

**Blanding's Turtle (Emydoidea blandingii) Research  
1988 Results/1989 Plans**

**Submitted to: Minnesota Department of Natural Resources  
Nongame Wildlife Program**

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**INTRODUCTION**

This is a final report summarizing field work conducted on Blanding's turtles, a state threatened species. The objective of this study was to identify concentrations of Blanding's turtles in the northern metropolitan region. Increased pressure from development has resulted in loss of wetlands and nesting habitat, creating a need for establishing protection priorities.

**METHODS**

After obtaining Blanding's turtle records for the study area and identifying potential concentrations, several methods were used to locate Blanding's turtles in the field.

**Blanding's Turtle Records**

Prior to conducting field work, all previous Blanding's turtle records within the study area were obtained from the MN DNR and plotted on USGS topographic maps and county road maps. Records prior to 1988 provided basic information used to identify potential concentrations of Blanding's turtles. Sightings reported in 1988 substantiated the assumptions drawn from the previous records. DNR personnel received reports from individuals who saw Blanding's turtles in 1988. These reports were followed up by conducting field visits to each site (see report form).

Contacts were made with resource managers within the study area to familiarize them with the project and to request reports of future Blanding's turtle sightings. DNR posters requesting reports of Blanding's turtle sightings were posted in towns within the study area.

APR 13 1989

### Visual Observations

Initial field work consisted of becoming familiar with the wetlands within this large study area. Wetlands which appeared to have suitable habitat for Blanding's turtles and/or had several records in the vicinity were observed with binoculars and spotting scope.

### Road Surveys

During the peak of the nesting season, early to mid-June, 10 volunteers were recruited to conduct road surveys throughout the study area. Survey routes were designed by selecting roads near potential concentrations of Blanding's turtles.

### Trapping

Hoop traps (Lagler, 1943) were obtained from MN DNR Fisheries offices in Brainerd, Little Falls, and Montrose. Traps consisted of 4 fiberglass hoops, approximately 1 m in diameter. Hoops were connected with nylon netting, and the throat of the trap was adjustable to allow for the capture of large turtles. The initial three traps had two leads each. Subsequent traps lacked leads, were equally as effective at trapping turtles, and were easier to work with in the field.

The traps were baited with frozen smelt, checked every other day, and rebaited if necessary. Frozen smelt were purchased at a local grocery store, cut up into small pieces and placed in plastic containers (i.e. tennis ball containers) which had been punctured several times. One container was placed in the rear portion of each hoop trap.

Traps were staked into place, with at least 15 cm of the tops of the hoops exposed to allow the captured turtles to obtain oxygen. Traps were typically removed from the wetland after 4 trap-nights.

Captured Blanding's turtles were aged by counting growth annuli on the plastron (Sexton, 1959), and sexed if at least 15 years old. In addition, turtles were weighed and measured (length and width of carapace). Turtles were marked prior to releasing them back in the wetland. Notches were filed into the margin of the carapace (Figure 1).

## RESULTS AND DISCUSSION

### Blanding's turtle reports

The MN DNR received approximately 150 reports from individuals who sighted Blanding's turtles within the study area. Sue Tracy, Nongame Wildlife Assistant, collected data from each person who reported a sighting. A small percentage of the sightings were verified.

### Road surveys

Volunteers found six Blanding's turtles while travelling the survey routes during the nesting season. Six additional Blanding's turtles were discovered on roads and in wetlands during the field season (Appendix 1).

### Trapping

Hoop traps provided the most productive technique for locating Blanding's turtles (Appendix 2). Trapping was conducted in Isanti and Anoka counties between 24 June - 19 July, and 18 August - 4 September. Although additional trapping was planned, the turtles did not respond to the bait during the later part of the summer and trapping efforts were terminated. Because Blanding's turtles will reduce their food intake prior to overwintering (Madeleine Linck, pers. com.), it is possible that they were already preparing for hibernation.

Out of 14 wetlands or ditches that were trapped in the two counties, 44 Blanding's turtles were captured at 5 sites. The majority of the turtles were captured from two wetlands in Isanti county, Lake Callahan (23 turtles) and Marget Lake Wildlife Management Area (17 turtles).

Results from the trapping efforts are summarized by age group in Table 1. The lack of response from turtles in the 0-4 age group is most likely due to the capture technique, not the absence of this age group in the population. According to Bruce Brecke (pers. comm), turtles in this age group have been found along edges of wetlands (in sedges), and may not spend a significant amount of time (if any) in open water. Individuals beyond the age of 25 are difficult to age accurately because the growth rings are not as pronounced. As Blanding's turtles age, the annuli are worn down until the shell is smooth. Individuals with smooth shells were assumed to be the older turtles in the population and were identified in a separate age group. No attempt was made to estimate age beyond 25 years.

## FUTURE PLANS

Through reports of Blanding's turtle sightings and the trapping results of 1988, it appears as though Blanding's turtles are more abundant than originally thought. The threat to this species, however, will increase with time. As housing developments spread out beyond the current suburban boundaries, turtles are confronted with drainage of wetlands, and loss of nesting habitat. In addition, roads separate turtle activity centers and put travelling adult and hatchling turtles at risk. In addition to habitat changes, the Blanding's turtles are exposed to an increasing population of predators, including raccoons, skunks, foxes and dogs. For these reasons it is important to continue the identification of population concentrations and establish management practices for selected areas.

In 1989 priority trapping sites will consist of managed areas. By identifying concentrations of Blanding's turtles in wetlands which are at least partially protected, a minimal effort would be necessary to protect core populations. Once concentrations are identified, selected populations can be studied more intensely to identify uplands or additional wetlands used by the Blanding's turtles. Such field work may identify unprotected nesting sites or overwintering sites. Protection of such areas may be critical in avoiding the senescence of these populations.

Managed areas included in trapping plans for 1989:

<u>County</u>	<u>Managed Area</u>	<u>Wetlands</u>
Anoka	Bethel WMA	Smith Lake, Sand Lake
	Boot Lake SNA	Linwood Lake
	Carlos Avery WMA	Twin Lakes, Pools
	Cedar Creek NHA	Fish Lake, Beckman L.
	Lamprey Pass SNA	Mud Lake
Chisago	Wild River State Park	Amiks Pond
Isanti	Athens WMA	various wetlands
	Crooked Road WMA	Mud Lake
	Marget Lake WMA	Marget Lake
	Typo Lake WMA	Typo Lake
Ramsey	Twin Cities Arsenal	various wetlands
Sherburne	Sand Dunes State Forest	Lake Ann
	Sherburne NWR	various wetlands
Wash.	Warner Nature Center	various wetlands

In addition to trapping managed areas, there are other unprotected wetland complexes that appear to have the potential for Blanding's turtle concentrations. These areas will also be priority trap sites in 1989 and consist of:

<u>County</u>	<u>Township</u>	<u>Wetland</u>
Anoka	Oak Grove	Grass Lake, Hickey Lake
	Columbus	Crossways Lake, Randeau Lake
Stearns	Lynden, Fairhaven	Mund Lake
	St. Augusta	
Wright	Silver Creek	North Lake

## **ADDITIONAL RESEARCH**

### Habitat Fragmentation

The impact of habitat fragmentation is possibly the greatest threat to the Blanding's turtles in the metropolitan area. The development occurring within the metro area has both direct and indirect impacts on the populations. Turtle populations are reduced due to mortality on roads, collecting, and an increase in predation. Indirect impacts result from reduced nesting success which will alter the age structure of the population, resulting in few, if any juveniles.

One way to analyze the affect of habitat fragmentation would be to compare turtle populations in developed and undeveloped wetlands. The ratio of juvenile turtles in the population will be an indicator of the productivity of adults.

### Food Studies

A food study would provide information regarding the diversity of food items consumed by Blanding's turtles in Minnesota. In addition, it would provide information on the interaction of various species within the wetland community. One interesting aspect of such a study would be the comparison of food habits and size of turtles. For example, the Weaver Dunes turtles in southeast Minnesota are noticeably smaller than the Blanding's in the north metro area. Perhaps this is related to food habits.

Details for the above mentioned studies will be discussed at a meeting scheduled by the MN DNR Nongame Wildlife Program.

BLANDING'S TURTLE REPORT

County \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_ (1/4 1/4 if possible)

Observer \_\_\_\_\_ Date of sighting \_\_\_\_\_

(Name & \_\_\_\_\_ Date reported \_\_\_\_\_

Address) \_\_\_\_\_ Daytime telephone # \_\_\_\_\_

Poster Sent: \_\_\_\_\_ Yes \_\_\_\_\_ No

Observer status (check one): \_\_\_\_\_ General Public \_\_\_\_\_ Wildlife Professional  
(give affiliation)  
\_\_\_\_\_ Turtle Expert (i.e., someone who has field experience with Blanding's, such as  
Linck, Moriarty, Brecke, etc.)

