A

TORNADO PROJECT SUMMARY SHEET

F = ? ONT

1. DATE AND TIME: AUG 27, 1973 MORNING (RECORD 1000 EST)

2. LOCATION OR PATH (attach map): SPANISH RIVER (ARDEN TOWNSHIP) TO FRIDAY LAKE (RHODES TWP) 0697307

3. PATH LENGTH: ☐ NOT KNOWN ☐ <1mi; ☐ 1-4mi; ☐ 5-10mi; ☒ 50 11-50mi; ☐ LENGTH IF>50mi

4. PATH WIDTH (ESTIMATED) 350 YDS TO 1500 YDS 5. TORNADO PART OF SQUALL LINE? ☐ YES; ☐ NO; ☐ UNKNOWN:

6. ANY UNUSUAL COLORATION? ☐ YES; ☐ NO; ☐ UNKNOWN

7. ANY UNUSUAL SOUND? ☐ YES; ☐ NO; ☐ UNKNOWN

8. IF ANSWER TO 6 OR 7 YES, ELABORATE;

9. LIST ANY ASSOCIATED PHENOMENA
(Such as hail, vivid lightning heavy rain, no rain, etc.)

10. TOTAL DAMAGE ESTIMATE $ U

11. TOTAL DEATHS NONE

12. TOTAL INJURED NONE

13. TOTAL HOMELESS NONE

14. LIST ALL REFERENCES "SUDBURY HARRONIC ESCAPES DAMAGING STORM" by B.J. Kohler ZEPHYR, A.E.S. AUG 1973
POTVIN, D. "STORM DAMAGE AUGUST 28, 1973. OMNR.

15. SUMMARIZE REMARKS PERTAINING TO (a) FUNNEL; (b) INTERESTING OR CAPRICIOUS EVENTS.

(a) none but areal photographs show unmistakable convergence and total destruction damage.

(b) Trees 12 to 14 inches in diameter completely flattened. One camp reduced to a pile of rubble and another untouched.

WORKSHEET

IDTO 0697307

1200 ϕ

(1) ORIGIN x 1743800

y 5243600

(5) Standard Error S_x

1000 ϕ

(2) LIFT-OFF x_1 17474000

y_1 5198000

(6) Standard Error S_y

(3) $(x_1 - x)$ = 39200

(4) $(y - y_1)$ = 45600

(7) DAMAGE LENGTH

$$L = [(x_1 - x)^2 + (y - y_1)^2]^{1/2}$$

(8) $\alpha = \tan^{-1} \dfrac{|y - y_1|}{|x - x_1|}$

(3)+(4) [→ r, θ] = 60133 m

[x ↔ y] = 49°

(9) Standard Error $S_L = (S_x^2 + S_y^2)^{1/2}$

(5)+(6) [→ r, θ] = 1562 ϕ

(10) $\beta = \dfrac{\tan^{-1} S_L}{L}$

(7)+(9) [→ r, θ]

