development. On the south end of this area, seagrasses were limited to the shoal and a small patch near the southern tip of Casey Key near the Inlet.

Locations illustrated on Figure 1 are as follows:

A) *Halodule wrightii* fringe. Red mangroves on spit of land to the north.

N 27° 07' 12.5"
W 82° 28' 06.9"

B) Shallow grassbeds between boat docks. Moderately dense monotypic stands of *Thalassia testudinum* with thick, well-developed blades.

N 27° 07' 08.4"
W 82° 28' 03.2"

C) Offshore grassbed (adjacent to GIWW #7). *Syringodium filiforme.* Grasses do not extend into channel.

N 27° 07' 04.7"
W 82° 28' 01.5"

D) North end of long southern shoal. Small-bladed *Halodule wrightii* around the edge of shoal. Sparse *Halodule* on the sand flat. Muddy sand in grassbed; sandier outside on flat. Shoal ends approximately 20 feet from GIWW.

N 27° 06' 56.4"
W 82° 27' 58.0"

E) South end of long southern shoal. Sparse patches of *Halodule wrightii*, extending to 20' of the GIWW. Sediments muddy sand. Several Brazilian pepper (*Schinus terebenthifolius*) trees along shoreline.

N 27° 06' 53.2"
W 82° 27' 55.7"

Venice Inlet. See locations (F) and (G) on Figure 1. The north and south shore of the Inlet are reinforced with large boulders that are covered with attached algal species. The substratum of this area was relatively coarse, consisting of a mix of approximately 70% shell hash to 30% sand. No seagrasses or rhizophytic algae were observed. The bottom slopes steeply into the channel. (No GPS positions obtained).

Southern shoreline of Venice Inlet. See locations (H) and (I) on Figure 1. This area has a highly modified shoreline consisting of seawalls, docks, and boat slips. No grassbeds or other habitats were observed within this section. The substratum was sandy. Dark patches within the photograph are water column coloration, consisting of the darker colored estuary water mixing with the clearer waters of the Gulf.

N 27° 06' 46.4"
W 82° 27' 39.0"

Roberts Bay. Several large shoals within the Bay are intersected by the GIWW and residential access channels. The shoals were limited to the interior of the Bay and along the margins.

Location (J) was a sand spit at south end of a shoal. This area consisted of a moderately-sized oyster reef with numerous clumps of live oysters (*Crassostrea virginica*). Much of the shell exhibited attached algae. The oyster bar sloped into a *Halodule* grassbed.

N 27° 06' 34.5"
W 82° 27' 33.1"

K) The northern end of the same shoal. Large continuous coverage of moderate to sparse density of *Halodule wrightii*. Substratum consisted of an approximately equal mix of sand, mud, and shell hash with occasional large quahog shells (*Mercenaria*).

N 27° 06' 38.3"
W 82° 27' 33.3"

Bird Island. See location (L) on Figure 1. Oyster bars surrounded the southern and eastern shore of Bird Island. The bright white photographic "signature" of the oysters is visible on the aerial photograph. Small oyster clumps were common along the mangrove fringe. There was sparse *Halodule* (fine, narrow blades) cover throughout the shallows of the eastern and northern island areas. The substratum was a muddy sand.

N 27° 06' 52.5"
W 82° 27' 35.7"

Snake Island (Disposal Area). See location (M) on Figure 1. Observations were made while circling the island by boat, and by subsequently exploring the north and west sides on foot. The substratum was mainly sand with large, scattered quahog and other shell debris. Small, sparse patches of *Halodule* were found on the west side (see points on aerial photograph). The south side beach dropped off

quickly into the channel. The photograph exhibited evidence of seagrasses on the east side of the island, although none were found in this location during the survey.

N 27° 06' 48.2"
W 82° 27' 50.1"

Lyons Bay. An inspection of the shallow shoals at the entrance to Lyons Bay (just east of Turner Key (N)) revealed sparse *Halodule* in the interior of main shoals with more dense *Halodule* along the fringe. Several patches of *Thalassia* were also observed along the western edge of the shoal. Oyster bars were present around the mouth of Lyons Bay (indicated on aerial photograph).

South Turner Key. See location (N) on Figure 1. A fringe of *Halodule* (around 10 feet wide) extended nearly to the edge of the GIWW. The seagrass blades had a heavy epiphyte cover of blue-green algae. Clumps of oysters were observed along a shallow shoreline. The substratum consisted of muddy sand. Red and black (*Avicennia germinans*) mangroves lined the shoreline.

N 27° 07' 03.7"
W 82° 27' 58.7"

North Turner Key. See location (O) on Figure 1. Shallow littoral area contained a fringe of *Halodule* (similar to South Turner Key). *Thalassia* was not observed along either South or North Turner Key. Seagrasses approached the eastern edge of GIWW which was approximately 20 feet from shore.

N 27° 07' 18.0"
W 82° 28' 05.2"

4.0 SUMMARIZED DATA FOR MARINE MAMMALS AND SEA TURTLES

There were no marine mammals or sea turtles observed during the coarse of the survey.

4.1 Manatees

Surveys of the Venice Inlet region, including Blackburn Bay, Lyons Bay, Dona Bay, and Roberts Bay, have been performed continuously since 1985. A compilation of twice-monthly aerial survey data for the past five years is plotted as Figures 2 through 14. While sightings of manatees have been documented throughout the year, highest numbers of sightings have been collected during the warmer months of the year (April - November).

Because the manatee population of Florida's central and west coast is seasonally migratory, the increased number of sightings in April and May probably represents an influx of animals which have left warm water refugia to the north and south of the Venice area, and are dispersing throughout the coastal area.

It is important to note that this is an extremely dynamic system, and that aerial survey data only provide a "snapshot" look at these animals at a given point in time. While there may not be a large number of manatees in Venice Inlet at any particular point in time, manatees presumably utilize the Venice Inlet area on a regular basis as they travel along the GIWW, or back and forth from the Gulf of Mexico. For instance, documented manatee sightings in the Gulf of Mexico are probably animals that reached the Gulf by travelling through Venice Inlet. Many of these sightings may also be the same animal or animals in different locations on different survey days. It is also important to note that this is a temperature-driven system. During unusually mild Winters, manatees may be expected to remain in an area as long as water temperatures do not fall below their thermal tolerance (approximately 68°F). Conversely, animals may not return to the area until later in the Spring during following an unusually harsh or persistently cold Winter.

Additional information on manatee migratory patterns in this area is available from visual surveys and telemetry data collected by the Florida Marine Research Institute.

4.2 Dolphins

As an incidental part of the aerial manatee surveys, notes on occurrences of cetaceans are also maintained at Mote Marine Laboratory. The most common cetacean on the gulf coast is the Atlantic bottlenose dolphin (*Tursiops truncatus*). Figures 15 through 27 illustrate sightings of dolphins for the same period of manatee sightings described above. Of particular note is the cluster of sightings in the vicinity of the Albee Road Bridge. This represents a particular "friendly" dolphin with a habit of begging for food from boaters. It should also be noted that the dolphin has been responsible for biting several boaters and swimmers in this area.

Dolphins are generally present in low numbers throughout the year.

4.3 Sea Turtles

Venice beaches host a significant nesting population of the loggerhead turtle (*Caretta caretta*) and occasional green turtle (*Chelonia mydas*) nesting. Juvenile Kemp's ridley (*Lepidochelys kempii*) and *Chelonia mydas* utilize the offshore and nearshore environs, possibly as developmental habitat and/or as migration routes. *Chelonia mydas* and *Lepidochelys kempii* are listed as endangered species, and *Caretta caretta* is listed as a threatened species, under the U.S. Endangered Species Act of 1973 and Chapter 370, Florida Statutes.

The field survey investigated benthic habitats in the vicinity of the project. In addition, information on benthos, sea turtles, and marine mammals was consolidated from on-going research programs and technical reports of Mote Marine Laboratory, Sarasota, Florida.

Seagrasses and oyster bars are present within the study area. Seagrasses consisted primarily of *Halodule wrightii* and occasional patches of *Thalassia testudinum*. Both seagrasses and oysters were found to be limited to the shallow fringe areas or sand shoals. The water of the area showed a high level of color due to flow of estuarine water from Dona and Roberts Bays. Seagrasses were not observed to penetrate into the channel areas.

Protected hard-bottom species are likely to be present on rocky substrates within the Inlet. However, with the exception of the Venice Jetties and hard-bottom areas to the north of the Inlet (in the Gulf), no hard-bottom areas are present within the study area.

Mangroves were common on the spoil islands but limited in distribution on Casey and Turner Keys, and on the mainland, due to shoreline development.

The manatee and bottlenose dolphin are common to the area, although neither appear to utilize the area continuously. Concentrations are seasonal and the area appears to serve primarily as a throughway for animals traveling to other locations.

Sea turtle nesting is common on the Gulf beaches during Spring and Summer. Turtles are generally limited to the open Gulf waters with sightings within the bay system only rarely reported (personal communication, Mote Sea Turtle Program).

