

Summary of Activities

Date: July 28, 2016

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Manitoba Sustainable Development -
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Subject: Chain Lakes - Bathmetry & Water Level Investigations

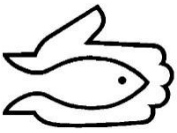
Location: Chain Lakes, Duck Mountains, MB - 14 U 368079 5726194

Summary: On the day of July 16th, 2016 SVSFE technicians investigated the Chain Lakes system to collect information on (1) basic bathymetry and habitat mapping and (2) to investigate low water levels to determine if fish stock may be affected, and furthermore - if human assistance is necessary. Essentially, due to the fact that the Chain Lakes system was a recipient lake for northern pike from the Glad Lake trout maintenance initiative, it became priority to further investigate and determine if current water levels should be of concern, while at the same time collecting baseline data on the system for the records.

Using a 16ft aluminum canoe technicians paddled the system from the south to north documenting both bathymetry and flows (page 2), along with habitat, general observations, and water sampling including a dissolved oxygen profile (page 3). All information collected can be viewed on pages 2 and 3 of this report.

Recommendations: Due to observations and information collected on July 16th, it is without a doubt that the lake levels are significantly lower, and the root cause of this has been identified. A large dam on the far north of the "chains" has blown and as a result dropped water levels significantly (especially in the lower reaches ~2m). After discussions with local, and common Chain Lakes anglers we have determined that this drop in water levels likely occurred at some point between 2014 and 2015. At this point in time, we see no immediate need for dam rehabilitation, as it appears that each reach of the chain lake system currently possesses enough depth to support northern pike populations. However, if it becomes necessary to initiate dam rehabilitation in the future, the route cause has been identified.





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July 18th, 2016 → BK, NK
8°C, No Wind, 2/8, H₂O → 18°C

CHAIN LAKES
Bathymetry & Flow

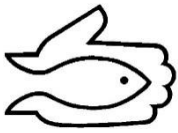


Fig: Blown Dam - North End

Lake Shoreline:

Pre-Survey Calculations:

Lake Area:



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July 18th, 2016

BK, NK, 18°C, Nohind

2/8, → Water-18°C

Legend

- A - Campsite
- # - Portage
- ∞ - Lookout
- X - Beaver Lodge
- * - Water Station
- Emerson Vegetation

1. Scouring Rush
2. Bullrush
3. Lillies

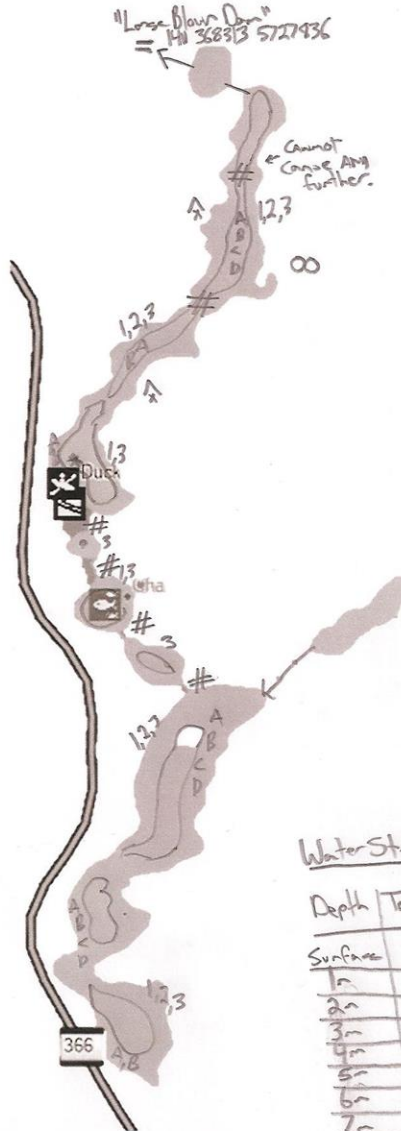
Submerged Vegetation

- A - Pondweed (Arifistia)
- B - Water-milfoil
- C - Coontail (Hornwort)
- D - Frig's Pondweed.

Water Station #1 Cont

Temp-	22.8°C
pH-	8.71
Cond-	271
TDS-	135
Alkalinity-	80
Phosphates-	15
Nitrate-	0
Nitrite-	0

CHAIN LAKES Habitat, Water Sampling & General Observations.



Observations

- Water flows from South-North
- First passage thru "chains" would be possible during high water or in spring.
- Water Levels appear slightly low in all chains, until the chain w/ the 9m hole, where levels appear to be ~2m below normal & chains north of here appear very low as well.
- Observed Northern Pike & Yellow perch in all reaches of the system.
- Loose Dam on north end has blown and appears to be reason why decline in water levels.
- Yoy NRPK noted in smaller central chains and likely serve as nursery waters.
- Large schools of YLPR observed throughout system.

Water Station #140 368004 5726608

Depth	Temp (°C)	DO (mg/L)
Surface	21.0°C	8.47 mg/L
1m	20.1°C	8.51 mg/L
2m	20.6°C	8.43 mg/L
3m	20.8°C	8.36 mg/L
4m	19.1°C	10.16 mg/L
5m	13.1°C	3.25 mg/L
6m	10.5°C	1.06 mg/L
7m	9.4°C	0.41 mg/L
8m	7.4°C	0.26 mg/L
9m	7°C	0.21 mg/L

Pre-Survey Calculations:

Lake Shoreline:

Lake Area: