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FJMC 98-001

FJMC REPORT:
BROAD WHITEFISH SPAWNING AREA
INVESTIGATION

MARCH 1998
COMPILED BY J. MATT STABLER

FJMC 98-001

PROJECT DESCRIPTION

BACKGROUND

Previous studies by The Department of Fisheries and Oceans (Ken Chang-Kue: 1978-79, 1982-84, 1985-87, 1990-93) identified broad whitefish (*Coregonus nasus*) migration routes extending from coastal bays through the Mackenzie Delta and upstream to the Peel and Arctic Red River Systems. Field investigations during these projects identified upstream locations in the Peel and Arctic Red River systems as important spawning sites for the anadromous stock of broad whitefish.

The information generated by the DFO studies were presented to a mixed audience of Inuvialuit, Gwich'in and Sahtu representatives during the Broad Whitefish Workshop held in Inuvik on March 16 - 17, 1994. Several experienced fishermen from the Mackenzie Delta informed those present at the workshop of their observations and beliefs that localized populations of broad whitefish spawn in areas within the ISR, as well as the Peel and Arctic Red River sites identified. Specific mention was made regarding sites, timing of fish use of these sites, and fish reproductive status. One such site - Whitefish Bay - was mentioned numerous times, and the subject of considerable discussion.

Following a modest traditional knowledge study focussing on the identification of locally presumed broad whitefish spawning sites within the ISR, it was decided to conduct an onsite investigation in an attempt to verify the presence/absence of spawning fish at the Whitefish Bay location.

For the two years prior to this study, the FJMC encouraged the development of the Inuvik Age Lab. With proven analytical and field skills, developed through hands-on experience with numerous fisheries projects, the Inuvik Age Lab was chosen to act as the chief field investigation team for this project. It was further decided by the Committee that this project should proceed with a minimal amount of supervision, as the next logical step in the Inuvik Age Lab team's professional development.

OBJECTIVES

1. To investigate the Whitefish Bay site to determine if it is being utilized by localized spawning populations of broad whitefish.
2. To further the development of the Inuvik Age Lab in the direct delivery of fisheries field projects.

PROJECT DESCRIPTION *(continued)*

METHODS

The project was based upon field sampling of broad whitefish at the Whitefish Bay site to collect data on sexual maturity and spawning condition. Sampling was conducted through the period of mid September to early October, and again in early November. Hoopnets were set at both entrances to the lake complex associated with Whitefish Bay (Kittigazuit Creek and East Whitefish Station) to monitor fish movements in and out of this drainage during the fall spawning period. Four gillnets were also set at selected locations in Whitefish Bay during the noted period. These gillnets were periodically relocated to cover as much of the system as was possible (see Maps 2 through 11 for exact locations). Catch data for all species captured was recorded. Nets were closely monitored in an effort to reduce the potential of catch related mortalities. Live, sexually mature broad whitefish were tagged (Floy tags) and released, in an effort to identify by recapture whether these fish were utilising the system for the purposes of spawning, or alternatively, passing through on their migration to another area.

MILESTONES (actual)

ACTIVITY	DATE
Assemble field equipment	September 1 - 5, 1995
Move to site(s) and set up camp	September 6 - 7, 1995
Gillnet, hoopnet and tagging operations	September 7 - October 5 1995
Study Team pulled due to inclement weather	October 6, 1995
Study Team back to site (Following freeze-up)	November 7, 1995
Tag Recapture Netting (within lakes system)	November 8 - 15, 1995
Study Team and equipment back to Inuvik	November 15 - 16, 1995
Data analysis & report writing	November/December 1995 and March 1998

RESULTS AND DISCUSSION

HOOPNETS

HOOPNET # 1

A gillnet (Net # 1) was set at the site designated for Hoopnet 1 from September 7 through the majority of the study period (refer to Map # 1). Due to strong tidally influenced currents in this narrow entrance to the Whitefish Bay system, no effort was made to install Hoopnet 1 until September 29, 1995. Serious effort was required to set, anchor and maintain the hoopnet for the next six field days. Catch data through this period (Sept. 29 - Oct. 5) is presented below:

HOOPNET 1 CATCH DATA - Refer to Map # 1 for location near East Whitefish

September 29 Set: 11:15 am Check: 11:20 pm Results: 5 Arctic Cisco	October 1 Set: 11:20 pm (Sept. 29) Check: 11:35 am Results: 2 Loche	October 2 Set: 12:00 pm (Oct. 1) Check: 12:00 pm Results: 0
October 3 Set: 12:00 pm (Oct. 2) Check: 12:00 pm Results: 0	October 4 Set: 12:00 pm (Oct. 3) Check: 12:00pm Results: 0	October 5 Set: 12:00 pm (Oct. 4) Check: 12:00 pm Results: 0 Pulled 7:40 pm Results: 0

Given the catch data (16 BWF, 4 LWF, 117 Inconnu, 4 N. Pike) of the nearby located gillnet (Net # 1) through the same time period, and the effort required to maintain the hoopnet, it was decided by study personnel that this capture technique was not conducive to project objectives.

HOOPNET # 2

Hoopnet # 2 was set at the outset of the project field investigation. Despite strong tidally influenced currents, which resulted in the net being lost for two days before being recovered in a nearby lake, the set was maintained for eight field study days. Catch data through this period (Sept. 7 - Sept. 18) is presented below:

HOOPNET 2 CATCH DATA- Refer to Map # 1 for location near Kittigazuit

September 7 Set: 1:30 pm Check: 5:50 pm Results: 0	September 8 Set: 6:00 pm (Sept. 7) Check: 12:30 pm Check: 4:45 pm Check: 8:40	Results: 1 Loche Results: 3 Cisco Results: 0	Reset: 12:40 pm Reset: 5:00 pm Reset: 8:50 pm
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HOOPNET # 2 CATCH DATA (*continued*)

September 9

Set: 8:50 pm (Sept. 8)

Check: 12:25 pm	Results: 2 Loche 7 Cisco	Reset: 12:35 pm
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September 10

Set: 12:35 pm (Sept. 9)

Check: 11:35 am	Results: 6 Loche 9 Cisco	Reset: 11:45 am
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Check: 6:55 pm	Results: 3 Loche	Reset: 7:10 pm
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September 11

Set: 7:10 pm (Sept. 10)

Check: 1:30 pm	Results: 1 Loche	Reset: 1 Loche 2 Cisco
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September 12

Net carried off by current - lost

September 14

Net located in lake Reset: 3:20 pm

Check: 7:45 pm	Results: 1 Loche 15 Cisco	Reset: 8:00 pm
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September 17

Set: 8:00 pm (Sept. 14)

Check: 11:50 am	Results: 3 Loche 10 Cisco	Reset: 12:00 pm
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September 18

Set: 12:00 pm (Sept. 17)

Check: 12:25 pm	Results: 7 Herring	Pulled
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Given the effort required to maintain the hoopnet, and the poor results in capturing project target fish species, it was decided by study personnel that this capture technique was not conducive to project objectives.

HOOPNETS CONCLUSION

Although hoopnets have been successfully employed in other fisheries projects in the region, it became apparent that they were not conducive to capturing broad whitefish in the entrances to the Whitefish Bay system. Subject to the influence of the strong currents in this area, and covering much less than fifty percent of the channel in which they were deployed, they appeared to be easily avoided by fish navigating these channels. Therefore these nets were abandoned, and replaced by soft monofilament gillnets for the remainder of the field investigations.

GILLNETS

Four gillnets were deployed in selected locations within the Whitefish Bay system throughout the period of September 7 to October 5. These were employed to capture migrant and local fish species to monitor numbers, movements in and out of the system and for tagging purposes (Tagging results follow immediately after this section). Capture of target and non-target species (especially inconnu) were particularly successful. Nets were constructed of soft monofilament and monitored closely to reduce potential capture induced mortality. These efforts were by and large successful, with a total of just over twenty-five fish mortalities recorded despite a total of 2,167 fish captured via this method.

A comprehensive summary of daily catches related to individually numbered and located nets is presented in Appendix I (attached). An overall summary of catches by net and location is presented in Appendix II (attached).

NET # 1

Gillnet number one was fifty yards in length, four and one-half inch mesh and constructed of soft monofilament. It was deployed near the entrance to the Whitefish Bay system near Whitefish Station (Billy Day's camp - refer to Map numbers 1 and 8 for exact locations) from September 7 through October 5 on each day of field operations. During the November attempt to recapture broad whitefish tagged during operations in September and October, this net was again deployed within the lakes system (see map # 11)

Catch data for the period from September 7 to October 5 is presented below:

NET # 1

SPECIES	TOTAL
BWF	83
LWF	8
Inconnu	252
N. Pike	4
Loche	3

The study team reported that in nearly all cases, fish were intercepted by this net upon entering the system from Kugmallit Bay. This was recognized as position of capture as an indication of travel direction.

Catch data from November 8 to November 15 is presented in the section following titled Tagging Results.

NET # 2

Gillnet number two was fifty yards in length, four and one-half inch mesh and constructed of soft monofilament. This net had to be procured for the project, and arrived at the field site on September 12, 1995. From September 13 through September 30, with the singular exception of September 22 when it was deployed in the usual location of Net # 1, this net was deployed further up the channel towards the lake system from Net # 1 (see map # 4). Through October 1 to 5, this net was deployed at the entrance point to the lake upstream of the channel it was previously set in (see map # 8). During the November attempt to recapture broad whitefish tagged during operations in September and October, this net was again deployed within the lakes system (see map # 11).

Catch data for the periods from September 13 to September 30, September 22, and October 1 to October 5 is presented separately below:

NET # 2

SPECIES	Sept. 13 - 30	Sept. 22	Oct. 1 - 5	TOTAL
BWF	86	7	43	136
LWF	5	2	0	7
Inconnu	213	28	51	292
N. Pike	2	1	11	14
Loche	4	0	0	4

As was the case in Net # 1, the study team reported that in nearly all cases, fish were intercepted by this net upon entering the system from Kugmallit Bay, having apparently avoided capture in Net # 1 located downstream. This was recognized as position of capture as an indication of travel direction.

Catch data from November 8 to November 15 is presented in the section following titled Tagging Results.

NET # 3

Gillnet number three was one hundred yards in length, four and one-half inch mesh and constructed of soft monofilament. It was deployed at the mouth of an inter-lakes channel within the Whitefish Bay system from September 7 through October 5, 1995 (see Map # 2). During the November attempt to recapture broad whitefish tagged during operations in September and October, this net was again deployed within the lakes system for a single operational day on November 13, 1995 (see map # 11)

Catch data for the period from September 7 to October 5 is presented below:

NET # 3 (continued)

NET # 3

SPECIES	TOTAL
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BWF	422
LWF	46
Inconnu	184
N. Pike	44
Loche	0
A. Charr	1
Salmon	1

The study team reported that fish were intercepted by this net traveling both directions within the lakes system, with a slightly noticeable favour for the upstream direction. This was recognized as position of capture as an indication of travel direction.

Catch data for November 13 is presented in the section following titled Tagging Results.

NET # 4

Gillnet number four was fifty yards in length, five inch mesh and constructed of soft monofilament. On September 7 and 8, this net was deployed at a point within a lake well in the Whitefish Bay lakes system (see Map # 2). From September 9 through September 29, it was deployed at the mouth of a channel providing access to the innermost lakes and creeks of the Whitefish Bay system (see Map # 3). From September 30 through October 5, the location of this set was changed four times - September 30 being located at the entrance channel to the system near Kittigazuit (see Map # 7), October 1 through 5 all sets in the near vicinity of the first location noted above (see Map #'s 8, 9 and 10). During the November attempt to recapture broad whitefish tagged during operations in September and October, this net was not employed.

Catch data for the periods from September 7-8, September 9 - 29, September 30, and October 1 to October 5 is presented separately below:

NET # 4

SPECIES	Sept. 7-8	Sept. 9-29	Sept. 30	Oct. 1-5	TOTAL
BWF	14	124	1	5	144
LWF	4	6	1	2	13
Inconnu	1	95	11	6	113
N. Pike	0	28	3	10	41
Loche	0	1	0	0	1

The study team reported that in nearly all cases, fish were intercepted by this net traveling upstream towards the innermost lakes and creeks of the Whitefish Bay system. This was recognized as position of capture as an indication of travel direction.

