General Principles
A Brief Review

What is the Boundary? It’s a matter of law.

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*State retains title to dry land as result of accretion, reliction, etc. after 05/25/1921
**Based on Prescriptive Rights of the public recognized and codified by legislature in ORS 390.605 to 390.620
***Public navigational easement if waterway has “the capacity to afford the length, width and depth to enable small boats...” or “capable of being navigated by oar or motor propelled small craft.”

Where is the Boundary? It’s a matter of facts.
- Documents & Maps
  - Filed, agency, private survey maps
  - Navigability Reports, Exploration Journals, News accounts
- Physical Evidence
  - Bank location, edge of vegetation, change in character of soil
- Historic Aerial Photos
- Historic Ground-Level Photos showing use.
General Principles - A Brief Review
Putting the basics all together and visualizing the terms.

Non-Tidal, Navigable Waters
Boundary of Sovereign Title

- Federal Common Law = OHWM
- Sovereignty succeeded to the OHWM
- ORS 274.025: OHWM on streams
- Oregon exception: OHWM of 05/25/1921 or meander line on lakes. ORS 274.430 & 274.440

Non-Tidal, Navigable Waters Recap

- Boundary along navigable streams at OHWM
- Boundary along shores of navigable lakes at OHWM as it existed on 05/25/1921 or at meander line and are no longer ambulatory.
- Lake boundaries will retain an ambulatory nature if lawfully drained, but only so far to fill out the least aliquot subdivision of the parcels adjoining the lake.
- The State owns natural accretions & relictions and may sell or lease those lands. The owners of parcels adjacent to the accreted lands have preference to purchase accreted lands if State offers them for sale.
Non-Tidal, Navigable Waters
Visualizing the terms

River or Lake Section

Water Boundaries
In Descriptions

Expressly called for: "along the bank", "along the shore", or "along the edge of the Rogue River"

Implied calls: "Lot 99 of the map of Blissful Shores", where Lot 99 shows to be a waterfront lot on the map, "along the meanders of", "with the meander line", or a recitation of courses identical to surveyed meander lines.

Express or implied, all are calls to the statutory water boundary.

Shore Movement
Generally

Accretion (also erosion) = slow & imperceptible

Movement due to accretion = ambulatory boundary on coast and on streams.

Oregon exception: Title to lands formed by accretion or reliction attaches to upland title if prior to May 25, 1921, but claimed by State if after. ORS 274.430, 274.440

Avulsion = sudden & violent

Movement due to avulsion = fixed boundary at the last natural location before the avulsion.

Islands formed by an avulsive change to the channel fixes the boundary at the old channel. Title to new island remains with upland parcel it was formerly a part of.
Apportionment of Lands Added by Accretion, Reliction, or Other Natural Processes

• No particular method prescribed by common law.
• Several methods exist and are commonly used.
• No precise procedures exist for deciding which method to use or to implement the chosen method.
• Courts seem to prefer the method which affords the most equitable division of the added lands among the adjacent riparian parcels.

Apportionment of Accretions On Navigable Streams

Stream Accretion - Proportional

Apportionment of Accretions On Navigable Streams

Stream Accretion - Bisected Rt. Angles
Apportionment of Accretions
On Navigable Streams

Stream Accretion - Extend Upland Boundaries

Apportionment of Accretions
On Lakes, Generally

Round Lake or Pie Method

Blue = Remaining Bed
Aqua = Accreted (or Relict) Area
Green = Upland between Meander Line and OHWM

Apportionment of Accretions
On Lakes, Generally

Long Lake, Proportional Method

Blue = Remaining Bed
Aqua = Accreted (or Relict) Area
Green = Upland between Meander Line and OHWM
Apportionment of Accretions
On Lakes, Generally

- Blue: Remaining Bed
- Aqua: Accreted (or Relicted) Area
- Green = Upland between Meander Line and OHWM

Apportionment of Accretions
On Lakes, in Oregon

- Blue: Remaining State Ownership
- Aqua: Accreted (or Relicted) Area
- Green = Upland between Meander Line and OHWM
- Purple = Area to fill least aliquot divisions

Is a water boundary *always* ambulatory?

