Low Water Issues for Floating Homes

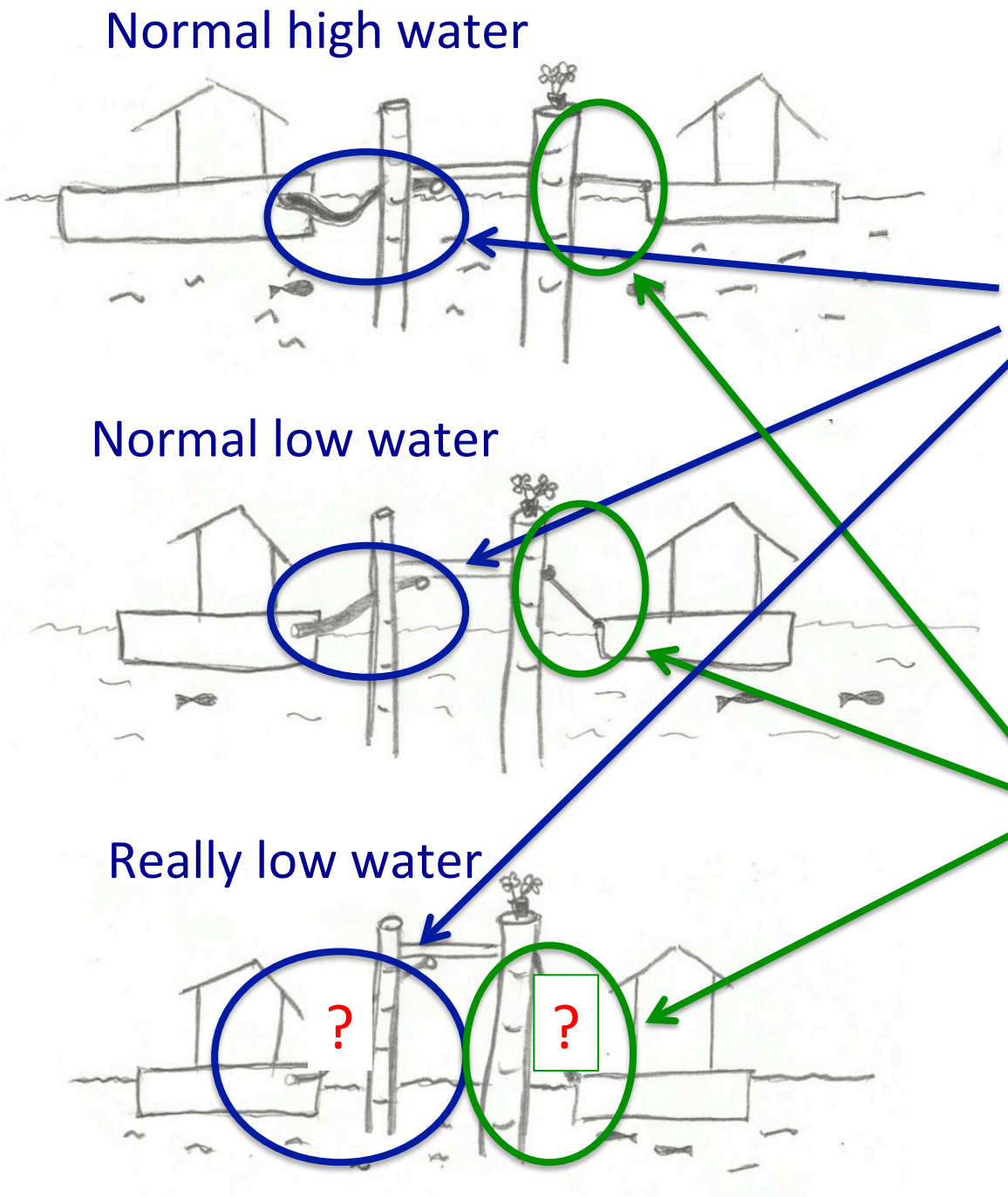
These are some potential problems that I am aware of.

You may have thought of others.

If we dodge this issue this year, it will probably be back again soon.

