIAO
E = CAIN9
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11
Gate
Fd viad


PH2-6 - Prairie
Cell #3
Date: 3/18/2016
Species: VIAO
Counter: WBM
X=VIAO
Gate


PH2-6 - Prairie
Cell #3
Date: 3/18/2016
Species: CAIN9
Counter: WBM
E = CAIN9
Gate

PH2-6 - Prairie
Cell #3
Date: 4/14/2016
Species: VIAD + CAIN9
Counter: LMM

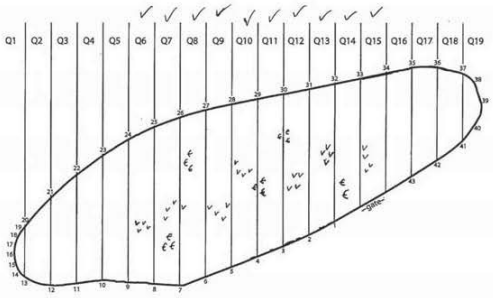
V = VIAD
E = CAIN9



4/17 recount of:
PH2-6 - Prairie
Cell #3
Date: 4/14/2016
Species: VIAD + CAIN9
Counter: LMM

✓ = no change

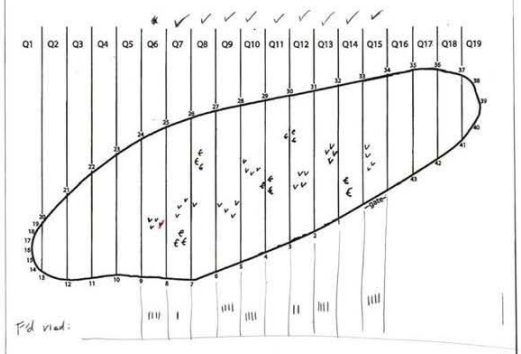
V = VIAD
E = CAIN9



~~5/17~~ 5/15 recount of:
PH2-6 - Prairie
Cell #3
Date: 4/14/2016 4/17
Species: VIAD + CAIN9
Counter: LMM

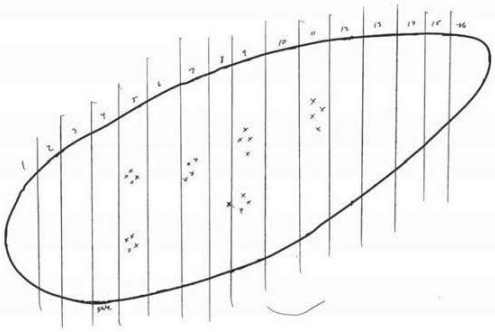
✓ = no change

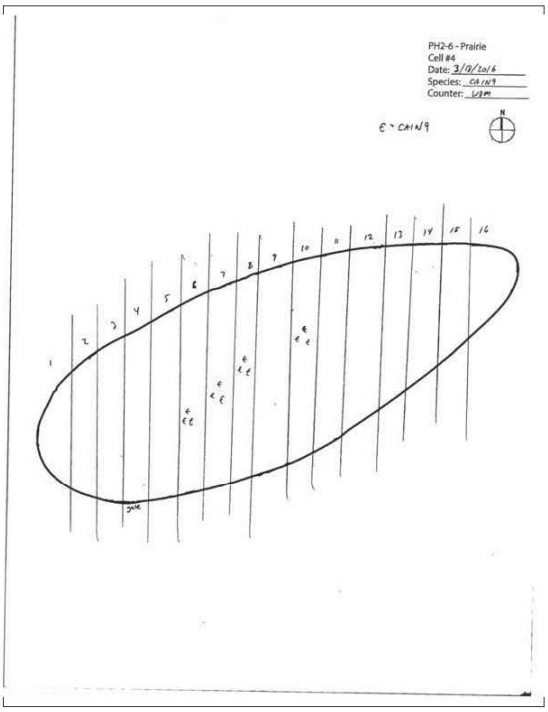
V = VIAD
E = CAIN9

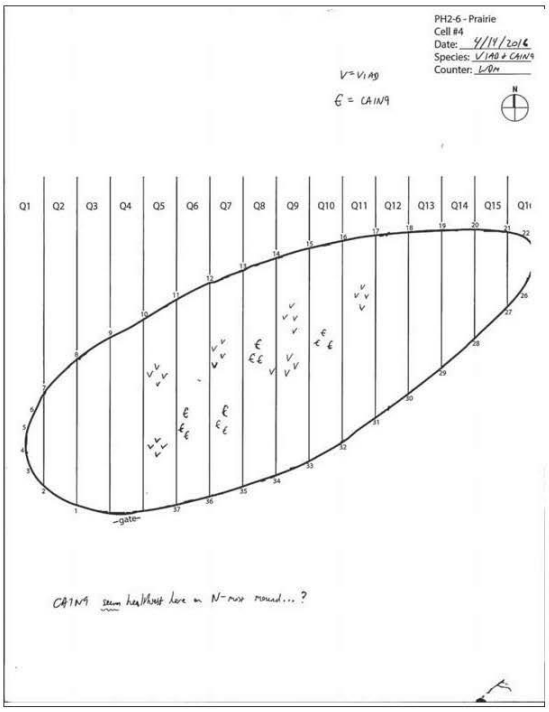


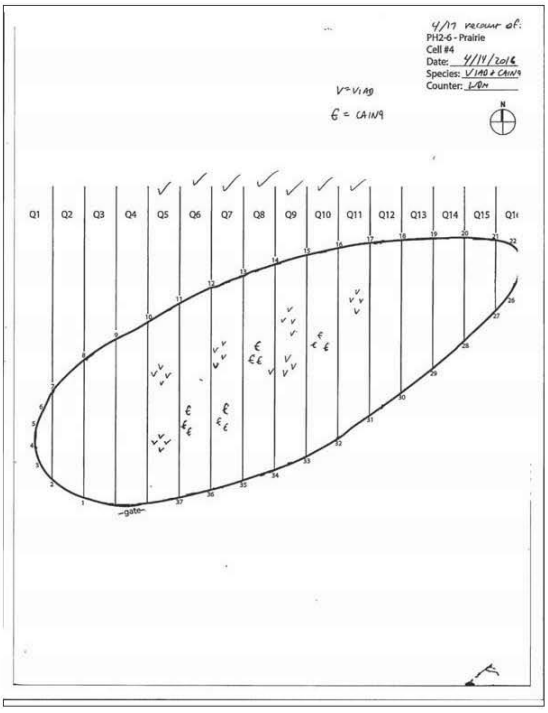
PH2-6 - Prairie
Cell #4
Date: 3/31/2016
Species: VIAD
Counter: MAM