[x ↔ y] = 1°

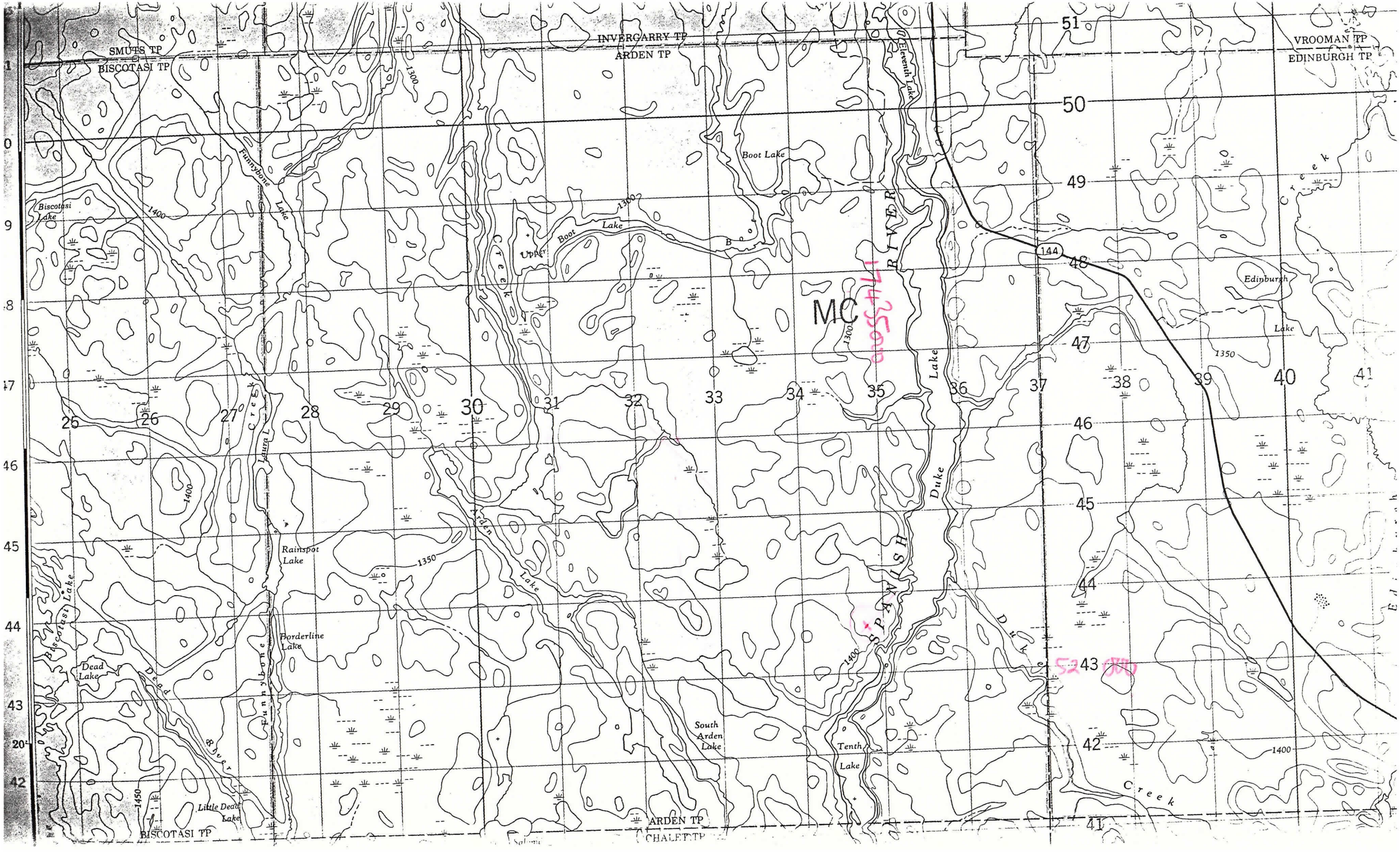
NE quad $\phi = 90 - \alpha$

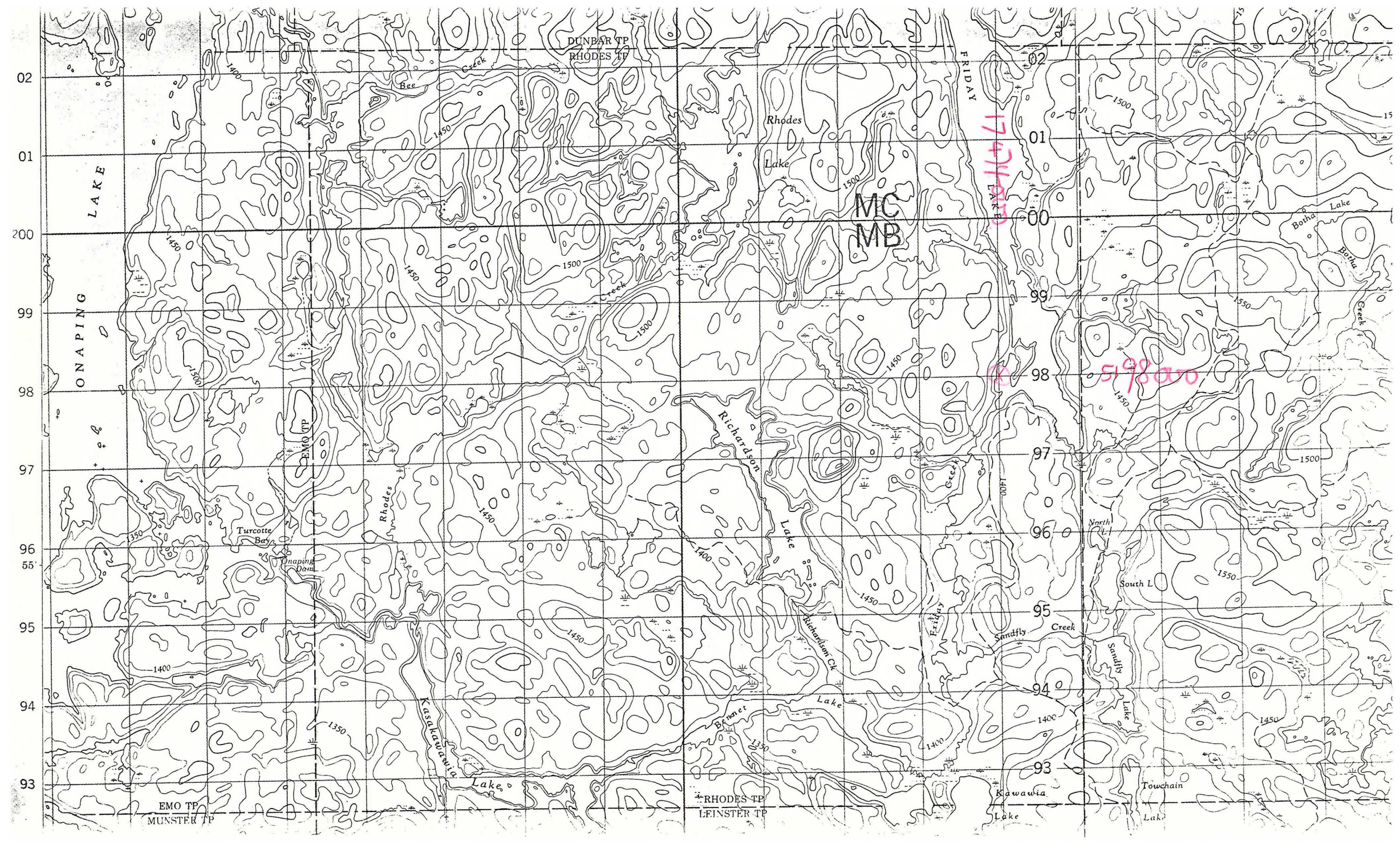
NW quad $\phi = 270 + \alpha$

SW quad $\phi = 270 - \alpha$

SE quad $\phi = 90 + \alpha$

(11) ϕ = 319°


SMUTS TP
BISCOTASI TP
INVERGARRY TP
ARDEN TP
VROOMAN TP
EDINBURGH TP
Biscotasi Lake
Funnybone Lake
Boot Lake
Upper Boot Lake
Eleventh Lake
Creek
RIVER
Duke
Lake
Edinburgh
Lake
Rainspot Lake
Laura Lake
Arden Lake
SPANISH
Borderline Lake
Dead Lake
Dead River
Funnybone Creek
South Arden Lake
Tenth Lake
Little Dead Lake
BISCOTASI TP
ARDEN TP
CHALET TP
144
MC
1300
1350
1400
1450


DUNBAR TP
RHODES TP
Bee Creek
Rhodes Lake
FRIDAY LAKE
ONAPING LAKE
Botha Lake
Botha Creek
Richardson Lake
Richardson Ck
Friday Creek
Sandfly Creek
Sandfly Lake
North L
South L
Turcotte Bay
Onaping Dam
Rhodes Creek
Kasakawawia Lake
Bennet Lake
Kawawia Lake
Towchain Lake
EMO TP
MUNSTER TP
RHODES TP
LEINSTER TP
MC
MB

SUDBURY NARROWLY ESCAPES DAMAGING STORM

PREPARED FOR ZEPHYR 11/9/73 BK

Sudbury was no exception to the eleven day record breaking heat wave which took place in most of Ontario at the end of August and the beginning of September. During the period, August 26th - September 5th, no fewer than eight daily record temperatures were surpassed or equalled.

Thunderstorm activity was also prominent in this hot and humid air mass. They were recorded at the Sudbury Airport on three of these eleven days, with lightning visible on the horizon on three others, indicating of course, thunderstorm activity in the vicinity. At least one of these thunderstorms reached destructive proportions, and were it not for the remote area it matured in, could have exceeded the damage recorded in the Sudbury tornado of August 1970.

On the morning of August 28th, reports of forest damage on Highway 144 to Timmins began filtering in to the Sudbury Weather Office. Accounts of large trees uprooted and broken in a narrow swath, prompted an air survey of the destruction, one week later.