Number seen: \_\_\_\_\_ Sex (if known): \_\_\_\_\_ Size: \_\_\_\_\_  
(Distinguish if shell length or total body length)

Have Blanding's been seen in this area before?

Turtle activity observed: Nesting? Yes or No

Observer's description of area:

Additional Comments by Observer:

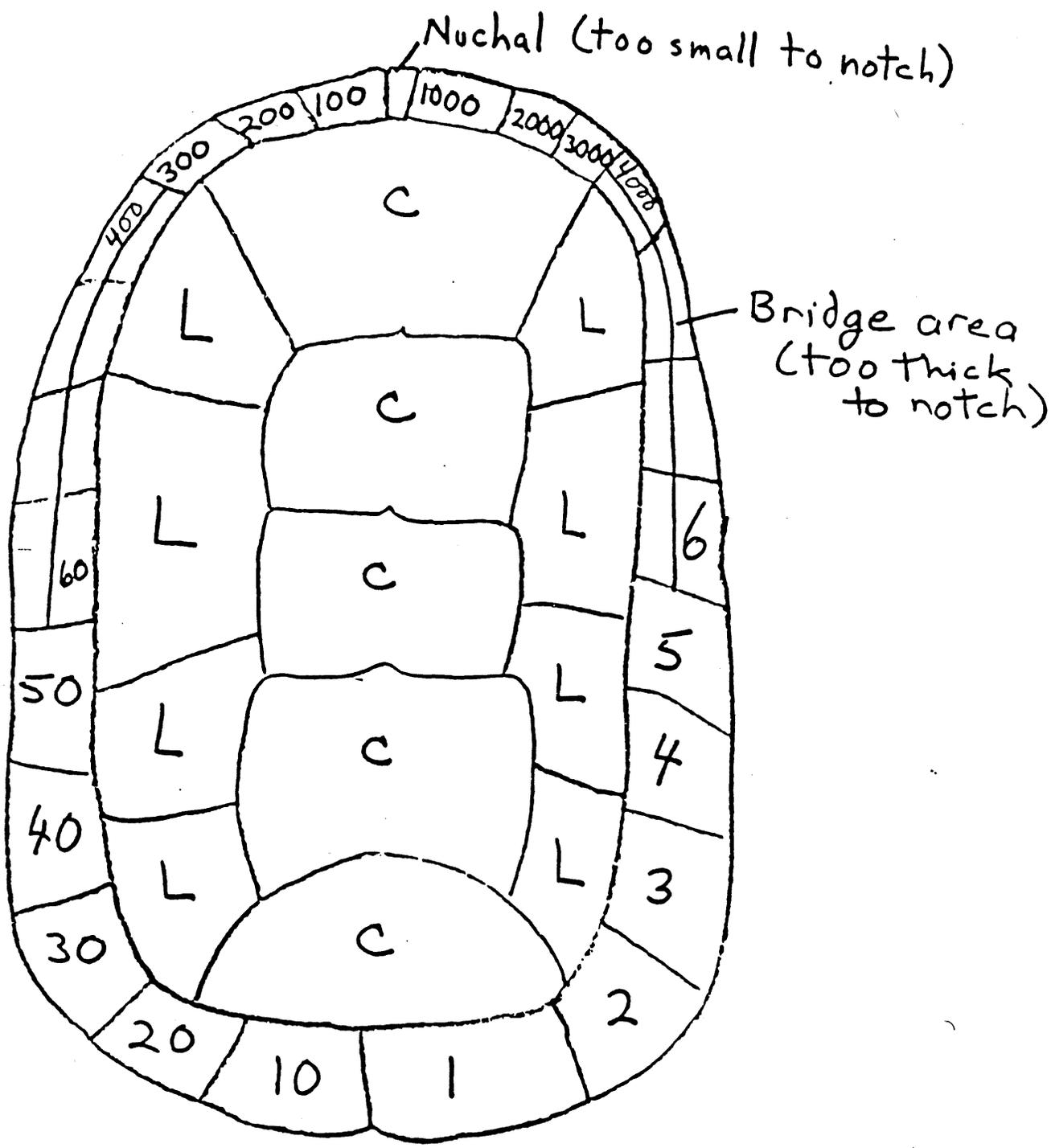
Map Sent to Verify Location: \_\_\_\_\_  
(with stamped, self-addressed envelope)

Documentation of Record (check one):

1. Verified with a specimen (i.e., dead turtle)  
Deposition of specimen:
2. Verified with a photo
3. Sighting only; Reporter's description was as follows:
4. Turtle also observed by another person with turtle experience - who?

Report Taken By:

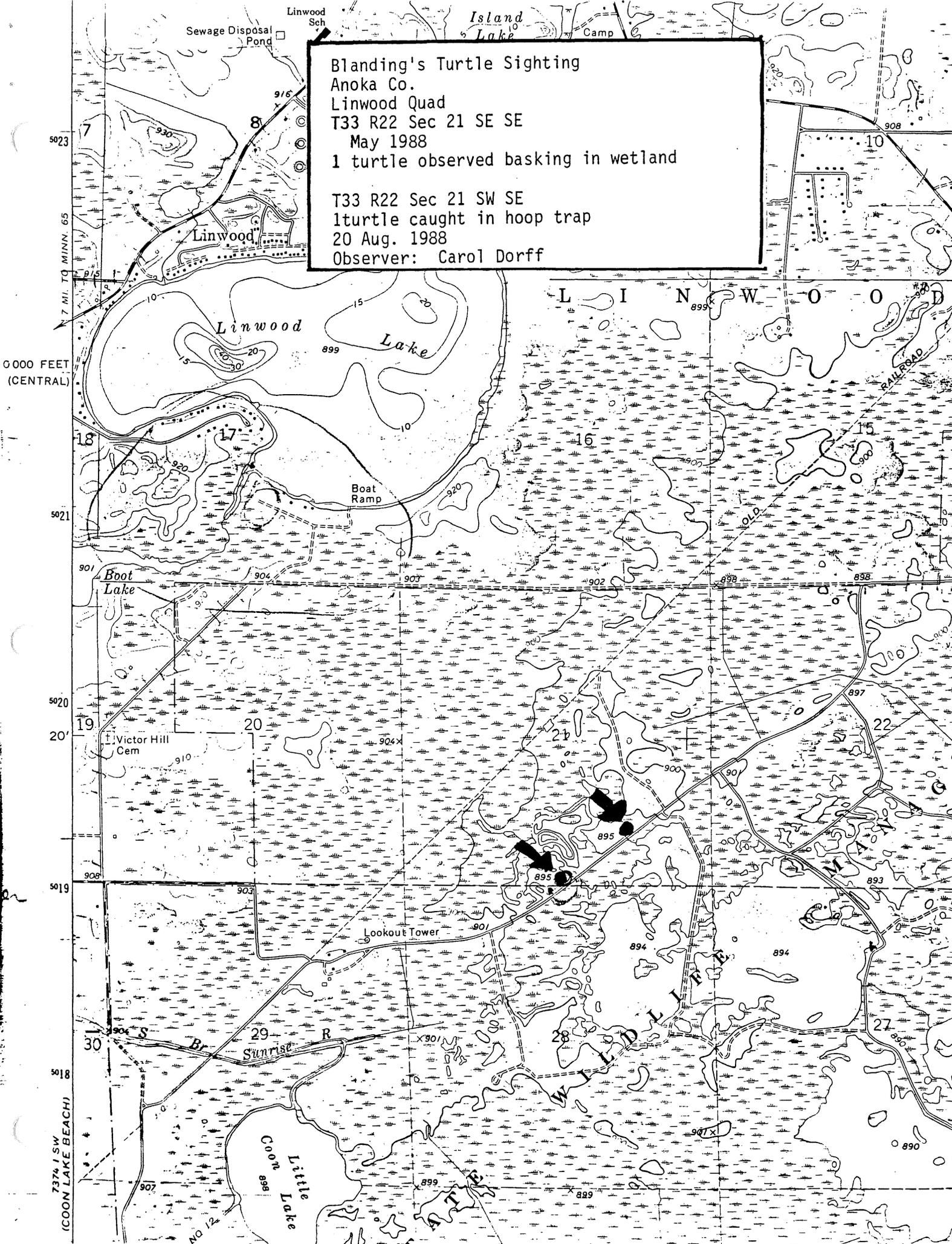
FIGURE 1. Method used to mark individual Blanding's turtles (as used by Terry E. Graham).



**APPENDIX 1. Blanding's turtles sighted during the 1988 field season in the north metro study area.**

Blanding's Turtle Sighting  
Anoka Co.  
Linwood Quad  
T33 R22 Sec 21 SE SE  
May 1988  
1 turtle observed basking in wetland

T33 R22 Sec 21 SW SE  
1 turtle caught in hoop trap  
20 Aug. 1988  
Observer: Carol Dorff



6000 FEET  
(CENTRAL)

7 MI. TO MINN. 65

5021

5020

5019

5018

7374 / SW  
(COON LAKE BEACH)

Blanding's Turtle Sighting

Anoka Co.