6.0 LIST OF PREPARERS

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7.0 LITERATURE CITED

Culter, J.K. 1990. A Benthic Habitat Evaluation of the Nearshore Zone, Off Nokomis Beach, Florida. Technical Report prepared for Dames & Moore and Sarasota County, Sarasota, FL.

Culter, J.K. 1993. Bay Bottom Habitats. In: Sarasota Bay: Framework for Action. Roat, P. C. Ciccolella, H. Smith and D. Tamasko, eds. Sarasota Bay National Estuary Program. pp. 8.1-8.18.

Dawes, C.J. 1987. The Dynamic Seagrasses of the Gulf of Mexico and Florida Coasts. In: Florida Marine Research Publications. Florida Department of Natural Resources, Bureau of Marine Research, Number 42.

Table 1. Historical pattern of sea turtle emergence on Venice beaches, south of the Inlet, 1987-1996.

Year	Total #N	Total #FC	Miles Covered	FC/N Ratio[1]
1996	263	372	4.6	1.41:1
1995	203	556	4.6	2.73:1
1994	188	238	4.6	1.26:1
1993	157	230	4.6	1.46:1
1992	196	227	4.6	1.15:1
1991	150	175	4.6	1.16:1
1990	68	84	3.6	1.23:1
1989	74	82	3.6	1.10:1
1988	77	63	3.6	0.81:1
1987	68	61	3.6	0.89:1

[1]FC/N: False Crawl to Nest (Ratio)

Table 2. Historic pattern of sea turtle emergences North of the Venice Inlet (Casey Key, Florida DNR Monument R-111 south to the Venice Inlet at ~800' south of R-114).

Year	Total #N	Total #FC	Miles Covered	FC/N Ratio[1]
1996	58	48	.7	0.82:1
1995	75	48	.7	0.64:1
1994	35	49	.7	1.40:1
1993	39	43	.7	1.10:1
1992	62	24	.7	0.38:1
1991	28	32	.7	1.14:1
1990	24	35	.7	1.45:1
1989	29	33	.7	1.13:1
1988	10	20	.7	2.00:1
1987	18	21	.7	1.16:1

[1]FC/N: False Crawl to Nest (Ratio)

Table 3. Turtle emergence activity, south of the Venice Inlet, for 1996, by MML Patrol Zone.

MML Patrol Zones	DNR Monuments	# Nests	#False Crawls	FC/N Ratio[1]
1	T-115 to T-122	105	101	1.0:1
2	T-122 to R-125	29	45	1.6:1
3	R-125 to R-128.5	40	72	1.8:1
4	R-128.5 to 875'S of R-130	6	33	5.5:1
5	875'S of R-130 to R-133	16	45	2.8:1
6	R-133 to R-138	67	76	1.1:1

[1]FC/N: False Crawl to Nest (Ratio)

Table 4. Historic Marine Turtle Stranding Data, south of Venice Inlet, Florida.

Year	Species & Number of animals
1987	*Caretta caretta* (4)
1988	*Caretta caretta* (3)
1989	*Caretta caretta* (3)
1990	*Caretta caretta* (2)
1991	No strandings
1992	No strandings
1993	*Caretta caretta* (2)
1994	*Caretta caretta* (1)
1995	*Caretta caretta* (5)
	Chelonia mydas (1)
	Lepidochelys kempii (1)
	Eritmochelys embricata (1)
1996	*Caretta caretta* (1)
	Lepidochelys kempii (3)

Table 5. Marine turtle stranding data north of the Venice Inlet (Casey Key, Florida DNR R-111 south to the Venice Inlet at ~800' south of R-114).

Year	Species & Number of Animals
1996	*Chelonia mydas* (1)
1995	*Lepidochelys kempii* (1)
1990	*Lepidochelys kempii* (1)

Figure 2. Compilation of twice-monthly, manatee aerial survey data, for the past five years in the Venice Inlet area.

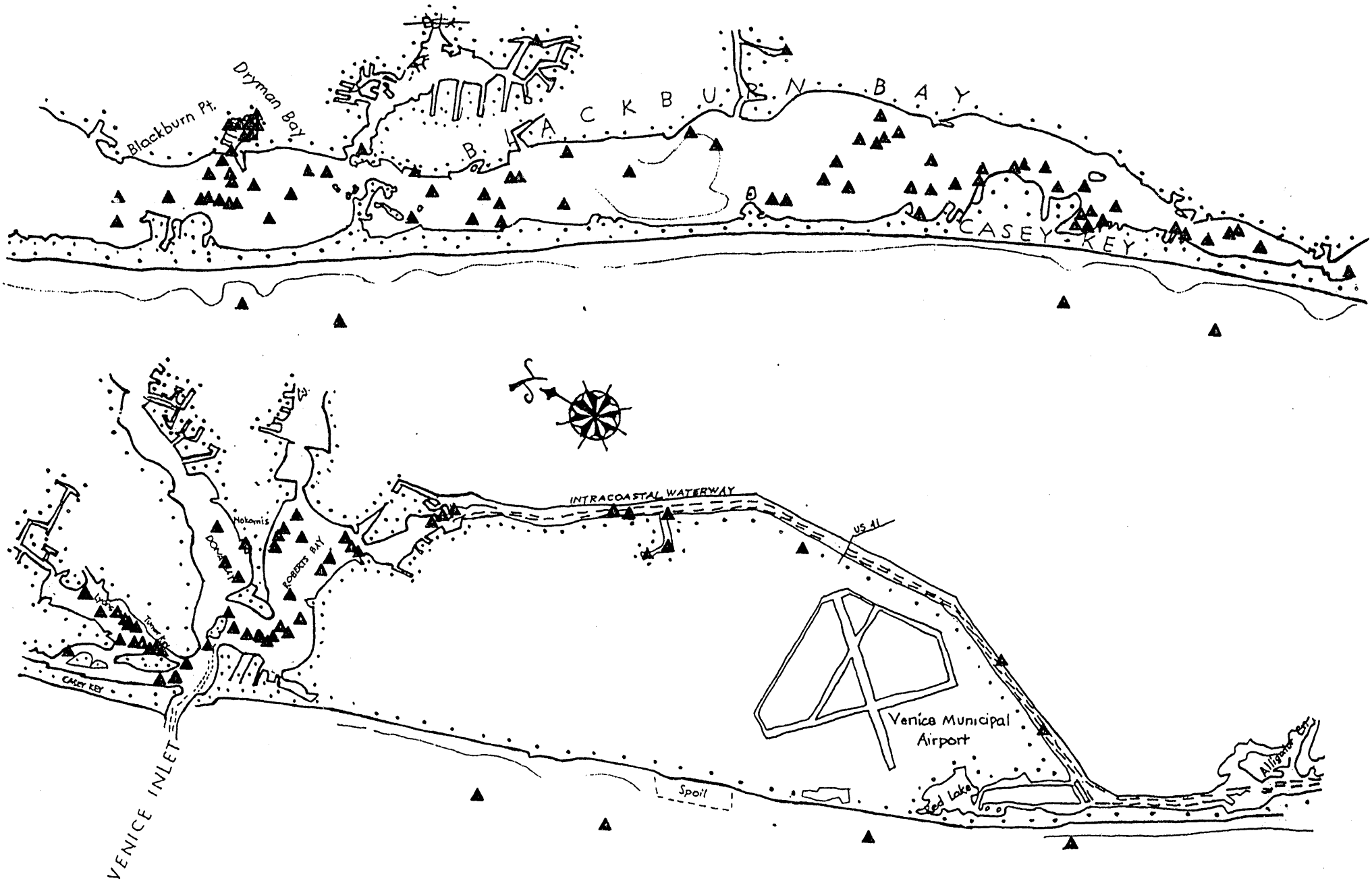


Figure 3. Compilation of January, manatee aerial survey data, for the past five years in the Venice Inlet area.