The air survey confirmed fairly extensive forest damage. A swath, averageing one quarter mile in width, could easily be followed from the Spanish River in Arden Township to Friday Lake in Rhodes Township, a distance of about 50 miles. As reported to the Weather Office, trees along the storm path were broken, uprotted or flattened. Although it is difficult to guage the size of the trees from the air, people who viewed the swath where it crossed Highway 144, estimate the base diameter at 12-14 inches.

Damage was confined primarily to the forest, although two cottages seen from the aircraft encountered severe destruction. One camp, at least it appeared to be one, was merely a pile of rubble, while the second, only a few hundred yards distance, had the four walls intact, but the roof was missing. The former structure was near the center of the storm path, while the latter on the edge.

It is interesting to note, if the storm path were extrapolated an additional forty miles, it would pass between the northeastern corner of the City of Sudbury and the Sudbury Airport.

At 11:00PM on August 27th, a heavy thunderstorm was recorded at the Sudbury Airport with observed winds gusting to 55 mph (tower later reported seeing a wind gust to 65 mph). The weather observer, however, comments he was knocked to the ground by a strong wind gust while taking the 11:00PM observation. In Capreol, approximately 10 miles to the north of the airport, pea size hail, heavy rain and winds estimated at 60 mph occurred at about the same time. It is conceivable the heavy thunderstorm recorded at the airport could have resulted from the same cumulonimbus cell which produced the extensive forest damage to the northwest.

Photographs taken during the air survey are of interest. In many areas the trees were fallen, not only in the direction of storm movement, but also inward toward the center of the storm's path, indicating a strong inward force. Professional consultation is currently being sought on the possibility of the storm being classified as a tornado, but the low pressure in a tornado funnel would explain the great inward force displayed in the arrangement of the fallen trees.

This storm occurred three years plus one week after the Sudbury tornado of August 10th, 1970. The previous storm, still vivid in the minds of Sudburians, resulted in five deaths and property destruction exceeding ten million dollars. An additional forty miles on this latest storm, could have resulted in a repeat of the 1970 nightmare, possibly with more disastrous consequences.

MEMORANDUM

GOVERNMENT OF CANADA

NOTE DE SERVICE

GOUVERNEMENT DU CANADA

FROM / DE: Officer in Charge
Weather Office Sudbury

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE - NOTRE RÉFÉRENCE: 5964-1

YOUR FILE - VOTRE RÉFÉRENCE:

DATE: September 6, 1973

TO / À: OMBW

SUBJECT / SUJET: Damaging Storm - August 27th, 1973

1. Enclosed is a collection of material gathered in connection with a violent storm which took place northwest of the Sudbury area. I have not attempted to assess the material, but simply to present the facts.

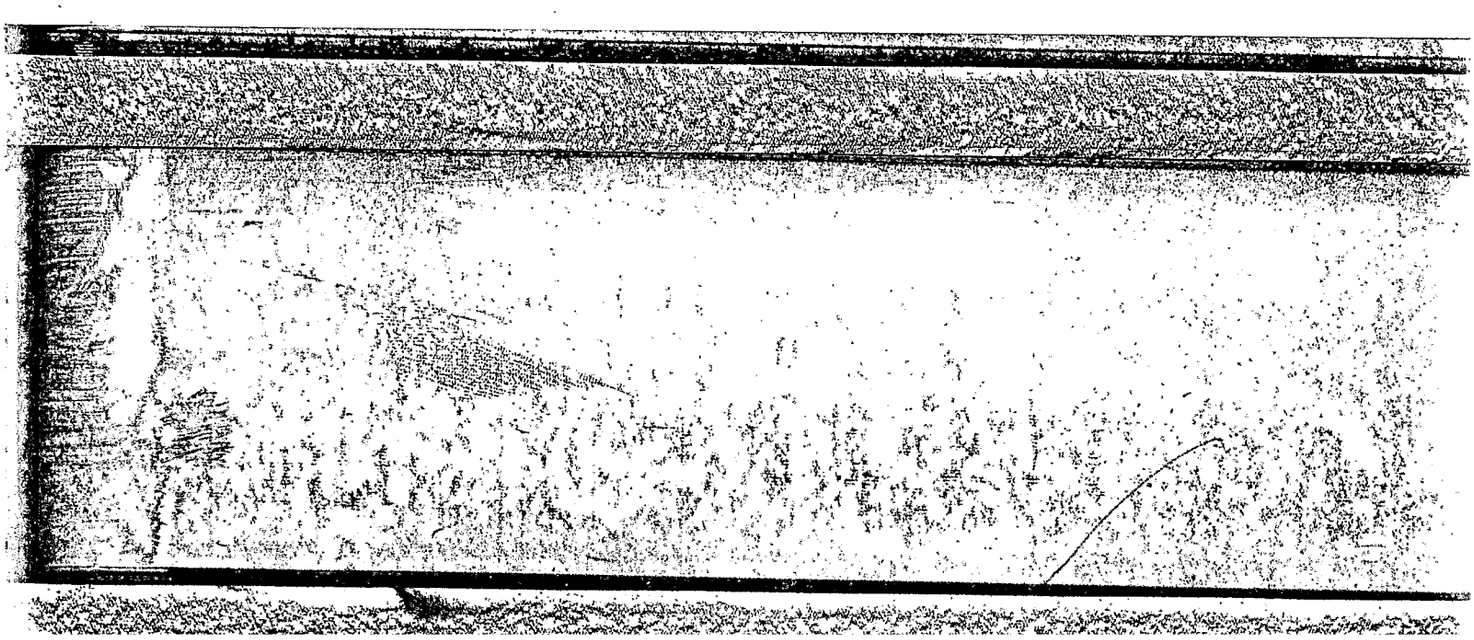
2. The storm followed a path from the Spanish River in Arden Township to Friday Lake in Rhodes Township. Due to the remoteness of the area, it appears no one was in the vicinity, but travelers on Hiway 144 to Timmins, estimate it occured late in the day August 27th, or early in the morning the following day

3. I managed to hitch a flight into the area on September 4th for the purpose of taking some photographs and viewing the reported damage.

3.1 Damage was confined primarily to the forest, although two cottages seen from the aircraft received extensive damage. One camp, at least it appeared to be one, was a pile of rubble, while a second, only a few hundred yards away, had the four walls entact, but the roof was missing. The former structure was near the center of the storm path, while the latter on the edge.

4. The attached map shows the approximate route of the storm. Trees along the path were flattened and the swath, I would estimate, averaged $\frac{1}{4}$ mile in width. Although it is difficult to guage the size of the trees, people who viewed the swath where it crossed Hiway 144, estimate the diameter of the trees at base were 12-14 inches.