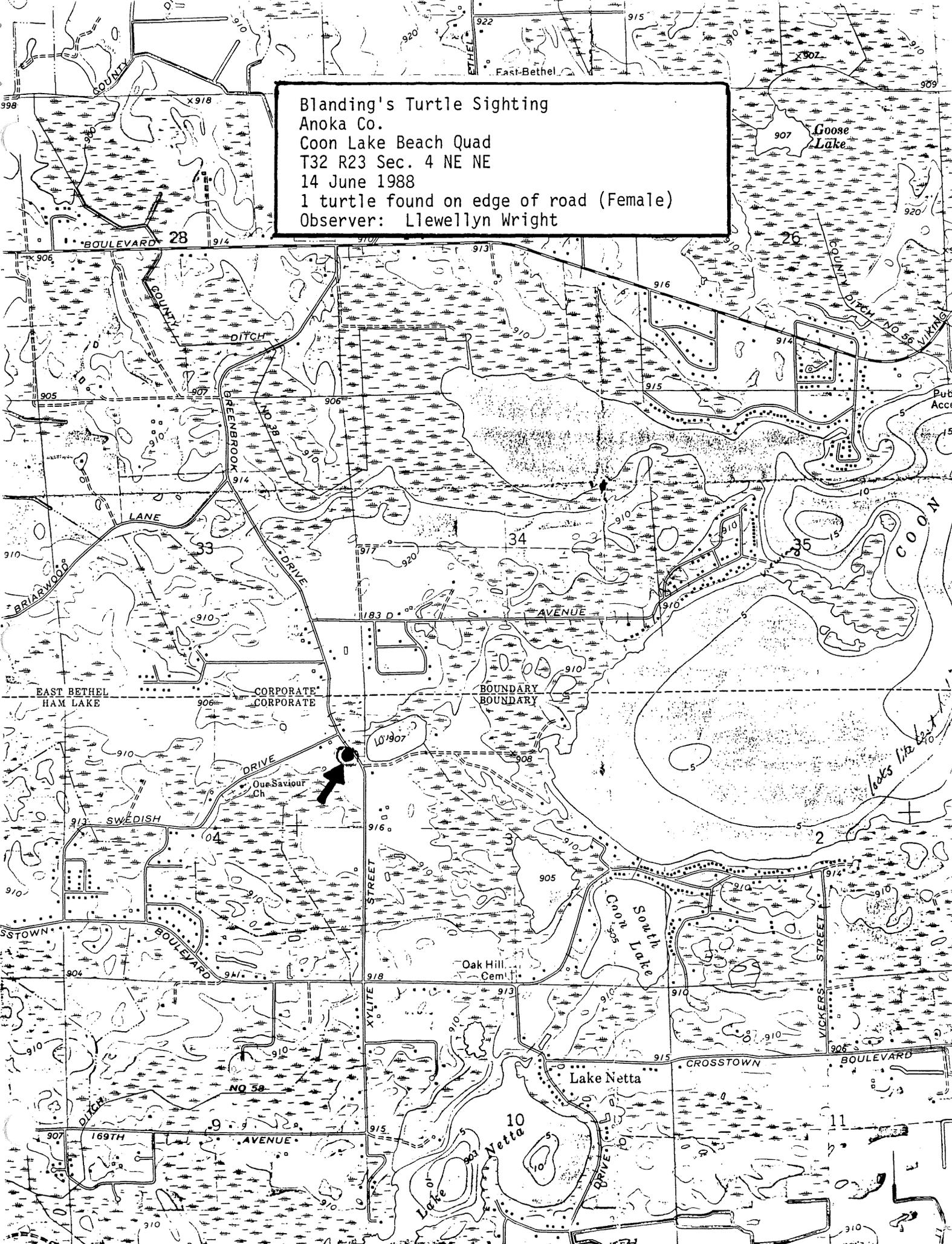
Coon Lake Beach Quad

T32 R23 Sec. 4 NE NE

14 June 1988

1 turtle found on edge of road (Female)