GILLNETS RESULTS - DISCUSSION

For the purpose of discussion, the results obtained by Nets 1 and 2 will be considered together, as the two were basically monitoring the same entrance channel into the Whitefish Bay lakes system. It was noted by field personnel that nearly all captures in these two nets were interceptions of fish traveling further upstream into the system. In total, 219 broad whitefish, 544 inconnu, 18 northern pike, 15 lake whitefish, and 7 loche (burbot) were intercepted in the confines of this channel. Of specific interest to study objectives is the number of broad whitefish that entered the system via this conduit during the study period. Study results indicate that significant numbers of both broad whitefish and inconnu first enter the freshwater system here, directly from the estuary of Kugmallit Bay, either for purposes of spawning, overwintering or both. The number of broad whitefish, and the relatively high number of inconnu entering into the system via this channel indicate that this is an important migration corridor for both populations - much more so than the other three species encountered.

Net # 3 monitored fish use of the Whitefish Bay lakes, and specifically the use of an area near an interconnecting channel between two of the larger lakes within the system throughout the study period. In total, 422 broad whitefish, 184 inconnu, 46 lake whitefish, 44 northern pike, and one each of Arctic charr and salmon (spp. uncertain) were captured. The high number of broad whitefish utilizing this area immediately prior to their known spawning period is worthy of note. This is perhaps an indication that these whitefish were utilizing the lakes as a staging area prior to moving upstream to spawn in the more rapidly flowing creeks within the system. The number of inconnu captured also indicate that this area is of significance to that species. The increase in captures of both lake whitefish and northern pike are thought to be reflective of the lacustrine environment in which Net # 3 was set.

Net # 4 monitored fish use of a channel providing access to the innermost lakes and creeks of the Whitefish Bay system. Discounting the catch data of September 30 (when set near Kittigazuit), the total catch was 143 broad whitefish, 102 inconnu, 38 northern pike, 12 lake whitefish and 1 loche. It was noted by field personnel that nearly all captures in this net were interceptions of upstream moving fish, indicating that these fish were in the process of moving into the innermost creeks and smaller lakes within the system. The small lakes above the point where Net # 4 was set are comparatively shallow, therefore providing little in the way of suitable over-wintering habitat. Noting the high number of broad whitefish, and incidentally captured inconnu moving into this area, it is entirely possible that these fish represent current year spawners migrating upstream to preferred spawning locations in faster flowing water. Although set for a single day, the capture data of September 30 is also worthy of note. It would seem to indicate, albeit on a limited scale, that few of the fish observed using the areas monitored by Nets 1 - 3 were exiting the system through this route.

More discussion on the results of the netting program follows the next section dealing with tagging results, wherein the two can be compared and discussed in conjunction.

TAGGING RESULTS

One of the main focuses of the project was to apply spaghetti (Floy) tags to captured broad whitefish (current year spawners) as they entered the Whitefish Bay system, and then to attempt to recapture these fish as they moved either further into the system towards potential spawning areas or out of the system. Upon the first site visit by the project manager, it was discovered that nearly all broad whitefish captured to date, and regardless of apparent sexual maturity, had been tagged. This occurred in the fairly early stages of the field investigation (September 14), and subsequently only broad whitefish recognized to be current year spawners were applied tags. Tagging operations were conducted at all net sites through the study period (refer to Maps 2 - 10 for exact locations).

The study team was forced to abandon the site due to inclement weather and the onset of ice-up on October 6, 1995. They returned to the study area on November 7, and again set nets within the system in an attempt to recapture previously tagged broad whitefish (See Map # 11 for locations).

NET # 1- TAGGING OPERATIONS:

Prior to September 14, 55 broad whitefish were tagged following capture in Net # 1, representing ninety-five percent of those whitefish captured to date (55 of 58). From September 17 forward, 24 known current year spawners were tagged, representing ninety-six percent of those whitefish captured (24 of 25) in this time span. Field personnel noted that a significant number of those fish tagged prior to September 14 had displayed physical characteristics of being current year spawners. A comparison of the mean lengths of fish tagged prior to September 14, with those tagged after this date suggest that the average size of broad whitefish tagged in the former period was slightly greater (458.15 mm prior Sept. 14; 453.5 mm following) although not statistically so. The mean length of all broad whitefish tagged at this location (456.7 mm) falls well within the range of sizes observed for spawners of this specie (Ken Chang-Kue: 1978-79, 1982-84, 1985-87, 1990-93; Scott & Crossman: Freshwater Fishes of Canada: 1985). No tagged fish, from either before or after September 14 tagging operations were recaptured in Net 1 throughout the study.

From November 8 through November 15 Net # 1 was deployed through ice within one of the lakes of the study system in an attempt to recapture previously tagged broad whitefish. Capture data for this period is presented in Appendices I and II (attached) and summarized (for all species) below:

NET # 1: Recapture Netting Results

SPECIES	TOTAL
BWF	111
LWF	19
Inconnu	31
N. Pike	7
Loche	0
Lake Trout	1

Of the 111 broad whitefish captured through this time period, none had been previously tagged in the September/October operation. Field personnel report that the majority of these whitefish appeared to be spent current year spawners.

NET # 2: TAGGING OPERATIONS:

Prior to September 14, 45 broad whitefish were tagged following capture in Net # 2, representing one hundred percent of those whitefish captured to date (45 of 45). From September 17 forward, 89 known current year spawners were tagged, representing ninety-eight percent of those whitefish captured (89 of 91) in this time span. Field personnel noted that a significant number of those fish tagged prior to September 14 had displayed physical characteristics of being current year spawners. A comparison of the mean lengths of fish tagged prior to September 14, with those tagged after this date suggest that the average size of broad whitefish tagged in the former period was greater (458.76 mm prior Sept. 14; 441.79 mm following). The mean length of all broad whitefish tagged at this location (447.5 mm) falls within the range of sizes observed for spawners of this specie. There were three tag recaptures in Net # 2 through the study period as summarized below:

Tag Recaptures Net 2:

Sept. 13 # 00698 - Tagged Net # 1 Sept. 9

Sept. 18 # 00030 - Tagged Net # 1 Sept. 11
00031 - Tagged Net # 2 Sept. 14

From November 8 through November 15 Net # 2 was deployed through ice within one of the lakes of the study system in an attempt to recapture previously tagged broad whitefish. Comprehensive capture data for this period is presented in Appendices I and II (attached) and summarized (for all species) below:

NET # 2: Recapture Netting Results

SPECIES	TOTAL
---------	-------

BWF	135
LWF	11
Inconnu	19
N. Pike	4
Loche	0

Of the 135 broad whitefish captured through this time period, none had been previously tagged in the September/October operation. Field personnel again observed that the majority of these whitefish appeared to be spent current year spawners.

NET # 3: TAGGING OPERATIONS

Prior to September 14, 279 broad whitefish were tagged following capture in Net # 3, representing ninety-nine percent of those whitefish captured to date (279 of 281). From September 17 forward, 146 known current year spawners were tagged, also representing ninety-nine percent of those whitefish captured (146 of 148) in this time span. Field personnel again noted that a significant number of those fish tagged prior to September 14 had displayed physical characteristics of being current year spawners. A comparison of the mean lengths of fish tagged prior to September 14, with

those tagged after this date suggest that, in this case, the average size of broad whitefish tagged in the second period was greater (436.9 mm prior Sept. 14; 440.2 mm following). The mean length of all broad whitefish tagged at this location (438.1 mm) just falls within the range of sizes observed for spawners of this specie. No tagged fish, from either before or after September 14 tagging operations were recaptured in Net # 3 throughout the study.

During the recapture operations in November, Net # 3 was deployed through ice for a single day (November 13) within one of the lakes of the study system in an attempt to recapture previously tagged broad whitefish. Comprehensive capture data for this period is presented in Appendices I and II (attached) and summarized (for all species) below:

NET # 3: Recapture Netting Results

SPECIES	TOTAL
---------	-------

BWF	4
LWF	6
Inconnu	6
N. Pike	0
Loche	0

Of the 6 broad whitefish captured through this time period, none had been previously tagged in the September/October operation. Field personnel again observed that these whitefish appeared to be spent current year spawners.

NET # 4: TAGGING OPERATIONS

Prior to September 14, 105 broad whitefish were reported as tagged following capture in Net # 4, representing one hundred and seven percent of those whitefish reported captured to date (105 of 89). The apparent discrepancy in the two data sets appears to be an under-reporting of complete catches on September 9 and September 13 (Sept. 9: 9 reported captured, data exists for 11 tagged fish; Sept. 13: 16 reported captured, data exists for 25 tagged fish). For the purposes of this section, the author will assume the tagging information represents real fish. From September 17 forward, 46 known current year spawners were tagged, representing one hundred percent of those whitefish captured (46 of 46) in this time span. Field personnel again noted that a significant number of those fish tagged prior to September 14 had displayed physical characteristics of being current year spawners. A comparison of the mean lengths of fish tagged prior to September 14, with those tagged after this date suggest that the average size of broad whitefish tagged in the former period was greater (458.3 mm prior Sept. 14; 447.3 mm following). The mean length of all broad whitefish tagged at this location (454.9 mm) falls well within the range of sizes observed for spawners of this specie. No tagged fish, from either before or after September 14 tagging operations were recaptured in Net # 4 throughout the study.

During the recapture operations in November, Net # 4 was not deployed.

TAGGING OPERATIONS SUMMARY:

All Locations:

Prior to September 14: 484 broad whitefish tagged

September 14 - October 5: 305 current year spawners tagged

Total of 789 broad whitefish tagged

Total Recaptures = 3

Captures during November operations (BWF) = 250

Tag recaptures during November operations = 0

TAGGING OPERATIONS DISCUSSION

Of the 305 fish identified as current year spawners and subsequently tagged, 113 were intercepted moving into the system via the channel near Whitefish Station (combined data from Net #'s 1 and 2), 146 (Net # 3) were captured in the interlake system, and 46 were intercepted while attempting to access the innermost lakes and creeks of the Whitefish Bay system (Net # 4). There was an extremely high incidence of spawners to non-spawners captured in the period from September 14 through October 5, 1995.

The percentage of current year spawners in the 484 fish tagged prior to September 14 is uncertain. As previously noted, the project field personnel observed that a significant number of these fish did appear to be in spawning condition. 100 of these broad whitefish were intercepted moving into the system via the channel near Whitefish Station (combined data from Net #'s 1 and 2), 279 (Net # 3) were captured in the interlake system, and 105 were intercepted while attempting to access the innermost lakes and creeks of the Whitefish Bay system (Net # 4).

The two recaptures at the Net # 2 site of fish tagged at the Net # 1 location are supportive of the observation that fish were generally traveling upstream through this channel into the Whitefish Bay system.

Leaving aside the data from the tagging efforts prior to September 14, the information presented would suggest that a very significant component of the broad whitefish entering, using and gaining access to the uppermost reaches of the system are in spawning condition. Although no tagged fish were recaptured in the November operations, the data from this operation is still worthy of note. The study team reported that the majority of the whitefish captured in November appeared to be spent current year spawners - a condition easily identified when compared to resting or non-spawning overwintering fish in early November. The combination of these two data sets, especially when the rate of total captures to spawners in the September 14 to October 5 period is taken into account, strongly suggests that the system is being utilized by broad whitefish for the purposes of spawning in the upper reaches, then overwintering in the freshwater lake system below. While it might be argued that the fish observed in spawning condition were simply moving through the system on their way to points further upstream in the Mackenzie River system, this would not address several

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important aspects: the high numbers of fish captured in advanced spawning condition immediately prior to known spawning timing (leaving very little time to effect the migration to previously identified spawning areas upstream in the Mackenzie River); the numbers of fish in spawning condition accessing the innermost reaches of the Whitefish Bay system just prior to known spawning timing, and finally; the presence of significant numbers of spent fish in the lakes of the system immediately after their known spawning interval (leaving little or no time to return from reaches in the upper Mackenzie River).

While it would be quite a leap to suggest that all of the fish tagged prior to September 14 were also in spawning condition, it can easily be assumed that at least some component of these fish were current year spawners. This, combined with the above analysis, would suggest that the localized population of broad whitefish utilizing the Whitefish Bay system is significant in number.

Though no tagged fish were recaptured in the November operation, the data set provides an interesting enigma. Were the tagging data to be subject of mark/recapture analysis, the few recaptures would indicate a very high population figure. However, as the system is open to migration both in and out of the system, did these tagged fish move to another location or simply avoid recapture? The answer to this question is obviously beyond the scope of this project, but perhaps the focus of another, future effort.

