



Water Rights and Boundaries

PDH325

3 Hours

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Final Exam Water Rights and Boundaries

1. What is the term for grain-by-grain deposition of soil on the bank of a river?
 - A) Avulsion
 - B) Erosion
 - C) Accretion
 - D) Reliction
2. How long is one lunar cycle when determining "mean high tide"?
 - A) 18.6 years
 - B) 19 years
 - C) 19.6 years
 - D) No lunar cycle exists
3. What lines geometry can be determined by observation of river traffic being most commonly used for navigation?
 - A) Property Line
 - B) Thalweg
 - C) Line of mean high tide
 - D) Medial line
4. Can a Point Bar be vegetated?
 - A) Only in Arkansas
 - B) No
 - C) Yes, all have vegetation
 - D) Yes, or bare
5. What type of vegetation is typically grown above the water's edge?
 - A) Coral
 - B) Aquatic
 - C) Terrestrial
 - D) Transitional
6. What term is use for 'spring' primarily by surveyors when marking boundaries?
 - A) Aqua Profluente
 - B) Aqua viva
 - C) Aqua profluens
 - D) Aqua Appia

7. What group provided the primary impetus for changing the rules for allocating water in the western states?
 - A) Fishermen
 - B) Salesmen
 - C) Miners
 - D) Farmers

8. What is the loss of a water right for non-use?
 - A) Forfeiture
 - B) Failure
 - C) Sovereign right
 - D) Blanket use

9. Prior to Independence, where did our water rights system come from?
 - A) Germanic Code
 - B) Egyptian Rulers
 - C) English Common Law
 - D) Norwegian Ships

10. Where would one search for a flood map?
 - A) FEMA
 - B) Local University
 - C) Local Clerk and Recorder
 - D) State Surveyor

Water Rights and Boundaries

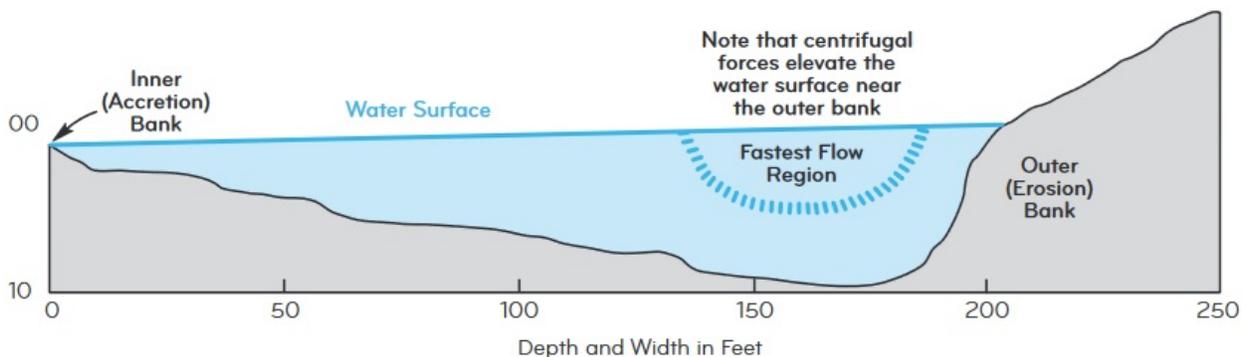
Water Rights - Definitions

Historically, in the United States, determining water rights and boundaries has proven to be very difficult. Both represent some of the most complex and challenging problems regarding land ownership. This topic covers a great deal of issues including meander lines, dependent resurveys, navigability issues, division of lands, partition lines, accretion, reliction, omitted lands whether truthful or erroneous, islands, rivers and lakes.

Let us first take the time to look at a few important terms for purpose of understanding.

Abandonment: Voluntarily Relinquish or Abandon a Water Right Certificate or Claim. A holder of a water right may voluntarily relinquish the water right if the water use has diminished or completely stopped. Relinquishment can also occur when the state agency responsible for water managing water rights notifies a water right holder (through an administrative order) that evidence shows the water right has not been put to full use. (1)

Accretion: The process of deposition consisting of the grain-by-grain deposition of soil along the bank of a river. (2) (See Image 1.1 below)



(Image 1.1)

Adjudication: In the water rights context, a judicial or administrative process whereby water rights are determined or decreed by a court of law. (1)

Alluvial River: A river that flows through its own sediments that by nature, move around over time by the process of erosion of one bank and deposition on the other bank. (2)