Observer: Llewellyn Wright



Blanding's Turtle Sighting

Anoka Co

Coon Lake Beach Quad

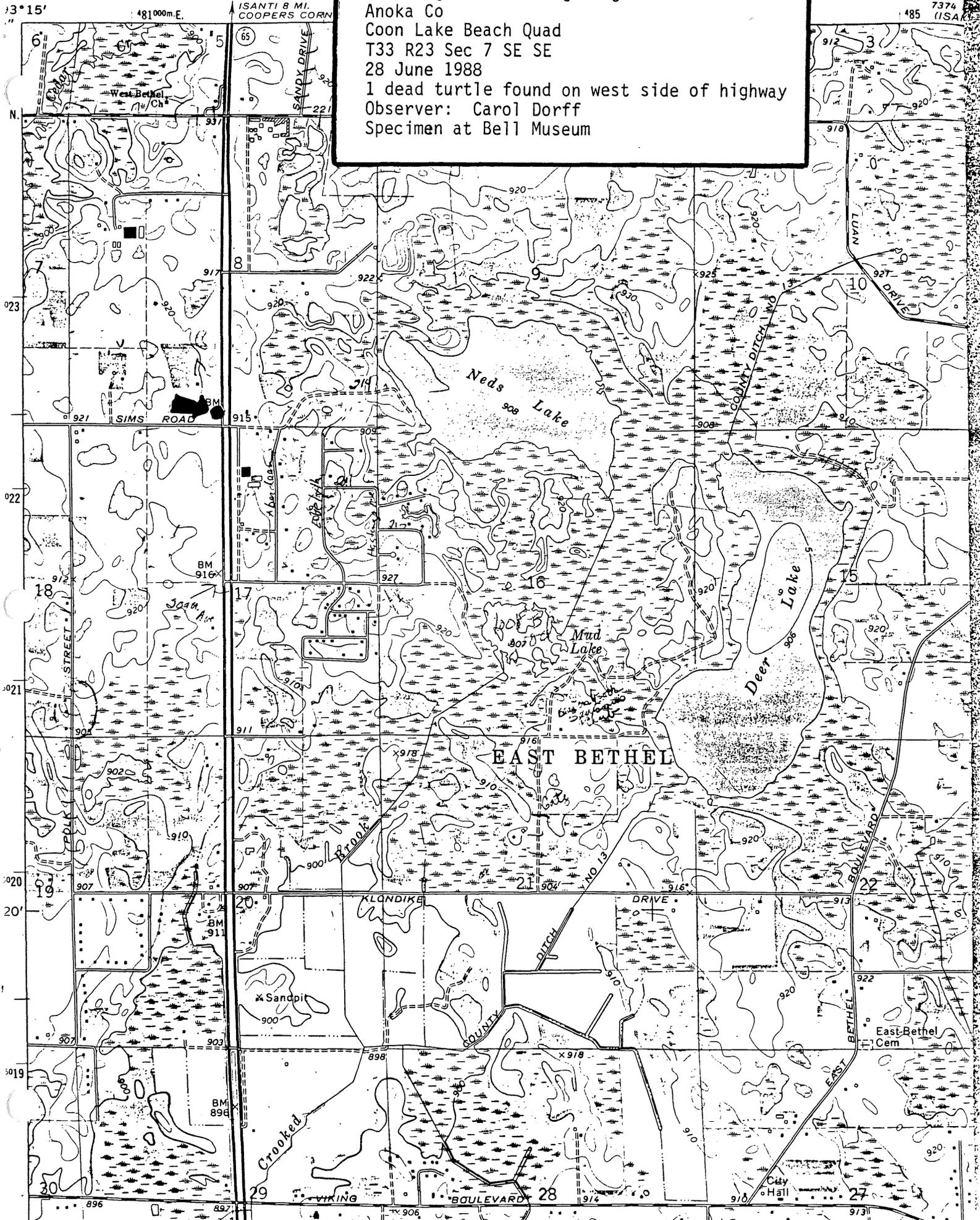
T33 R23 Sec 7 SE SE

28 June 1988

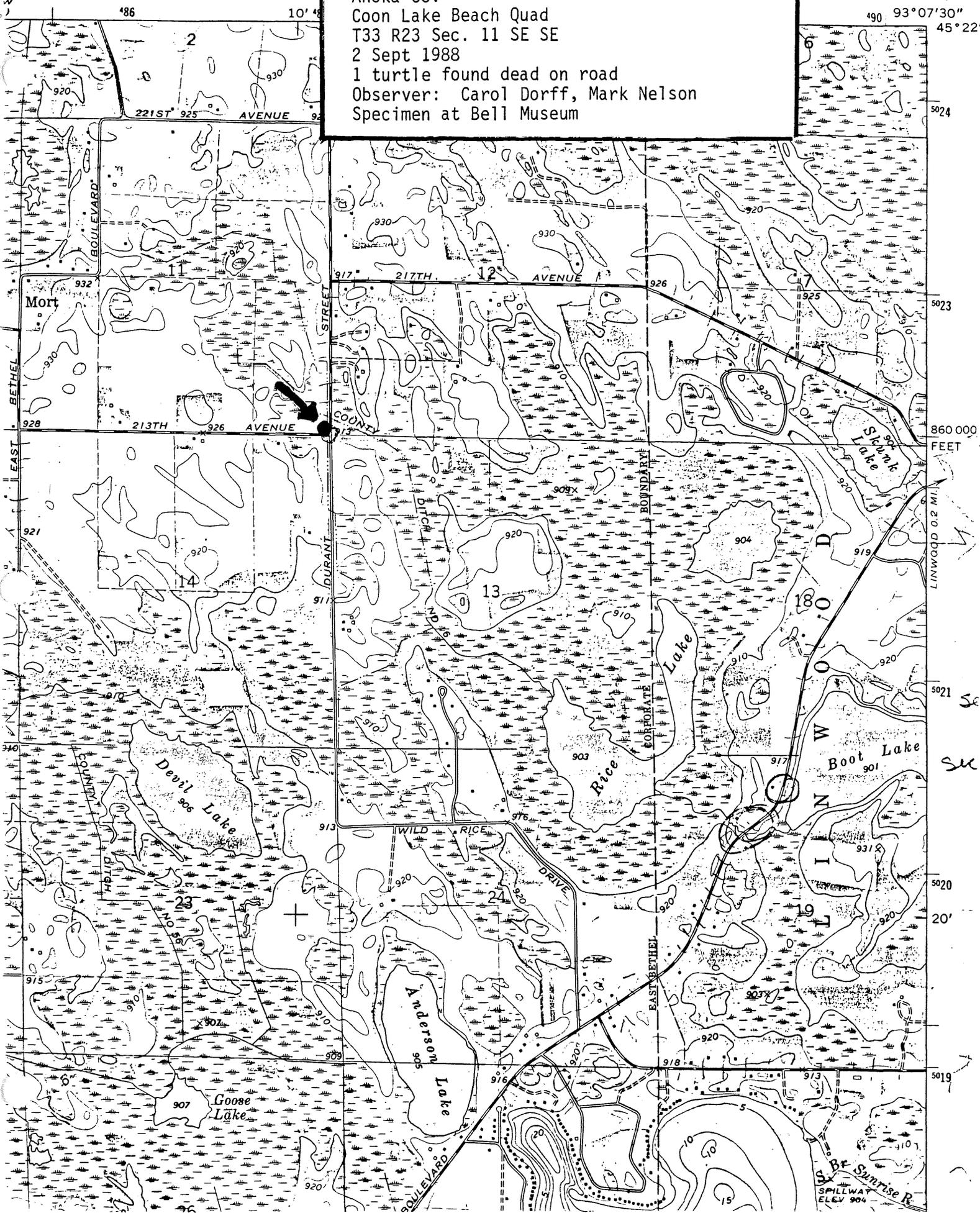
1 dead turtle found on west side of highway

Observer: Carol Dorff

Specimen at Bell Museum



Blanding's Turtle Sighting  
Anoka Co.  
Coon Lake Beach Quad  
T33 R23 Sec. 11 SE SE  
2 Sept 1988  
1 turtle found dead on road  
Observer: Carol Dorff, Mark Nelson  
Specimen at Bell Museum



LINEWAD 0.2 MI.

860 000  
FEET

5021

5020

20'

5019

5024

5023

93°07'30"

45°22'

SB Sunrise R.  
SPILLWAY  
ELEV 900

Boot Lake

Skunk Lake

Race Lake

Devil Lake

Anderson Lake

Goose Lake

Mort

BOULEVARD

STREET

DURANT

BOUNDARY

EAST BETHEL

BOULEVARD

WILD RICE

DITCH

221ST AVENUE

217TH AVENUE

213TH AVENUE

DRIVE

486

10'

490

10'

5024

5023

860 000

5021

5020

5019

5024

5023

Blanding's turtle sighting

Anoka Co.

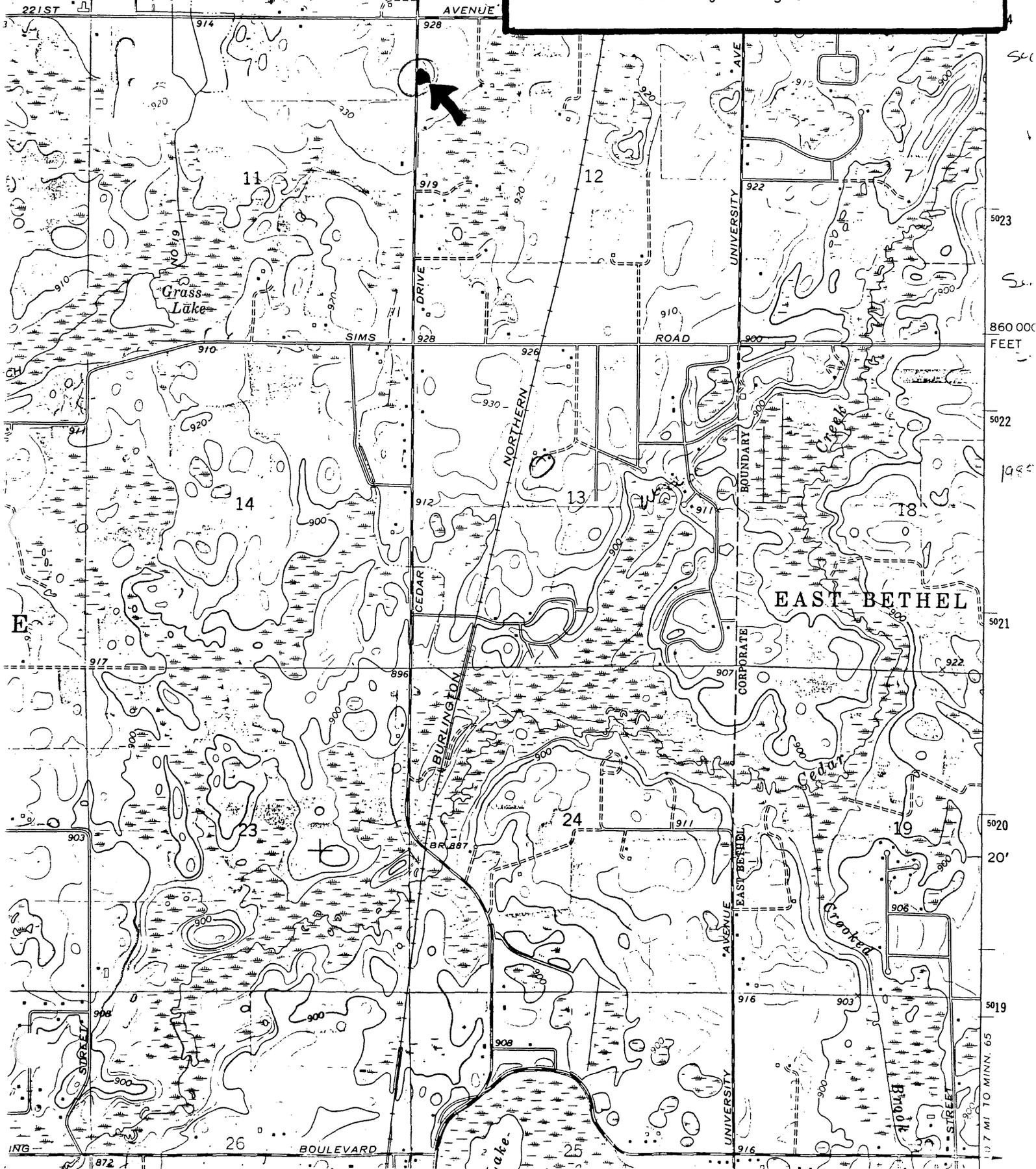
Cedar Quad

T33 R24 Sec 12 NW NW

14 June 1988

1 injured turtle found on road (female)