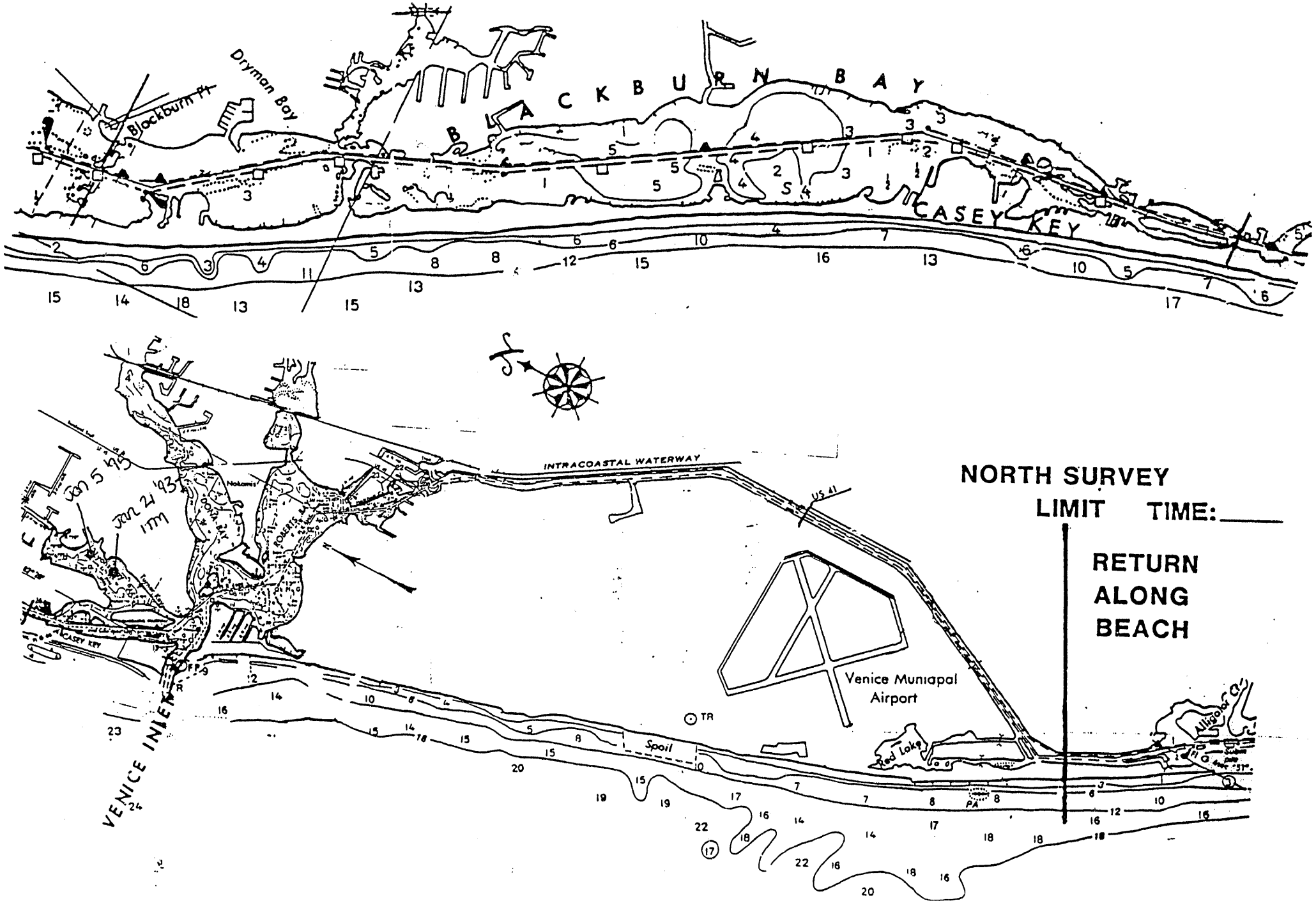


Figure 4. Compilation of February, manatee aerial survey data, for the past five years in the Venice Inlet area.

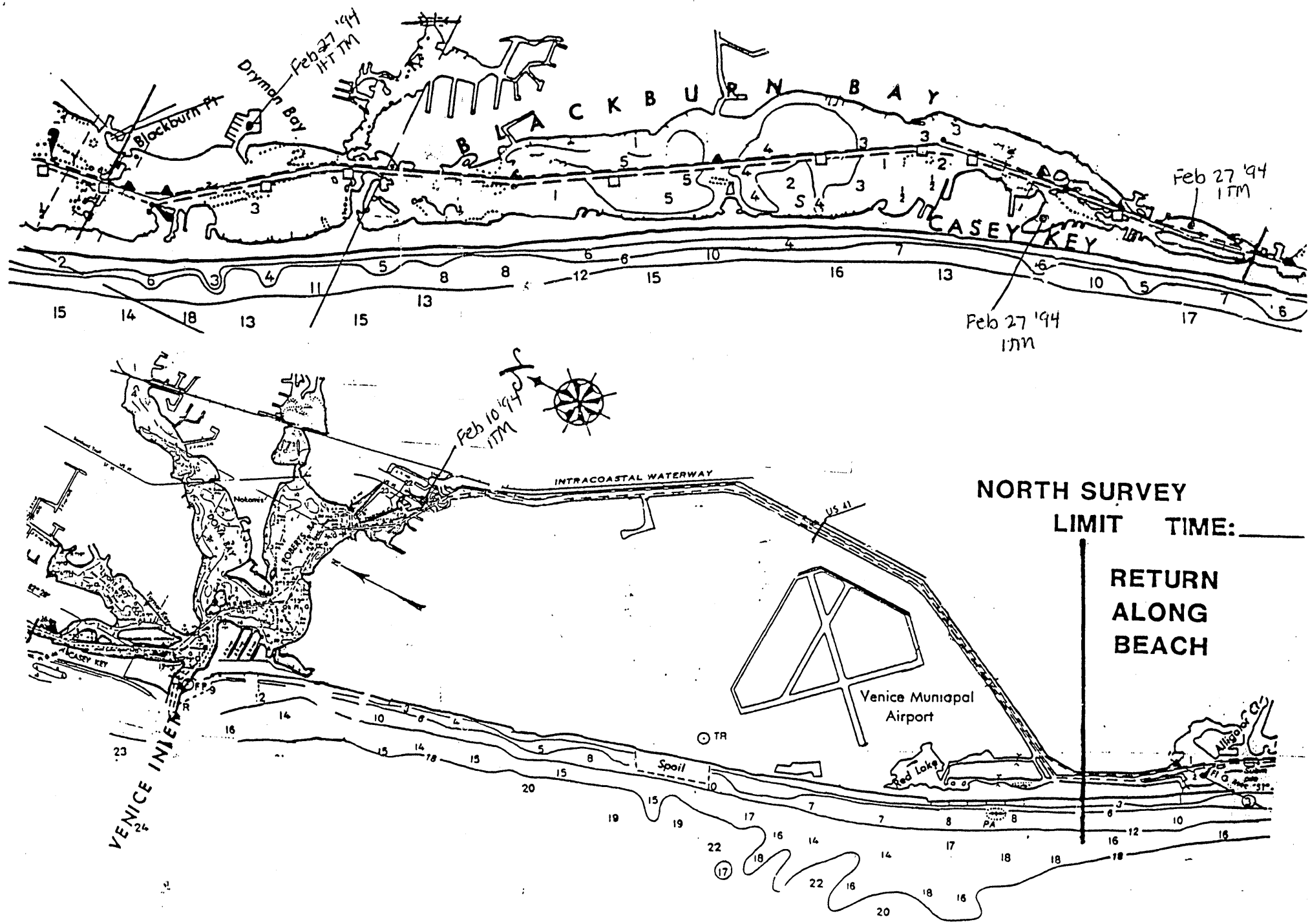


Figure 5. Compilation of March, manatee aerial survey data, for the past five years in the Venice Inlet area.