5. High winds were reported at Thor Lake, about six miles east of the storm path, but no damaged resulted. It is interesting to note, if the storm path were extrapolated an additional forty miles, it would pass between the northeastern corner of the City of Sudbury and the Sudbury Airport.



MEMORANDUM / NOTE DE SERVICE

GOVERNMENT OF CANADA / GOUVERNEMENT DU CANADA

FROM / DE

TO / À

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE - NI/RÉFÉRENCE

YOUR FILE - V/RÉFÉRENCE

DATE

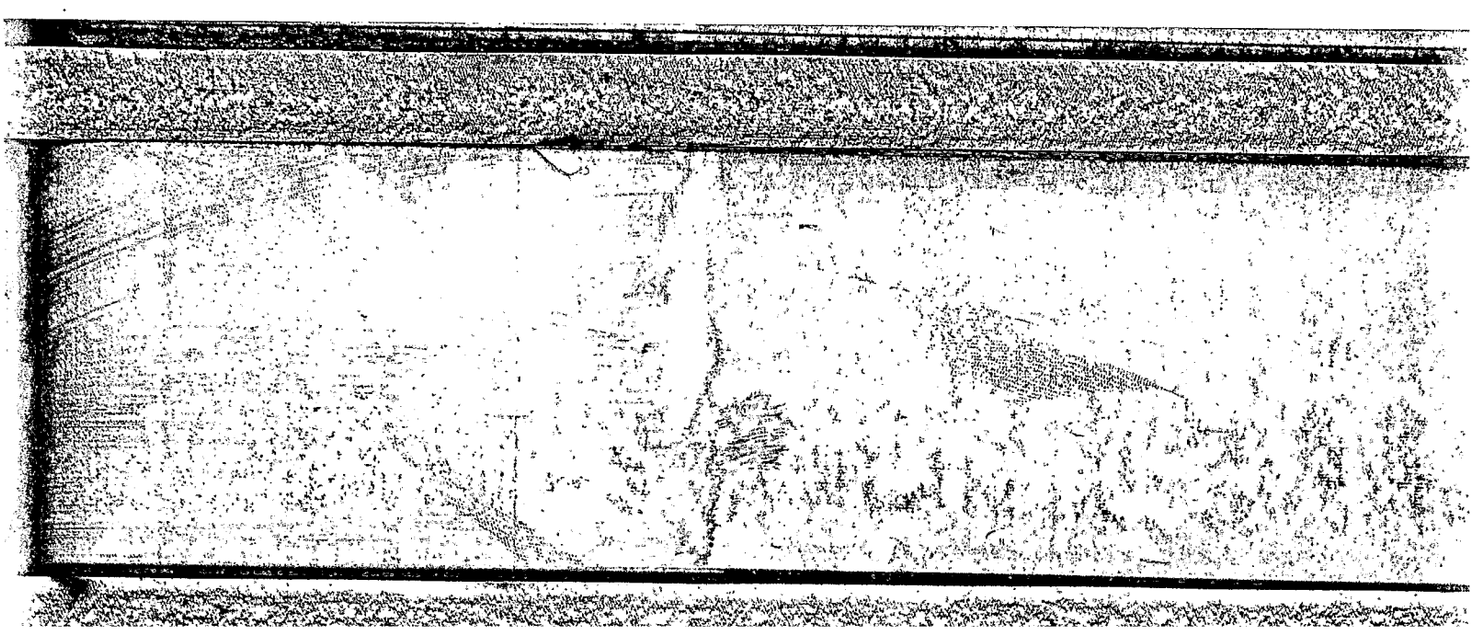
SUBJECT / SUJET

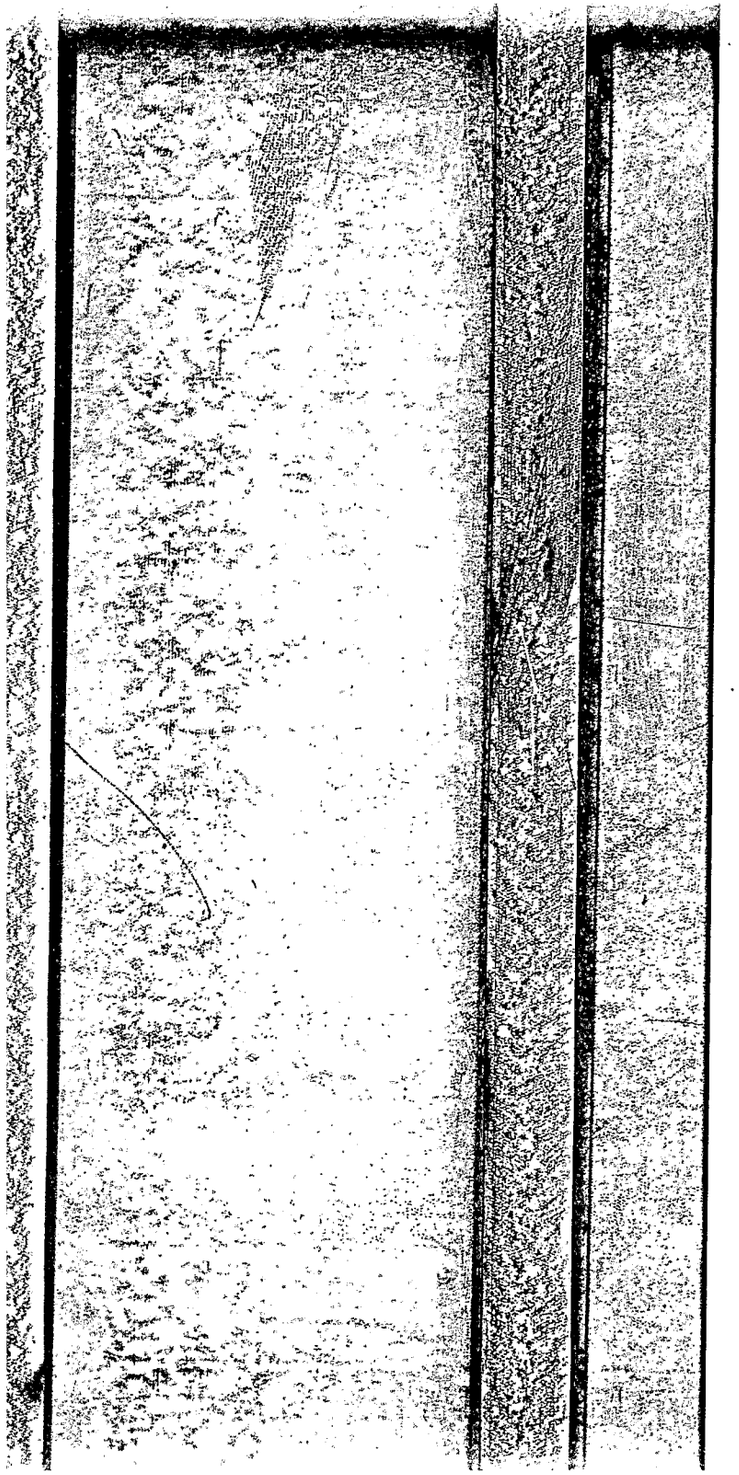
6. At 11:00PM on August 27th, a heavy thunderstorm was recorded at the Sudbury Airport with observed winds gusting to 55 MPH. The weather observer, however, comments he was knocked to the ground by a strong wind gust while taking the 280300Z observation. In Capreol, approximately 10 miles to the north, pea size hail, heavy rain and winds estimated at 60MPH occurred at about the same time. I would speculate the heavy thunderstorm recorded at the airport could have resulted from the same cell which produced the damage to the northwest.