Observer: Llewellyn Wright



5023  
860 00  
FEET

5022

1983

5021

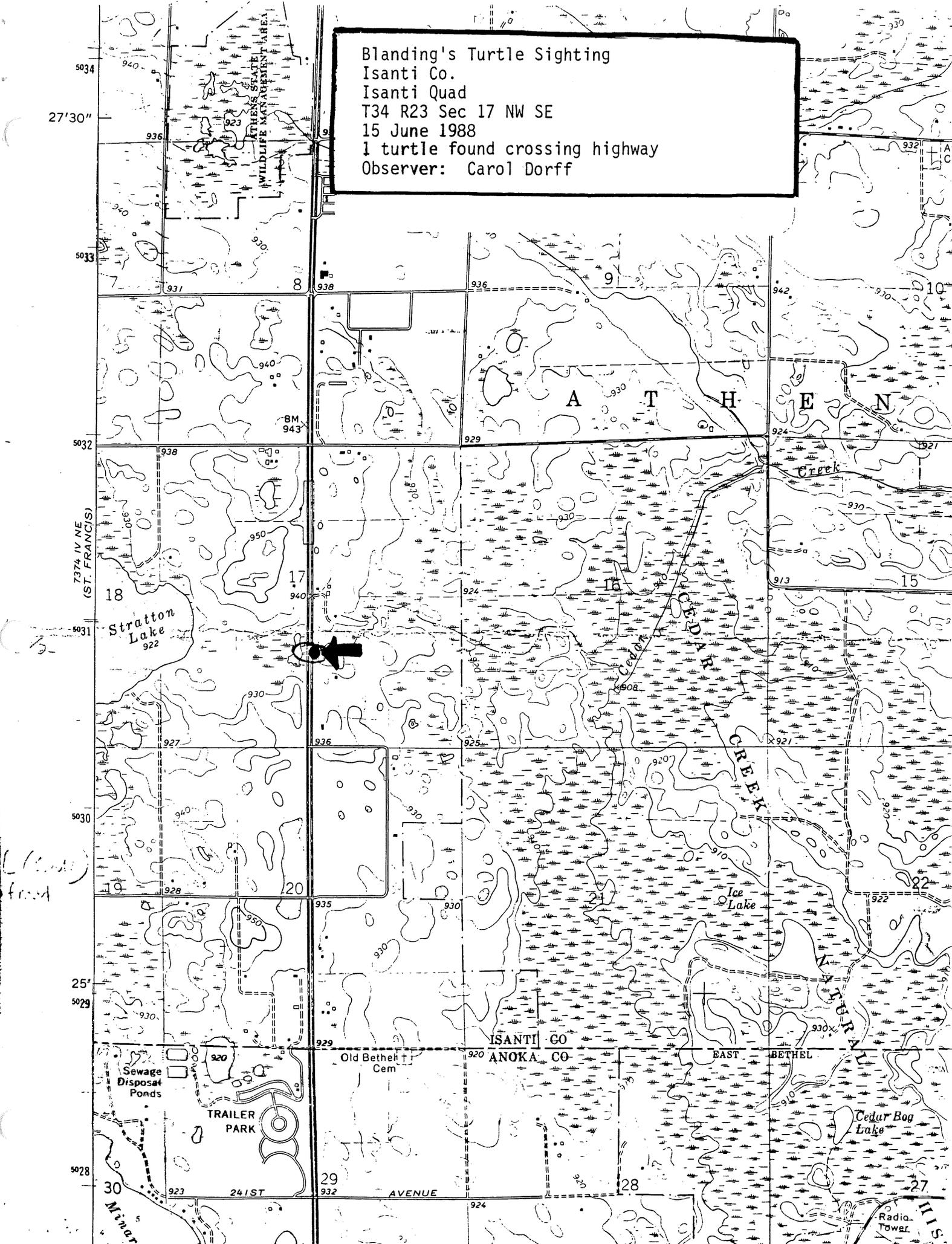
5020

20'

5019

1.7 MI TO MINN. 65

Blanding's Turtle Sighting  
Isanti Co.  
Isanti Quad  
T34 R23 Sec 17 NW SE  
15 June 1988  
1 turtle found crossing highway  
Observer: Carol Dorff



27'30"

5034

5033

5032

5031

5030

25'

5029

5028

30

Minari

241ST

29

7374 IV NE  
(ST. FRANCIS)

18

Stratton Lake  
922

20

Sewage Disposal Ponds

TRAILER PARK

Old Bethel Cem

29

AVENUE

ISANTI CO  
ANOKA CO

EAST BETHEL

Cedar Bog Lake

Radio Tower

A T H E N

Creek

ICE CREEK

ICE LAKE

TRAILER

27

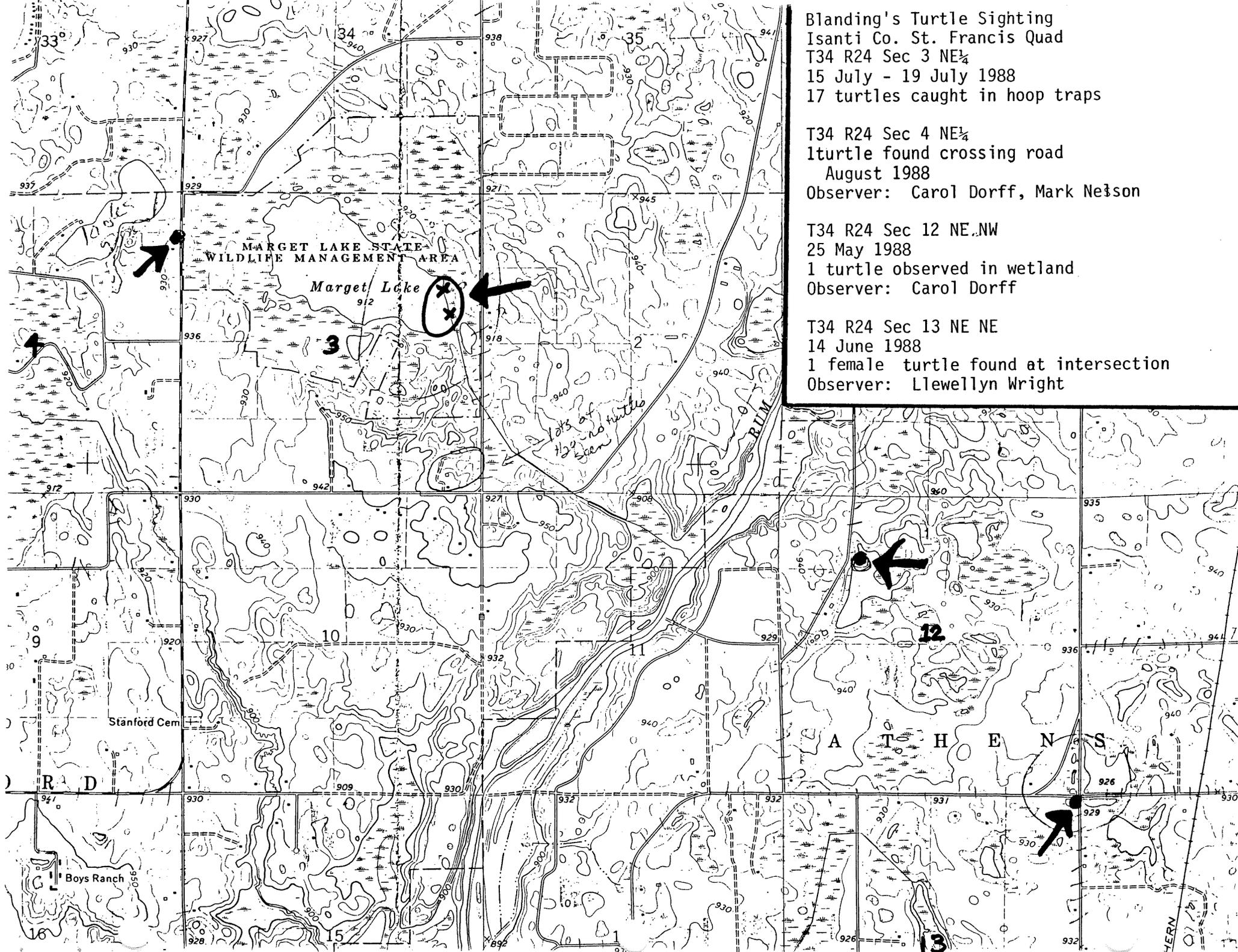
28

29

30

(Location) found





Blanding's Turtle Sighting  
 Isanti Co. St. Francis Quad  
 T34 R24 Sec 3 NE¼  
 15 July - 19 July 1988  
 17 turtles caught in hoop traps

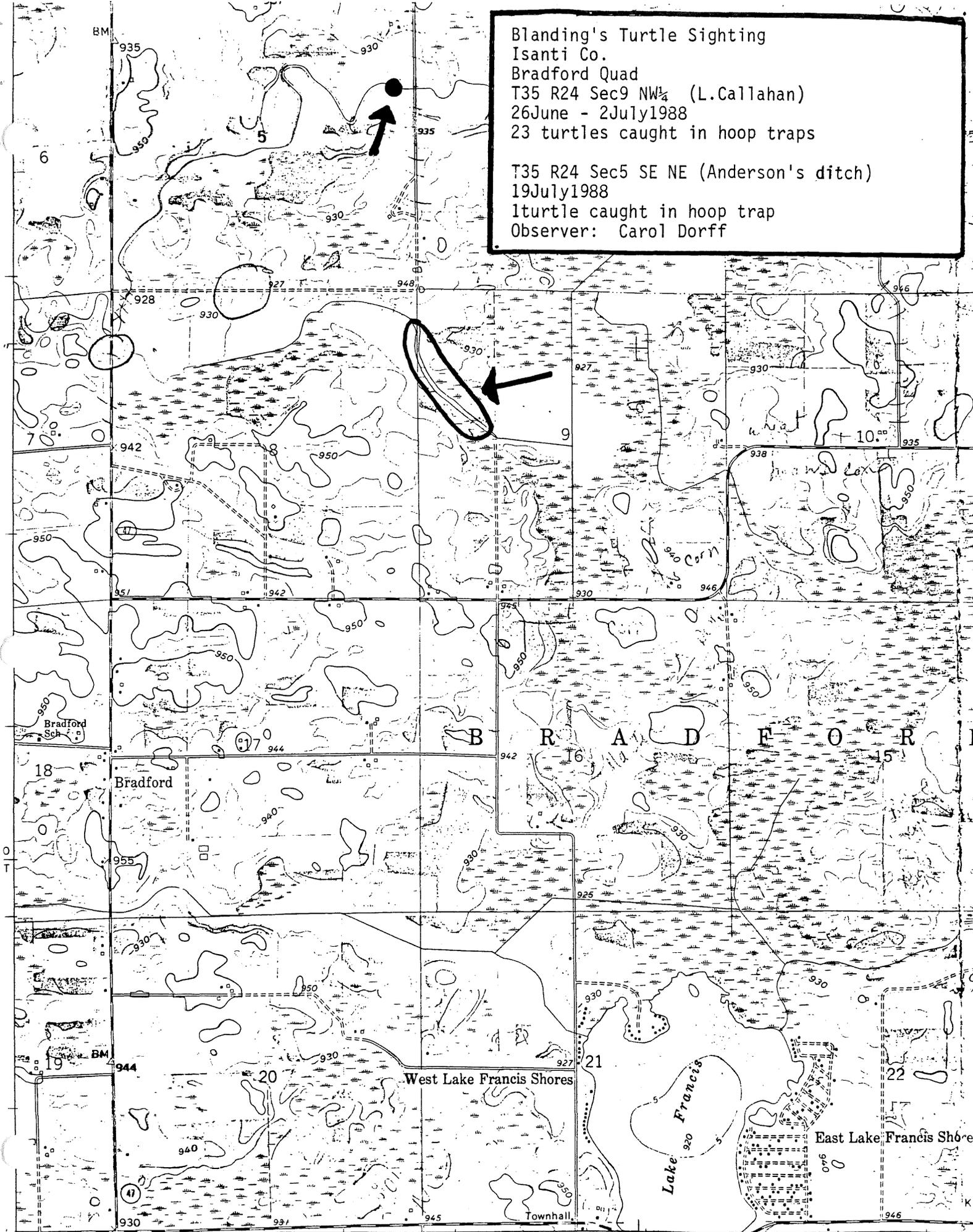
T34 R24 Sec 4 NE¼  
 1 turtle found crossing road  
 August 1988  
 Observer: Carol Dorff, Mark Nelson

T34 R24 Sec 12 NE.NW  
 25 May 1988  
 1 turtle observed in wetland  
 Observer: Carol Dorff

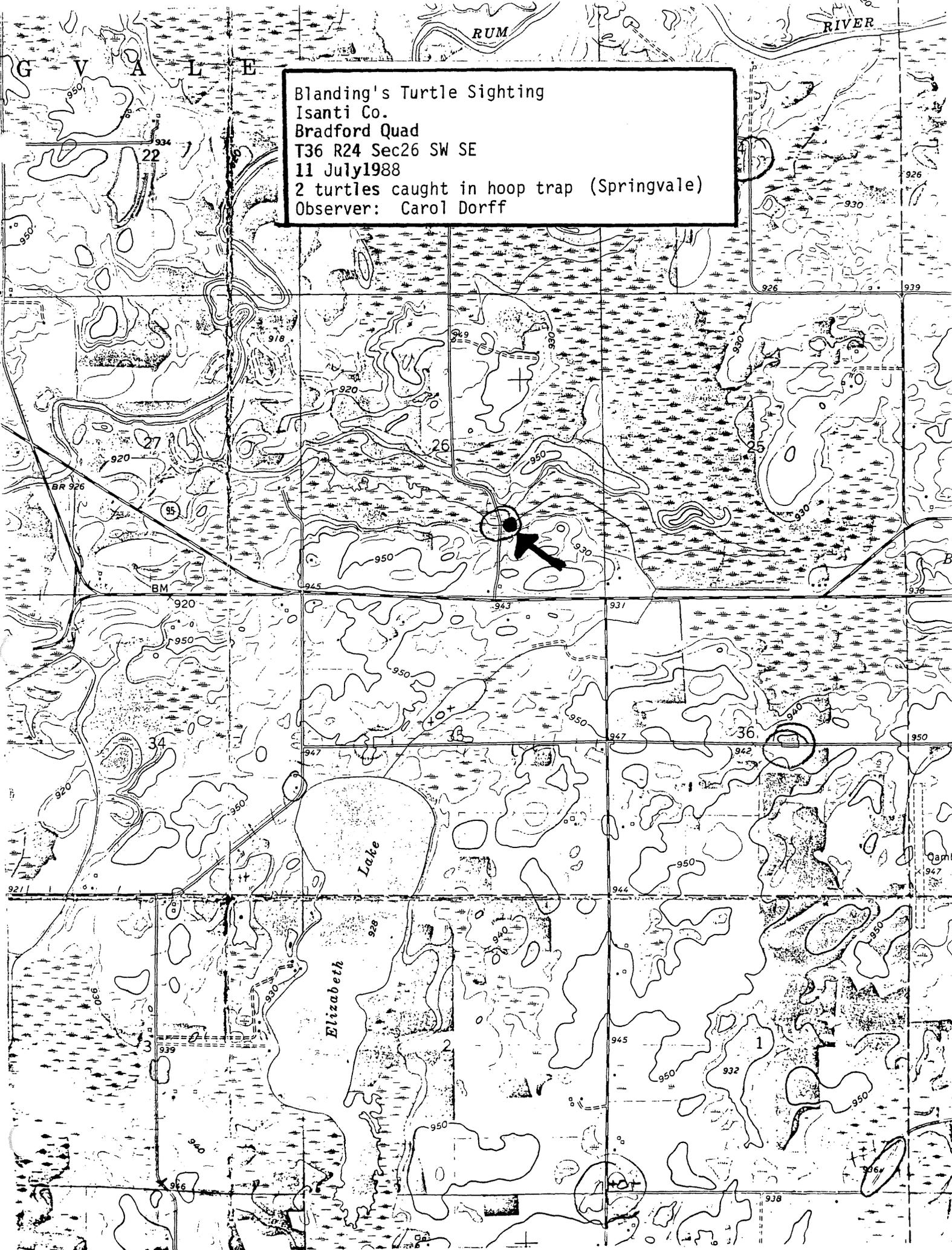
T34 R24 Sec 13 NE NE  
 14 June 1988  
 1 female turtle found at intersection  
 Observer: Llewellyn Wright

Blanding's Turtle Sighting  
 Isanti Co.  
 Bradford Quad  
 T35 R24 Sec9 NW¼ (L.Callahan)  
 26June - 2July1988  
 23 turtles caught in hoop traps

T35 R24 Sec5 SE NE (Anderson's ditch)  
 19July1988  
 1turtle caught in hoop trap  
 Observer: Carol Dorff



Blanding's Turtle Sighting  
Isanti Co.  
Bradford Quad  
T36 R24 Sec26 SW SE  
11 July 1988  
2 turtles caught in hoop trap (Springvale)  
Observer: Carol Dorff



**Blanding's Turtle Sighting**

Sherburne Co.