FHA Community Meeting
Queen City Yacht Club
August 24, 2015

Ed Waddington
Tenas Chuck Moorage
2339 Fairview Ave E.
edw@uw.edu



Fixed Docks

Utility Lines

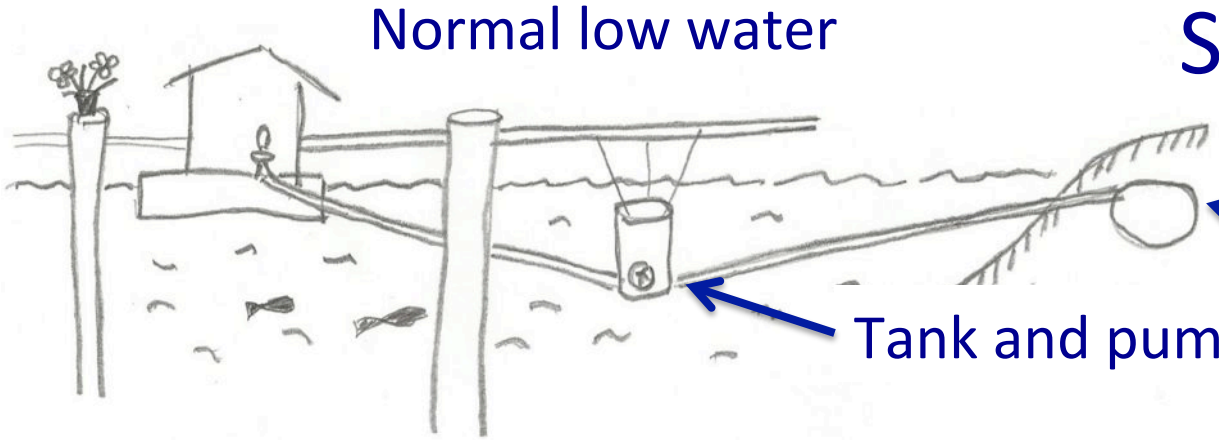
- Water
- Gas
- Electric
- Sewer

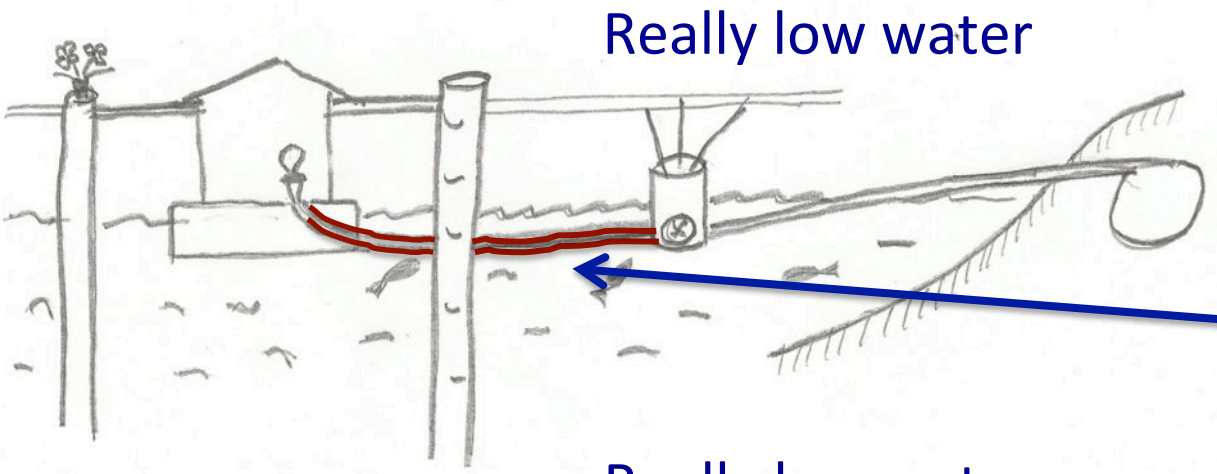
Mooring attachment

- Arms
- Chains

Check frequently for slack

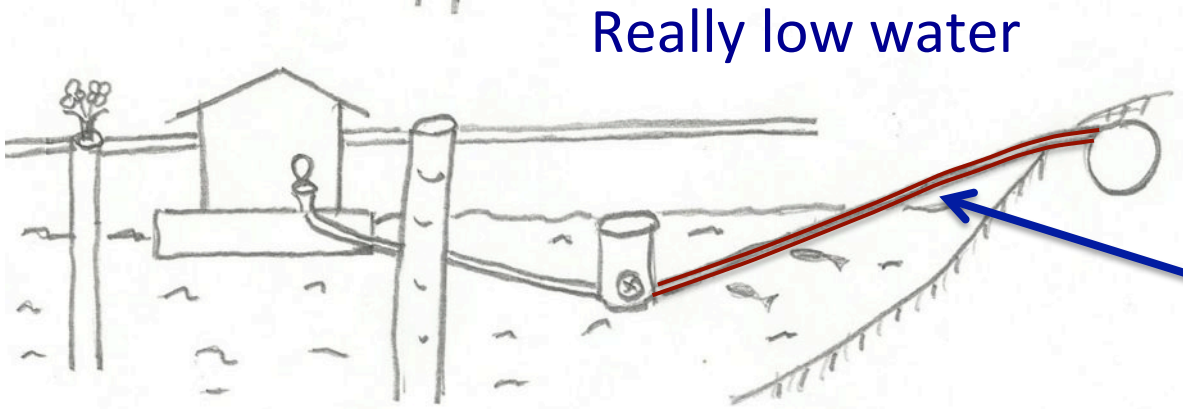
