

COLUMBIA 
TOWBOAT **RIVER**
ASSOCIATION
1500 NE Irving St., Suite 540, Portland, OR 97232
Telephone: 503-234-8551, Facsimile: 503-234-8555

The Columbia River Towboat Association consists of 10 member companies barging nearly 13 billion tons of cargo between Astoria, Oregon and Lewiston, Idaho annually. The tugs and barges involved in this service are unique and specifically sized and configured to economically and safely operate within the physical confines of the federally authorized 14-foot navigation channel connecting 26 ports along the Columbia and Snake River System.

The Snake River has not been dredged in over three years. As a result many reaches of the river have shoaled in creating an increasingly dangerous situation that impedes navigation. In the absence of maintenance to the navigation channel, Snake River pool levels have been managed at a level above MOP. This has allowed the barge companies to continue to operate. Operating at MOP reduces the depth of the navigation channel and in the absence of dredging will halt safe navigation.

- One of the most challenging and difficult portions of the Snake River to navigate begins at the entrance of the Snake River up through the Ice Harbor cut. Here you have numerous shoal areas that are exposed during MOP. This area has seen many groundings. The area between buoy “8” all the way to the lower lock entrance of Ice Harbor dam is bank to bank rock.

Ice Harbor MOP @ 437ft. Recommendation is MOP + 2 feet.

- The area between Snake River Miles 27 and 29, just below the Sheffler grain elevator is experiencing an increased amount of shoaling. The shoal areas are marked by red nun “28”.
- Just immediately above Sheffler, between the Walker grain elevator and the airstrip at Burr there is a shoal area marked by buoys “34” and “38”. This shoal area has expanded significantly over the past few years reducing the width of the navigable channel.
- Lower Monumental lower dam entrance beginning approximately at buoy “58A” all the way into the guide wall entrance. This area has seen several groundings in recent years at MOP+1.

Lower Monumental MOP @537ft. Recommendation is MOP + 2 feet.

- Beginning on lower McGuire Range up bound to the lower guide wall entrance of Little Goose has shoaled extensively.

Little Goose MOP @ 633ft. Recommendation is MOP +2 feet.

- At the approach to the upper entrance of the locks beginning at buoy “2”, the shoal area has extended out from the beach.
- Schultz Bar has been an ongoing problem with extensive shoaling, this area located between buoys “29A” and “35” is navigated at “slow Bell” because of “bottom suction”.
- During MOP+1, the Almoda Grain elevator has difficulty loading and fleeting the barge due to a rock ledge just out from the loading facility. The areas immediately above and below the two elevator facilities located here has also seen increased shoaling making it difficult to turn the tows for spotting at the elevators.
- The entrance to the lower locks at Lower Granite all along what is known as Davis Bar has shoaled in extensively, this also is an area where the tug and tow has to “ slow bell” because of bottom suction.

Lower Granite MOP 733ft. Recommendation is MOP +3 feet

- The area between river mile 137 and 138 known as Steptoe Lower Range on the south side of the river has shoaled in extensively reducing the navigable channel.
- The area covering the confluence of the Snake and Clearwater Rivers has been a problem area at mop+2. The whole area up to the Cargill Grain elevator has extensively shoaled in to the point where the tug and tows have difficulty making their approaches up bound threw the RR lift bridge in the Clearwater. A radical “S” turn is required on approach to the bridge to avoid foul ground.

Note: There are other contributing factors further exasperated by reductions in water depth.

- **Lockages-** It is important to understand that with the MOP levels it makes it very difficult for the tug and tows to cross over the sills while entering and exiting the locks. This difficulty increases when the tug and tows are down bound with loads exiting the locks due to the effects of water displacement. It is important that the tugs pushing their loads gain enough speed to increase the water past their rudders to gain steerage. Without this speed through the water the tugs have no steering control. As the tug and tow exits the locks, water is trying to force its way back into the locks to displace the weight of the tow leaving. At MOP, with very little water over the sill, it becomes increasingly difficult to control the tow and takes an increased amount of time to gain the speed needed. Full power is applied to overcome these forces and like a rear wheel drive car quickly accelerating from a dead stop the rear of the car squat’s down. In the case of a vessel, the amount of squat will exceed one foot of draft.

- **Bank Suction/ Cushion-** A common river navigation phenomena affecting the handling characteristics of tugs and tows when operating in narrow channels is known as “bank suction”. Bank suction involves the tendency of a vessel to veer toward the bank as it displaces the water along the shore. The opposite affect, known as bank cushion is often encountered at slower speeds when the bow wave bounces off of the shore and back against the vessel. The effects of these phenomena are compounded the nearer the vessel is to the shoreline and varies with speed.
- **Bottom Suction-** This phenomenon is often encountered when there is very little underkeel clearance. As the vessel moves through the water it displaces the water ahead of it. In shallow water, this condition occurs when the water is displaced at a faster rate than the water that rushes in to replace it.
- **Trim-** When we speak of draft we assume that the vessel is trim. Trim is the difference in drafts between forward and aft. It is not uncommon to trim the barge down by the stern by a foot or more to make it handle better. This means that the depth of the stern is deeper than the bow.
- **List-** List is the angle of inclination of the vessel. Loading mechanisms for various bulk cargo are not precision guided. The result is that barges are often listing or leaning to one side by a foot or more. This means that the draft on one side of the vessel is greater than the other.
- **Sea Conditions-** Wave action causes vessels to bounce up and down and from side to side. Vessels become particularly lively the lighter they are loaded, but even loaded barges can bounce up and down a couple of feet.

All of these conditions contribute to the handling characteristics of tugs and barges. As a result, a reasonable margin of safety is required to insure the consistency and reliability of the system. Compensating for pool level reductions is much more complex than simply light loading a few barges. The safety and reliability of the entire system and by extension the integrity of the entire supply chain is already severely compromised as a result of not maintaining the navigation channel and approaches through annual dredging. The only thing that has enabled the CRTA member companies to continue to operate is through the management of adequate pool levels to enable us to navigate over, around and through otherwise unnavigable reaches of the river.