CONCLUSION

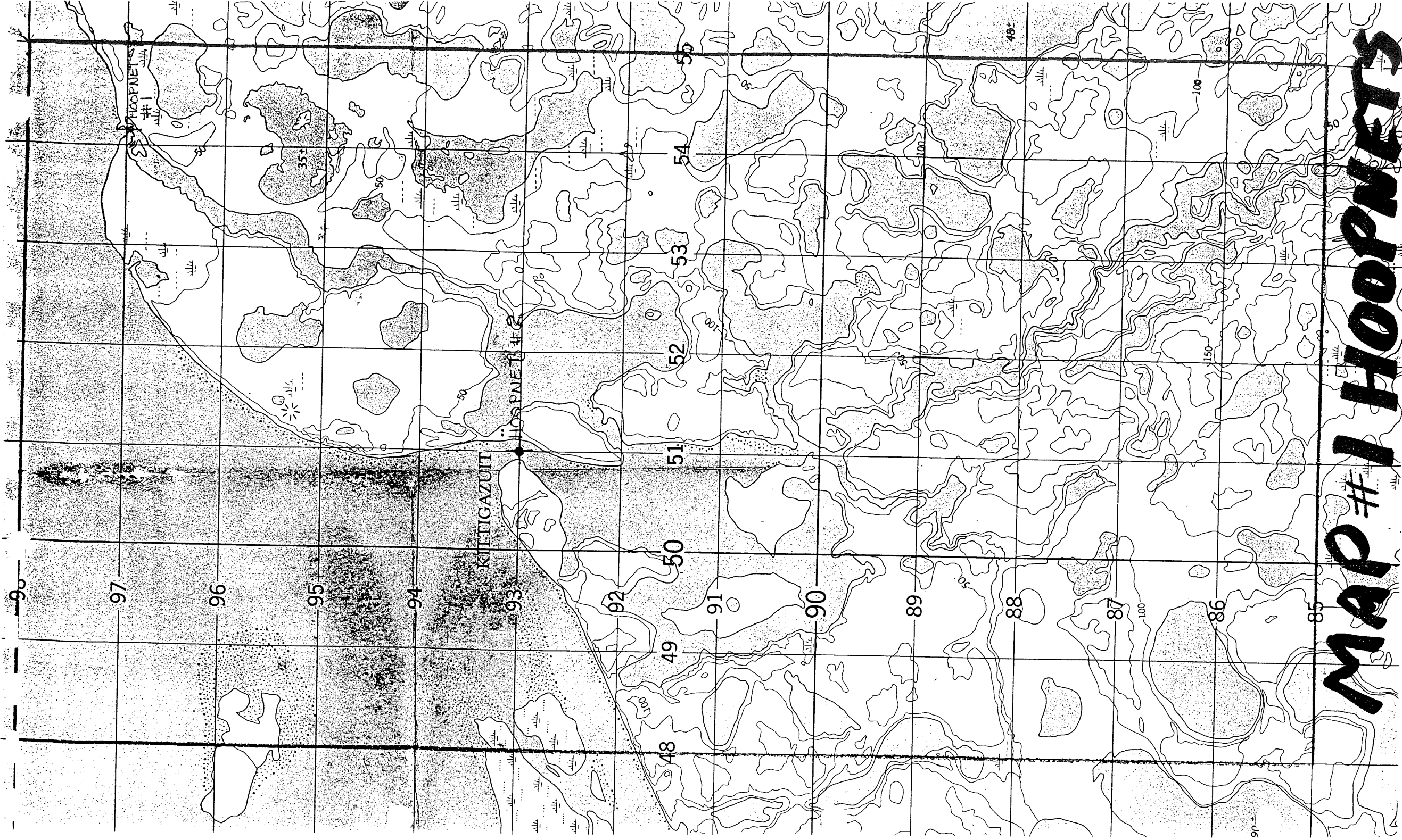
The field study produced very interesting data. However, the information gathered stops just short of conclusively providing concrete evidence in support of the theory that broad whitefish are utilizing the Whitefish Bay system for the purposes of spawning. Interpretation of the information results in the strong inference that the theory must logically hold true, especially in light of the discussion presented immediately above. Therefore, while this study cannot conclude absolutely 'beyond any shadow of a doubt' broad whitefish are spawning in the Whitefish Bay system, it does very much appear to be the case.

The high numbers of broad whitefish and inconnu captured throughout the study period strongly indicate that this is an area of significant use, and therefore critical importance to local populations of both these species.

In the matter of the second project objective, that being the furthering of the Inuvik Age Lab team's professional development in the delivery of field research, it is the opinion of this author that the project was a noteworthy success. Very few problems were encountered, those namely the tagging of all broad whitefish captured in the initial stage of the project, and a singular event of under-reporting catch data. The first of these was seemingly the product of zeal in their desire to perform with excellence on their first 'stand-alone' project, while the second is likely to be encountered with any project dealing with sample numbers in the thousands and multiple species, regardless of the level of experience of the operatives. This team produced excellent records, kept capture mortality to an absolute minimum, strove to employ hoopnets in extreme conditions even in light of poor returns, maintained all equipment in excellent condition, and operated professionally and efficiently throughout the period of this study. They are to be congratulated on a job well done, and should be seriously considered for future research efforts within the region.

MAPS SECTION

MAP # 1	Hoopnet Placement
MAP # 2	September 7 - Net Placement
MAP # 3	September 9 - Net Placement
MAP # 4	September 13 - Net Placement
MAP # 5	September 22 - Net Placement
MAP # 6	September 28 - Net Placement
MAP # 7	September 30 - Net Placement
MAP # 8	October 1 - Net Placement
MAP # 9	October 2 - Net Placement
MAP # 10	October 3 - Net Placement
MAP # 11	November Operations - Net Placement