Not always...

Express or implied call for water boundary or call along meanders?

- Yes, is shore in its natural state? (Yes)
- No, has shore moved since parcel was created/patented? (No)
- No, has movement been slow and imperceptible? (Yes)
- No, artificial influence? (No)

Ambulatory

Fixed
Fixed Water Boundaries
No Longer a Water Boundary

• When a meander line followed something other than the bank of a water body.
  • Edge of swamp land or heavy brush at margins of riparian corridor.
  • Secondary bank which is significant distance from waterway.
  • Grossly inaccurate or fraudulent meander.

• When there has been enough accretion between the meander line and water body to justify an additional lot occurring between the time of original survey and federal patent.

• All such lands are subject to future survey and sale by the federal government.

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Fixed Water Boundaries
No Longer a Water Boundary

• Avulsion: "A sudden and perceptible loss or addition to land by the action of water, or a sudden change in the bed or course of a stream." Black's Law Dictionary, 6th Ed.

• Where a bank or shore has been artificially or avulsively altered. Boundary fixed at last natural location of OHWM.

• Meander may be best or only evidence of that location.

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Fixed Water Boundaries
No Longer a Water Boundary

• Where a conveyance expressly excepts area between the meander line and the actual edge of the waterway.

• Where the area between the meander line and the actual edge of waterway had been previously conveyed.

• Where there has been a Boundary Line Agreement between the upland owner and the sovereign owner of the bed of a navigable waterway.
Fixed Water Boundaries
No Longer a Water Boundary

- Where there has been a Boundary Line Agreement between adjoining riparian owners along a non-navigable waterway as to the riparian boundary.

- Where accretions have accumulated along the shore of a meandered, navigable lake, or where the lake has been lawfully drained beyond filling out the least aliquot divisions of the upland parcels as addressed in ORS 274.430 & 274.440.
  - Effective against State patents? Certainly.
  - Effective against Federal patents? Maybe, maybe not. Tested in Federal Court?

Fixed Water Boundaries
Artificial Influence

- Typical examples: jetties, groins, breakwaters, dams, weirs, dredging, intentional rechannelization, and canals that add or remove water.

- When artificial influence has affected the natural process on the bank, the boundary becomes fixed according to the last natural location of the bank.

- To fix the boundary, the artificial influence must be the direct and proximate cause. State of California ex rel. State Lands Commission (Lovelace). 11 Cal 4th 50 (1995). (Fd no OR case on point)

Fixed Water Boundaries
Artificial Channel

This portion of the Willamette may be the result of natural processes, but appears to have been intentionally rechanneled. No assumptions should be made in such a case, but the history of dredging activity and of possible avulsive events should be investigated.
Fixed Water Boundaries
Artificial Influence – Dam & Canal

Swamp & Overflowed Lands

• The Act of September 28, 1850 (Arkansas Swamplands Act) granted to several states the swamp and overflowed lands within their respective borders. Extended to Oregon by Act of March 12, 1860.

• “Swamp lands, as distinguished from overflowed lands, may be considered such as require drainage to fit them for cultivation. Overflowed lands are those which are subject to such periodical or frequent overflows as to require levees or embankments to keep out the water, and render them suitable for cultivation.”

Irwin v. San Francisco Savings Union, 136 US 578 (1890)

Swamp & Overflowed Lands

• Swamp lands require drainage to make fit for cultivation
Swamp & Overflowed Lands

Swamp & Overflowed Lands

- S&O lands lie above the OHWM but below more arable uplands
- S&O lands, granted to Oregon by the Act of 1860, were listed to the State as they were identified in the original GLO surveys.