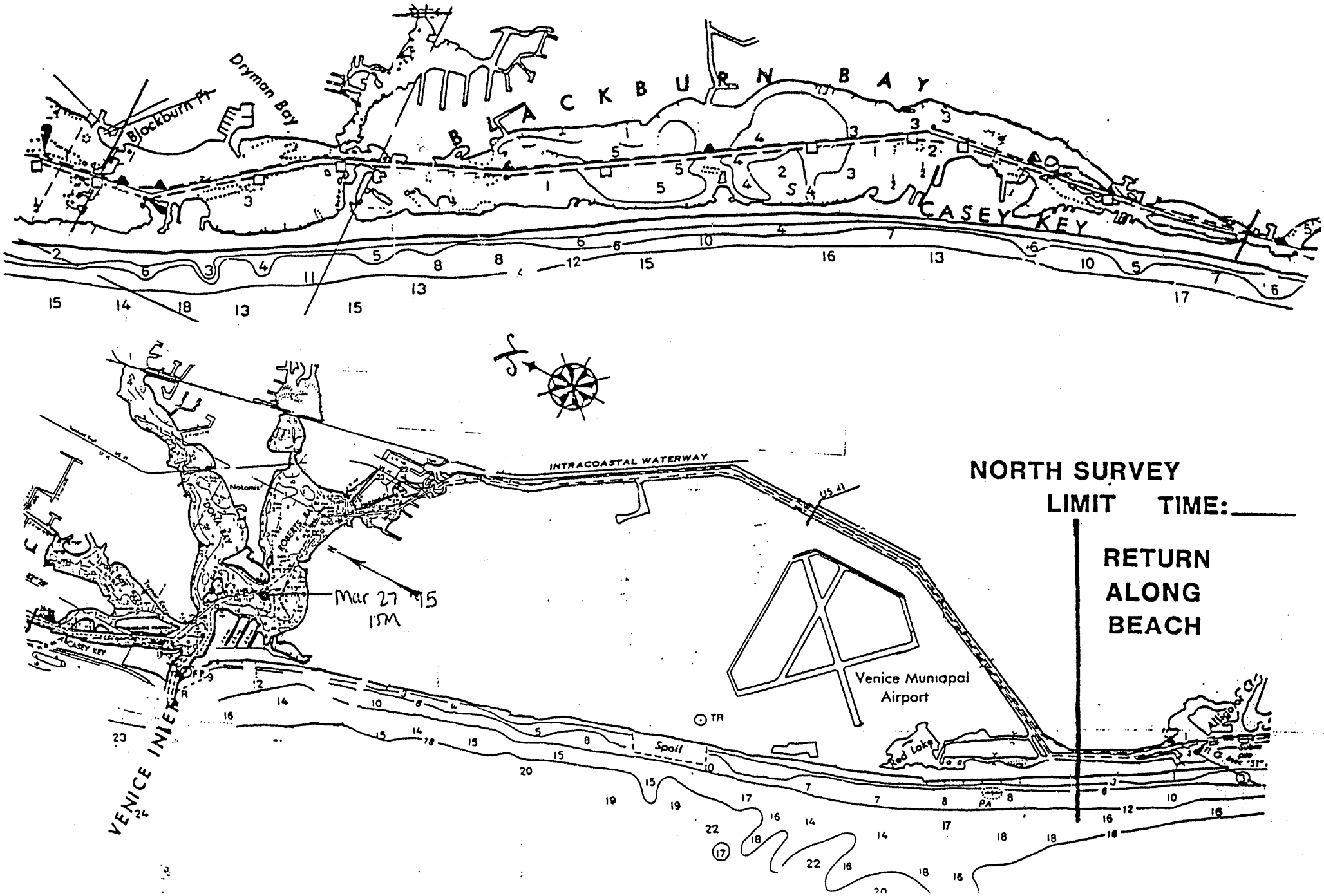


Figure 6. Compilation of April, manatee aerial survey data, for the past five years in the Venice Inlet area.

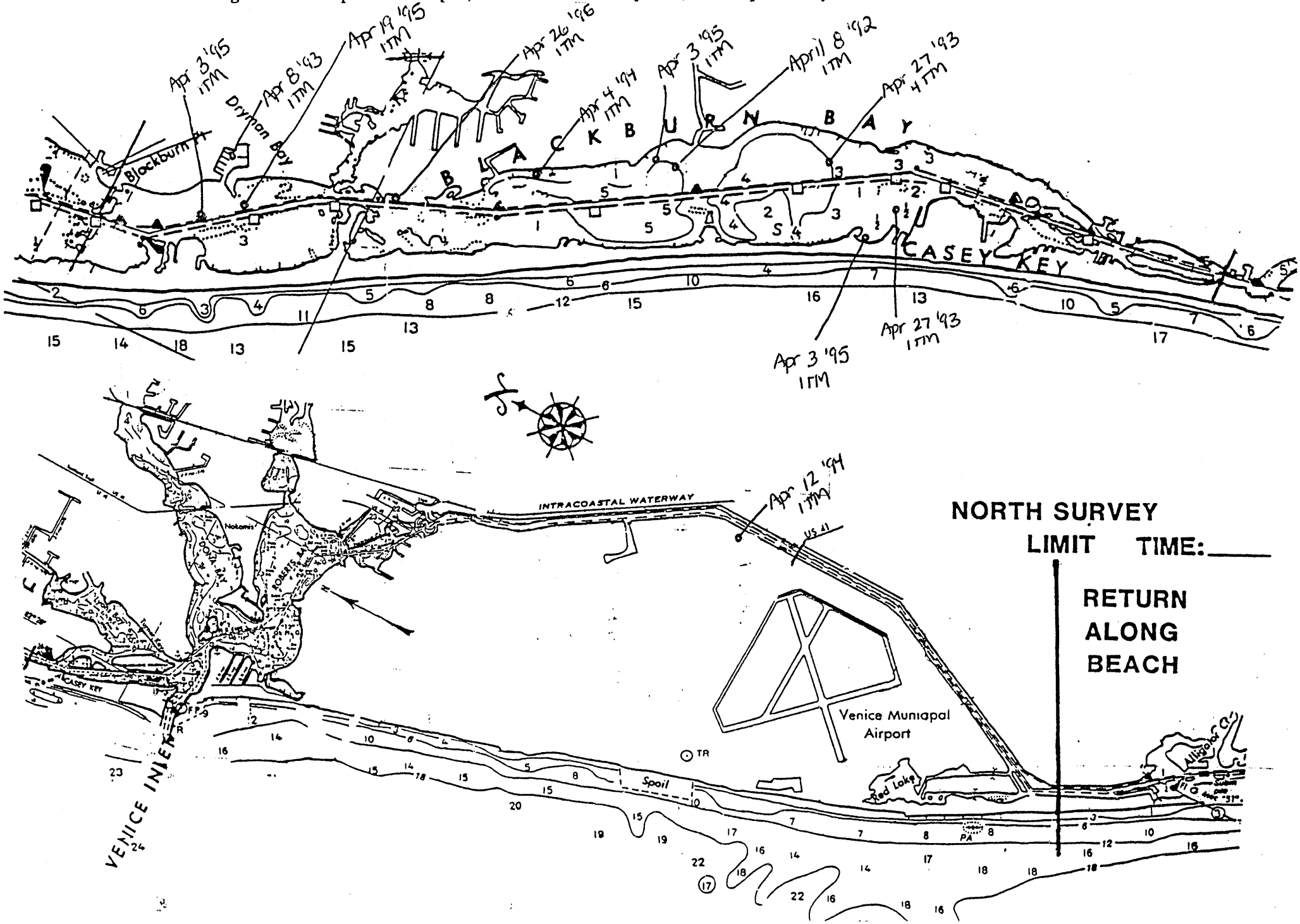


Figure 7. Compilation of May, manatee aerial survey data, for the past five years in the Venice Inlet area.

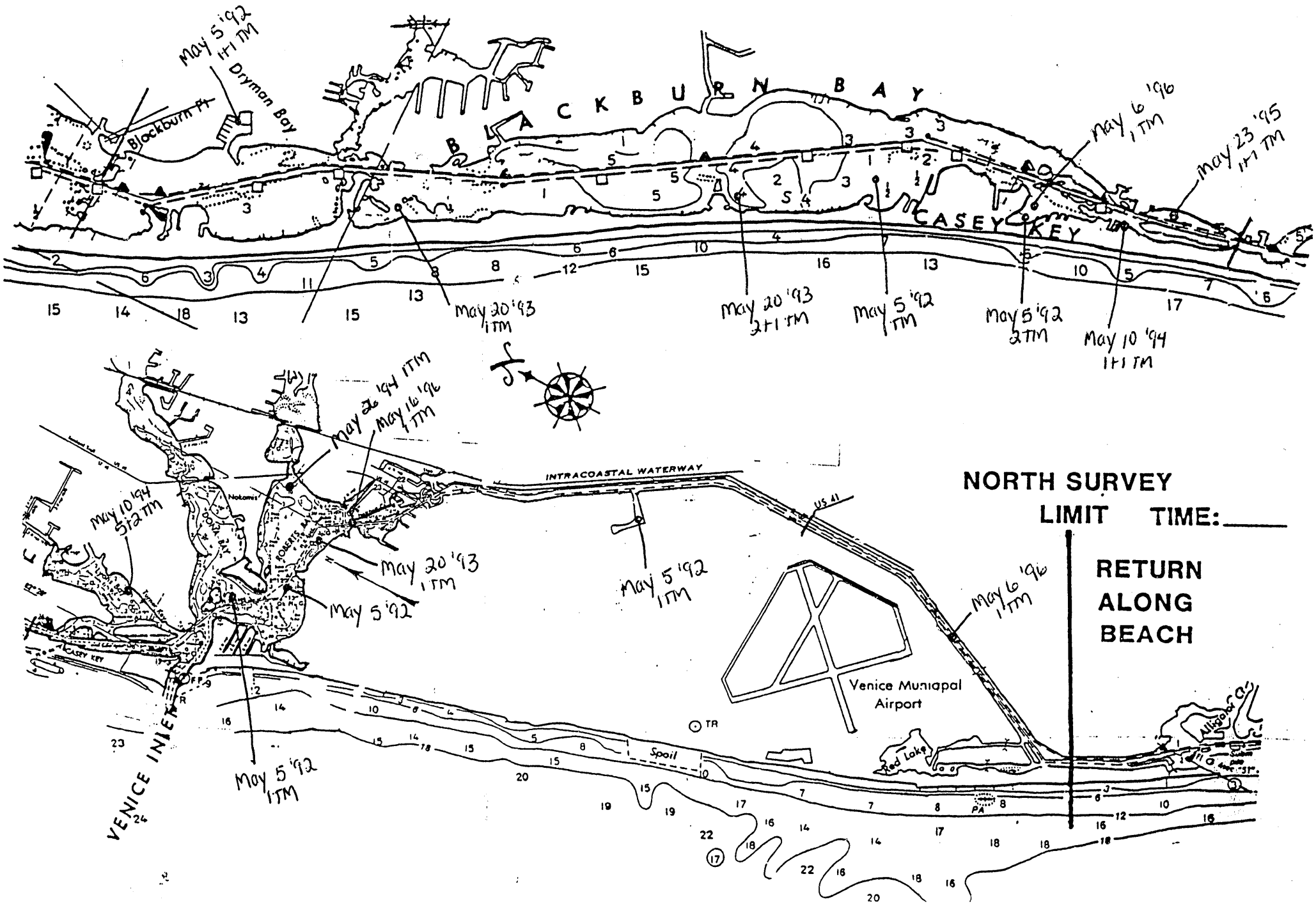


Figure 8. Compilation of June, manatee aerial survey data, for the past five years in the Venice Inlet area.