Sewer Systems





Fixed dock, fixed holding tank

- Loss of gradient into tank at low water

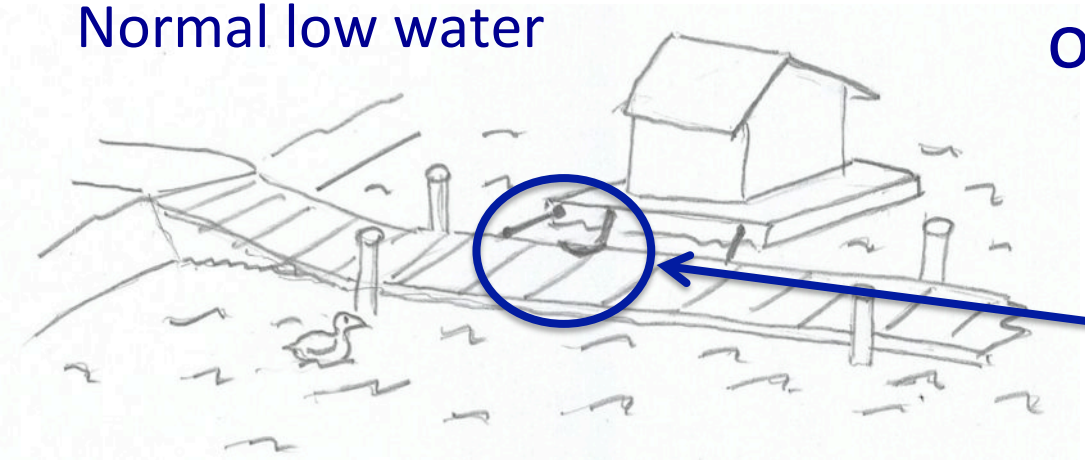


Fixed or floating dock, floating tank

- Steeper gradient to pump from tank up to street

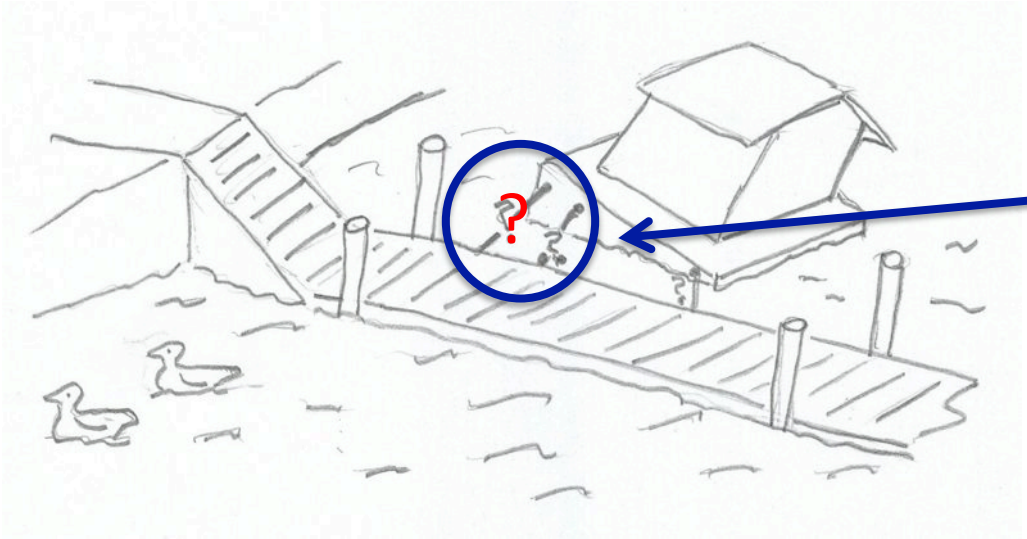
Grounded Floating Homes on Floating Dock

Normal low water



Utility hoses and attachment arms still have some slack.