MAP #1 HOOPNETS

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KITTIGAZUIT

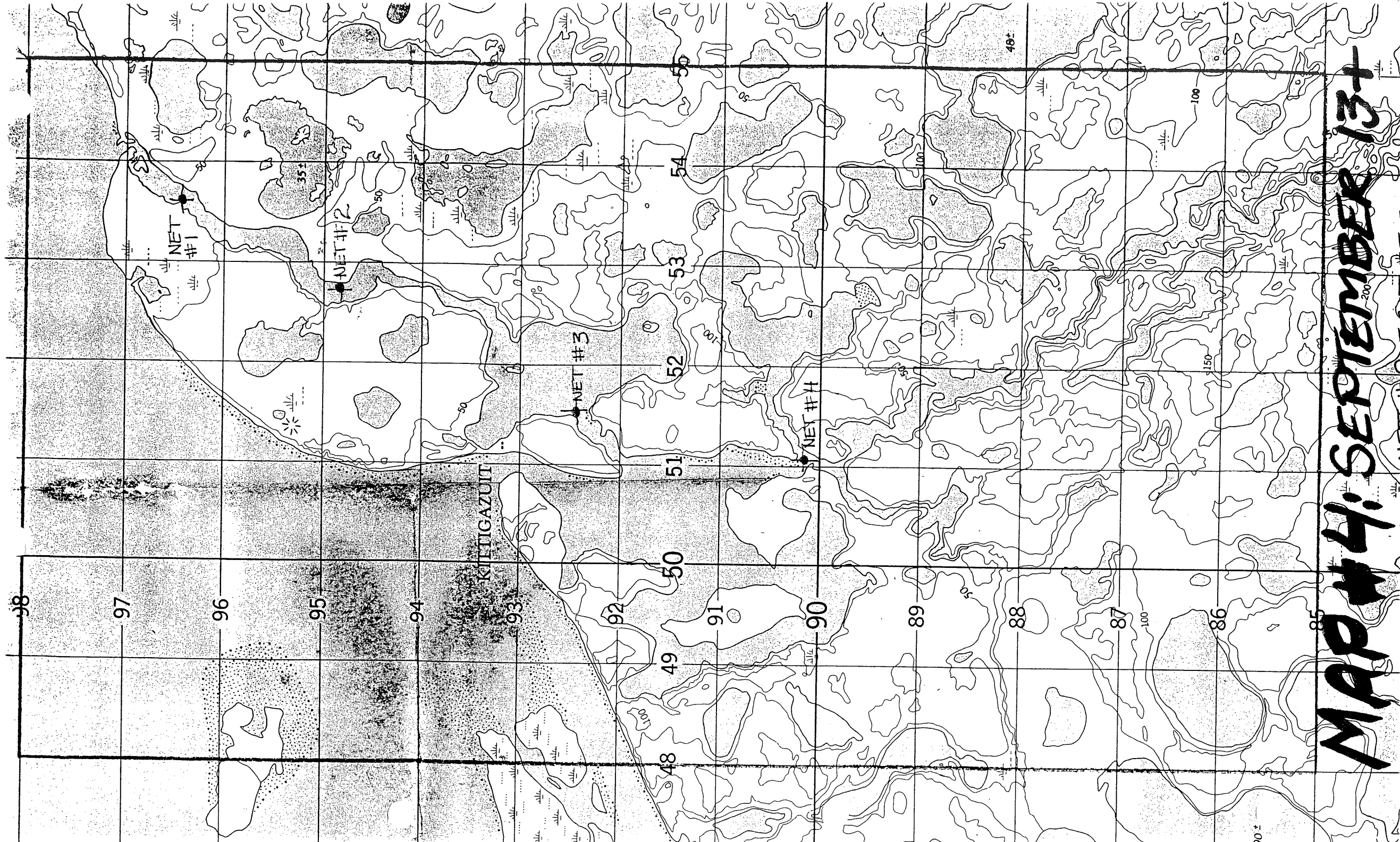
NET #1

NET #3

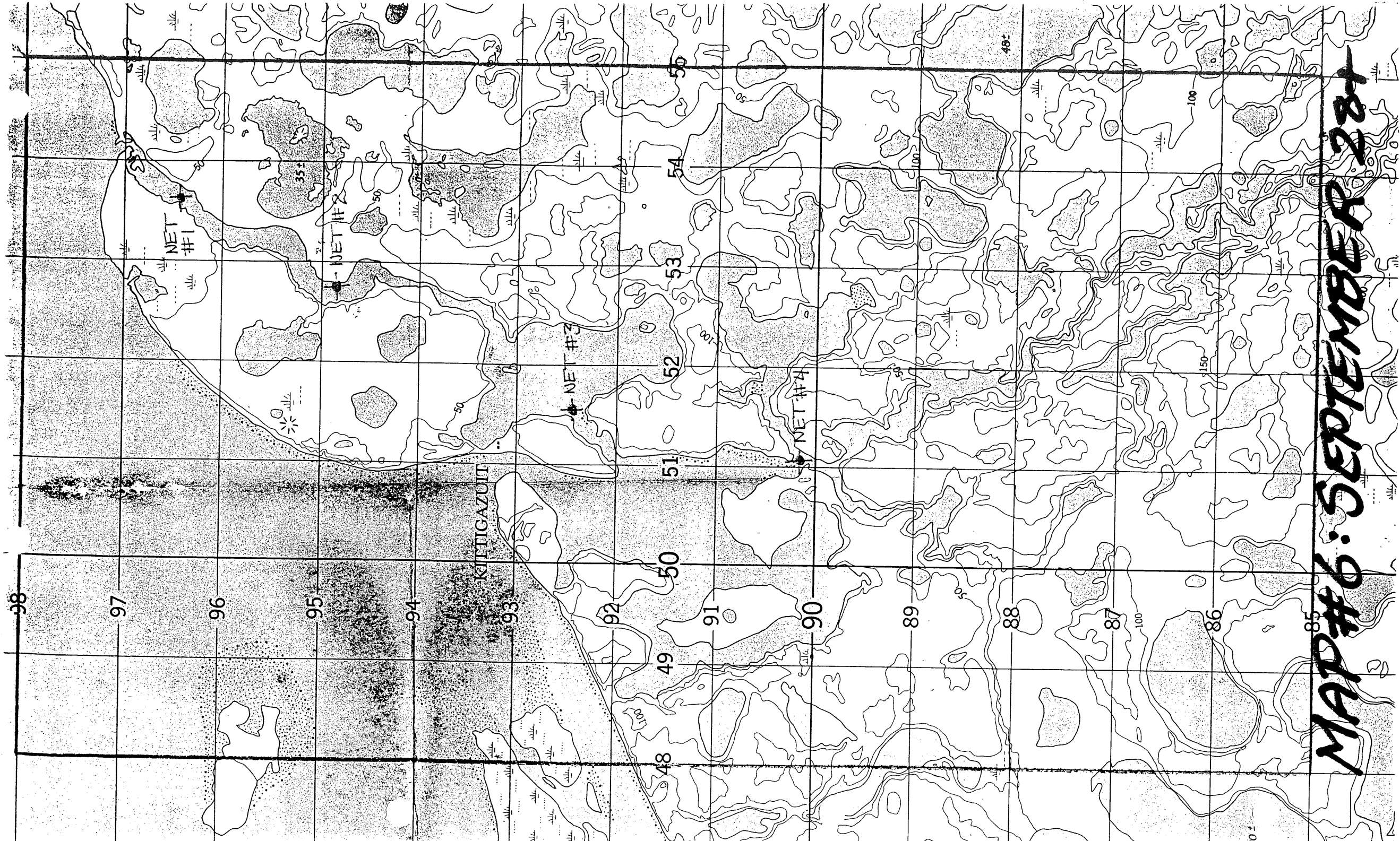
NET #4

MAP #2

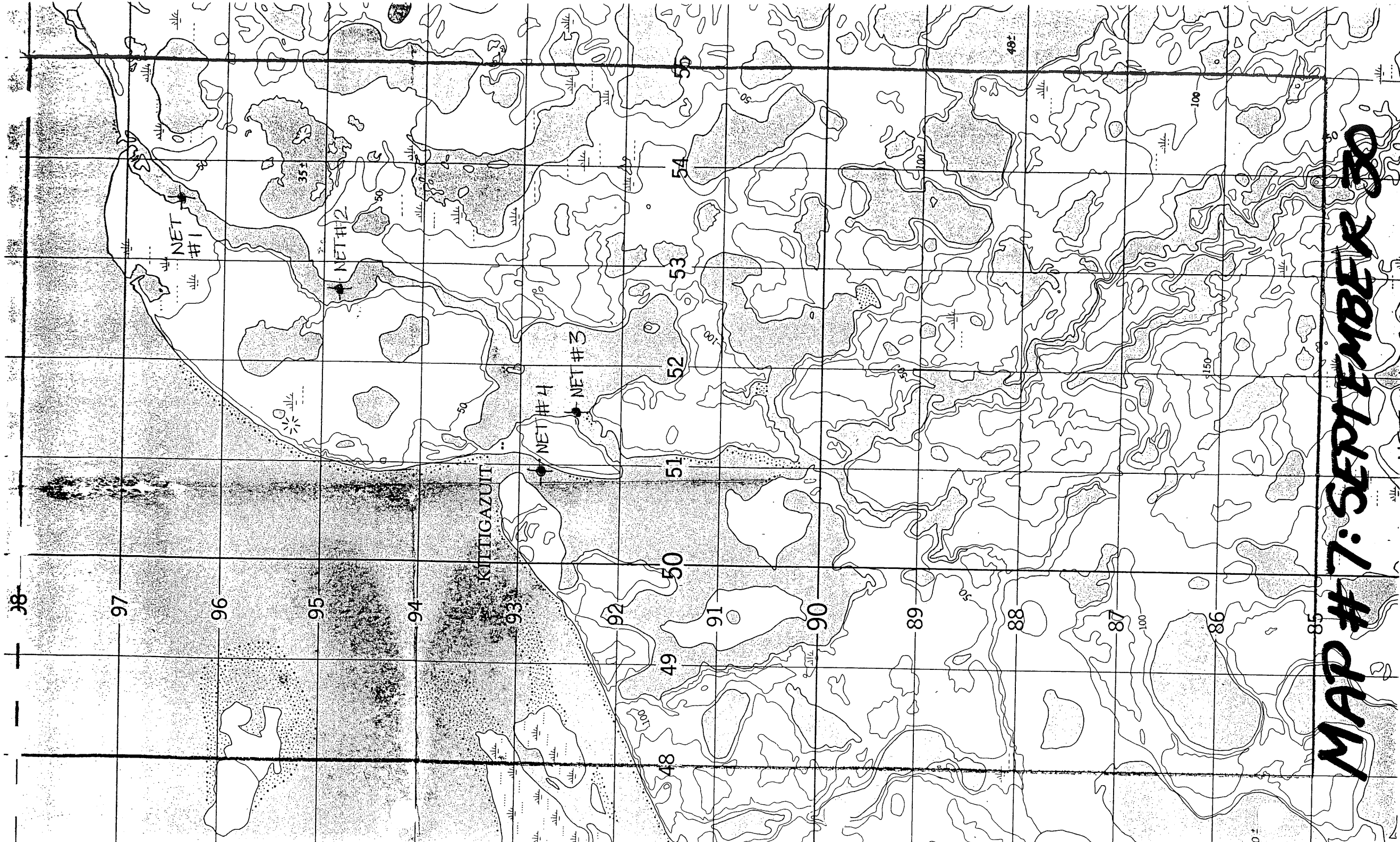
SEPTEMBER 7+



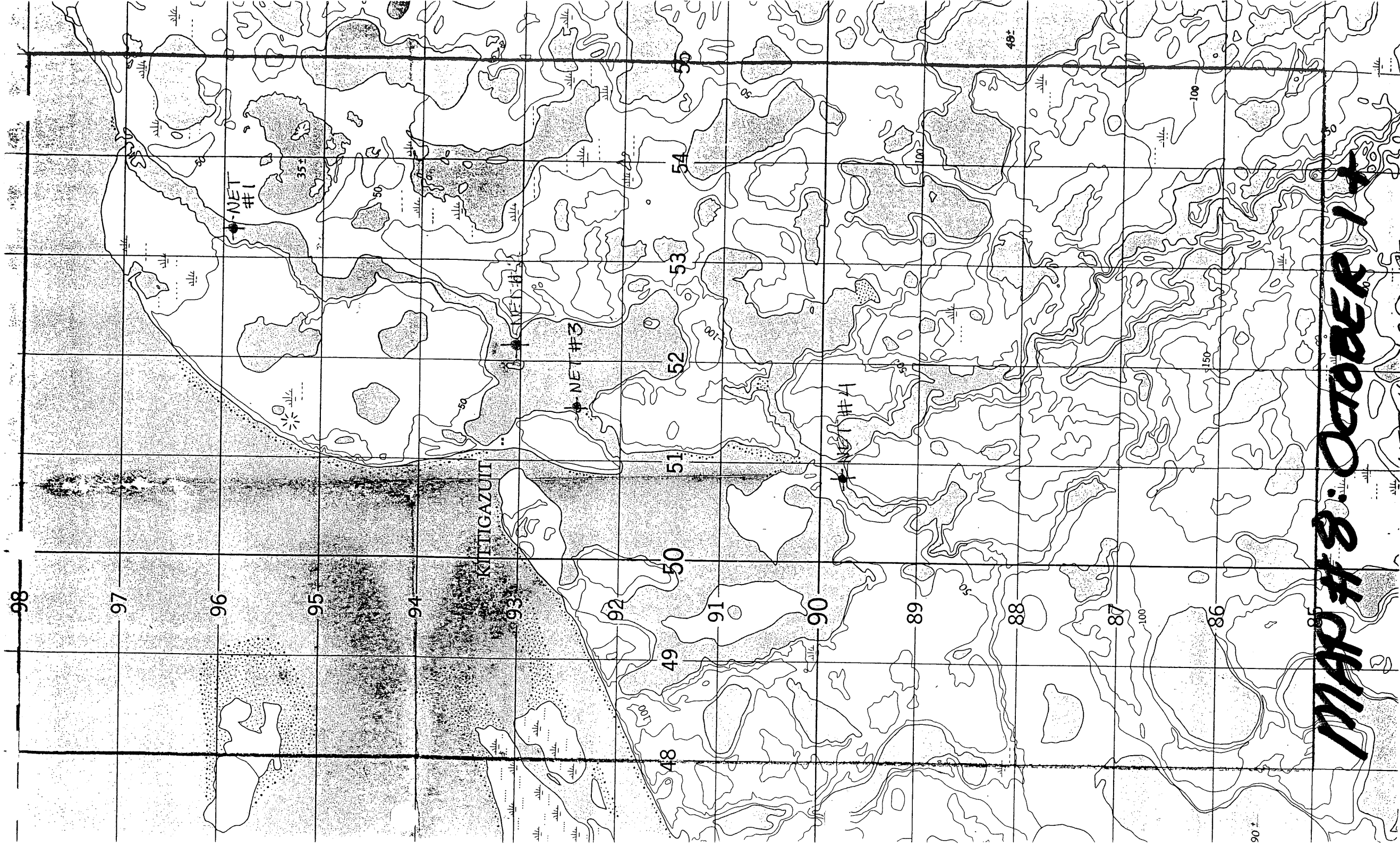
MAP #4: SEPTEMBER 13+



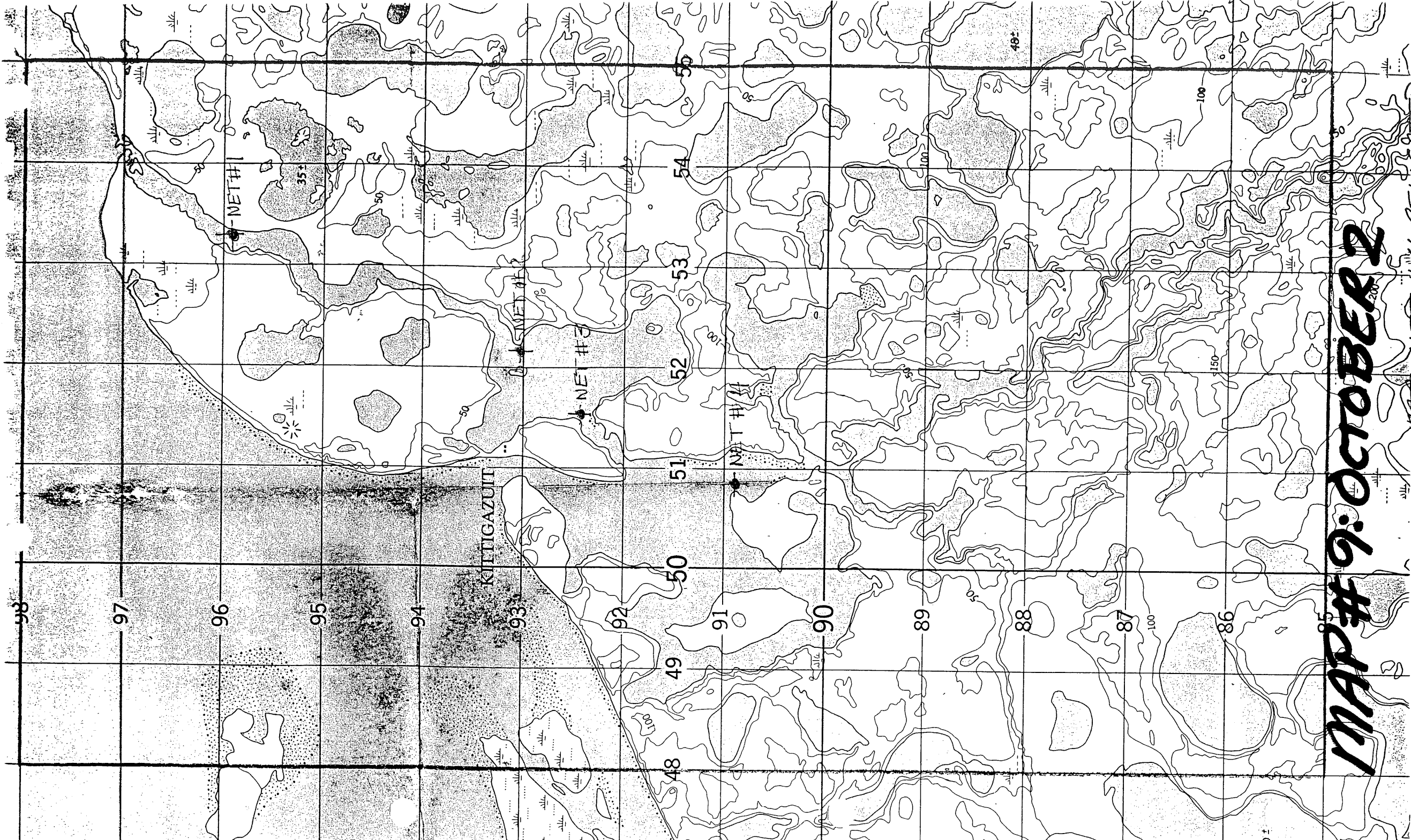
MAP #6: SEPTEMBER 28th



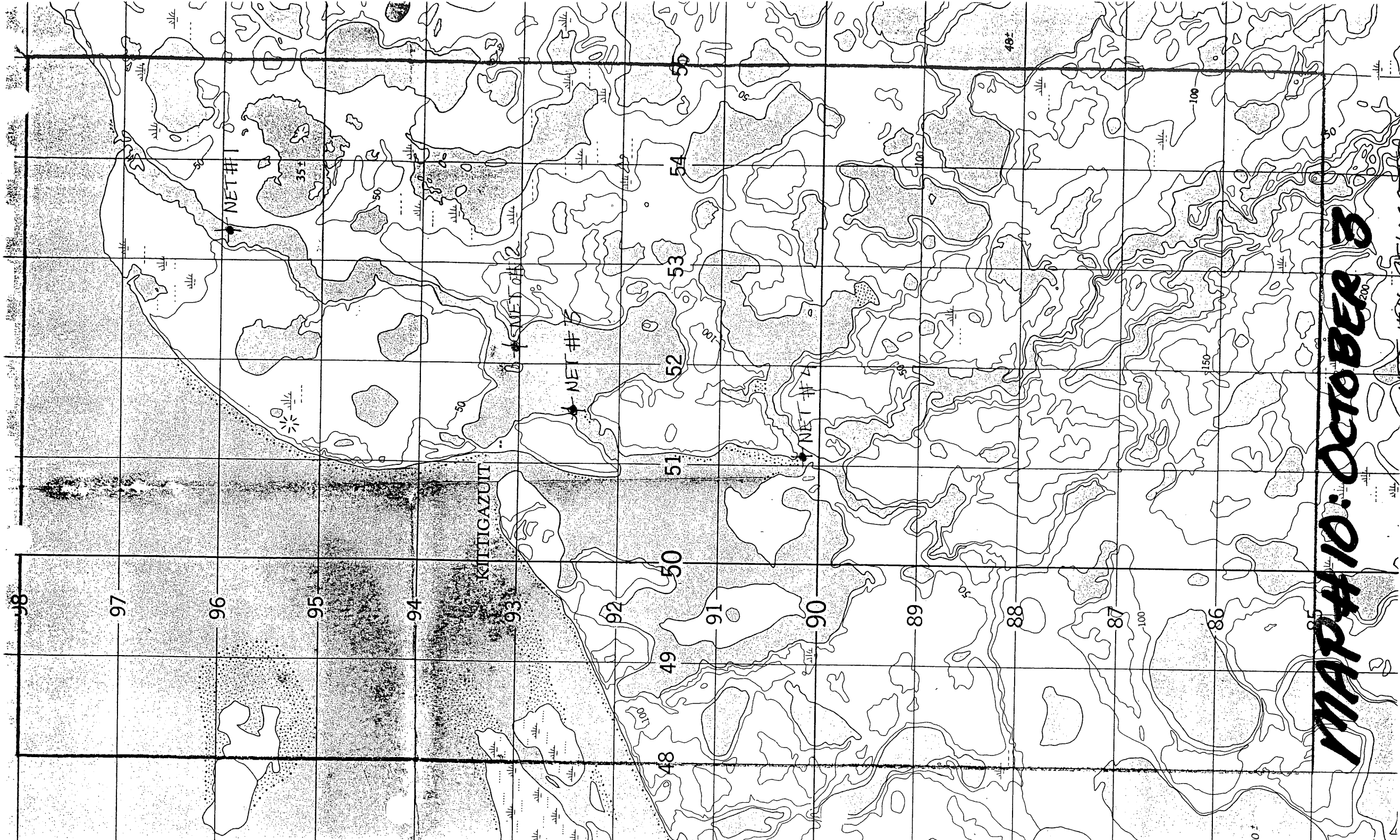
MAP # 7: SEPTEMBER 30

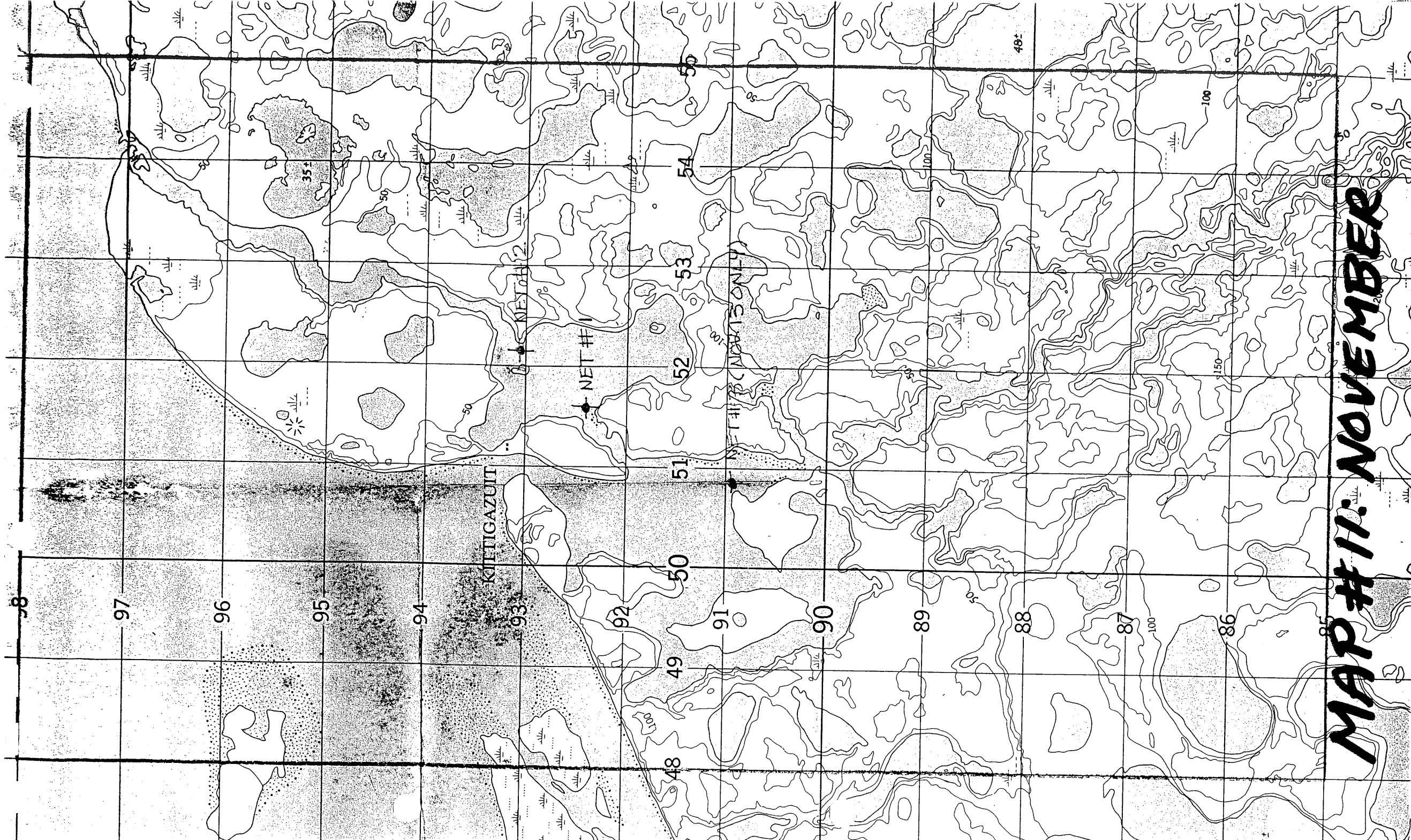


MAP #8: OCTOBER 1



MAP # 9: OCTOBER 2





MAP #11: NOVEMBER

APPENDIX I

DAILY CATCH DATA FOR INDIVIDUAL NETS

BROAD WHITEFISH STUDY - NET # 1 - 4.5" mesh 50 yds (Refer to maps for location)

September 7 95

Time Set	4:05 pm	6:20 pm	8:30 pm	
Time Checked	6:15 pm	8:25 pm	10:25 pm	TOTALS
BWF	7	1	2	10
LWF	1	-	1	2
INCONNU	2	-	-	2
N. PIKE	-	-	-	0

September 8

Time Set	11:10 am	1:35 pm	3:55 pm	6:15 pm	
Checked	1:25 pm	3:45 pm	6:00 pm	7:50 pm	TOTALS
BWF	5	1	4	3	13
LWF	1	-	1	-	2
INCONNU	3	3	6	2	14
N. PIKE	-	-	-	-	0

September 9

Time Set	11:25 am	1:50 pm	6:55 pm	
Time Checked	11:35 am	6:40 pm	8:50 pm	TOTALS
BWF	8	5	2	15
LWF	-	-	-	0
INCONNU	2	10	6	18
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 1 (continued)

September 10

Time Set	10:50 am	1:00 pm	4:00 pm	6:15 pm	
Checked	12:50 pm	3:40 pm	6:00 pm	8:05 pm	TOTALS
BWF	-	3	1	1	5
LWF	-	-	-	-	0
INCONNU	4	7	1	3	15
N. PIKE	-	-	-	-	0

September 11

Time Set	1:55 pm	3:45 pm	5:15 pm	7:00 pm	
Checked	3:30 pm	5:05 pm	6:50 pm	8:45 pm	TOTALS
BWF	1	-	4	-	5
LWF	-	-	-	-	0
INCONNU	2	11	2	-	15
N. PIKE	-	-	-	-	0
LOCHE	-	-	-	1	1

September 13

Time Set	11:45 am	2:05 pm	5:05 pm	
Time Checked	2:00 pm	4:55 pm	7:45 pm	TOTALS
BWF	1	4	-	5
LWF	-	-	-	0
INCONNU	-	11	14	25
N. PIKE	-	-	-	0
Loche	-	-	1	1

BROAD WHITEFISH STUDY - NET # 1 (continued)

September 14

Time Set	10:45 am	1:05 pm	4:05 pm	
Time Checked	1:00 pm	4:00 pm	6:40 pm	TOTALS
BWF	-	5	-	5
LWF	-	-	-	0
INCONNU	1	1	16	18
N. PIKE	-	-	-	0
Loche	-	-	1	1

September 17

Time Set	10:55 am	1:15 pm	3:20 pm	5:30 pm	