Big Lake Quad

T33 R27 Sec 18 NW NE

24 June 1988

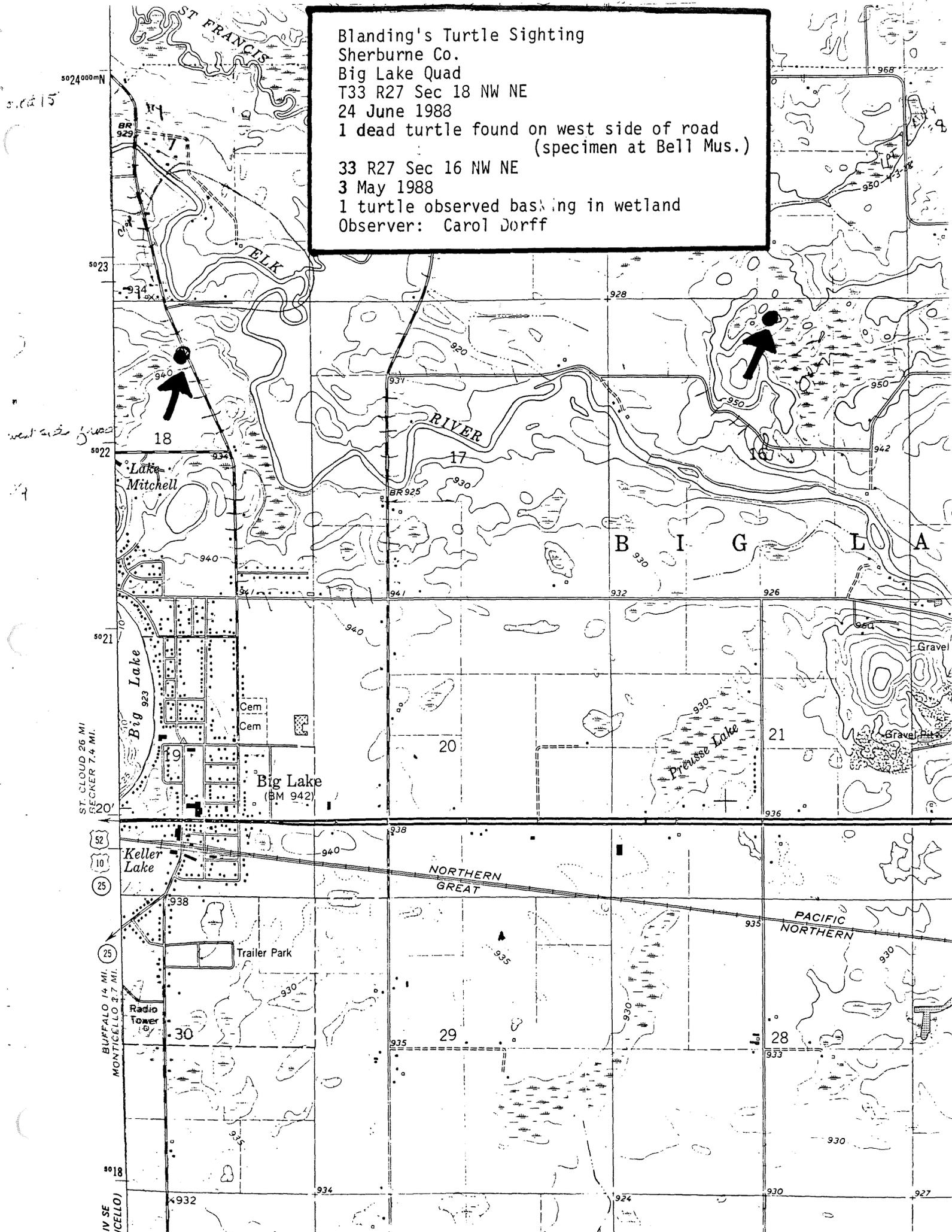
1 dead turtle found on west side of road  
(specimen at Bell Mus.)

33 R27 Sec 16 NW NE

3 May 1988

1 turtle observed basking in wetland

Observer: Carol Dorff



s.c. 15

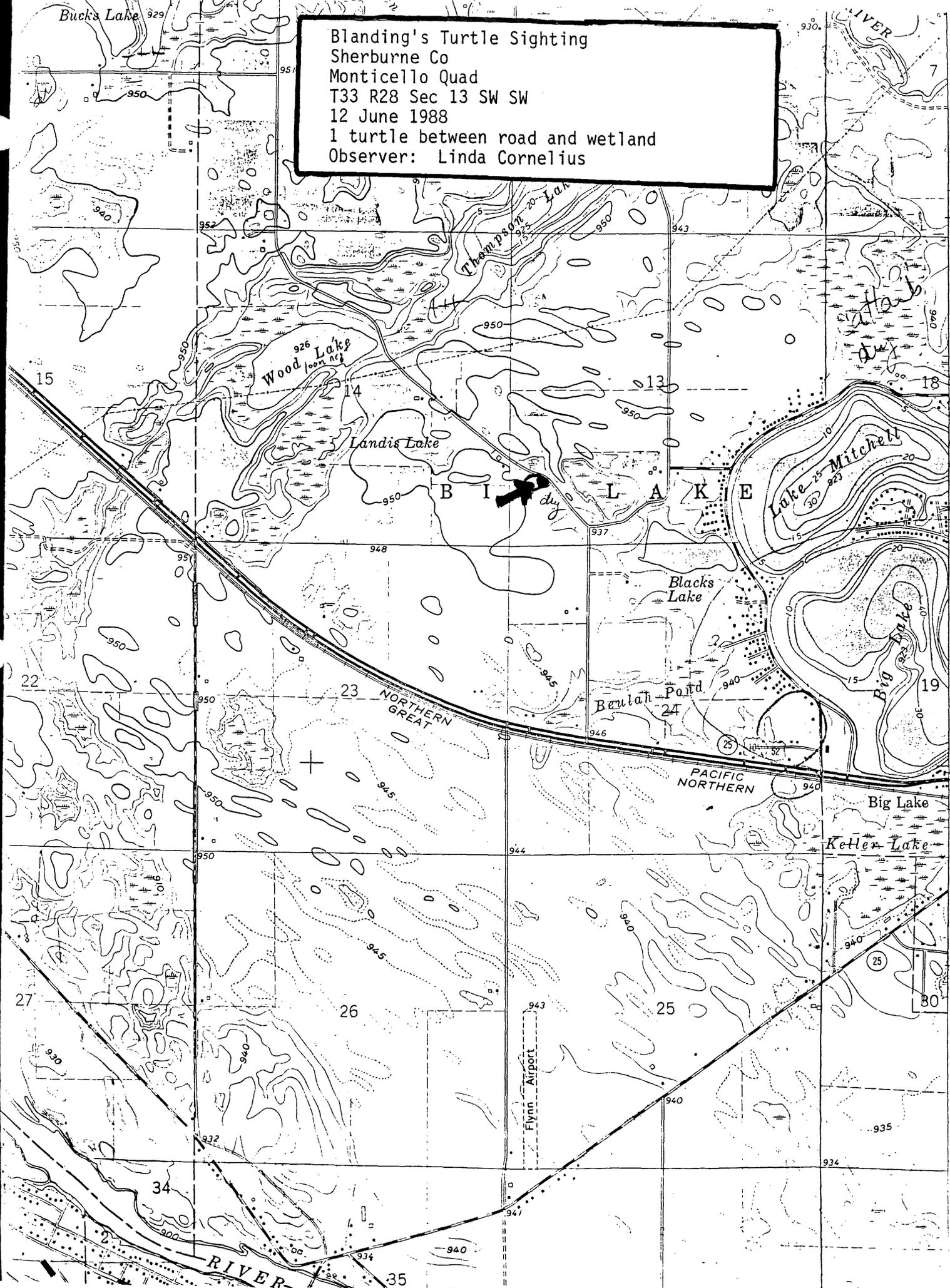
west side of road

ST. CLOUD 26 MI  
RECKER 7.4 MI.

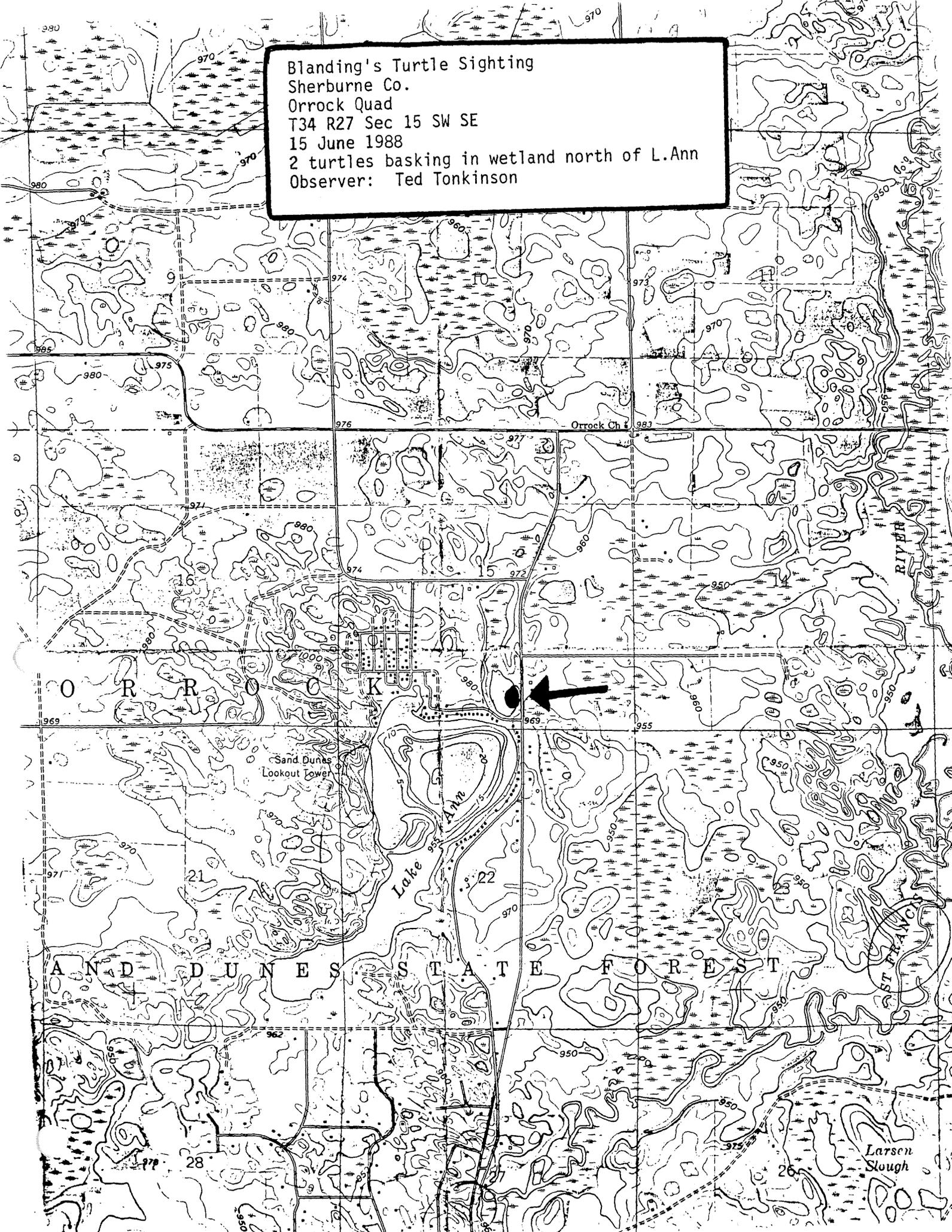
BUFFALO 14 MI.  
MONTICELLO 2.7 MI.