7. The photographs are interesting. It would seem to me, and I do not profess to be an expert in the field, that the position of the broken trees would indicate a strong inward force to the path's center. (photo #1 & #2) Tornado? However, photo #3 shows the trees fallen in the direction of the storm movement. Plow winds?

8. I would very much appreciate any comments you have as to the possibility of tornado activity. Ted Wiacek has expressed interest in the photographs, perhaps you could forward then to YYZ later.

B.J. Kahler
Officer in Charge





Trees levelled, several camps have disappeared

SUDBURY STAR - AUGUST 31st, 1973

Sudbury narrowly escaped damaging storm

As Sudburians were waiting out the heat wave this week, a storm passed within 40 miles of the city early in the week which could have caused damage similar to that experienced in a severe storm which hit Sudbury in August, 1970.

Monday night, while city residents were watching a violent electrical storm slip around Sudbury, a high intensity ripped through a 40 - mile stretch of land to the west.

From an air survey conducted by the ministry of natural resources Thursday, it was found that a path — at times 350 yards wide — could be traced from the Spanish River in Arden township near Espanola to Friday Lake in Rhodes township near Lake Onaping in which all standing vegetation was flattened.

Trees were reported uprooted, broken and strewn around "like a bulldozer went through them," according to a ministry official.

"It must have been of a really high velocity for it levelled everything in its path," he added.

CAMPS DISAPPEARED

An air surveyor said that several camps in the path of the storm have disappeared and three cottages in the Onaping Lake area were "just a pile of timber."

No one apparently was in the camps or the cottages at the time, as the Dowling detachment of the provincial police had no reports of injuries or missing persons.

It was also because of the relatively isolated location of the storm that reports of the extent of the damage did not begin to filter back to Sudbury until motorists travelling Highway 144 noticed the path where it cut across the highway about 50 miles northwest of Sudbury.

THUNDERSTORMS

The Sudbury weather bureau does not believe it was a tornado which swept through the area because it had no radar recordings for one at the time. The weatherman believes the high wind resulted from a thunderstorm which passed through the immediate Sudbury area twice this week.

As one of the meteorologists explained that a slow - moving cold front moved into the area from the northwest at the beginning of the week. When it hit a mass of hot air upon entering Northern Ontario, strong thunderstorms developed with cloud formations reaching 45,000 feet.

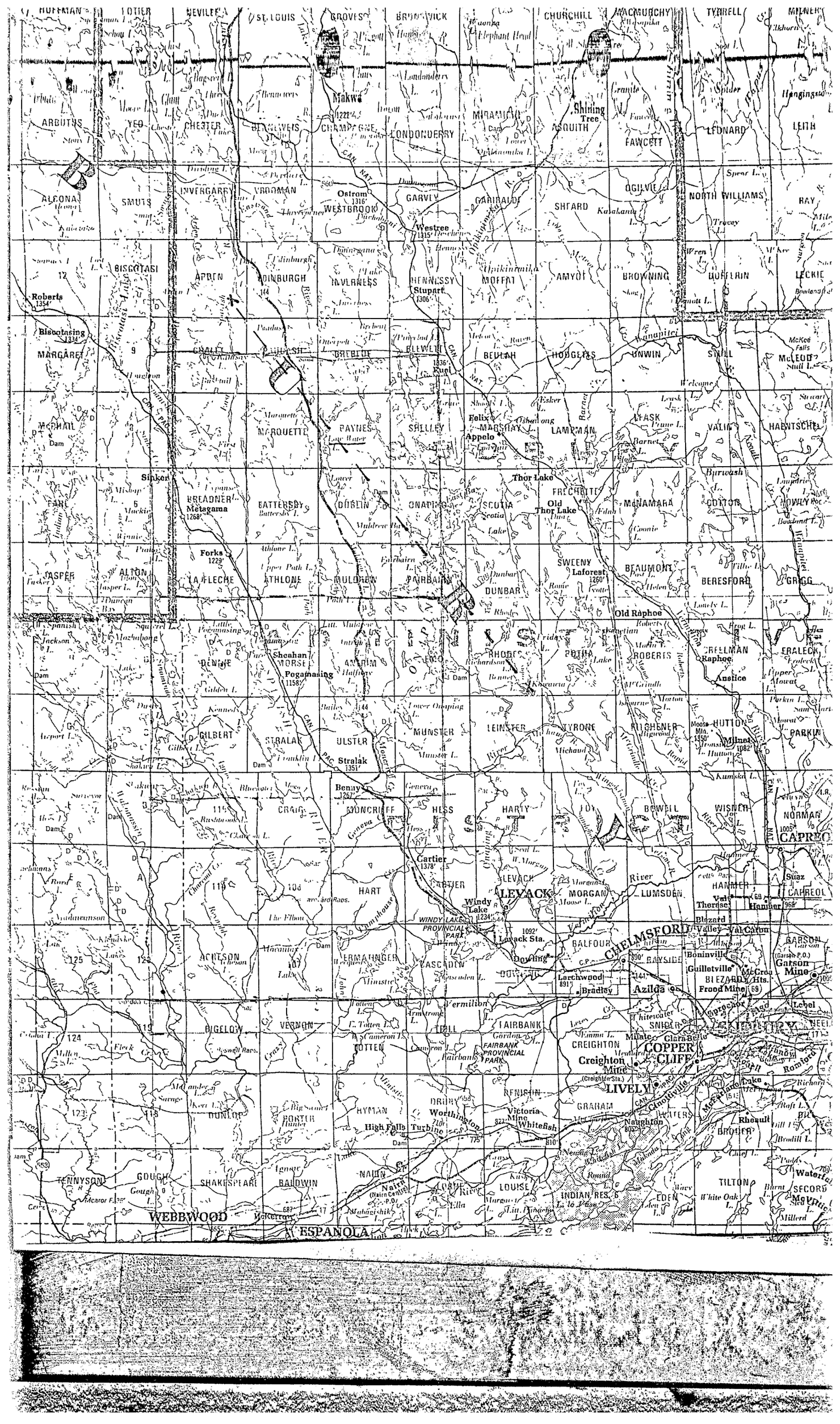
When that height is reached, the downdraft of cold air can be very strong by the time it reaches the ground with wind velocity up to 70 miles an hour.