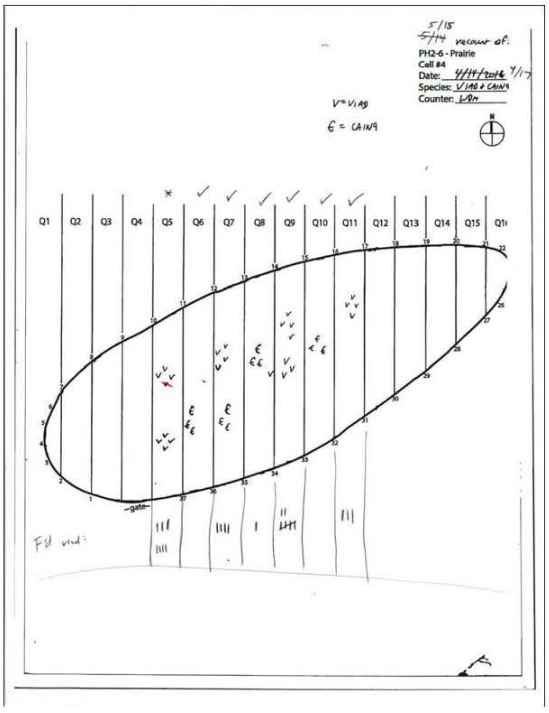
X = VIAD



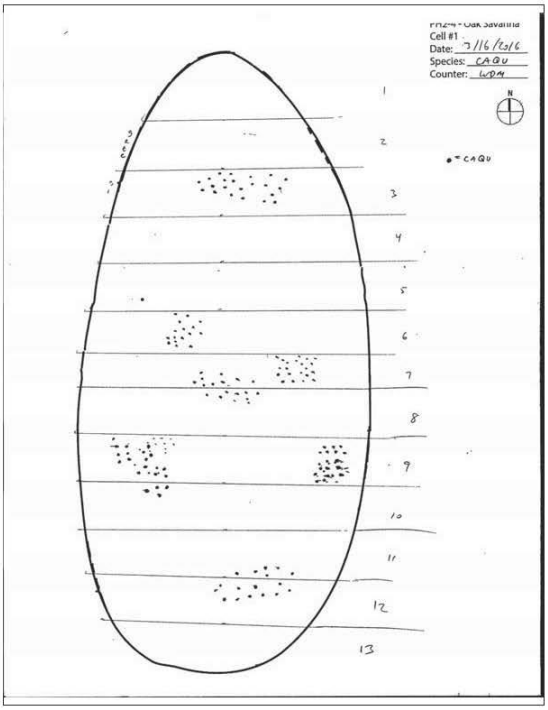

PH2-6 - Prairie
Cell #4
Date: 3/19/2016
Species: CAIN9
Counter: WBM
E = CAIN9
N

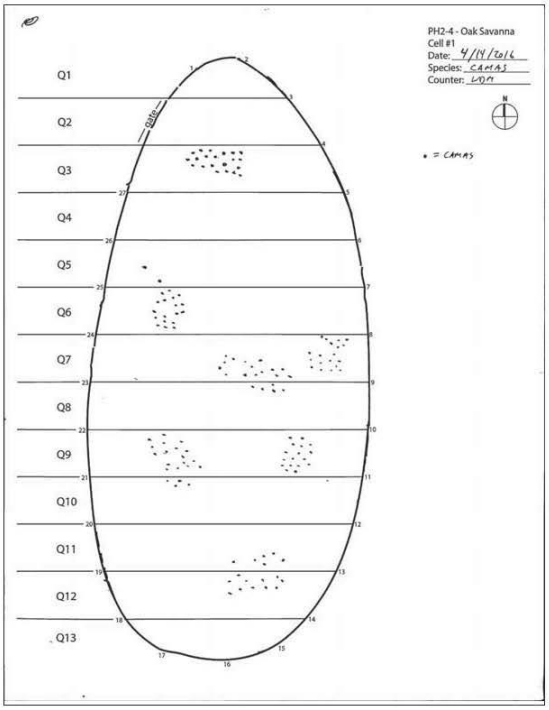

PH2-6 - Prairie
Cell #4
Date: 4/19/2016
Species: V1A9 & CAIN9
Counter: LRM
V = V1A9
E = CAIN9
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15
-gate-
CAIN9 seem healthiest here on N-most mound... ?

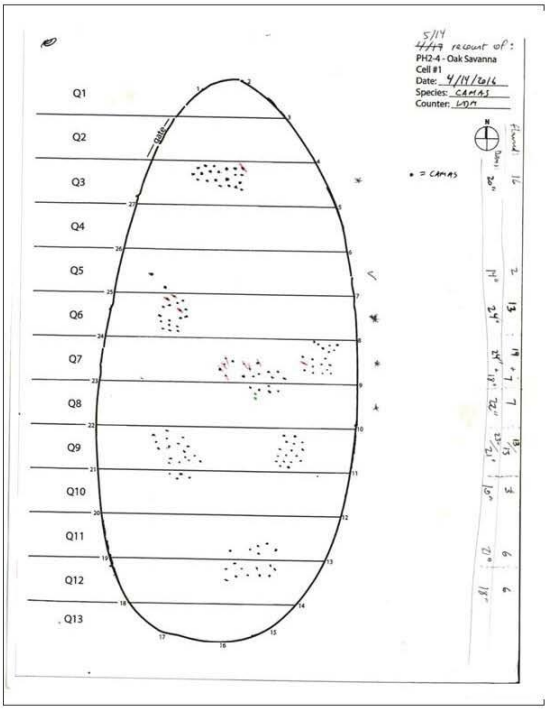

4/19 recount of:
PH2-6 - Prairie
Cell #4
Date: 4/19/2016
Species: V1A9 & CAIN9
Counter: LRM
V = V1A9
E = CAIN9
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15
-gate-