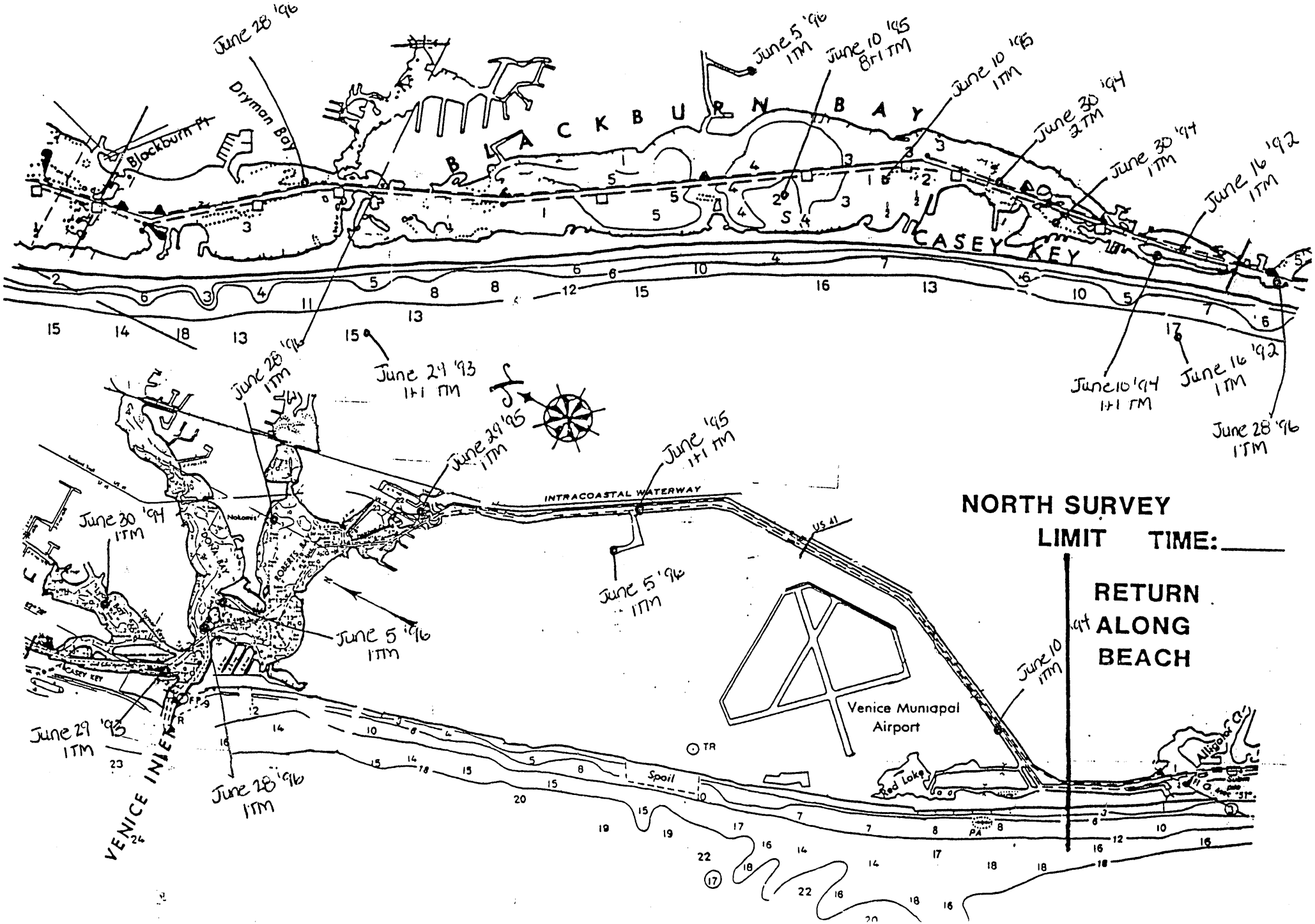


Figure 9. Compilation of July, manatee aerial survey data, for the past five years in the Venice Inlet area.

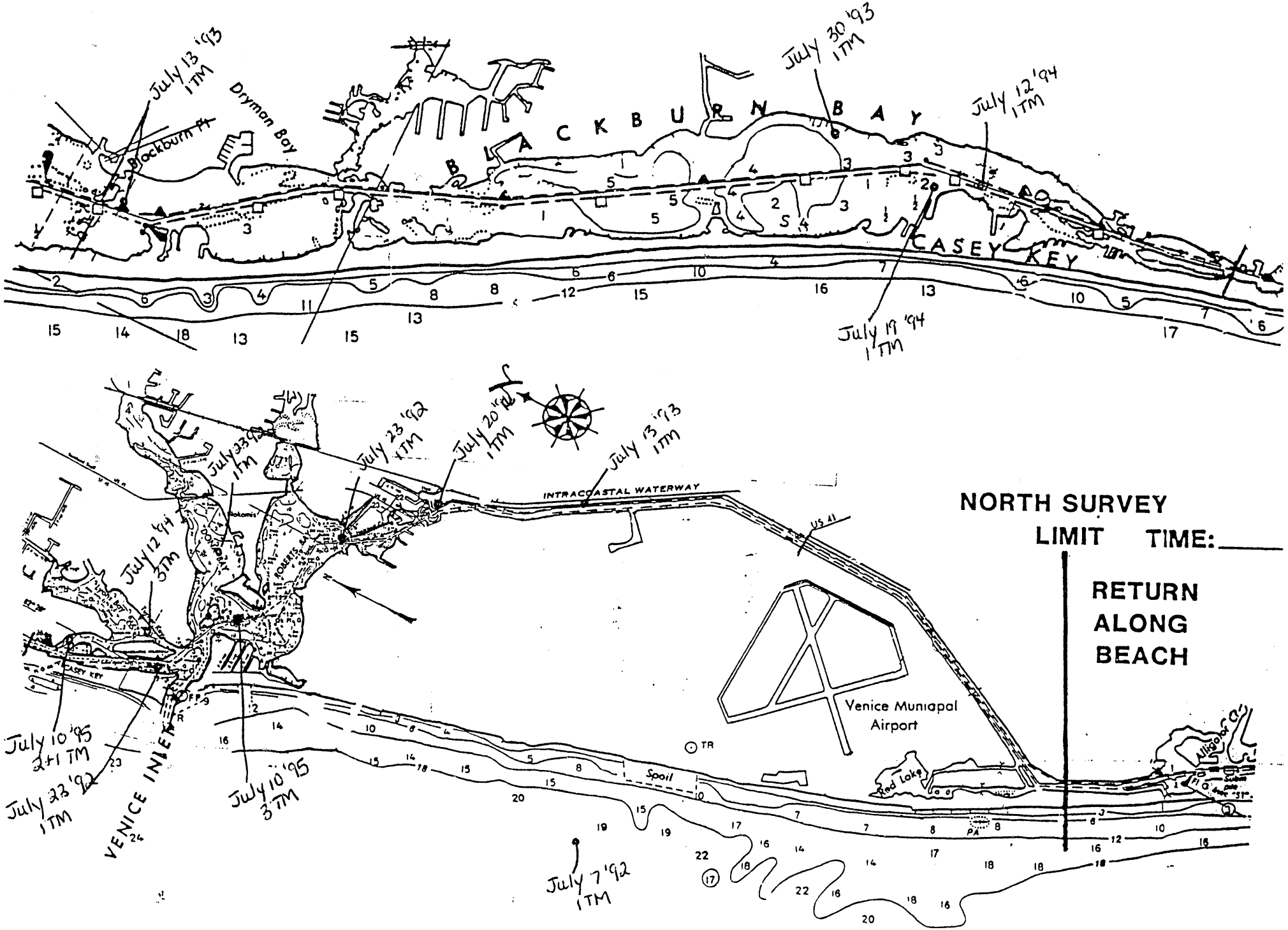
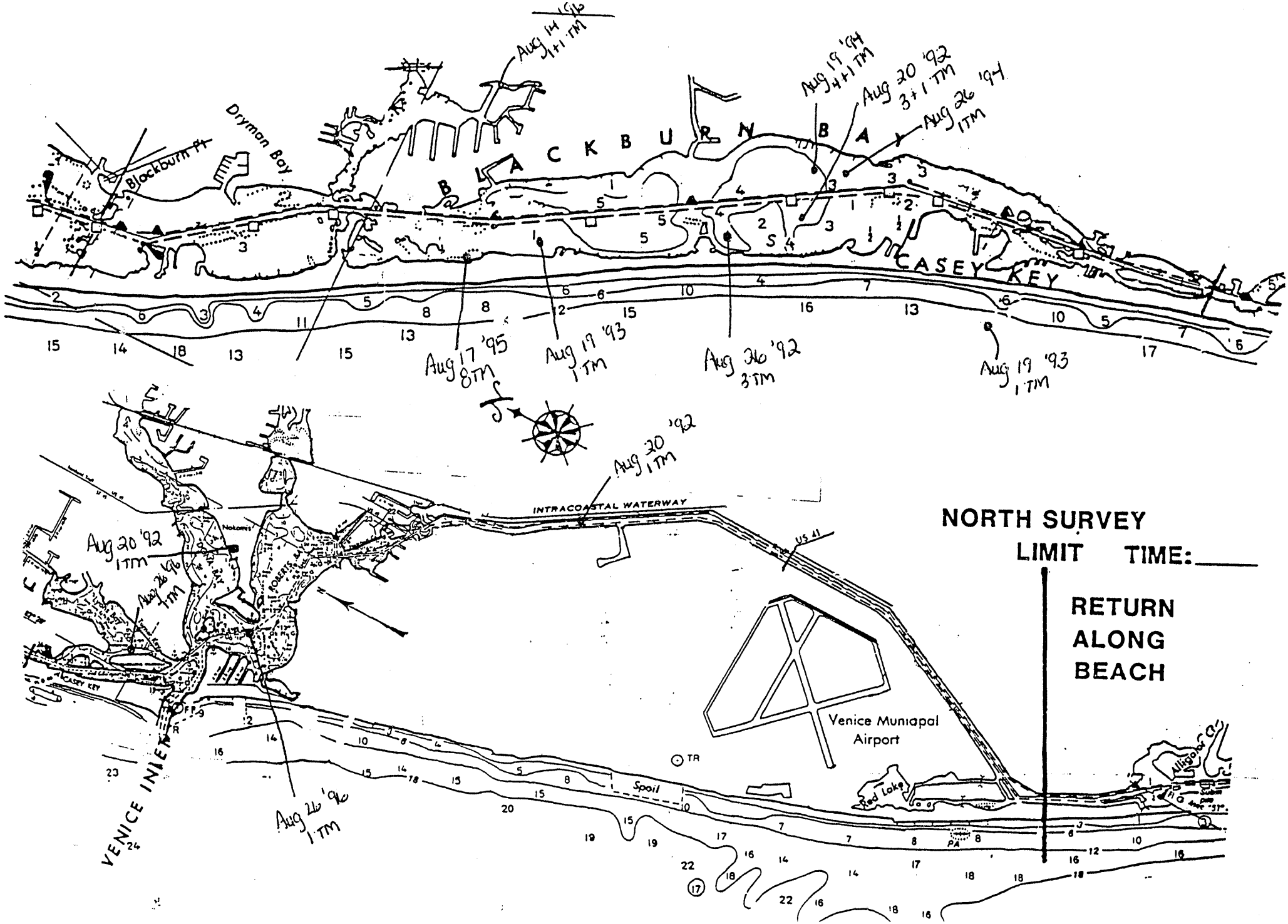