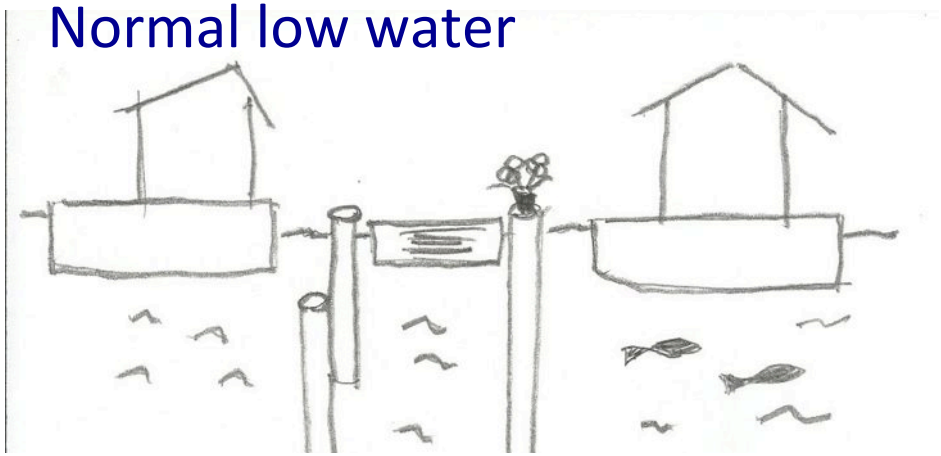
Really low water



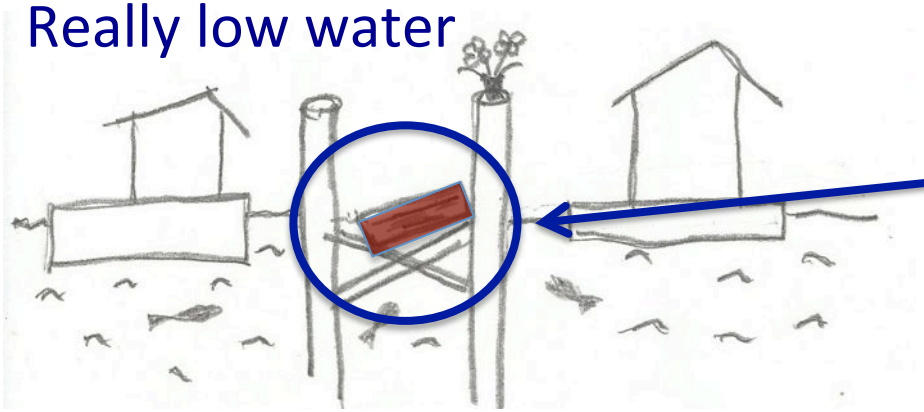
Utility hoses and attachment arms could be stretched beyond their limits if dock goes down but home does not.