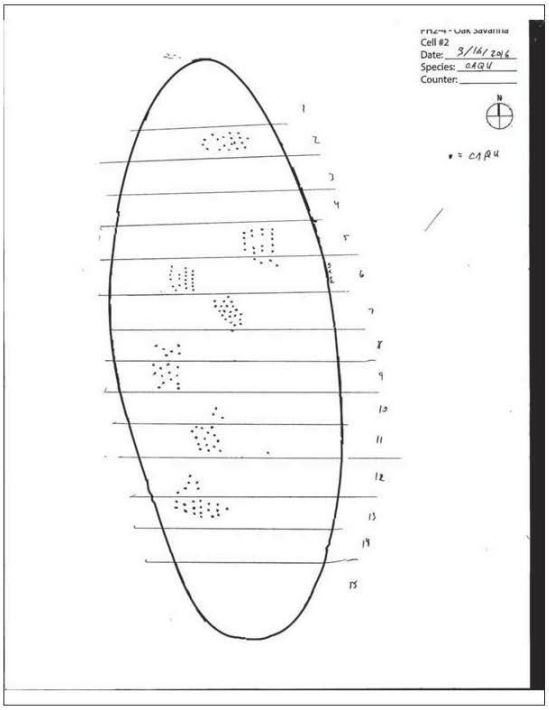

5/15
5/14 recount of:
PH2-6 - Prairie
Cell #4
Date: 4/19/2016 5/17
Species: V1A9 & CAIN9
Counter: LRM
V = V1A9
E = CAIN9
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15
-gate-
Fd wind

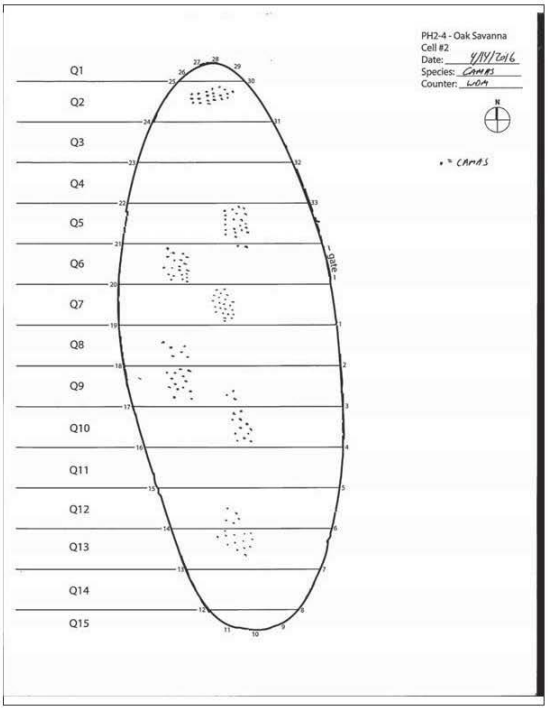
CAMAS

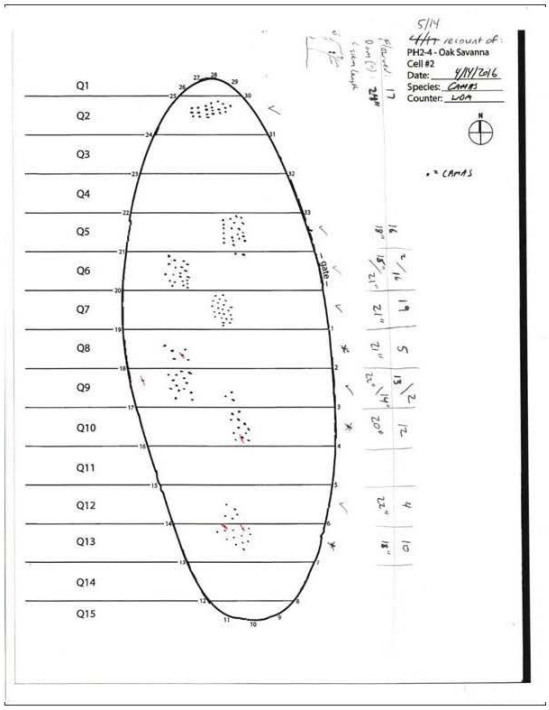

Cell #1
Date: 3/16/2016
Species: CAQU
Counter: LMM
* = CAQU

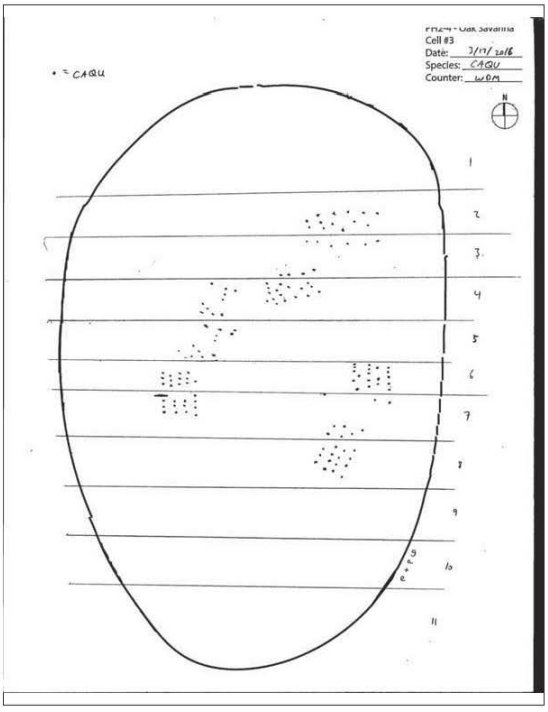

PH2-4 - Oak Savanna
Cell #1
Date: 4/19/2016
Species: CAMAS
Counter: LMM
* = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13