Figure 10. Compilation of August, manatee aerial survey data, for the past five years in the Venice Inlet area.



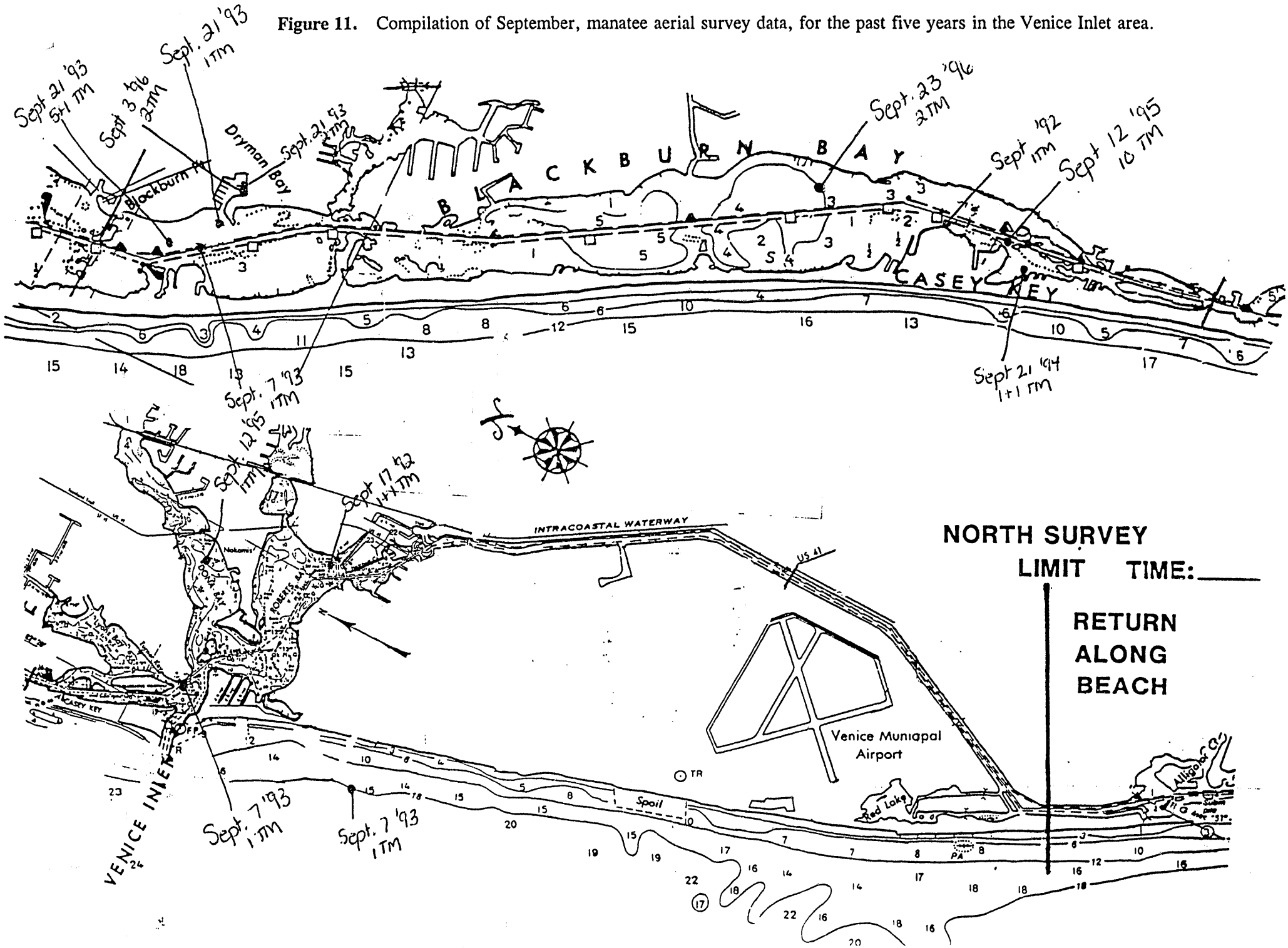


Figure 11. Compilation of September, manatee aerial survey data, for the past five years in the Venice Inlet area.

Figure 12. Compilation of October, manatee aerial survey data, for the past five years in the Venice Inlet area.