Checked	1:00 pm	3:15 pm	5:20 pm	8:30 pm	TOTALS
BWF	-	1	1	3	5
LWF	-	-	-	-	0
INCONNU	-	-	2	11	13
N. PIKE	-	-	-	-	0

September 20

Time Set	11:10 am	-	-	-	
Checked	1:35 pm	-	-	-	TOTALS
BWF	3	-	-	-	3
LWF	-	-	-	-	0
INCONNU	7	-	-	-	7
N. PIKE	-	-	-	-	0

BROAD WHITEFISH STUDY - NET # 1 (continued)**September 28**

Time Set	11:00 am	1:30 pm	6:00 pm	
Time Checked	1:25 pm	5:50 pm	8:20 pm	TOTALS
BWF	-	1	-	1
LWF	-	-	-	0
INCONNU	1	3	4	8
N. PIKE	-	-	-	0

September 29

Time Set	10:30 am	1:05 pm	3:50 pm	
Time Checked	1:00 pm	3:45 pm	6:30 pm	TOTALS
BWF	-	-	-	0
LWF	-	-	-	0
INCONNU	1	4	13	17
N. PIKE	-	1	-	1

NOTE:**NET RELOCATED AM. 30 SEPTEMBER - REFER TO MAP FOR NEW LOCATION****September 30**

Time Set	10:45 am	1:05 pm	3:30 pm	
Time Checked	1:05 pm	3:25 pm	6:00 pm	TOTALS
BWF	1	2	1	4
LWF	-	-	-	0
INCONNU	7	3	13	23
N. PIKE	-	1	1	2

BROAD WHITEFISH STUDY - NET # 1 (continued)

October 1

Time Set	11:00 am	1:40 pm	4:25 pm	
Time Checked	1:35 pm	4:15 pm	6:35 pm	TOTALS
BWF	2	1	2	5
LWF	-	1	-	1
INCONNU	8	8	12	28
N. PIKE	-	-	-	0

October 2

Time Set	11:25 am	1:30 pm	3:40 pm	
Time Checked	1:25 pm	3:35 pm	5:50 pm	TOTALS
BWF	-	1	1	2
LWF	1	-	-	1
INCONNU	9	6	2	17
N. PIKE	-	-	-	0

October 3

Time Set	10:50 am	1:10 pm	3:40 pm	
Time Checked	1:05 pm	3:35 pm	6:10 pm	TOTALS
BWF	-	-	1	1
LWF	-	1	-	1
INCONNU	9	8	10	27
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 1 (continued)

October 5

Time Set	11:45 am	2:15 pm	5:20 pm	
Time Checked	2:10 pm	5:15 pm	7:10 pm	TOTALS
BWF	-	2	2	4
LWF	-	1	-	1
INCONNU	1	3	1	5
N. PIKE	-	-	1	1

**NOTE: STUDY TEAM PULLED DUE TO INCLEMENT WEATHER -
RETURNED NOVEMBER 8 FOLLOWING FREEZE-UP. NET
RELOCATED - REFER TO MAP FOR LOCATION**

November 8

Time Set	2:30 pm	4:45 pm	-	
Time Checked	4:30 pm	Left overnight	-	TOTALS
BWF	8	-	-	8
LWF	-	-	-	0
INCONNU	4	-	-	4
N. PIKE	-	-	-	0

November 9

Time Set	4:45 pm (8 Nov)	12:15 pm	5:30 pm	
Time Checked	12:00 pm (9 Nov)	2:55 pm	Left overnight	TOTALS
BWF	5	6	5	16
LWF	4	-	2	6
INCONNU	5	-	2	7
N. PIKE	-	1	-	1

