

MCM LTER Benchmarks For Manual Lake Level Surveys



Updated May 2023
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Lake Bonney

East lobe Lake Bonney, south shore. Benchmark currently being used is a pin in a rock labeled 'medved1' on a copper tag, located down slope of the Lake Bonney met station (BOYM) and Lake Bonney camp. As of 2022/23 the tag is VERY close to the shore. It will be submerged after just one or two seasons of lake level rise. Be prepared to use backup benchmark

Name: Medved1

Lat/Long: S 77.71453°, E 162.46480°

Elevation: 66.535 meters above sea level



Photo facing west
(towards Bonney Met
Station). Medved1
located on rock near
shoreline



Lake Bonney Continued

There is a second benchmark called “MCMLTER_BOY” that was installed on 11/1/2014. GPS coordinates are unknown. Elevation is 71.85 masl. Krista Myers took a photo of what she suspects is MCMLTER_BOY, but there is no tag on it. See photo below for reference – we should survey between Medved1 and this bolt to confirm if it is MCMLTER_BOY. The elevation difference should be $71.85 \text{ m} - 66.535 \text{ m} = 5.315 \text{ m}$. Install new copper tag on bolt to prevent future confusion. Take GPS point and record in notes.

Name: MCMLTER_BOY

Lat/Long: ?

Elevation: 71.85 meters above sea level



Possibly
MCMLTER_BOY?

Lake Fryxell

Camp BM - Benchmark is a rebar surrounded by a ring of small rocks just east of old Fryxell Jamesway site. Now is situated due west of the moat boat tripod. Across little gully from current tent sites 2 and 3 inside of facility zone. Marked with bubble gum tag in Dec.

Name: Camp BM

Lat/Long: -77.605729, 163.126559

Elevation: 19.773 meters above sea level



Lake Fryxell Continued

Alternative/newer benchmark is located upslope of the old Jamesway location on a huge rock (impossible to miss). Pin is flush with the rock as we drilled too deep. This may become primary benchmark if lake levels inundate benchmark above. Photo is very old, from when original Jamesway was there.

Note this benchmark is over 5 meters higher in elevation than the lake level. It will require multiple turning points.

Name: LF11 BM

Lat/Long: S 77° 36.334' E 163° 07.166'

Elevation: 23.448 meters above sea level



Lake Hoare

There are quite a few BMs around the Lake Hoare camp – the one used in the most recent years is called LH 11 BM, and is located just east of camp near the tent camping sites.

Name: LH 11 BM

Lat/Long: S 77 37'23.8" E 162 54'17.5"

Elevation: 76.218 meters above sea level



Lake Vida

The most recent benchmark used since the 2018/19 season is called LVI 11 which was installed in 2010. Benchmark is located on south shore of Lake Vida pretty high up on the shore, installed in a large boulder. Not super easy to spot, and pretty far away from current lake level.

Name: LVI 11

Lat/Long: S 77 22.935, E 161 49.071

Elevation: 355.322 meters above sea level



Lake Vida continued:

In 2022/23 Peter Doran surveyed Lake Vida compared to the met station stake closest to the lake. This was measured to be 1.132 meters above the lake on 1/26/2023, which puts it at an elevation of 350.446 masl when tied into the LVI10 benchmark elevation taken on the same day.

This can be used as a temporary benchmark until the met station is moved, since the Lake Vida benchmark across the lake is far away and also roughly 6 meters above the lake (as of 2022/23) which makes for a difficult lake level measurement.

Lake Vanda

The UNAVCO benchmark (**VAN0**) is located just to the north of the Kiwi camp. This is the one that teams have been using most recently as of 2022/23. It has a cap on the top of the benchmark which should be **removed** before shooting lake level. Photo below (facing south).

Name: VAN0

Lat/Long: 77° 31.348' S, 161° 41.383' E

Elevation: 95.774528 meters above sea level



The old BM (**ASTRO A?**) is only accessible during the early season before the melt. It is an official monument pin in a rock, well-marked with a spray-painted orange circle around it.

Lat/Long: 77° 31.61637924 S, 161° 40.80068724 E

LVA 11 BM is a pin in bedrock located on the east shore of the lake, south of the Kiwi camp. There is a dead seal between the lake and the new BM

Lat/Long: S 77° 31'34.4", E 161° 41'19.7"

Don Juan Pond

New BM installed on 12/8/2016 by UNAVCO (Thomas Nylen) on large bolder on southern side of lake. The new BM was installed because the DVDP borehole is a cap which can be twisted off, and the borehole is slightly wobbly. New BM is also closer to the helo landing site, which as of 2016/17 season, is located on the east side of DJP, denoted by a rock circle. Allocate an additional hour of helo support for the hike over.

New BM Lat/Long: -77.56383 161.19483

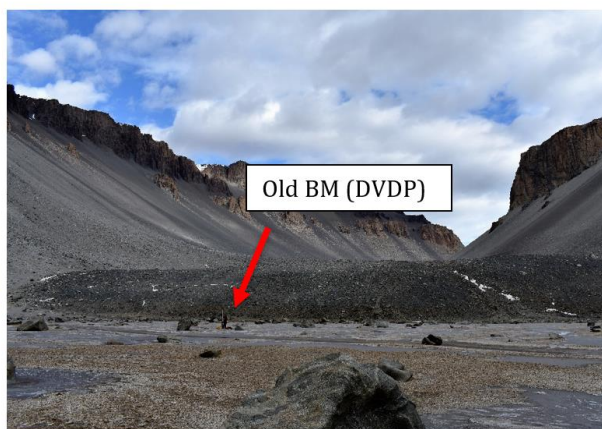
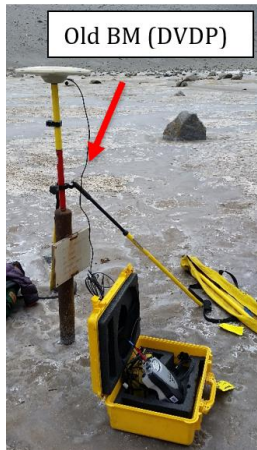
Elevation: 117.989 meters above sea level



The old BM is top of the borehole from Dry Valleys Drilling Project (DVDP), established in the 1970s.

Old DVDP BM Lat/Long: -77.56336 161.18000

Old DVDP BM Elevation: 118.69 meters above sea level



Lake Miers

The BM is a terrier bolt located on the north shore of the lake (indicated by an arrow on the map below). Kiwis established the BM and its official name is BMT26. There is a bolt in the rock which is 50 centimeters tall, and the elevation is referenced to the **top of the bolt**. When shooting lake levels, the survey rod should be placed on top of bolt, remove the cap.

Name: BMT26

Lat/Long: S 78.093602°, E 163.8580926

Elevation: 160.69 meters above sea level



Lake Joyce

Latitude: -77.715403°

Longitude: 161.634699°

Benchmark is a large bolt in a rock, with orange “NSF-USAP-USGS” marker. Benchmark is just west of a small delta formation (which could be submerged) centrally located on the North shore of the lake. This delta should not be assumed safe to land on should it be visible. There is a larger delta about 100 meters to the west of the bolt that was safe to land on in January 2015. Other landing sites are limited to the lake ice itself. Alternatively, prepare for a hike!



Lake House

Latitude: -77.701587°

Longitude: 161.452423°

Benchmark is a large bolt in a rock, with orange “NSF-USAP-USGS” marker. Benchmark is located East of Lake House, near known landing sites, within 100 m of the lake.