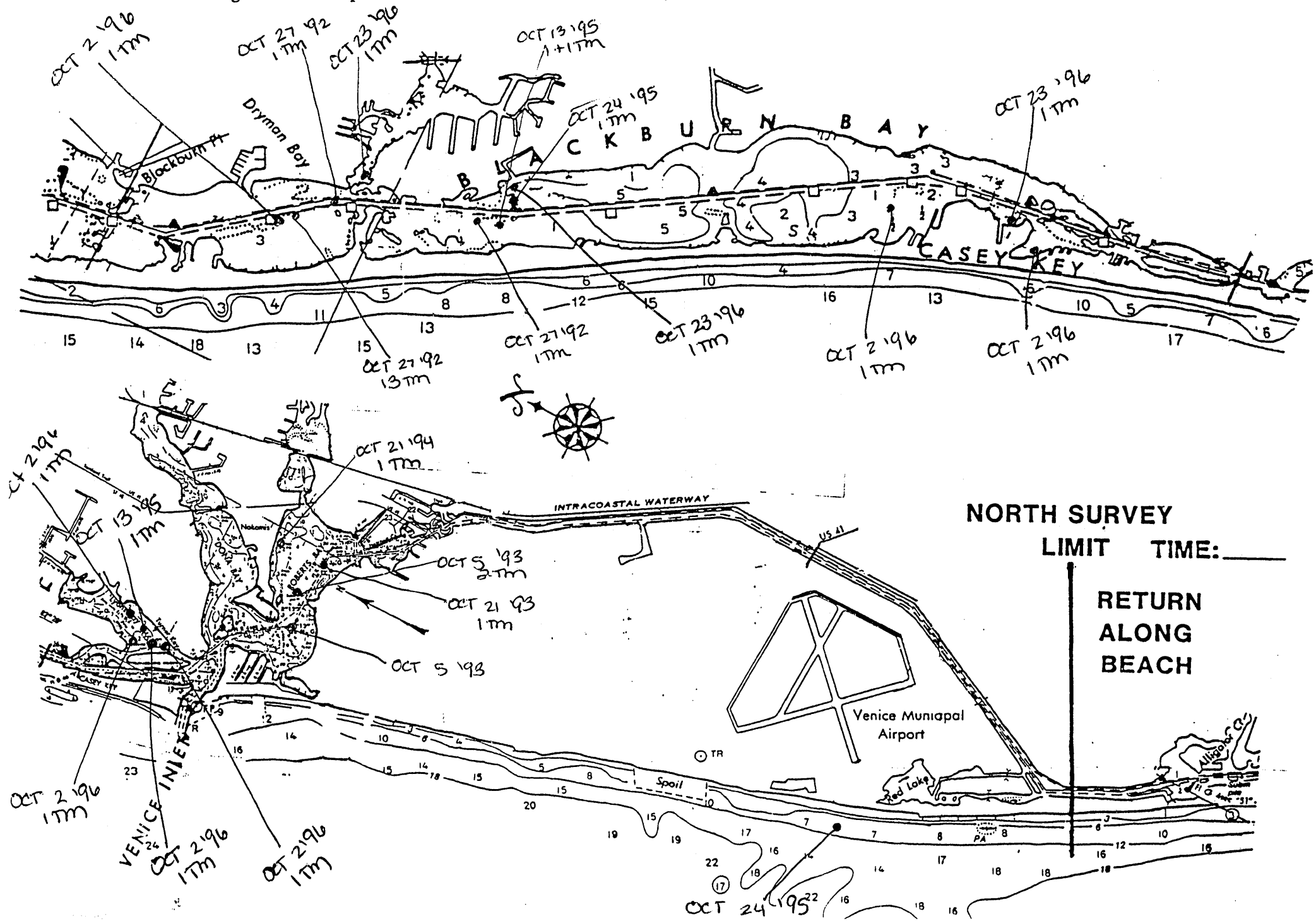


Figure 13. Compilation of November, manatee aerial survey data, for the past five years in the Venice Inlet area.

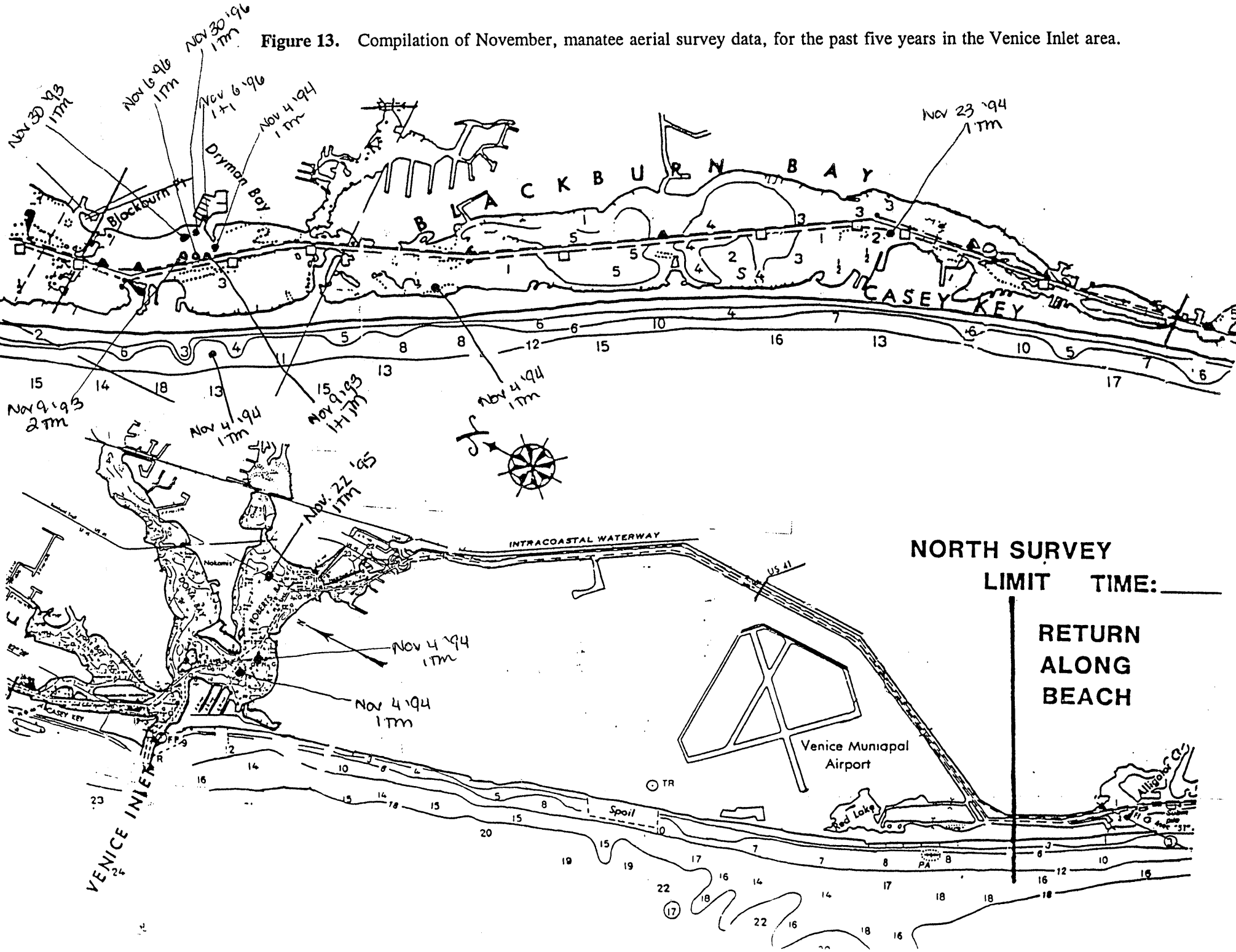


Figure 14. Compilation of December, manatee aerial survey data, for the past five years in the Venice Inlet area.

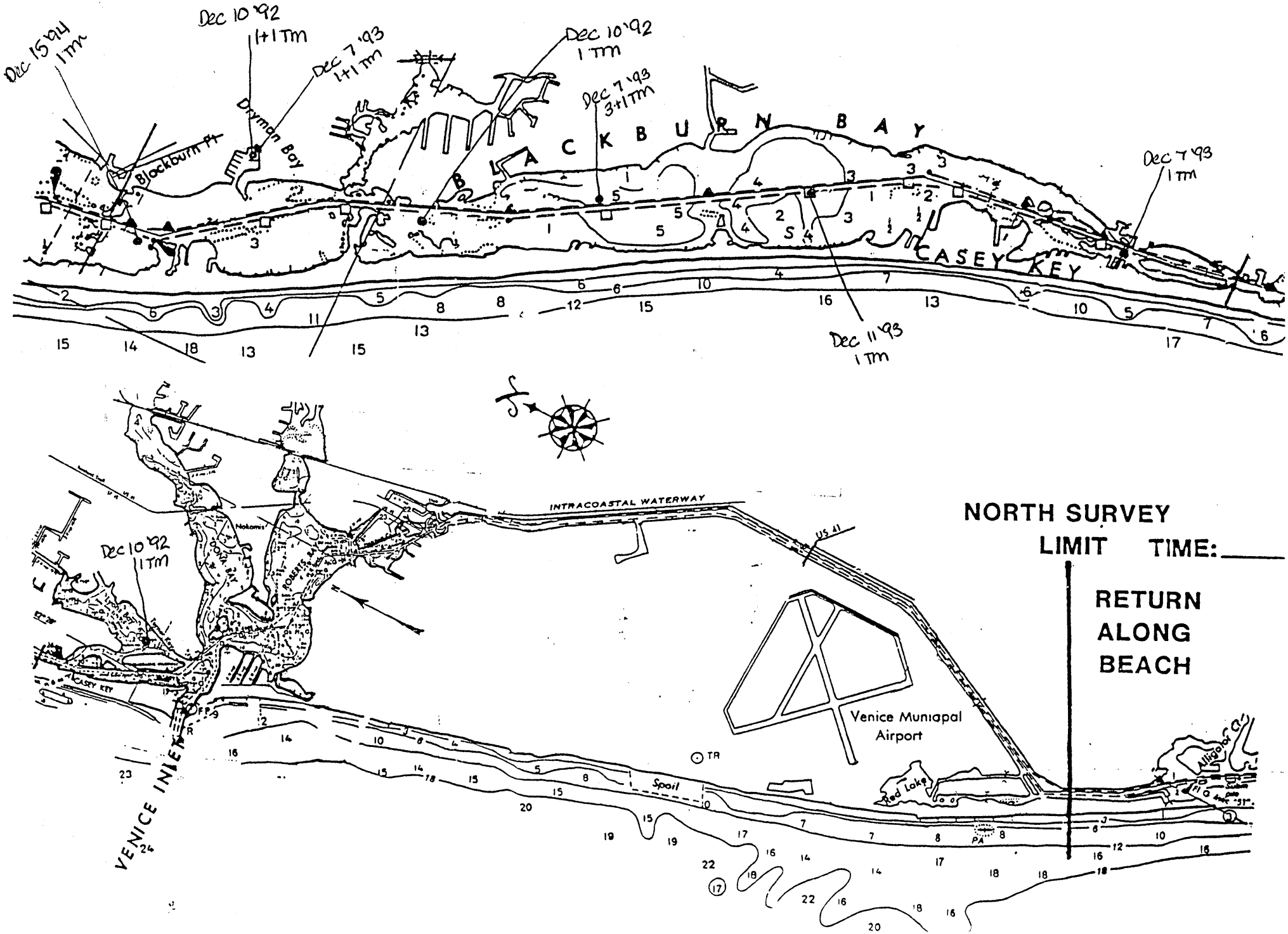


Figure 15. Compilation of twice-monthly, dolphin aerial survey data, for the past five years in the Venice Inlet area.