BROAD WHITEFISH STUDY - NET # 1 (continued)

November 10

Time Set	5:50 pm (9 Nov)	Icing Problems	4:00 pm	
Time Checked	12:05 pm (10 Nov)	Net Not Set	Left overnight	TOTALS
BWF	14	-	-	14
LWF	-	-	-	0
INCONNU	9	-	-	9
N. PIKE	1	-	-	1

November 11

Time Set	4:00 pm (10 Nov)	12:30 pm	5:25 pm	
Time Checked	12:20 pm (11 Nov)	5:15 pm	Left overnight	TOTALS
BWF	16	9	-	14
LWF	2	1	-	3
INCONNU	2	1	-	3
N. PIKE	1	-	-	1
Lake Trout	1	-	-	1

November 12

Time Set	5:25 pm (11 Nov)	12:55 pm	5:30 pm	
Time Checked	12:40 pm (12 Nov)	5:20 pm	Left overnight	TOTALS
BWF	12	4	-	16
LWF	2	1	-	3
INCONNU	1	1	-	2
N. PIKE	-	2	-	2

BROAD WHITEFISH STUDY - NET # 1 (continued)**November 13**

Time Set	5:30 pm (12 Nov)	12:00 pm	4:20 pm	
Time Checked	11:35 am (13 Nov)	4:15 pm	Left overnight	TOTALS
BWF	15	2	-	17
LWF	1	2	-	3
INCONNU	1	1	-	2
N. PIKE	-	1	-	1

November 14

Time Set	4:20 pm (13 Nov)	11:50 pm	5:50 pm	
Time Checked	11:45 am (14 Nov)	5:30 pm	Left overnight	TOTALS
BWF	16	2	-	18
LWF	1	1	-	2
INCONNU	2	-	-	2
N. PIKE	-	1	-	1

November 15

Time Set	5:50 pm (14 Nov)	Pulled		
Time Checked	11:00 am (15 Nov)			TOTALS
BWF	8	-	-	8
LWF	2	-	-	2
INCONNU	2	-	-	2
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 2 - 4.5" mesh 50 yds (Refer to maps for locations)

Net procured from Tuktoyaktuk 12 September. First set 13 September.

September 13

Time Set	12:05 pm	2:20 pm	5:20 pm	
Checked	2:10 pm	5:10 pm	8:00 pm	TOTALS
BWF	12	7	11	28
LWF	1	-	-	1
INCONNU	7	6	18	31
N. PIKE	-	-	-	0
LOCHE	-	1	1	2

September 14

Time Set	11:00 am	1:20 pm	4:20 pm	
Checked	1:10 pm	4:10 pm	6:55 pm	TOTALS
BWF	5	8	4	17
LWF	-	2	-	2
INCONNU	3	3	10	16
N. PIKE	-	-	-	0

September 17

Time Set	11:05 am	1:25 pm	5:40 pm	6:10 pm	
Checked	1:20 pm	3:25 pm	6:00 pm	8:45 pm	TOTALS
BWF	-	5	11	5	21
LWF	-	-	-	-	0
INCONNU	2	7	6	5	20
N. PIKE	-	-	-	-	0

NOTE: Recapture Tag # 0607

BROAD WHITEFISH STUDY - NET # 2 (continued)

September 18

Time Set	11:50 am	2:00 pm	6:35 pm	
Checked	1:50 pm	6:15 pm	8:40 pm	TOTALS
BWF	1	7	1	9
LWF	-	-	-	0
INCONNU	14	31	14	59
N. PIKE	-	-	-	0
LOCHE	-	-	1	1

NOTE: Recapture Tag #'s 0030 & 0031

September 20

Time Set	11:30 am	-	-	
Checked	1:30 pm	-	-	TOTALS
BWF	5	-	-	5
LWF	-	-	-	0
INCONNU	24	-	-	24
N. PIKE	-	-	-	0

NOTE: NETS PULLED AFTER FIRST SET

NOTE: NET RELOCATED SINGLE DAY- SEE MAP FOR NEW LOCATION

September 22

Time Set	12:50 pm	3:15 pm	-	
Checked	3:05 pm	7:05 pm	-	TOTALS
BWF	4	3	-	7
LWF	1	1	-	2
INCONNU	16	12	-	28
N. PIKE	1	-	-	1

NOTE: NET RELOCATED TO ORIGINAL LOCATION - SEE MAP

BROAD WHITEFISH STUDY - NET # 2 (continued)

September 28

Time Set	11:05 am	1:40 pm	6:10 pm	
Checked	1:30 pm	6:00 pm	8:25 pm	TOTALS
BWF	-	3	1	4
LWF	-	1	1	2
INCONNU	7	11	11	29
N. PIKE	-	-	-	0
LOCHE	-	-	1	1

September 29

Time Set	10:40 am	1:10 pm	3:55 pm	
Checked	1:05 pm	3:50 pm	6:40 pm	TOTALS
BWF	-	1	1	2
LWF	-	-	-	0
INCONNU	2	5	10	17
N. PIKE	-	-	-	0

September 30

Time Set	11:00 am	1:20 pm	3:45 pm	
Checked	1:15 pm	3:40 pm	6:10 pm	TOTALS
BWF	-	-	-	0
LWF	-	-	-	0
INCONNU	2	9	6	17
N. PIKE	-	1	1	2

NOTE: NET RELOCATED - SEE MAP FOR NEW LOCATION

BROAD WHITEFISH STUDY - NET # 2 (continued)**October 1**

Time Set	11:20 am	1:55 pm	4:35 pm	
Checked	1:50 pm	4:30 pm	6:55 pm	TOTALS
BWF	3	1	3	7
LWF	-	-	-	0
INCONNU	5	9	16	30
N. PIKE	-	1	-	1

October 2

Time Set	11:30 am	1:45 pm	3:55 pm	
Checked	1:40 pm	3:50 pm	6:05 pm	TOTALS
BWF	5	5	2	12
LWF	-	-	-	0
INCONNU	5	4	4	13
N. PIKE	1	1	-	2

October 3

Time Set	11:05 am	1:20 pm	3:55 pm	
Checked	1:15 pm	3:50 pm	6:25 pm	TOTALS
BWF	3	4	6	13
LWF	-	-	-	0
INCONNU	1	1	1	3
N. PIKE	-	-	2	2

BROAD WHITEFISH STUDY - NET # 2 (continued)**October 5**

Time Set	12:00 pm	2:25 pm	5:35 pm	
Checked	2:20 pm	5:30 pm	7:20 pm	TOTALS
BWF	3	3	5	11
LWF	-	-	-	0
INCONNU	3	2	-	5
N. PIKE	1	1	4	6

**NOTE: STUDY TEAM PULLED DUE TO INCLEMENT WEATHER -
RETURNED NOVEMBER 8 FOLLOWING FREEZE-UP. NET
RELOCATED - REFER TO MAP FOR LOCATION**

November 9

Time Set	2:45 pm	5:30 pm	-	
Checked	5:15 pm	Left Overnight	-	TOTALS
BWF	9	-	-	9
LWF	-	-	-	0
INCONNU	-	-	-	0
N. PIKE	-	-	-	0

November 10

Time Set	5:30 pm (Nov 9)	1:05 pm	3:40 pm	
Checked	12:55 pm (Nov 10)	3:35 pm	Left Overnight	TOTALS
BWF	14	2	-	16
LWF	1	-	-	1
INCONNU	5	1	-	6
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 2 (continued)

November 11

Time Set	3:40 pm (Nov10)	12:10 pm	5:15 pm	
Checked	11:55 am (Nov 11)	5:05 pm	Left Overnight	TOTALS
BWF	16	7	-	23
LWF	-	2	-	2
INCONNU	2	-	-	2
N. PIKE	1	1	-	2

November 12

Time Set	5:15 pm (Nov 11)	1:20 pm	5:20 pm	
Checked	1:15 pm (Nov 12)	5:10 pm	Left Overnight	TOTALS
BWF	16	7	-	23
LWF	-	1	-	1
INCONNU	1	-	-	1
N. PIKE	1	-	-	1

November 13

Time Set	5:20 pm (Nov 12)	12:15 pm	4:30 pm	
Checked	12:10 pm (Nov 13)	4:25 pm	Left Overnight	TOTALS
BWF	18	7	-	25
LWF	1	-	-	1
INCONNU	2	1	-	3
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 2 (continued)**November 14**

Time Set	4:30 pm (Nov 13)	12:10 pm	6:05 pm	
Checked	12:05 am (Nov 14)	5:50 pm	Left Overnight	TOTALS
BWF	9	15	-	24
LWF	3	1	-	4
INCONNU	5	-	-	5
N. PIKE	-	-	-	0

November 15

Time Set	6:05 pm (Nov 14)	Pulled	-	
Checked	11:10 am (Nov 11)	-	-	TOTALS
BWF	15	-	-	15
LWF	2	-	-	2
INCONNU	2	-	-	2
N. PIKE	1	-	-	1

BROAD WHITEFISH STUDY - NET # 3 - 4.5" mesh 100 yds (Refer to map for location)

September 7 95

Time Set	3:00 pm	6:05 pm	8:15 pm	
Checked	6:00 pm	8:05 pm	9:55 pm	TOTALS
BWF	8	4	5	17
LWF	-	-	-	0
INCONNU	-	-	-	0
N. PIKE	-	-	1	1

September 8

Time Set	11:30 am	2:10 pm	4:30 pm	6:30 pm	
Checked	2:00 pm	4:15 pm	6:15 pm	8:15 pm	TOTALS
BWF	9	10	11	3	33
LWF	2	4	2	-	8
INCONNU	-	2	2	-	4
N. PIKE	-	1	-	-	1

September 9

Time Set	11:45 am	2:05 pm	7:15 pm	
Checked	1:55 pm	7:05 pm	9:05 pm	TOTALS
BWF	13	15	15	43
LWF	3	2	2	7
INCONNU	1	3	-	4
N. PIKE	2	1	4	7

BROAD WHITEFISH STUDY - NET # 3 (continued)**September 10**

Time Set	11:10 am	1:30 pm	4:20 pm	6:30 pm	
Checked	1:25 pm	4:00 pm	6:15 pm	8:15 pm	TOTALS
BWF	18	24	17	11	70
LWF	-	-	1	1	2
INCONNU	-	3	1	5	9
N. PIKE	1	-	-	-	1

September 13

Time Set	12:15 pm	3:10 pm	5:50 pm	
Checked	2:40 pm	5:30 pm	8:30 pm	TOTALS
BWF	29	26	25	80
LWF	1	1	2	4
INCONNU	-	5	1	6
N. PIKE	1	1	1	3

September 14

Time Set	11:10 am	1:35 pm	4:30 pm	
Checked	1:20 pm	4:20 pm	7:15 pm	TOTALS
BWF	12	15	11	38
LWF	2	1	2	5
INCONNU	3	3	3	9
N. PIKE	2	3	2	7

BROAD WHITEFISH STUDY - NET # 3 (continued)**September 17**

Time Set	11:20 am	1:45 pm	4:10 pm	6:10 pm	
Checked	1:35 pm	3:35 pm	5:55 pm	9:00 pm	TOTALS
BWF	8	6	9	9	32
LWF	1	1	2	-	4
INCONNU	6	10	8	9	33
N. PIKE	-	1	-	-	1
SALMON	-	1	-	-	1

NOTE: SALMON SPP. UNKNOWN - 668 MM OTOLITHS SAMPLED**September 18**

Time Set	12:00 am	2:15 pm	7:00 pm	
Checked	2:05 pm	6:50 pm	9:00 pm	TOTALS
BWF	11	10	11	32
LWF	-	-	2	2
INCONNU	2	2	5	9
N. PIKE	2	2	1	5
ARC. CHARR	-	-	1	1

NOTE: ARCTIC CHARR RIPE FEMALE 614 MM - OTOLITHS SAMPLED**September 20**

Time Set	11:45 am	Pulled	-	
Checked	2:20 pm	-	-	TOTALS
BWF	6	-	-	6
LWF	3	-	-	3
INCONNU	5	-	-	5
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 3 (continued)**September 28**

Time Set	11:20 am	1:55 pm	6:25 pm	
Checked	1:50 pm	6:20 pm	8:40 pm	TOTALS
BWF	1	4	6	11
LWF	-	1	1	2
INCONNU	7	6	2	15
N. PIKE	-	2	-	2

September 29

Time Set	10:50 am	1:20 pm	4:15 pm	
Checked	1:10 pm	4:05 pm	6:55	TOTALS
BWF	4	2	1	7
LWF	-	2	2	4
INCONNU	5	5	5	15
N. PIKE	-	3	3	6