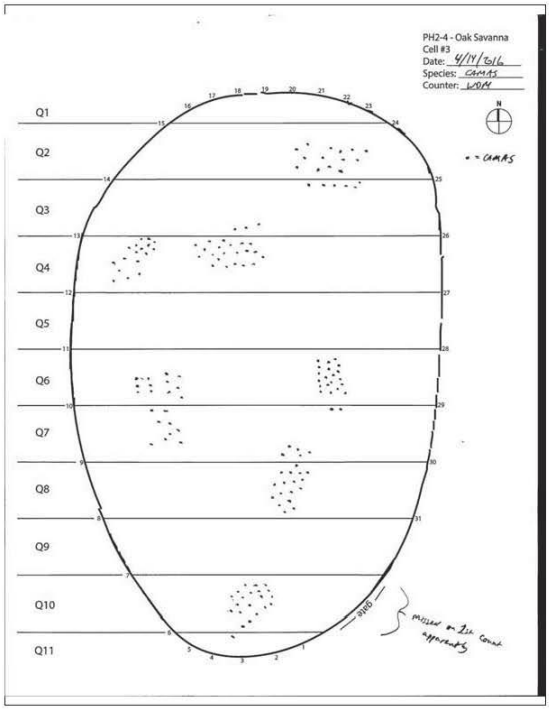

5/14
recount of:
PH2-4 - Oak Savanna
Cell #1
Date: 4/19/2016
Species: CAMAS
Counter: LMM
* = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13

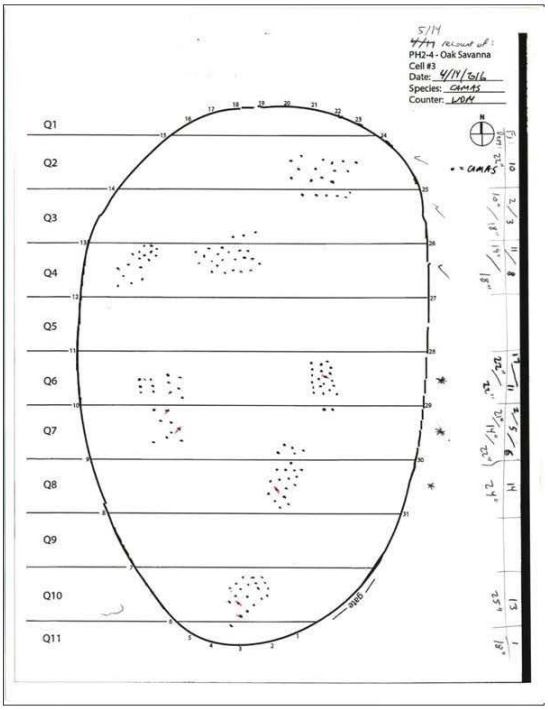

Cell #2
Date: 3/16/2016
Species: CAQU
Counter:
* = CAQU

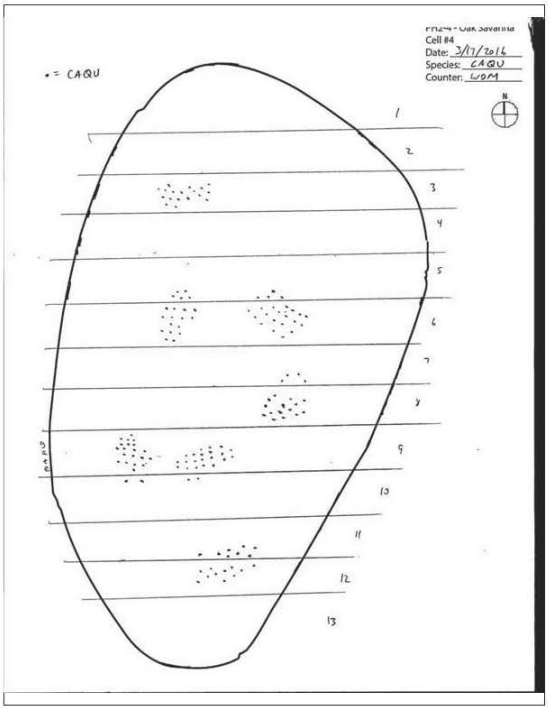

PH2-4 - Oak Savanna
Cell #2
Date: 4/19/2016
Species: CAMAS
Counter: WDM
• = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

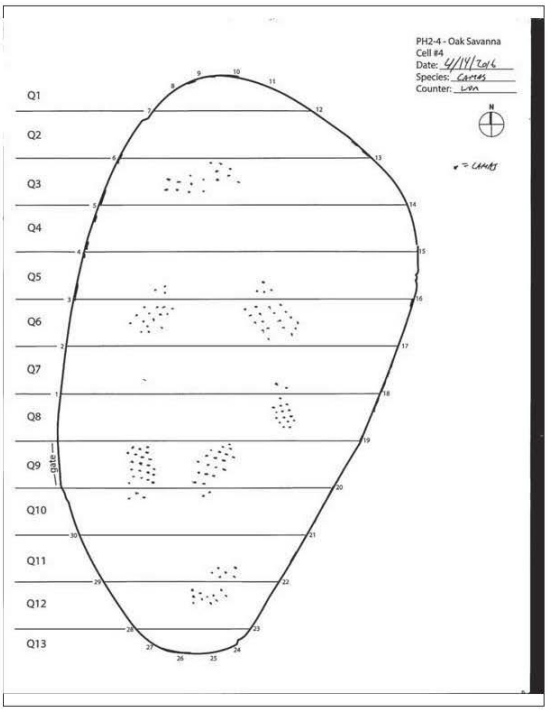

5/14
recount of:
PH2-4 - Oak Savanna
Cell #2
Date: 4/19/2016
Species: CAMAS
Counter: WDM
• = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15