Swamp & Overflowed Lands

Swamp & Overflowed Lands

The Challenges – The Federal Level

- Identification & treatment of S&O surveys was not adequately clarified in GLO Instructions until 1864.
- Many early GLO surveys incorrectly meandered the margin of S&O lands rather than the banks of rivers. (early/mid 1850s)
- Many early GLO surveys segregated S&O lands incorrectly. (late 1850s/early 1860s)
- Many surveys misidentified S&O lands or did not identify them at all. Sometimes corrected by replat.
Swamp & Overflowed Lands  
The Challenges – The Federal Level

Survey made in 1853. Meandered “Edge of willow thicket” through most of township. Federal govt later issued patent to State for all lands in the township, lying between the meander lines, excepting the bed of the navigable river.

Swamp & Overflowed Lands  
The Challenges – The Federal Level

What it really looks like.

Swamp & Overflowed Lands  
The Challenges – The State Level (in CA; OR??)

• Many early patents for S&O lands were actually tide lands.
• Many state S&O patents to individuals made prior to being listed to State by federal government.
• Poor early record keeping systems.
• Poor system of ensuring proper survey was performed.
Swamp & Overflowed Lands
The Challenges – The County Level (in CA; OR??)

- S&O lands were “surveyed” by the local County Surveyor as part of the application process for patent.
- A few County Surveyors appeared to have performed careful surveys.
- Most S&O surveys appear to have been poorly performed or not actually surveyed at all.

Swamp & Overflowed Lands
A County S&O Survey

Swamp & Overflowed Lands
An Alleged County S&O Survey

Typical of S&O surveys in this area, Begins at MC, follows GLO meanders to nominal aliquot line, follows nominal aliquot rather than meander of actual bank, then closes. Created from GLO records rather than actual measurements.

Field notes or Tavern notes?
References and Resources

- Attorney General Opinion No. 8281, 04/21/2005

References and Resources

- Other State Agencies

- Local Government
  - County Surveyor
  - County or City Department of Public Works
  - Irrigation Districts

References and Resources

- Federal Agencies
  - Bureau of Land Management
    - [www.blm.gov/or](http://www.blm.gov/or), [www.glorecords.blm.gov](http://www.glorecords.blm.gov)
  - Forest Service
    - [http://www.fs.usda.gov/r6](http://www.fs.usda.gov/r6)
  - Bonneville Power Administration
    - [www.bpa.gov](http://www.bpa.gov)
  - Corps of Engineers
    - [www.nwp.usace.army.mil](http://www.nwp.usace.army.mil)
  - National Archives
    - [www.archives.gov](http://www.archives.gov)
References and Resources

• **Government Publications**
  - Shore and Sea Boundaries (3 Vols.), Shalowitz, A (Vols. 1 & 2), Reed, M (Vol. 3), USC&GS
  - Manual of Surveying Instructions (as applicable), BLM
  - Various Technical Reports regarding methods or projects

• **Texts & Other Materials**
  - Standard General Boundary References
    - Boundary Control & Legal Principles
    - Evidence & Procedures for Boundary Control
    - Clark on Boundaries
  - Seminar Handouts & State Association Publications
  - Water Boundary References
    - Water Boundaries, Cole, G.
    - River & Lake Boundaries, Simpson, J.
    - Water Boundaries, Flushman, B.

**Water Boundaries Practice Questions**

1. The *natural* process that causes a water boundary to become fixed is called ________________.

2. When a water boundary becomes fixed due to natural process or artificial influence, what determines the boundary location?
   ____________________________________________________

3. List five examples of artificial influence upon a riparian or littoral boundary.
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
1. The natural process that causes a water boundary to become fixed is called **Avulsion**.

2. When a water boundary becomes fixed due to natural process or artificial influence, what determines the boundary location? **The last natural location of the bank, shore, or channel.**

3. List five examples of artificial influence upon a riparian or littoral boundary.
   - Dam or Weir
   - Seawall or Headwall
   - Revetment (Rip Rap)
   - Canals
   - Groin
   - Fill
   - Rechannel
   - Breakwater
   - Jetty
   - Material Removal
4. **True** or **False**: Meander lines are always a fixed boundary on navigable lakes in Oregon?  
   