September 30

Time Set	11:10 am	1:30 pm	3:55 pm	
Checked	1:20 pm	3:50 pm	6:25 pm	TOTALS
BWF	4	4	6	14
LWF	-	1	-	1
INCONNU	8	9	5	22
N. PIKE	1	1	2	4

BROAD WHITEFISH STUDY - NET # 3 (continued)**October 1**

Time Set	11:30 am	2:10 pm	4:45 pm	
Checked	2:00 pm	4:40 pm	7:10 pm	TOTALS
BWF	3	6	6	16
LWF	1	1	-	2
INCONNU	5	7	5	17
N. PIKE	3	-	2	5

October 2

Time Set	11:45 am	1:55 pm	4:10 pm	
Checked	1:50 pm	4:00 pm	6:15 pm	TOTALS
BWF	6	4	5	15
LWF	2	-	-	2
INCONNU	2	6	4	12
N. PIKE	-	1	-	1

October 3

Time Set	11:30 am	1:35 pm	4:05 pm	
Checked	1:30 pm	3:50 pm	6:40 pm	TOTALS
BWF	4	2	4	10
LWF	-	-	-	0
INCONNU	4	4	3	11
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 3 (continued)**October 5**

Time Set	12:10 pm	2:40 pm	5:45 pm	
Checked	2:30 pm	5:40 pm	7:35 pm	TOTALS
BWF	3	2	-	5
LWF	-	-	-	0
INCONNU	3	3	5	11
N. PIKE	-	-	-	0

**NOTE: STUDY TEAM PULLED DUE TO INCLEMENT WEATHER -
RETURNED NOVEMBER 8 FOLLOWING FREEZE-UP. NET
RELOCATED - REFER TO MAP FOR LOCATION**

November 13

Time Set	4:05 pm (Nov 12)	Pulled	-	
Checked	12:30 pm (Nov 13)	-	-	TOTALS
BWF	4	-	-	4
LWF	6	-	-	6
INCONNU	6	-	-	6
N. PIKE	-	-	-	0

BROAD WHITEFISH STUDY - NET # 4 - 5" mesh 50 yds (Refer to map for location)

September 7

Time Set	1:50 pm	3:15pm	5:25 pm	8:00 pm	
Checked	3:10 pm	5:20 pm	7:50 pm	9:50 pm	TOTALS
BWF	-	3	2	-	5
LWF	1	2	-	1	4
INCONNU	-	-	-	-	0
N. PIKE	-	-	-	-	0

September 8

Time Set	12:05 pm	2:40 pm	4:40 pm	7:00 pm	
Checked	2:30 pm	4:30 pm	6:45 pm	8:25 pm	TOTALS
BWF	2	2	2	3	9
LWF	-	-	-	-	0
INCONNU	-	-	1	-	1
N. PIKE	-	-	-	-	0

NET RELOCATED - REFER TO MAP FOR NEW LOCATION

September 9

Time Set	12:10 pm	2:25 pm	7:45 pm	
Checked	2:20 pm	7:35 pm	9:30 pm	TOTALS
BWF	3	12	8	23
LWF	-	-	-	0
INCONNU	1	4	5	10
N. PIKE	-	1	-	1

BROAD WHITEFISH STUDY - NET # 4 (continued)**September 10**

Time Set	11:25 am	2:00 pm	5:00 pm	6:45 pm	
Checked	1:45 pm	4:45 pm	6:35 pm	8:35 pm	TOTALS
BWF	7	7	4	6	24
LWF	-	1	-	-	1
INCONNU	5	4	4	6	19
N. PIKE	4	-	-	-	4

September 13

Time Set	12:25 pm	3:30 pm	6:15 pm	
Checked	3:20 pm	6:05 pm	9:00 pm	TOTALS
BWF	11	5	-	16
LWF	-	-	-	0
INCONNU	7	5	5	17
N. PIKE	2	1	1	4
LOCHE	-	1	-	1

NOTE: RECAPTURE TAG # 0864**September 14**

Time Set	11:20 am	2:00 pm	5:00 pm	
Checked	1:50 pm	4:50 pm	7:35 pm	TOTALS
BWF	7	10	4	21
LWF	-	1	-	1
INCONNU	-	3	4	7
N. PIKE	2	1	-	3

NOTE: MORT TAG # 0935

BROAD WHITEFISH STUDY - NET # 4 (continued)**September 17**

Time Set	11:30 am	2:10 pm	4:30 pm	6:35 pm	
Checked	2:00 pm	3:55 pm	6:25 pm	9:25 pm	TOTALS
BWF	2	1	3	4	10
LWF	-	-	-	-	0
INCONNU	1	1	-	1	3
N. PIKE	2	1	-	3	6

September 18

Time Set	12:15 am	2:40 pm	7:20 pm	
Checked	2:25 pm	7:10 pm	9:20 pm	TOTALS
BWF	2	9	5	16
LWF	2	-	-	2
INCONNU	7	5	4	16
N. PIKE	2	2	2	6

September 20

Time Set	11:45 am	Pulled	-	
Checked	2:40 pm	-	-	TOTALS
BWF	9	-	-	9
LWF	-	-	-	0
INCONNU	4	-	-	4
N. PIKE	1	-	-	1

BROAD WHITEFISH STUDY - NET # 4 (continued)**September 28**

Time Set	11:30 am	2:10 pm	6:40 pm	
Checked	2:00 pm	6:35 pm	8:55 pm	TOTALS
BWF	3	1	-	4
LWF	-	-	-	0
INCONNU	4	3	3	10
N. PIKE	1	1	-	2

September 29

Time Set	11:00 am	1:35 pm	3:20 pm	
Checked	1:30 pm	3:15 pm	7:05 pm	TOTALS
BWF	1	-	-	1
LWF	1	-	1	2
INCONNU	1	3	5	9
N. PIKE	-	-	1	1

NET RELOCATED - REFER TO MAP FOR NEW LOCATION**September 30**

Time Set	11:35 am	1:45 pm	4:10 pm	
Checked	1:40 pm	4:05 pm	6:40 pm	TOTALS
BWF	1	-	-	1
LWF	1	-	-	1
INCONNU	3	6	2	11
N. PIKE	3	-	-	3

NET RELOCATED - REFER TO MAP FOR NEW LOCATION

BROAD WHITEFISH STUDY - NET # 4 (continued)

October 1

Time Set	12:15 pm	2:50 pm	5:00 pm	
Checked	2:20 pm	4:55 pm	7:30 pm	TOTALS
BWF	-	-	-	0
LWF	1	1	-	2
INCONNU	-	-	2	2
N. PIKE	5	2	-	7

NET RELOCATED - REFER TO MAP FOR NEW LOCATION.

October 2

Time Set	11:55 am	2:10 pm	4:15 pm	
Checked	2:05 pm	4:10 pm	6:30 pm	TOTALS
BWF	1	1	-	2
LWF	-	-	-	0
INCONNU	-	-	-	0
N. PIKE	-	-	-	0

NET RELOCATED - REFER TO MAP FOR NEW LOCATION

October 3

Time Set	1:50 pm	4:15 pm	-	
Checked	4:10 pm	6:55 pm	-	TOTALS
BWF	1	-	-	1
LWF	-	-	-	0
INCONNU	-	-	-	0
N. PIKE	-	2	-	2

BROAD WHITEFISH STUDY - NET # 4 (continued)

October 5

Time Set	12:15 pm	2:55 pm	5:55 pm	
Checked	2:45 pm	5:50 pm	7:45 pm	TOTALS
BWF	1	-	1	2
LWF	-	-	-	0
INCONNU	3	1	1	4
N. PIKE	-	1	-	1

**NOTE: STUDY TEAM PULLED DUE TO INCLEMENT WEATHER -
RETURNED NOVEMBER 8 FOLLOWING FREEZE-UP. NET # 4 NOT
SET IN NOVEMBER.**

APPENDIX II

SUMMARIZED NET CATCH DATA

BROAD WHITEFISH STUDY: NET # 1 SUMMARY

	-----LOCATION 1-----												-----LOCATION 2-----				-----LOCATION 3-----										
	September												October				November										
Date	7	8	9	10	11	13	14	17	20	28	29	30	1	2	3	5	8	9	10	11	12	13	14	15	Totals		
BWF	10	13	15	5	5	5	5	5	3	1	0	4	5	2	1	4	8	16	14	14	16	17	18	8	194		
LWF	2	2	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	6	0	3	3	3	2	2	27		
Inconnu	2	14	18	15	15	25	18	13	7	8	17	23	28	17	27	5	4	7	9	3	2	2	2	2	283		
N. Pike	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	1	1	1	2	1	1	0	11		
Loche	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3		
LkTrout	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1		

BROAD WHITEFISH STUDY: NET # 2 - SUMMARY

[illegible]

BROAD WHITEFISH STUDY: NET # 3 - SUMMARY

[illegible]

BROAD WHITEFISH STUDY: NET # 4 - SUMMARY

[illegible]

APPENDIX III

DAILY TAGGING DATA FOR INDIVIDUAL SITES

**BROAD WHITEFISH STUDY
NET # 1 - TAGGING DATA**

SEPTEMBER 7 95 Total = 10

Tag Number	Fork Length (mm)
00512	427
00514	459
00515	448
00516	447
00517	460
00518	435
00519	530
00526	417
00532	397
00533	406

September 8 Total = 11

Tag Number	Fork Length (mm)
00534	440
00535	488
00536	453
00537	470
00538	515
00550	444
00561	445
00562	442
00580	444
00581	458
00582	443

**BROAD WHITEFISH STUDY
NET # 1 - TAGGING DATA**

September 9 Total = 15

Tag Number	Fork Length (mm)
00589	500
00590	524
00591	428
00592	475
00593	476
00594	501
00595	449
00596	459
00613	456
00614	448
00615	465
00616	443
00617	487
00645	438
00646	503

September 10 Total = 5

Tag Number	Fork Length (mm)
00696	443
00697	440
00698	465
00730	463
00752	444

**BROAD WHITEFISH STUDY
NET # 1 - TAGGING DATA**

September 11 Total = 14

Tag Number	Fork Length (mm)
00770	475
00771	390
00772	400
00773	448
00775	496
00826	506
00827	434
00828	478
00829	431
00938	470
00939	462
00940	463
00941	458
00942	512

Total: 55 tagged to date

NOTE:

Only mature / ripe fish tagged after this date.

September 17 Total = 8

Tag Number	Fork Length (mm)
00030	445
00042	491
00066	452
00067	404
00068	444
00145	442
00146	448
00147	472

**BROAD WHITEFISH STUDY
NET # 1 - TAGGING DATA**

September 28 Total = 1

Tag Number	Fork Length (mm)
00181	435

September 30 Total = 3

Tag Number	Fork Length (mm)
00206	450
00212	465
00213	508

October 1 Total = 5

Tag Number	Fork Length (mm)
00224	470
00225	459
00232	468
00240	480
00241	420

October 2 Total = 2

Tag Number	Fork Length (mm)
00263	446
00274	396

October 3 Total = 1

Tag Number	Fork Length (mm)
00296	489

October 5 Total = 4

Tag Number	Fork Length (mm)
00314	464
00315	418
00320	458
00321	460

BROAD WHITEFISH STUDY
NET # 1 - TAGGING DATA

NET # 1 TOTALS:

55 BWF tagged Sept. 7 - Sept. 11

Mean Fish Length: $25198 / 55 = 458.15$ mm

24 Known mature spawners tagged Sept. 17 -
Oct. 5.

Mean Fish Length: $10884 / 24 = 453.5$ mm

Total 79 tags applied.

Mean Fish Length: $36082 / 79 = 456.7$ mm

Tag Recaptures Net 1

NIL

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

September 13 95 Total = 30

Tag Number	Fork Length (mm)
00776	482
00777	454
00778	524
00779	489
00780	490
00781	440
00782	468
00783	433
00784	441
00785	461
00830	535
00831	494
00832	463
00833	511
00834	421
00835	445
00836	406
00870	457
00871	481
00872	463
00873	425
00874	453
00875	436
00876	443
00877	450
00878	414
00879	443

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

00880	432
00914	434
00915	480

**September 13 - Tag Recaptures:
00698 - Tagged Net # 1 Sept. 9**

September 14 Total: 15

Tag Number	Fork Length (mm)
00916	416
00917	472
00918	446
00943	503
00944	457
00945	428
00946	497
00947	469
00948	449
00949	429
00950	452
00976	430
00977	433
00978	499
00979	496

45 BWF tagged to date.

NOTE:

Only mature / ripe fish tagged after this date.