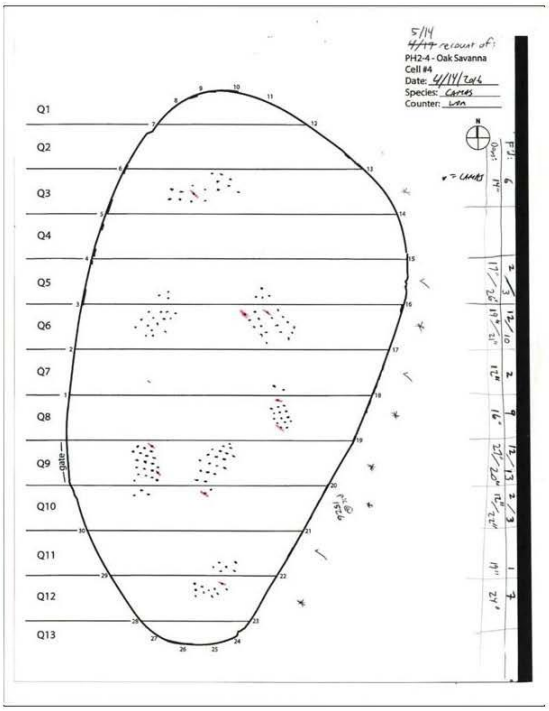

Cell #3
Date: 5/19/2016
Species: CAQU
Counter: WDM
• = CAQU

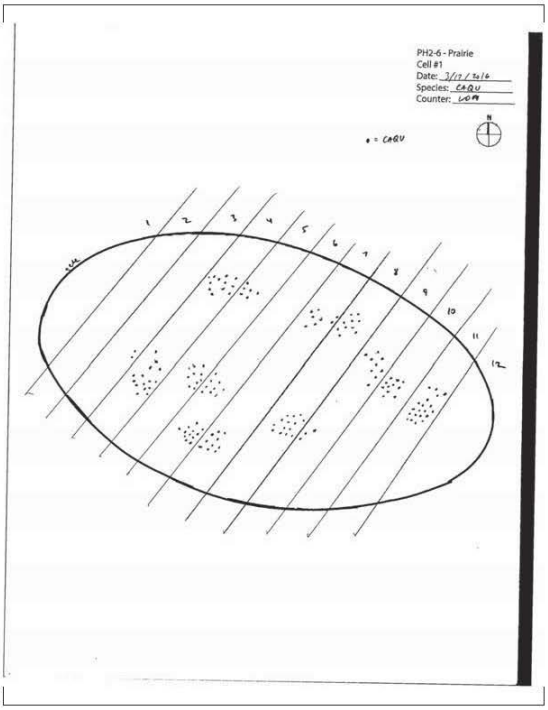

PH2-4 - Oak Savanna
Cell #3
Date: 4/19/2016
Species: CAMAS
Counter: WDM
• = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11

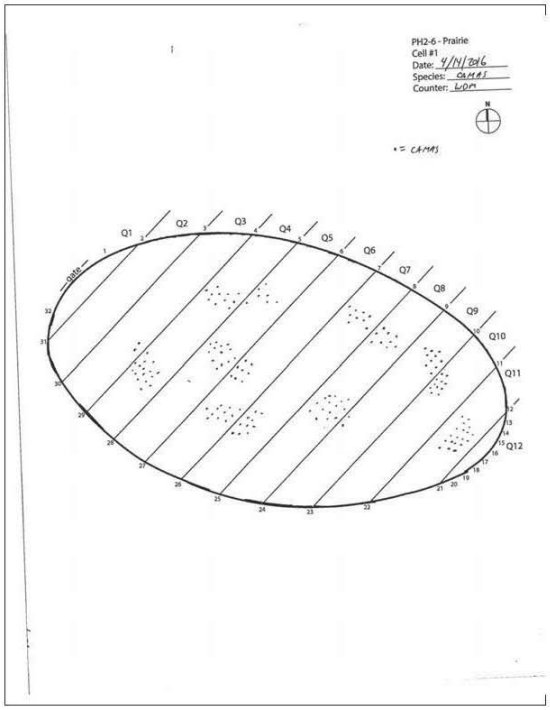

5/14
4/14 recount of:
PH2-4 - Oak Savanna
Cell #3
Date: 4/14/2016
Species: CAMAS
Counter: LVM
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
gate

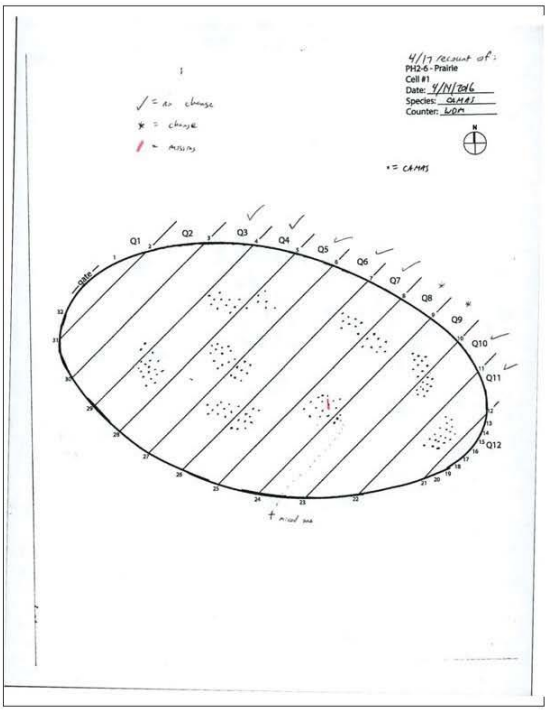

• = CAQU
Cell #4
Date: 3/17/2016
Species: CAQU
Counter: LVM

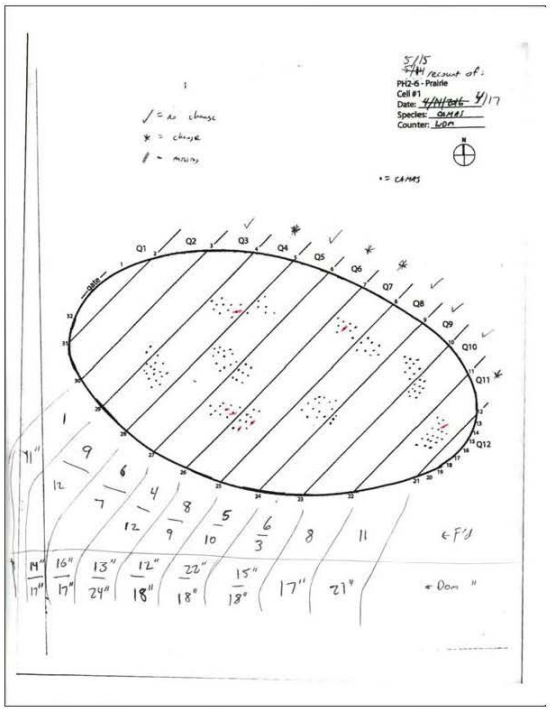

PH2-4 - Oak Savanna
Cell #4
Date: 4/14/2016
Species: CAMAS
Counter: LVM
• = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
gate