Moreover, the storms which passed through the area were in individual cells which can create, what he called, "plow winds." These would be the downdraft of an individual storm cell which, when it reaches ground level can be violent, but localized to the area it hits.

This, the weatherman believes was what happened Monday night. He noted that Sudbury caught just the edge of the storm yet winds up to 55 miles an hour were recorded for a time at Sudbury Airport, where the weather office is located.

After just bypassing Sudbury Monday night, the storm passed through the area again Wednesday night as the cold front retreated back into northwestern Ontario.

Again, the potential for a violent thunderstorm was there, but it swept around Sudbury, exhausting its energy elsewhere.


HUFFMAN
TOTTER
NEVILLE
ST. LOUIS
GROVES
BROADWICK
CHURCHILL
MACMURCHY
TYRRELL
MILNER
Makwa
Shining Tree
ARBUTUS
YEO
CHESTER
BENNETT
CHAMPAGNE
LONDONDERRY
MIRAMICHI
ASQUITH
FAWCETT
LEONARD
LEITH
ALCONA
SMUTS
INVERGARRY
VROOMAN
Ostrom
WESTBROOK
GARVEY
GARIBALDI
SHIARD
OGILVIE
NORTH WILLIAMS
RAY
Westree
BISCOTASI
APREN
EDINBURGH
LAVERNESS
HENNESSY
Stuart
MOFFAT
AMYOT
BROWNING
DUFFERIN
LECKIE
Roberts
Biscotasing
MARGARET
CHALLY
BATCHEW
BEULAH
HODGERTS
UNWIN
STILL
McLEOD
McPHAIL
Dam
MARQUETTE
PAYNES
SHELLEY
Felix
MARSHAY
Appelo
LAMPMAN
LASK
VALIN
HAENTSCHEL
Sinker
FARR
BREADNER
Metagama
BATTERSBY
DUBLIN
SCOTIA
Thor Lake
Old Thor Lake
FRECHETTE
McNAMARA
COTTON
HOWEY
JASPER
ALTON
LA FLECHE
ATHLONE
FAIRBAIRN
Forks
SWEENY
Laforest
BEAUMONT
BERESFORD
GREGG
DUNBAR
Old Raphoe
Sheahan
DENISE
MORSE
Pogamasing
ANTRIM
RHODES
POTIA
ROBERTS
RELLMAN
Raphoe
Anstice
ERALECK
GILBERT
STRALAK
ULSTER
Stralak
MUNSTER
LEINSTER
TYRONE
KITCHENER
HUTTON
Milnet
PARKIN
Benny
CRAIG
MONCRIEFF
HESS
HARTY
BOWELL
WISNER
NORMAN
CAPREOL
Cartier
HART
LEVACK
MORGAN
LUMSDEN
HANMER
Windy Lake
Lorrack Sta.
Dowling
BALFOUR
CHELMSFORD
BAYSIDE
Boninville
Garson Mine
Larchwood
Bradley
Azilda
Blezard Valley
Val Caron
Frood Mine
ACTON
VERMAHNEN
CASCADEN
Vermilion
BIGELOW
VERNON
TOTTEN
TIRELL
FAIRBANK
CREIGHTON
COPPER CLIFF
Creighton Mine
LIVELY
DUNLOP
HYMAN
PORTER
DRURY
Worthington
High Falls Turbine
Victoria Mine
Whitefish
GRAHAM
NAUGHTON
WATERS
Rheault
TENNYSON
GOUGH
SHAKESPEARE
BALDWIN
NAIRN
Nairn Centre
LORNE
LOUISE
INDIAN RES. 6
TILTON
WEBBWOOD
ESPANOLA

Ontario

Ministry of
Natural
Resources

September 14, 1973

Our file number

Your file number

Weather Office
Sudbury Airport
Garson, Ontario

Dear Sirs:

Re: Storm Damage August 28, 1973

The attached map outlines the twister damage as mapped by our staff by aerial reconnaissance. No ground survey has been initiated due to the relatively inaccessible area affected. However, as far as we can determine, the path of the storm, originating in the southeast corner of Orden Twp., followed an approximate course of 140° (Ast.) to the bottom end of Friday Lake in Rhodes Twp.

Width of the swath cut varies from 350 yds. to 1800 yds. wide depending on terrain, with a means of approximately 500 yds. Fringe damage is, of course, evident but highly variable.

True species affected are jack pine, spruce, poplar, and white birch, but merchantible volume data has yet to be compiled.

At least two cottages on Onaping Lake were completely destroyed.

Salvage operations for merchantible timber will be initiated as soon as possible since the storm cut such a clean swath, breaking, and uprooting all the trees and piling them in a radial pattern. The dangerous fire hazard created is obvious.

The path of the damaged area crosses Highway 144 at the lower end of Marquette Lake in Marquette Twp. and can be readily inspected by the road side.