Floating docks at very low water

Normal low water

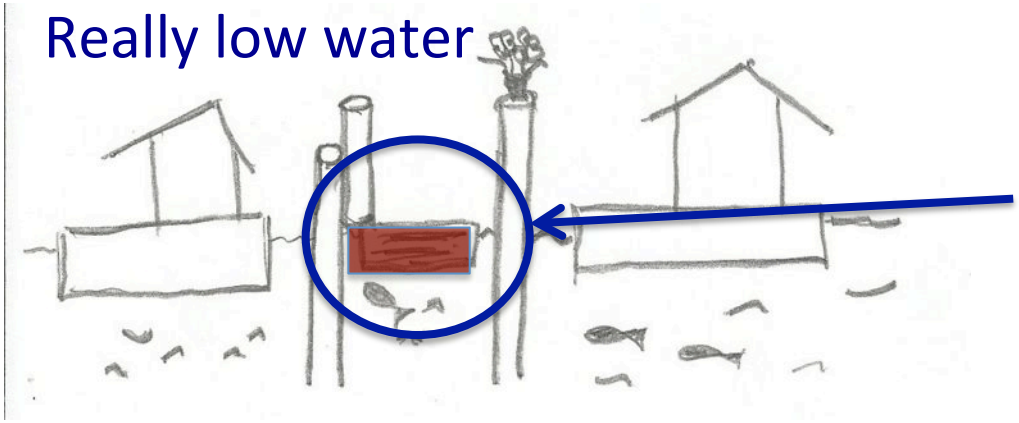


Really low water



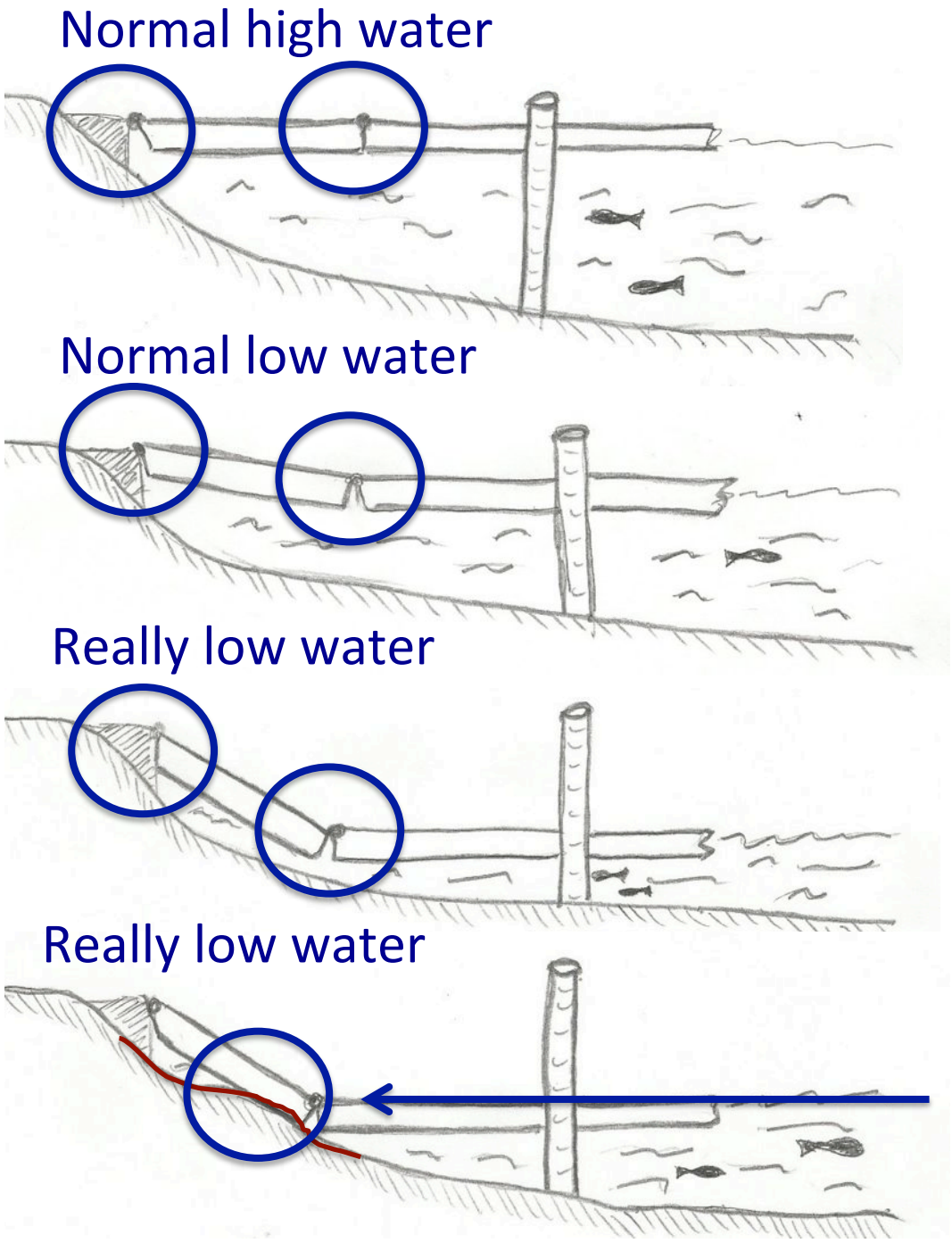
Dock could get hung up on under-water cross braces when water falls