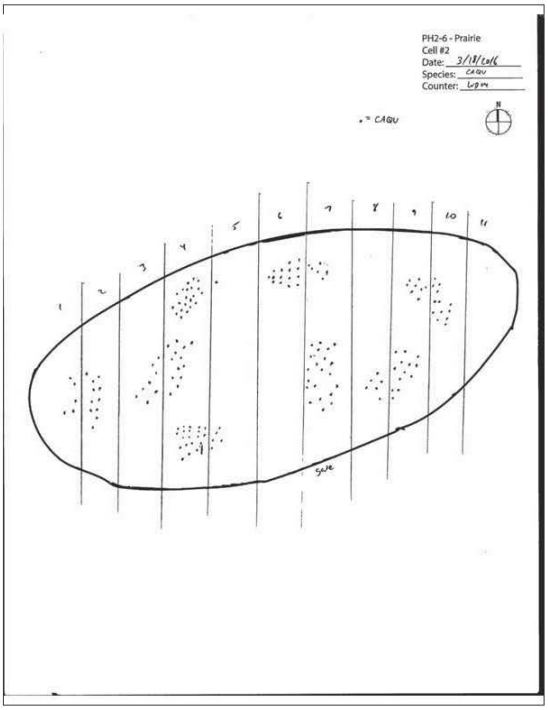

5/14
4/14 recount of:
PH2-4 - Oak Savanna
Cell #4
Date: 4/14/2016
Species: CAMAS
Counter: LVM
• = CAMAS
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
gate

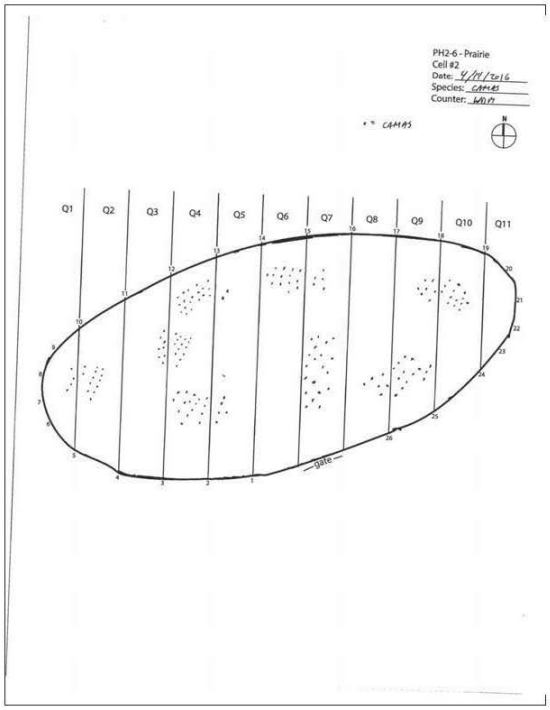

PH2-6 - Prairie
Cell #1
Date: 3/17/2016
Species: CAQU
Counter: LDM
• = CAQU

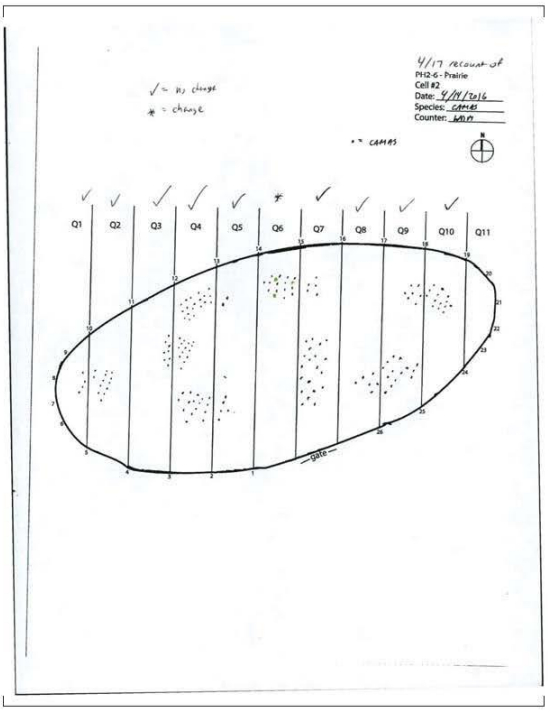

PH2-6 - Prairie
Cell #1
Date: 4/N/2016
Species: CAMA1
Counter: LDM
• = CAMA1

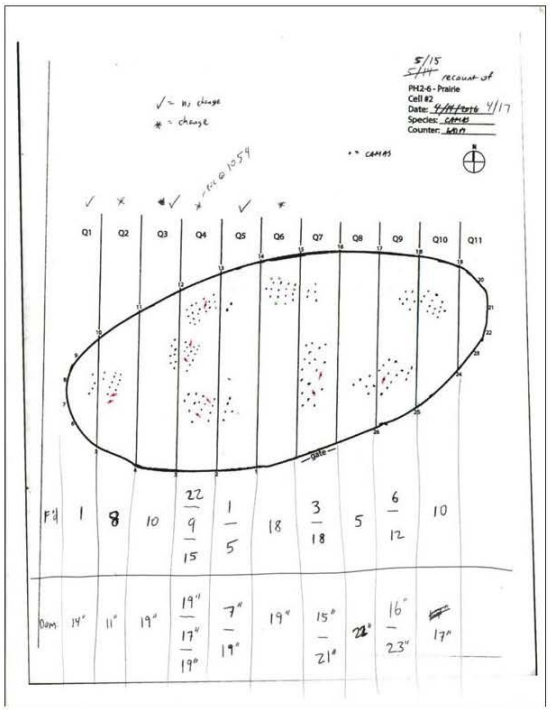

4/17 recount of:
PH2-6 - Prairie
Cell #1
Date: 4/N/2016
Species: CAMA1
Counter: LDM
✓ = no change
* = change
/ = missing
• = CAMA1