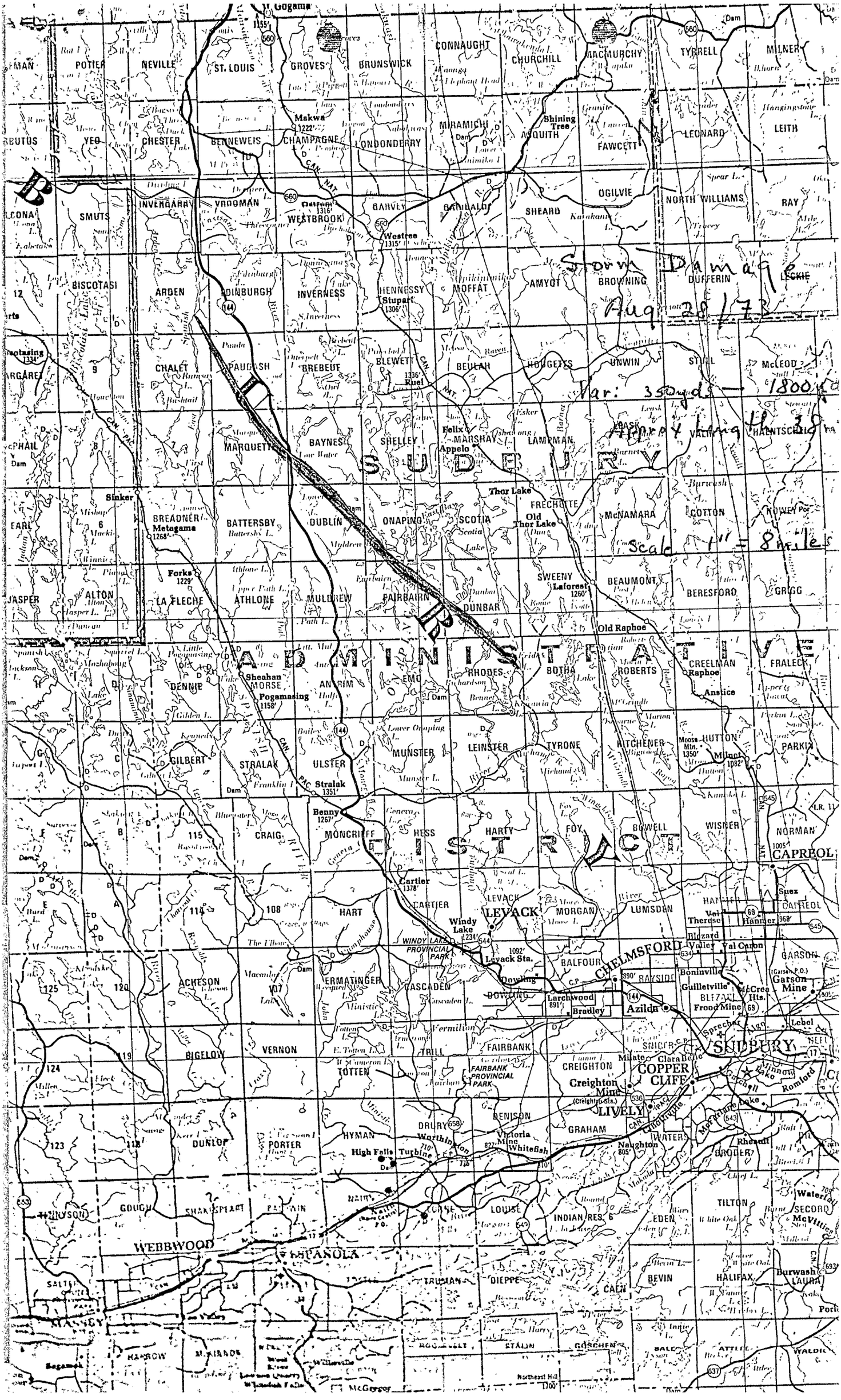
For your information.