5. Give three examples of conditions or actions that can cause meander lines to become fixed boundaries.  
   
4. **True** or **False**: Meander lines are always a fixed boundary on navigable lakes in Oregon?  
   (ref 274.430,440)  
   Boundary fixed at natural location of the OHWM as it existed on 05/25/1921. The meander line may be the best or only evidence of that location. If a lake is lawfully drained, riparian owners take the exposed lands of the former bed to the extent that the least aliquot division of their fractional upland parcel is completed. Riparian owners may lease or buy lands accreted after 05/25/1921, or exposed lands adjacent to their complete least aliquot division from the State.  
   
5. Give three examples of conditions or actions that can cause meander lines to become fixed boundaries.  
   1. When GLO Surveyor followed something other than bank of water body (i.e. edge of swamp)  
   2. Where meanders grossly inaccurate or fraudulent (i.e. no lake or stream where reported)  
   3. Where enough accretion occurred after GLO survey and before patent to create additional lots.  
   4. Where grantor expressly reserved or previously granted land waterward of the meander line. Intent to do this must be clearly stated, not merely implied.
Water Boundaries Practice Questions

6. What is the status of large portions of accreted land which formed prior to patent of the adjacent government lot, or of lands within fraudulent meander lines?

7. What is the status of lands which have accreted within the meander lines of navigable lakes in Oregon?

8. What is the status of lands which have accreted along streams after all adjacent upland parcels had been patented?

Water Boundaries Practice Questions - Answers

6. What is the status of large portions of accreted land which formed prior to patent of the adjacent government lot, or of lands within fraudulent meander lines?

Such lands are part of the Federal Public Domain, subject to future survey and disposal.

7. What is the status of lands which have accreted within the meander lines of navigable lakes in Oregon?

State of Oregon claims ownership of accretions on navigable lakes occurring after 05/25/1921. Accretions shown to have occurred prior to then attach to the title of the adjacent upland parcel. Accretions occurring after that remain sovereign lands of the State. If no reliable evidence of the pre-1921 lakeshore can be produced, the meander line is the boundary.
8. What is the status of lands which have accreted along streams after all adjacent upland parcels had been patented?

*Accretions along stream banks attach to title of adjacent riparian parcels. Accretions forming islands (Emergence) within navigable streams are sovereign lands of the State. Accretions forming Islands within non-navigable streams belong to the upland owner of the near bank, or to owners on each side if in the middle of the channel.*

9. List three methods of apportioning accretions to adjacent upland parcels...
   A. Along the bank of a river or stream?
   B. Within a non-navigable lake?
   C. Within a navigable lake in Oregon?

10. Which is the best or standard method of apportioning accretions...
    A. Along the bank of a river or stream?
    B. Within a non-navigable lake?
    C. Within a navigable lake in Oregon?
Water Boundaries
Practice Questions - Answers

9. List at least two methods of apportioning accretions to adjacent upland parcels...
   C. Within a navigable lake in Oregon?

   If lawfully drained, or if per purchase or lease from State, extend lines of least aliquot division up to existing shore or end of least aliquot division, whichever is more landward. Otherwise, there is no apportioning of accretions. They belong to the State.

Water Boundaries
Practice Questions - Answers

10. Which is the best or standard method of apportioning accretions...
    A. Along the bank of a river or stream?
    B. Within a non-navigable lake?

   Same answer for A & B – There is no best or standard method. It is best to use the method which is most equitable to the adjacent riparian owners.

   C. Within a navigable lake in Oregon?

   Only method is to extend to the least aliquot division represented by the fractional upland parcel IF apportionment is even applicable. Normally, accretions are not apportioned. They belong to the State.

Water Boundaries
Practice Questions

11. ______ lands require levees to keep out periodic high flows in order to make the land suitable for agricultural use.

12. ______ lands require drainage to make the land suitable for agricultural use.