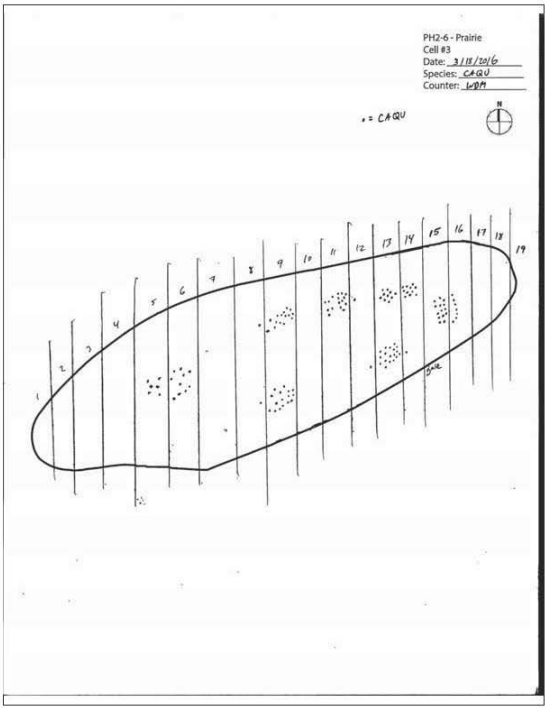

5/15
4/17 recount of:
PH2-6 - Prairie
Cell #1
Date: 4/N/2016 4/17
Species: CAMA1
Counter: LDM
✓ = no change
* = change
/ = missing
• = CAMA1

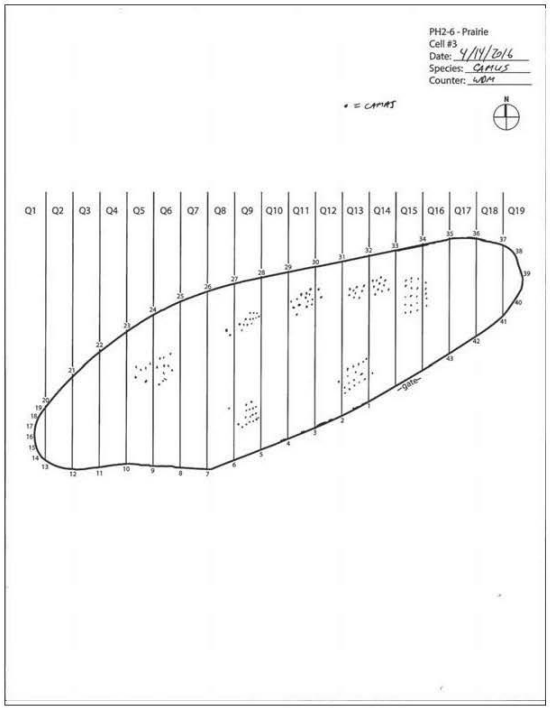

PH2-6 - Prairie
Cell #2
Date: 3/18/2016
Species: CAQU
Counter: LGM
• = CAQU
N
gate

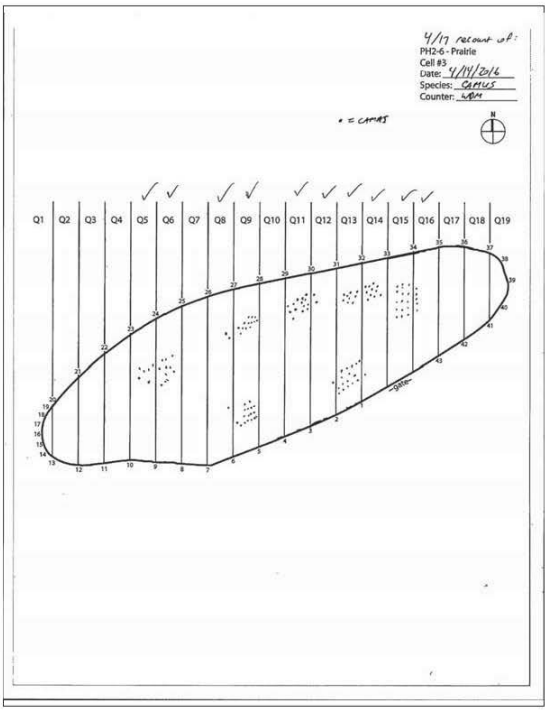

PH2-6 - Prairie
Cell #2
Date: 4/11/2016
Species: CAMAS
Counter: LGM
• = CAMAS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11
gate

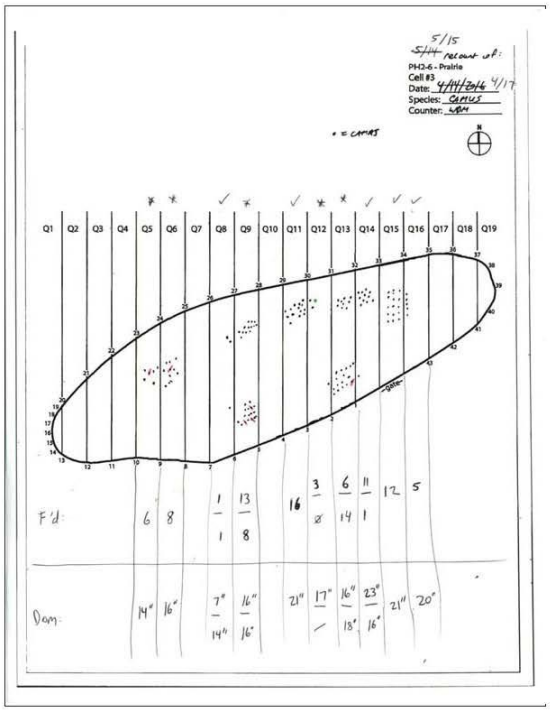

4/17 recount of
PH2-6 - Prairie
Cell #2
Date: 4/11/2016
Species: CAMAS
Counter: LGM
✓ = no change
* = change
• = CAMAS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11
gate