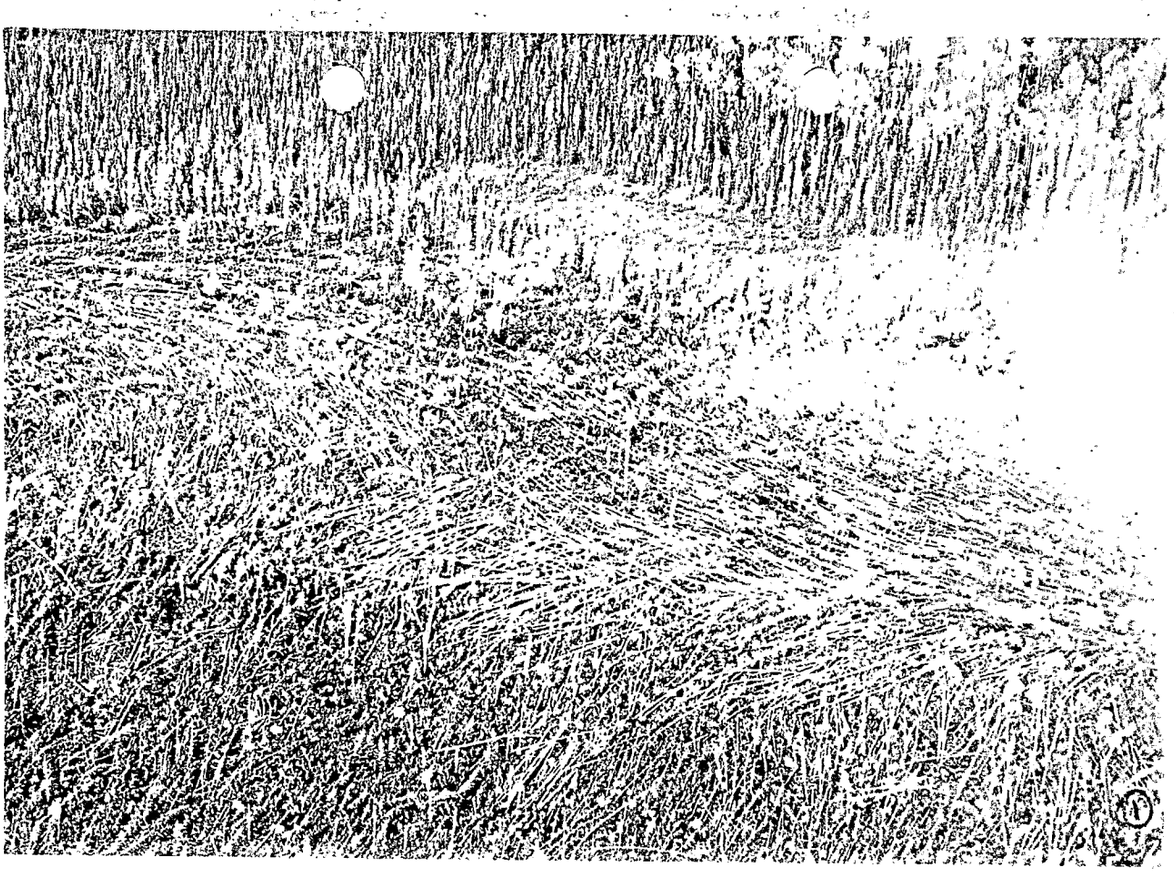
Yours very truly,

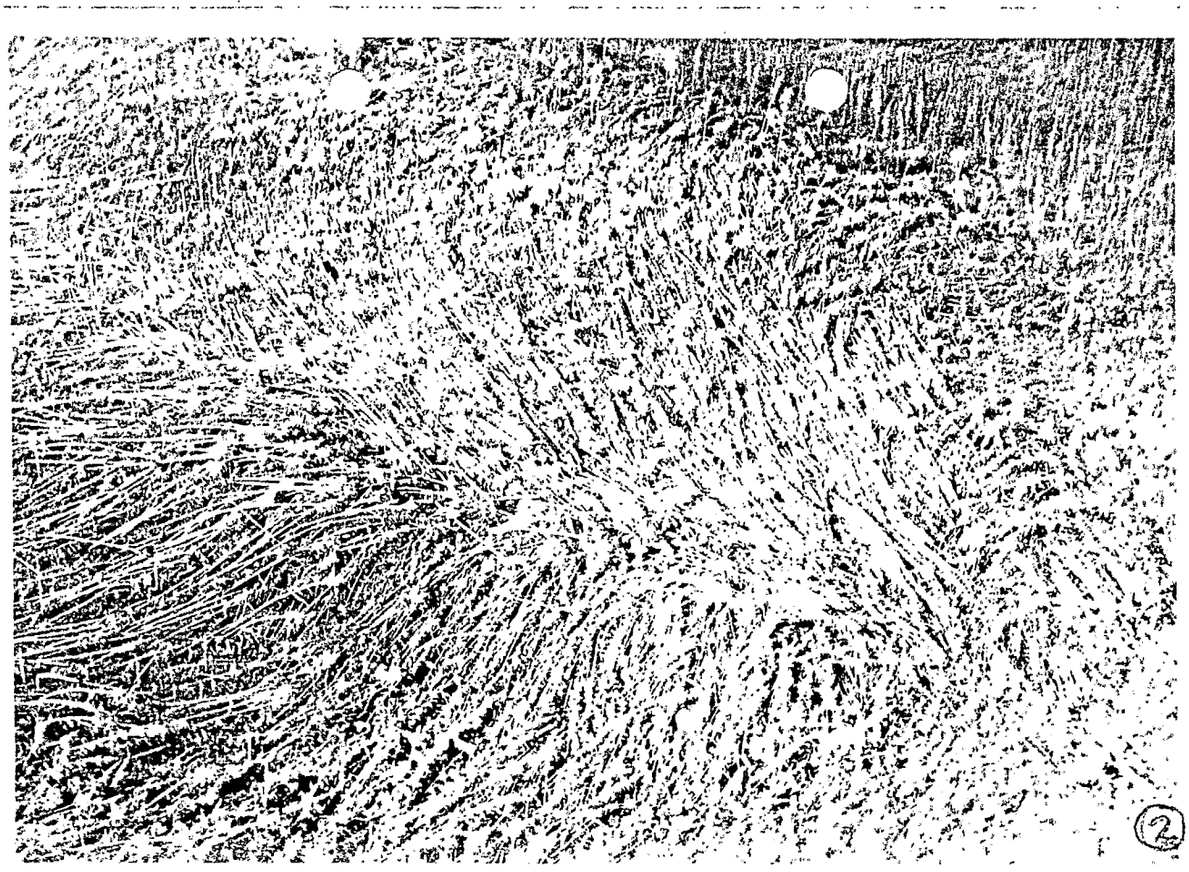
E.A. Kraker

D. Potvin
Forest Management Supervisor

E.A. Kraker
encl


Storm Damage
Aug 20/73
Var: 350 yds → 1800 yds
Approx length 38
Scale 1" = 8 miles
SUDBURY
ADMINISTRATIVE
DISTRICT
Gogama
CONNAUGHT
CHURCHILL
MACMURCHY
TYRRELL
MILNER
POTIER
NEVILLE
ST. LOUIS
GROVES
BRUNSWICK
YEO
CHESTER
BENNEWEIS
CHAMPAGNE
LONDONDERRY
MIRAMICHI
ASQUITH
FAWCETT
LEONARD
LEITH
SMUTS
INVERGARRY
VROOMAN
WESTBROOK
GARVEY
GARIBALDI
SHEARD
OGILVIE
NORTH WILLIAMS
RAY
BISCOTASI
ARDEN
EDINBURGH
INVERNESS
HENNESSY
MOFFAT
AMYOT
BROWNING
DUFFERIN
LECKIE
CHALET
PAUDASH
BREBEUF
BLEWETT
BEULAH
HOUGETTS
UNWIN
STULL
McLEOD
MARQUETTE
BAYNES
SHELLEY
MARSHAY
LAMPMAN
VALIN
HALENTSCHEID
Sinker
BREADNER
Metagama
BATTERSBY
DUBLIN
ONAPING
SCOTIA
FRECHETTE
McNAMARA
COTTON
ROWLEY
ALTON
LA FLECHE
ATHLONE
MULDREW
FAIRBAIRN
DUNBAR
SWEENY
Laforest
BEAUMONT
BERESFORD
GREGG
Old Raphoe
DENNIE
Sheahan
MORSE
Pogamasing
ANTRIM
EMO
RHODES
BOTHA
ROBERTS
CREELMAN
Raphoe
FRALECK
Anstice
GILBERT
STRALAK
ULSTER
Stralak
MUNSTER
LEINSTER
TYRONE
KITCHENER
HUTTON
Milnet
PARKIN
Benny
MONCRIFFE
HESS
HARTY
FOY
BOWELL
WISNER
NORMAN
CAPREOL
CRAIG
Cartier
CARTIER
HART
LEVACK
Windy Lake
MORGAN
LUMSDEN
Suez
Vel Therese
Hanmer
Blezard Valley
Val Caron
WINDY LAKE PROVINCIAL PARK
Levack Sta.
BALFOUR
CHELMSFORD
GARSON
Garson Mine
ACHESON
ERMATINGER
CASCADEN
Dowling
Larchwood
Bradley
RAYSIDE
Azilda
Boninville
Guilletville
Wa Crea Hts.
Frood Mine
BIGELOW
VERNON
TRILL
FAIRBANK
Sprechar
Lebel
SUDBURY
TOTTEN
FAIRBANK PROVINCIAL PARK
CREIGHTON
Creighton Mine
COPPER CLIFF
Clara Belle
Minnow Lake
Romford
LIVELY
DENISON
DRURY
Worthington
Victoria Mine
Whitefish
GRAHAM
Chelmsford
Naughton
WATERS
Rheault
BROUDER
Manitou Lake
DUNLOP
PORTER
HYMAN
High Falls
Turbine
TILTON
Waterfall
SECORD
McVittie
JOHNSON
GOUGH
SHAKESPEARE
LOUISE
INDIAN RES. 6
EDEN
WEBBWOOD
ESPANOLA
TRUSCAN
DIEPPE
CAEN
BEVIN
HALIFAX
Burwash
LAURA
SALTER
MANLEY
HARROW
McKINNON
Sagamok
Northeast Hill
1300'


①


②