Appropriative Water Rights/Appropriation Doctrine: An appropriative water right confers upon one who actually diverts and uses water, the right to do so for reasonable and beneficial uses. The date of

initiation of the right, followed by application of the water to beneficial use in a reasonable period, determines the rights priority over other water users. The right to use groundwater is separate from the right given to use surface water. (1)

Aquatic Vegetation: Any one of a variety of plants that must grow in water; they are obligated to grow with their roots in the water. (2)

Avulsion: The sudden and perceptible change in a channel or boundary stream with a new channel and remaining “fast” land between, or a comparable change in some other body of water forming a boundary due to natural causes or from the result of human activities. (2)

Backswamp: A point beyond the natural levee of a flood plain when the flood plain is waterlogged. (2)

Banco: The remnant of property left in a bordering country. (2)

Bar, River: A low formation of soil that has risen from the bed by the action of the river. Bars may be gravel or soil depending on what material formed them. (2)

Bed Scour: This occurs when the river bottom is lower in elevation due to a high flow of water. (2)

Beneficial Use: Use (or in some states the non-use) of water for the benefit of the appropriator as defined by state law. Beneficial use is the basis, measurement, and limit of a water right. (1)

Boundary, Water: A concept that must be applied by observation of the river, lakeshore, or ocean beach and other tidal water boundaries. The actual survey work merely approximates the infinite identifications of riverbanks, channels or shorelines. (2)

Braided Stream: A stream that consists of small and shallow channels that resembles a braid by division and combination throughout. (2) (See Image 1.2 below)



(Image 1.2)

Chute Channel: A breach across a point bar that occurs when high rates of flow erode a “short cut”. (2)

Diversion: A turning aside or alteration of the natural course of a flow of water, normally including a physical departure from the natural channel. (1)

Doctrine of Reemergence: Holds that where the record riparian parcel is submerged due to an increase in water level, not erosion, and then subsequently reemerges through a subsidence of water, such that the same soil is exposed, the title remains to the record riparian parcel owner. (2)

Emergence: This is the process in uncovering the bed of a water body, being the opposite of submergence. (2)

Erosion: The grain-by-grain removal of soil from the banks or bed of a stream or lake by the action of water. Legally, under Federal jurisdiction and nearly all State jurisdictions, the upland owner loses title to the eroded land. (2)

Erroneous Omitted Lands: Applies to lands, not shown on the original plat of survey, that were excluded by a gross discrepancy in the location of the meander line. (2)

Flood Plain: Adjacent land to a body of water that stretches from the banks of its channel to the base of the enclosing valley walls, and which experiences flooding during periods of high discharge. FEMA is tasked with keeping accurate accounts of flood plain areas that are likely to flood over time. (3)

Forfeiture: The loss of a water right through non-use, based on statutory provisions found in state water law, for a prescribed time period (generally, five years) with no showing of actual intent of abandonment required. (1)

Inland Waters: Waters that are not influenced by daily tides. (2)

International Boundary Rivers: Rivers that serve as the boundaries between two or more countries. The United States shares Boundary Rivers on both the Canadian and Mexican borders. The Rio Grande is an example along the Mexican border. (2)

Instream flow: A water use (aquatic habitat, recreation, wetlands, navigation, hydropower, riparian vegetation, water quality, waste assimilation) that requires no diversion from the natural watercourse and does not substantially reduce the water supply. In many states, only the state or a state agency may hold the state instream water right. (1)

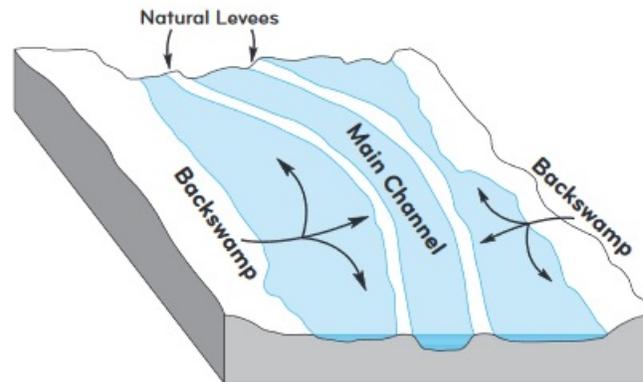
Island: A body of upland that is completely surrounded by water when the water is at Ordinary High Water Mark for inland waters, or at the Mean High Tide for tidal waters. (2)