IV SE  
TICELLO

Blanding's Turtle Sighting  
Sherburne Co  
Monticello Quad  
T33 R28 Sec 13 SW SW  
12 June 1988  
1 turtle between road and wetland  
Observer: Linda Cornelius



Blanding's Turtle Sighting  
Sherburne Co.  
Orrock Quad  
T34 R27 Sec 15 SW SE  
15 June 1988  
2 turtles basking in wetland north of L. Ann  
Observer: Ted Tonkinson



**Blanding's Turtle Sighting**

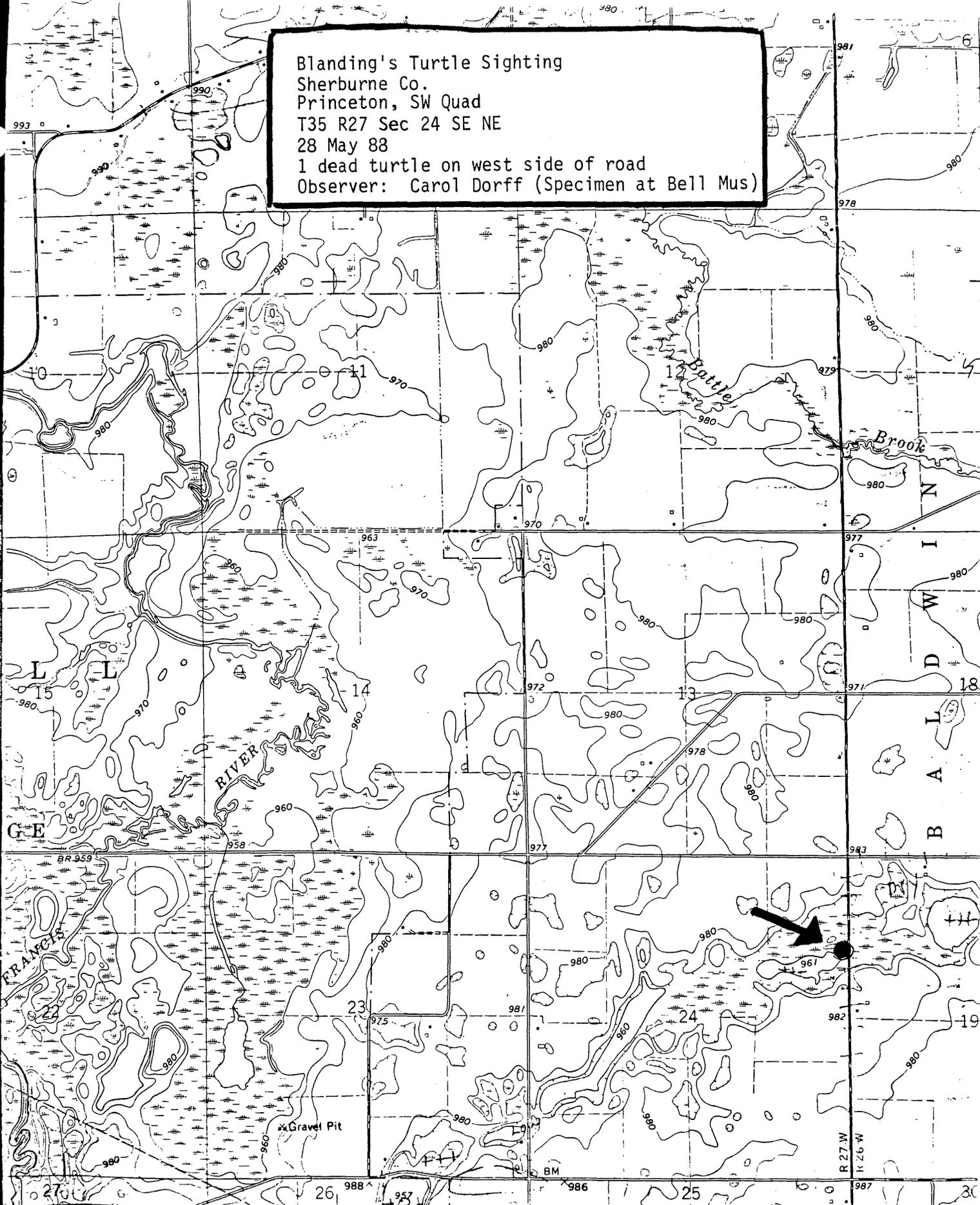
Sherburne Co.  
Princeton, SW Quad

T35 R27 Sec 24 SE NE

28 May 88

1 dead turtle on west side of road

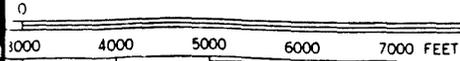
Observer: Carol Dorff (Specimen at Bell Mus)



ROCK)

41 NW

1:24 000



1 MILE

1 KILOMETER

2 090 000 FEET (SOUTH)

● INTERIOR—GEOLOGICAL SURVEY WASHINGTON D.C.—1970

450000m E.

93°

LAKE FREMONT 7

**ROAD CLASSIFICATION**

Secondary highway, all weather, Light-duty road, all weather,  
hard surface ————— improved surface —————

Unimproved road, fair or dry  
weather - - - - -

APPENDIX 2. Blanding's turtles captured in the north metro study area, Minnesota. 26 June - 4 September 1988.

<u>County</u>	<u>Wetland</u>	<u>Date</u>	<u>ID#</u>	<u>Sex*</u>	<u>Age**</u>	<u>L xW(mm) Carapace^</u>	<u>Weight (kg)^^^</u>	
Isanti	L. Callahan	26 June	01	J	08	179	-	
			02	M	18	229	-	
			03	M	20+	229	-	
			40	M	14	229	-	
			04	M	25+	242	-	
			05	F	20+	229 x 153	-	
			06	M	20	229	-	
			07	J	12	200	-	
			08	M	16	233 x 155	-	
			10	M	25+	235	-	
		28 June	11	F	20+	222 x 153	-	
			12	M	17	233 x 145	-	
			13	F	25	235 x 153	-	
		30 June	12	M	25+	235 x 150	-	
			13	F	25+	235 x 155	-	
		2 July	14	F	25	no record	-	
			15	M	25+	267 x 175	-	
			16	M	20+	250 x 170	-	
			17	F	17	222 x 145	-	
			18	F	20	242 x 150	-	
		6 July	09	M	S	235 x 155	-	
			19	F	20	217 x 145	-	
		Springvale	11 July	20	M	26	255 x 163	-
				21	M	S	247 x 167	2.1
		Anderson's ditch	19 July	22	J	14	185 x 127	0.8
				37	M	S	246 x 162	1.9
		Marget Lake WMA	17 July	23	J	12	177 x 120	0.7
				24	F	16	225 x 148	1.6
				25	F	20+	233 x 157	1.9
				26	M	S	257 x 174	2.3
				27	F	16	226 x 149	1.5
				28	M	20+	250 x 168	2.0
				29	M	18	244 x 159	1.8
				30	M	24	236 x 157	1.8
31	F			25+	246 x 163	1.1		
30	J			10	169 x 117	0.6		
33	F			S	230 x 153	1.7		
34	M			25+	233 x 158	1.7		

	Marget Lake	17 July	35	M	S	253 x 169	2.1
	WMA	con't	36	M	20+	240 x 166	1.9
			37	M	25+	246 x 162	1.9
		19 July	32	J	5	145 x 104	0.4
		4 Sept.	39	M	20+	243 x 172	1.9
Anoka	Carlos Avery	20 Aug.	38	F	10	189 x 132	1.6
	WMA						

\*M=Male, F=Female, J=Juvenile

\*\*S=Smooth plastron, (unable to age).

^Carapace width was not recorded for turtles captured prior to 28 June unless they were recaptured.

^^Weight was not obtained for turtles captured prior to 11 July.