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

September 17

Total = 20

Tag Number	Fork Length (mm)
00031	473
00032	449
00033	399
00034	458
00043	453
00044	448
00045	491
00046	455
00047	475
00048	488
00049	466
00050	485
00051	430
00052	501
00053	484
00069	452
00070	447
00071	477
00072	453
00073	463

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

September 18

Total = 9

Tag Number	Fork Length (mm)
00087	417
00101	461
00102	476
00103	472
00104	469
00105	455
00106	490
00107	435

September 18 - Tag Recaptures:

00030 - Tagged Net # 1 Sept. 11

00031 - Tagged Net # 2 Sept. 14

September 20

Total = 5

Tag Number	Fork Length (mm)
00148	490
00149	454
00150	460
00151	510
00152	467

September 22

Total = 7

Tag Number	Fork Length (mm)
00169	444
00171	473
00172	433
00173	431
00174	497
00175	497
00176	488

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

September 28 Total = 3

Tag Number	Fork Length (mm)
00182	481
00183	475
00184	467

September 29 Total = 2

Tag Number	Fork Length (mm)
00201	453
00204	475

October 1 Total = 7

Tag Number	Fork Length (mm)
00226	431
00227	465
00228	483
00233	425
00242	455
00243	488
00244	398

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

October 2 Total = 12

Tag Number	Fork Length (mm)
00251	423
00252	479
00253	468
00254	485
00255	409
00264	443
00265	515
00266	404
00267	437
00268	428
00275	390
00276	416

October 3 Total = 13

Tag Number	Fork Length (mm)
00282	431
00283	438
00284	439
00289	424
00290	406
00291	453
00292	447
00297	388
00298	432
00299	400
00300	447
00301	449

**BROAD WHITEFISH STUDY
NET # 2 TAGGING DATA**

October 5

Total = 11

Tag Number	Fork Length (mm)
00307	440
00308	448
00309	420
00316	433
00317	448
00318	490
00322	438
00323	379
00324	452
00325	418
00326	440

NET # 2 TOTALS:

45 BWF tagged Sept. 7 - Sept. 14.

Mean Fish Length: $20644/45 = 458.76$ mm

89 Known mature spawners tagged Sept. 17 -
Oct. 5.

Mean Fish Length: $39319/89 = 441.79$ mm

Total 134 tags applied.

Mean Fish Length: $59963/134 = 447.5$ mm

Tag Recaptures Net 2:

Sept. 13 # 00698 - Tagged Net # 1 Sept. 9

Sept. 18 # 00030 - Tagged Net # 1 Sept. 11

00031 - Tagged Net # 2 Sept. 14

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

September 7 95

Total = 17

Tag Number	Fork Length (mm)
00504	472
00505	455
00506	394
00507	400
00508	425
00509	437
00510	409
00511	410
00522	458
00523	431
00524	443
00525	497
00527	375
00528	389
00529	405
00530	369
00531	435

September 8

Total = 33

Tag Number	Fork Length (mm)
00539	454
00540	415
00541	463
00542	403
00543	508
00544	436
00545	442

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00546	421
00547	496
00551	455
00552	420
00553	427
00554	439
00555	448
00556	452
00557	477
00558	475
00559	387
00560	449
00567	393
00568	402
00569	412
00570	440
00571	381
00572	403
00573	428
00574	402
00575	454
00576	446
00577	393
00583	406
00584	389
00585	457

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

September 9

Total = 43

Tag Number	Fork Length (mm)
00597	426
00598	434
00599	458
00600	433
00601	413
00602	448
00603	410
00604	429
00605	432
00606	434
00607	494
00608	434
00609	439
00618	421
00619	479
00620	445
00621	423
00622	487
00623	416
00624	395
00625	400
00626	444
00627	468
00628	465
00629	403
00630	397
00631	445

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00632	476
00647	478
00648	485
00649	428
00650	434
00651	408
00652	433
00653	468
00654	397
00655	425
00656	437
00657	420
00658	388
00659	420
00660	416
00661	405

September 10

Total = 68

Tag Number	Fork Length (mm)
00670	443
00671	463
00672	427
00673	450
00674	410
00675	405
00676	400
00677	470
00678	376
00679	454
00680	457

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00681	403
00682	425
00684	446
00685	441
00686	453
00687	430
00688	472
00699	419
00700	469
00701	455
00702	461
00703	428
00704	409
00705	473
00707	434
00708	463
00709	496
00710	489
00711	495
00712	495
00713	436
00714	455
00715	428
00716	468
00717	485
00718	461
00719	444
00720	405
00721	373

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00722	411
00731	412
00732	426
00733	406
00734	423
00735	410
00736	378
00737	476
00738	428
00739	418
00740	419
00741	403
00742	373
00743	408
00744	394
00745	416
00746	412
00747	401
00753	391
00754	414
00755	468
00756	415
00757	399
00758	444
00759	409
00760	445
00761	438
00763	384

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

September 13

Total = 80

Tag Number	Fork Length (mm)
00786	485
00787	517
00788	469
00789	478
00790	431
00791	472
00792	458
00793	481
00794	482
00795	443
00796	449
00797	409
00798	490
00799	488
00800	454
00801	470
00802	412
00803	436
00804	520
00805	426
00806	438
00807	413
00808	431
00809	436
00810	420
00811	400
00812	419

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00813	418
00814	399
00837	505
00838	407
00839	425
00840	505
00841	430
00842	434
00843	460
00844	444
00845	523
00846	393
00847	409
00848	485
00849	480
00850	428
00851	455
00852	412
00853	445
00854	400
00855	467
00856	407
00857	507
00858	443
00859	410
00860	398
00861	390
00862	376
00881	453

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00882	452
00883	414
00884	429
00885	453
00886	466
00887	471
00888	431
00889	439
00890	439
00891	416
00892	462
00893	434
00894	416
00895	426
00896	450
00897	430
00898	445
00899	445
00900	465
00901	418
00902	423
00904	425
00905	440
00906	417

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

September 14

Total = 38

Tag Number	Fork Length (mm)
00919	418
00920	430
00921	488
00922	470
00923	439
00924	473
00925	482
00926	470
00927	366
00928	451
00929	463
00930	426
00951	487
00952	462
00953	461
00954	443
00955	428
00956	428
00957	460
00958	469
00959	456
00960	430
00961	438
00962	420
00963	399
00964	381
00965	473

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00980	432
00981	450
00982	446
00983	453
00984	458
00985	406
00986	495
00987	425
00988	464
00989	440
00990	428

279 Fish tagged to date.

NOTE:

Only mature / ripe fish tagged after this date.

September 17 Total = 32

Tag Number	Fork Length (mm)
00995	383
00996	418
00997	465
00998	480
00999	410
01000	384
00026	407
00027	475
00035	411
00036	411
00037	428
00038	387

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00039	458
00040	432
00054	419
00055	390
00056	402
00057	408
00058	441
00059	436
00060	404
00061	383
00062	518
00074	500
00075	450
00076	439
00077	442
00078	503
00079	495
00080	499
00081	463
00082	470

September 18 Total = 32

Tag Number	Fork Length (mm)
00088	406
00089	408
00090	400
00091	393
00092	460
00093	427
00094	418

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00095	430
00096	439
00097	457
00098	448
00108	419
00109	408
00110	427
00111	436
00112	376
00113	390
00114	463
00115	448
00116	465
00117	435
00128	463
00129	491
00130	382
00131	476
00132	400
00133	446
00134	425
00135	396
00136	394
00137	439
00138	420

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

September 20

Total = 7

Tag Number	Fork Length (mm)
00153	392
00154	376
00155	390
00156	392
00157	435
00158	433
00159	456

September 28

Total = 11

Tag Number	Fork Length (mm)
00177	399
00185	374
00186	394
00187	430
00188	491
00190	453
00191	422
00192	430
00193	405
00194	437
00195	445

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

September 29 Total = 7

Tag Number	Fork Length (mm)
00196	410
00197	415
00198	369
00199	388
00202	460
00203	396
00205	494

September 30 Total = 14

Tag Number	Fork Length (mm)
00207	463
00208	437
00209	439
00210	496
00214	411
00215	466
00216	484
00217	475
00218	479
00219	461
00220	450
00221	442
00222	516
00223	448

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

October 1 Total = 15

Tag Number	Fork Length (mm)
00229	437
00230	452
00231	442
00234	489
00235	425
00236	454
00237	451
00238	444
00239	447
00245	465
00246	485
00247	430
00248	411
00249	438
00250	413

October 2 Total = 15

Tag Number	Fork Length (mm)
00256	473
00257	455
00258	433
00259	500
00760	465
00261	444
00269	450
00270	445
00271	510
00272	484

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

00277	442
00278	452
00279	475
00280	485
00281	418

October 3 Total = 9

Tag Number	Fork Length (mm)
00285	448
00286	463
00287	438
00288	443
00293	450
00294	523
00303	450
00305	449
00306	536

October 5 Total = 4

Tag Number	Fork Length (mm)
00310	474
00311	426
00312	473
00319	440

**BROAD WHITEFISH STUDY
NET # 3 TAGGING DATA**

NET # 3 TOTALS:

279 BWF tagged Sept. 7 - Sept. 14.

Mean Fish Length: $121903/279 = 436.9$ mm

146 Known mature spawners tagged Sept. 17 - Oct. 5.

Mean Fish Length: $64276/146 = 440.2$ mm

Total 425 tags applied.

Mean Fish Length: $186179/425 = 438.1$ mm

Tag Recaptures Net 3:
NIL

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 7 Total = 5

Tag Number	Fork Length (mm)
00501	485
00502	425
00503	448
00520	454
00521	478

September 8 Total = 11

Tag Number	Fork Length (mm)
00548	415
00549	456
00563	481
00564	485
00565	487
00566	435
00578	510
00579	455
00586	454
00587	480
00588	424

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 9 Total = 23

Tag Number	Fork Length (mm)
00610	425
00611	472
00612	414
00633	448
00634	465
00635	469
00636	490
00638	443
00639	481
00640	435
00641	438
00642	463
00643	394
00644	457
00662	475
00663	441
00664	479
00665	470
00666	473
00667	432
00668	456
00669	532

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 10

Total = 21

Tag Number	Fork Length (mm)
00690	461
00691	463
00692	508
00693	521
00694	461
00695	470
00723	441
00724	415
00725	497
00726	472
00727	458
00728	473
00729	483
00748	440
00749	420
00750	438
00751	566
00764	452
00765	398
00766	439
00767	495

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 13

Total = 25

Tag Number	Fork Length (mm)
00768	448
00769	469
00815	460
00816	447
00817	443
00818	445
00819	462
00820	492
00821	435
00822	466
00823	442
00824	446
00825	433
00863	506
00864	489
00865	496
00868	433
00869	542
00907	429
00908	530
00909	473
00910	474
00911	468
00912	463
00913	443

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 14 Total = 20

Tag Number	Fork Length (mm)
00931	483
00932	494
00933	428
00934	478
00936	472
00937	493
00966	460
00967	459
00968	426
00969	493
00970	446
00971	508
00972	465
00973	497
00974	440
00975	461
00991	444
00992	410
00993	489
00994	443

105 Fish tagged to date

NOTE:

Only mature / ripe fish tagged after this date.

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 17 Total = 10

Tag Number	Fork Length (mm)
00028	512
00029	494
00041	404
00063	494
00064	443
00065	458
00083	453
00084	435
00085	425
00086	419

September 18 Total = 16

Tag Number	Fork Length (mm)
00099	468
00100	457
00118	462
00119	470
00120	493
00121	454
00122	448
00123	497
00124	484
00125	440
00126	474
00140	463
00141	410
00142	470
00143	460
00144	473

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

September 20 Total = 9

Tag Number	Fork Length (mm)
00160	445
00161	436
00162	516
00163	444
00164	463
00165	455
00166	451
00167	438
00168	492

September 28 Total = 4

Tag Number	Fork Length (mm)
00178	430
00179	455
00180	455
00189	465

September 29 Total = 1

Tag Number	Fork Length (mm)
00200	452

September 30 Total = 1

Tag Number	Fork Length (mm)
00211	420

October 2 Total = 2

Tag Number	Fork Length (mm)
00262	405
00273	431

**BROAD WHITEFISH STUDY
NET # 4 TAGGING DATA**

October 3 Total = 1

Tag Number	Fork Length (mm)
00295	397

October 5 Total = 2

Tag Number	Fork Length (mm)
00313	510
00327	455

NET # 4 TOTALS:

105 BWF tagged Sept. 7 - Sept. 14

Mean Fish Length: $48118/105 = 458.3$ mm

46 Known mature spawners tagged Sept. 17 - Oct. 5.

Mean Fish Length: $20578/46 = 447.3$ mm

Total 151 tags applied.

Mean Fish Length: $68696/151 = 454.9$ mm

Tag Recaptures Net 4:
NIL