Really low water



Dock could get hung up under spliced pilings when water rises again

Gangways on Floating Docks -



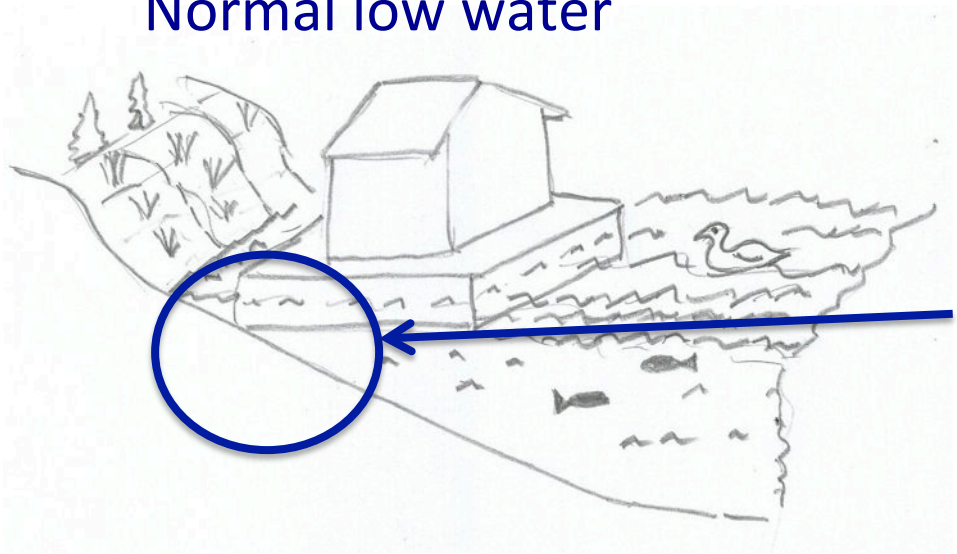
Gangways hinge at both ends

Is there enough range of motion for really low water?

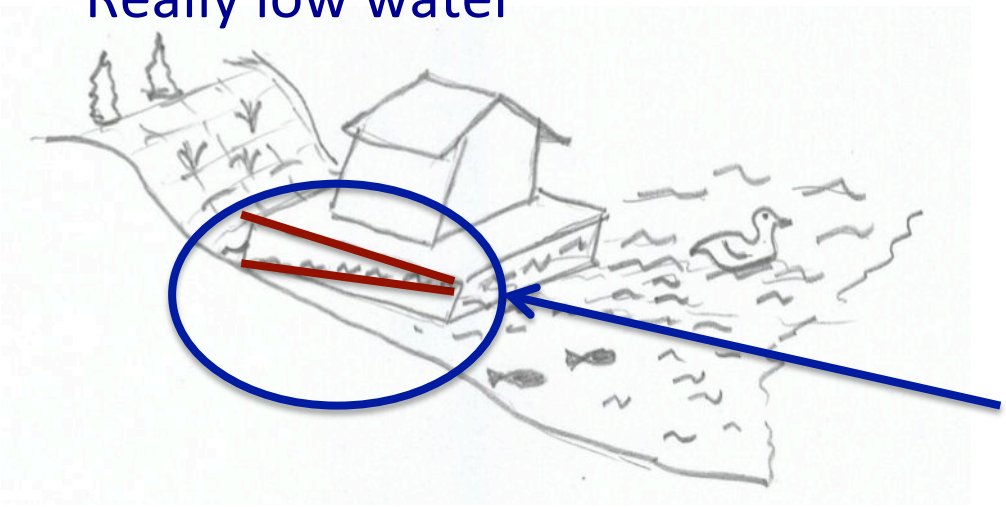
- Dock structure
- Utility lines

Is there enough bottom clearance?