13. Would a person wanting to purchase swamp & overflowed lands apply for a patent through the (Federal) General Land Office or through the (State) Board of Commissioners for the Sale of School and University Lands?
Water Boundaries
Practice Questions - Answers

11. **Overflowed** lands require levees to keep out periodic high flows in order to make the land suitable for agricultural use.

12. **Swamp** lands require drainage to make the land suitable for agricultural use.

13. Would a person wanting to purchase swamp & overflowed lands apply for a patent through the (Federal) General Land Office or through the (State) Board of Commissioners for the Sale of School and University Lands?

A person wanting to purchase swamp & overflowed lands would apply for a patent through the (Federal) General Land Office or through the (State) Board of Commissioners for the Sale of School and University Lands, predecessor to the State Land Board.
14. In which set of Instructions to the Surveyors General were the identification and segregation of swamp & overflowed lands finally completely addressed?

15. What are some of the common problems or issues with regard to S&O lands which may be encountered in GLO surveys conducted prior to these instructions of townships containing swamp & overflowed lands?

Meander lines may have followed edge of S&O Lands rather than bank of waterway. S&O Lands may have been misidentified or improperly segregated.

The McKenzie is navigable. Note areas of accretion on the insides of bends and erosion on the outsides of bends.
16. Identify the southerly boundary of Rebecca's parcel.

17. Who owns Area "A" between the old and new channels?

16. The new channel was the result of an avulsive event (the flood), so the southerly boundary of Rebecca's parcel is the OHWM of the right (northerly) bank of the old channel.

17. When a new channel results from an avulsive event, the boundary becomes fixed at the pre-avulsion location of the OHWM. Sierra's northerly boundary was the OHWM of the left (southerly) bank, and remains the OHWM of the left bank of the old channel. Area "A" belongs to Sierra.

Note that there are areas which need to be treated as the result of avulsion, and areas to be treated as the result of accretion and erosion.

18. Who owns the bed of the new channel?

19. Who owns the bed of the old channel?
18. Since the boundary becomes fixed as a result of the avulsive event, the bed of the new channel is within the area of Sierra’s parcel. Sierra holds fee title to the bed of the new channel subject to a navigational easement in favor of the public.

19. The bed of the old channel was sovereign land before the avulsive event and remains sovereign land even though it is no longer navigable-in-fact.

20. The navigability of the Green River is being questioned.
   a. Which entities may declare a waterway to be navigable in Oregon?
   b. Which entity is empowered to make the final determination as to navigability for title purposes?
   c. If the Green River is navigable, identify the southerly boundary of Marty’s parcel.
   d. If the Green River is not navigable, identify the southerly boundary of Marty’s parcel.

20a. The State Land Board may assert sovereign ownership based upon navigability study by the State Lands Department, or based upon a finding of navigability by a court of competent jurisdiction.

20b. The final word on navigability for title purposes is with the Federal Courts.

20c. If the Green River is navigable, the southerly boundary of Marty’s Parcel is the northerly OHWM of the natural channel.

20d. If the Green River is not navigable, the southerly boundary of Marty’s parcel is the thread of the natural channel.
21. Upon review of the GLO field notes for Section 8, you find that the Green River had been meandered. Where would you find the meander corners within Section 8?

22. What feature of the river were GLO Deputy Surveyors instructed to locate?

21. The Meander Corners should be located along the exterior lines of Section 8, at or near the bank of the River.

22. Deputy Surveyors were to locate the bank of the river, approximately corresponding with the OHWM.

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Credit for much of the information used in this presentation goes to several predecessors and colleagues. Among those are Roy Minnick and Kelly Olin, each a past Supervising Surveyor of the California State Lands Commission; Robert Reese, past President of the CLSA; Chuck Karayan, former County Surveyor for Clark Co., Wa, and the surveyors I've had the privilege to work with at the State Lands Commission since 2008.

Many of the images herein were found on the websites of public agencies or public organizations. Most color aerial images are from Google Earth.
Water Boundaries
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