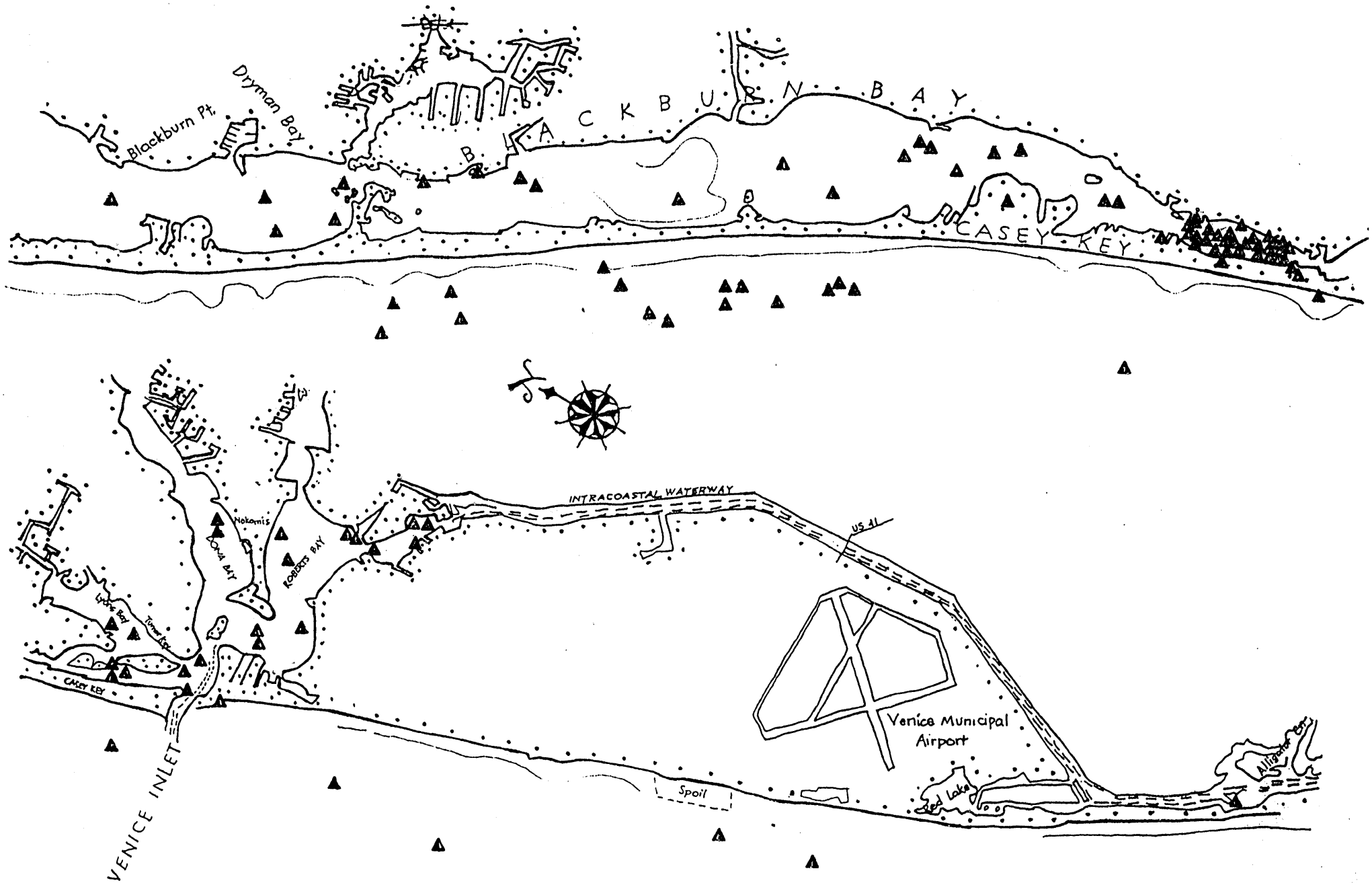


Figure 16. Compilation of January, dolphin aerial survey data, for the past five years in the Venice Inlet area.

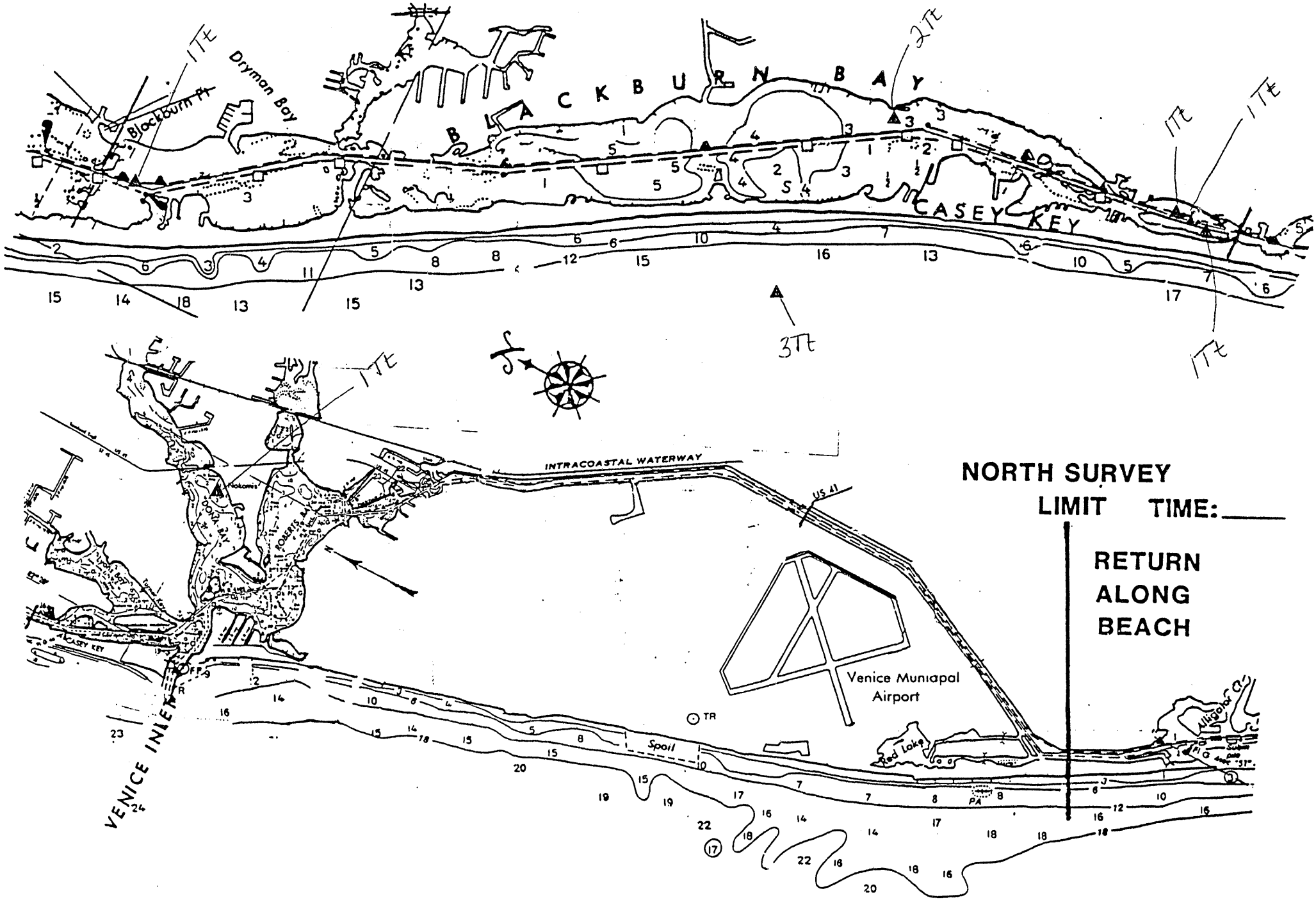


Figure 17. Compilation of February, dolphin aerial survey data, for the past five years in the Venice Inlet area.