Normal low water



Really low water



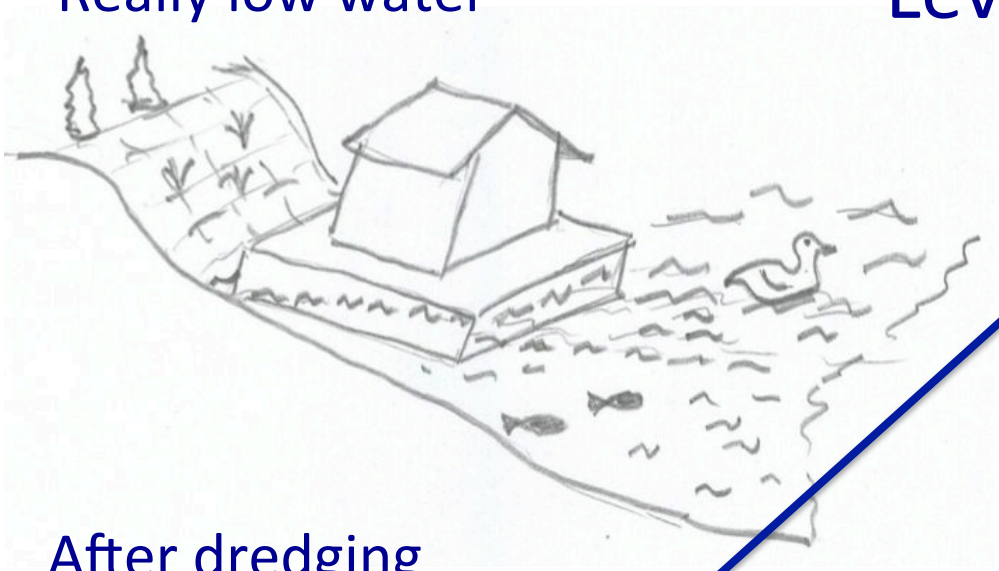
Floating Homes Aground

Many near-shore homes touch bottom or nearly touch bottom at normal low water

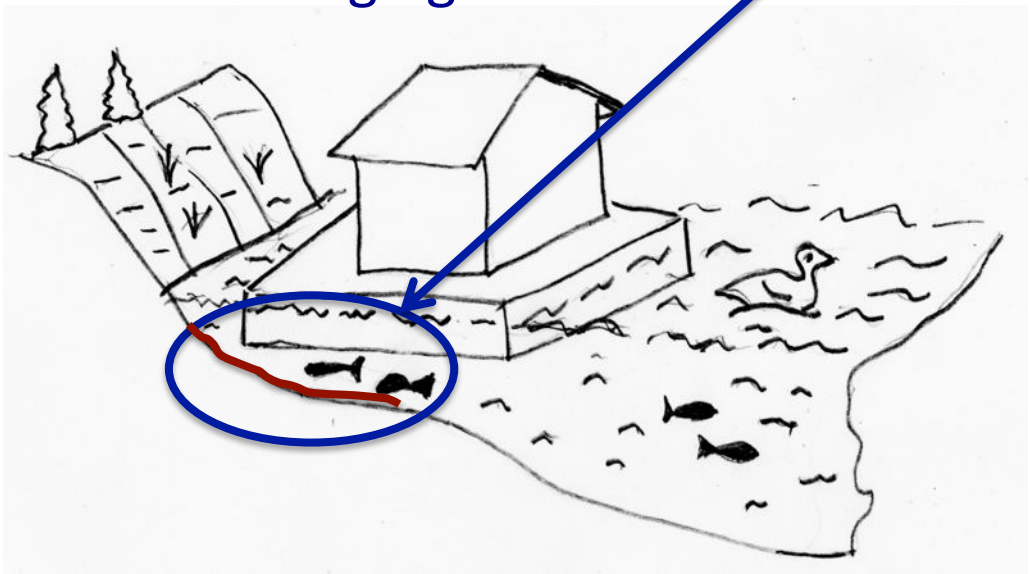
Shore side may stay high While lake side follows the water down

- Serious tilts could develop, e.g. one side of float 1.5 ft higher than the other.

Really low water



After dredging



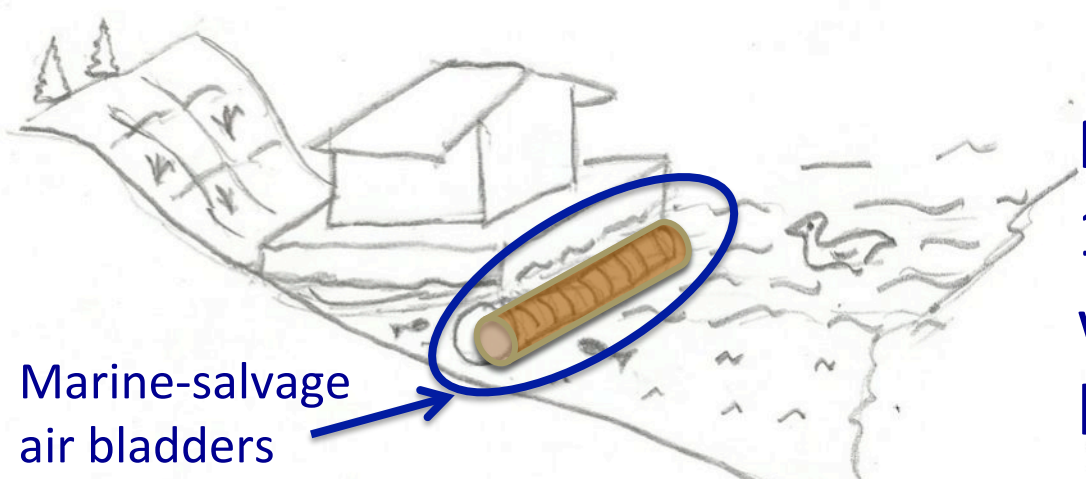
Leveling a tilting home -1

Can a foot or more of sediment be dredged from under the shore side?