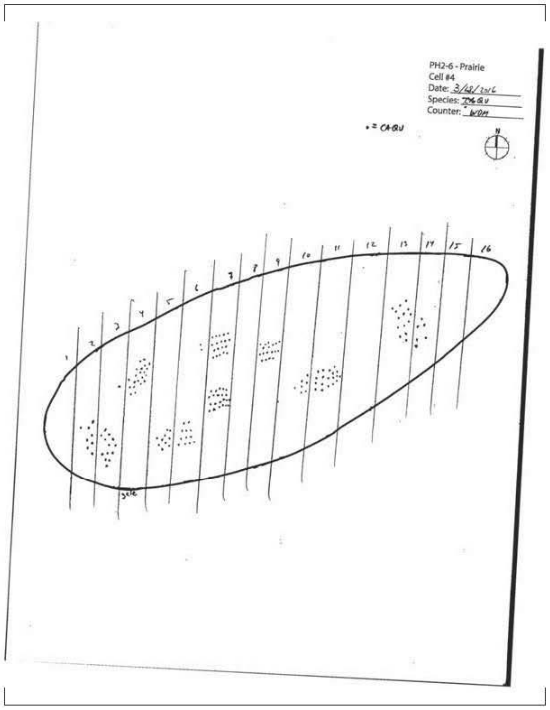

5/15
recount of
PH2-6 - Prairie
Cell #2
Date: 4/11/2016 4/17
Species: CAMAS
Counter: LGM
✓ = no change
* = change
• = CAMAS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11
gate
Flt 1 8 10 22/9/15 1/5 18 3/18 5 6/12 10
Dom 14" 11" 19" 19"/17"/19" 7"/19" 19" 15"/21" 16"/23" 17"

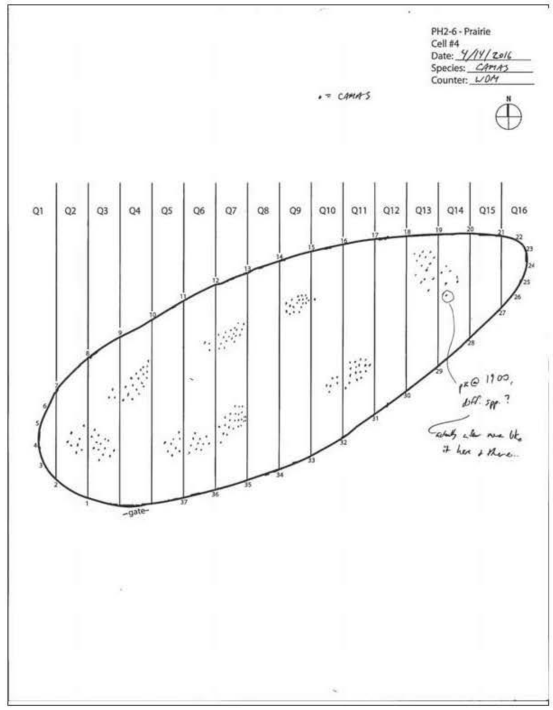

PH2-6 - Prairie
Cell #3
Date: 3/18/2016
Species: CAQU
Counter: WBM
• = CAQU
N

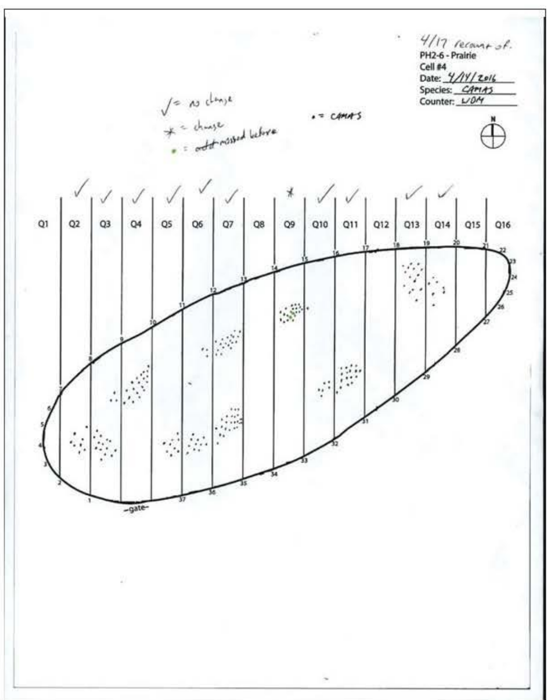

PH2-6 - Prairie
Cell #3
Date: 4/14/2016
Species: CAMUS
Counter: WBM
• = CAMUS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19

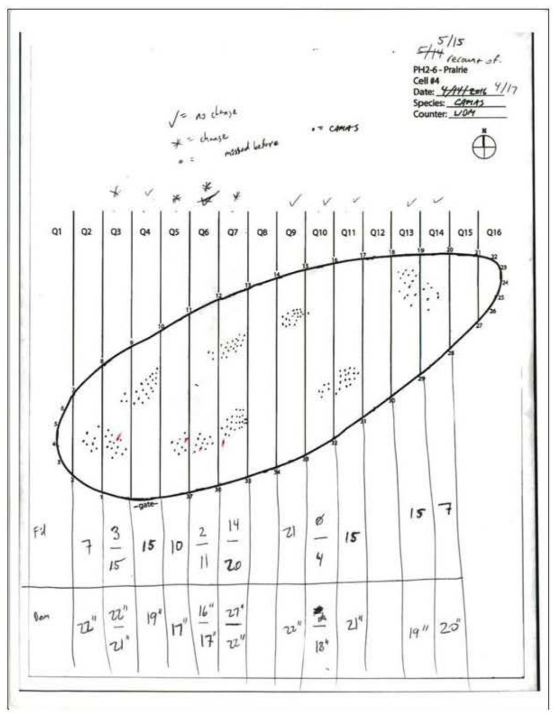

4/17 recount of:
PH2-6 - Prairie
Cell #3
Date: 4/14/2016
Species: CAMUS
Counter: WBM
• = CAMUS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19


5/15
5/14 recount of:
PH2-6 - Prairie
Cell #3
Date: 4/14/2016 4/17
Species: CAMUS
Counter: WBM
• = CAMUS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19
F'd:
Dam:


PH2-6 - Prairie
Cell #4
Date:
Species:
Counter:
N
gate


PH2-6 - Prairie
Cell #4
Date: 4/14/2016
Species: CAMAS
Counter: WDM
• = CAMAS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
-gate-


4/17 recount of.
PH2-6 - Prairie
Cell #4
Date: 4/14/2016
Species: CAMAS
Counter: WDM
√ = no change
* = change
• = missed before
• = CAMAS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
-gate-


5/15 recount of.
PH2-6 - Prairie
Cell #4
Date: 4/14/2016 4/17
Species: CAMAS
Counter: WDM
√ = no change
* = change
• = missed before
• = CAMAS
N
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
-gate-

This is the end.

You’re still here?

It’s over… go home.

Better yet, go outside! Do some science!