- Not in short term.
- Permits would need special exception, unlikely to be granted.
- Boulders or sunken logs might prevent suitable dredging, even if access and permitting is possible.

Leveling a tilting home - 2

Steeply sloping lake bed

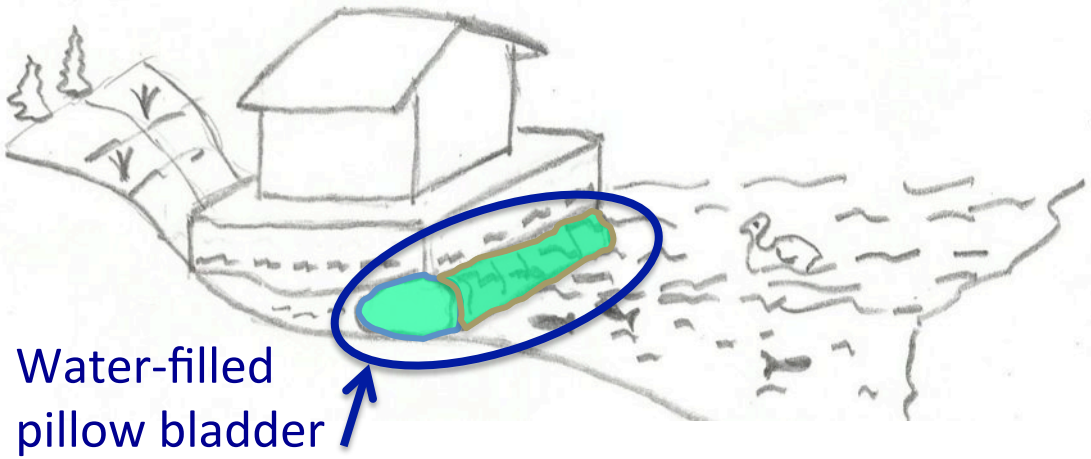


Raising lake side of a float 1 foot out of the water would require ~7 tons of lift.

- 300 cu ft of air bladder could do the job.
- 20 ft long 4 ft diameter, or several smaller bladders.
- Volume should be adjustable as lake level changes.

Leveling a tilting home - 3

Gently sloping lake bed



Water-filled pillow bladder

Australian water-storage tank

Pillow bladder transfers out-of-water weight of float onto lake bed.

With large contact area on bottom of float and on lake bed, internal bladder pressure could be just a fraction of an atmosphere, ~ 5 psi

Issues –

- Correct initial placement
- Stability with boat wakes?

Potential Issues with Leveling - 1

Holding part of your float out of the water is a far bigger job than leveling a home while it is floating. The weight of logs to be held up out of the water is enormous.

- It could be 10 tons or more to lift one side of a large log float up out of the water by a foot.

Moving possessions out of a home isn't a bad idea, but any weight savings may pale into insignificance relative to weight of the logs.

- Focus on those logs.

Potential Issues with Leveling - 2

Parts of the float held out of the water want to fall down, rather than to float up as they would normally do.

- Much of the flotation may come from unattached items (foam blocks, barrels, even logs …)
- Stresses elsewhere in the structure will be changed, possibly causing bending of stringers.
- Foam flotation within a foot of the surface is likely to fall off.
- If the second or third layer of logs are not pinned well (just held by buoyancy) they may be dislodged.

Potential Issues with Leveling - 3

The bottom of an old float can be very uneven.

- Logs are not perfect
- Foam blocks, barrels have been added over the years.

The lake bottom under a float can also be very uneven.

- Boulders, sunken logs, old refrigerators, other junk …

Before you can make an effective plan to support a grounded home, it would be helpful to know the shapes of your float bottom and the lake bed.

- Figure out which point or points will touch down first.
- How the float might rock or pivot from there.
- Whether the touchdown points will crush (styrofoam, barrels, …)

Action Items and Unanswered questions

- Establish dock person(s) to identify problems before they become serious.
- Identify contractors who can work with you if needed.
- Identify potential suppliers of new hoses and attachment hardware (could be contractors).
- Cost and availability of bladders?
- Timely installation – before water drops too far.
- Permit requirements?
- What will our weather be in the next month or two?