Join: In the context of the BLM water rights program, a legal action that requires the BLM (and all other affected Federal agencies) to participate in a McCarran Amendment comprehensive stream adjudication in which the rights of all competing claimants are adjudicated. All claimants to a specific water body are joined in the suit. (1)

Lake: Any relatively large body of slowly moving or standing water that occupies an inland basin of appreciable size. (4)

Land Use Plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of the FLPMA. The term includes both Resource Management Plans and Management Framework Plans. (1)

Levee, Natural: An area caused by flood events consisting of the building up of larger particles of sediment near the top of the riverbank on one side and the flood plain on the other. Typically found along alluvial streams. (2) (See Image 1.3 below)



(Image 1.3)

Line of Mean High Tide (MHT): The line of mean height of all the high tides over one entire lunar cycle of 18.6 years. This term is identical to “mean high water”. (2)

Litter Examination: The process of analyzing the height of rubbish, twigs and other floatable material that are typically in a rough alignment at the reach of the highest waves that wash upon shore. This line can also be examined to help determine “ordinary high water mark” along a river, but is typically a bit higher than the vegetation and soil tests. On the shore of a lake, this test, along with others can be useful to determine the (OHWM). (2)

McCarran Amendment: Enacted in 1952 and codified at 43 U.S.C. Section 666(a), this amendment waived the U.S. sovereign immunity and allowed states to sue the U.S. to determine water rights in state suits involving the comprehensive adjudication of all water rights for a river system or other source (i.e., general stream adjudications). (1)

Meander Corner: A corner established at every point where a section line, township line, range line or special survey boundary intersects the “ordinary high water mark” of a navigable stream or other meanderable body of water. For tidal waters, the corner is established at the intersection of the surveyed line with the line of “mean high tide”. (2)

Meander Line: The traverse that approximates the margin of a permanent natural body of water such as the bank of a stream, lake, or tidewater. The United States Supreme court asserts that in principle for original surveys, meander lines are not run as boundaries of the parcel. Instead, for the purposes of ascertaining the quantity of land remaining after segregation of the bed of the water body from the adjoining upland, for defining the sinuosities of the water bodies for platting, and for closing the survey for acreage calculations. (2)

Medial Line: The middle as measured half way at all points. This line will fall between the opposite bank meander corners or informative traverse and will also establish a continuous line formed by a series of

intersecting straight line segments or a combination of straight and curved line segments. Every point is equidistant from the nearest point on the opposite shores and approximates the true median. (2)

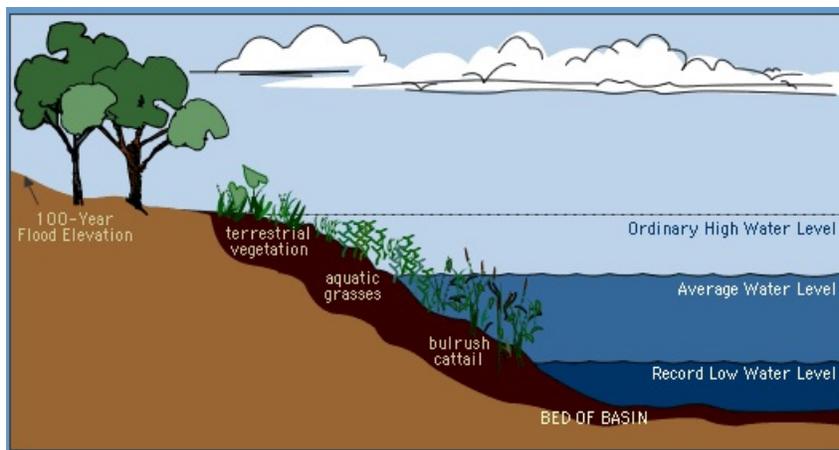
Median Line: The mathematical mean between controlling points and lines on the opposite bank meaner courses or informative traverse. It is derived from straight line and curved segment points halfway between the controlling lines and points on either bank. The curves in this case are treated as parabolas. (2)

Navigability: (original definition) A term that was addressed by Roman Law that passed to the Common Law of England and down to American Law. The beds of all tidally influenced waters belonged to the Government. Also, defined as navigable when used in ordinary condition as highways of commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on the waters. (2)

Omitted Lands: The Federal Land Policy and Management Act definition is non-surveyed lands, other than islands, that were erroneously or fraudulently omitted from the original surveys. (2)

Opposite Banks Delimitations: A defined line representing the limits of ownership between opposite banks. (2)

Ordinary High Water Mark (OHWM): The average high water mark through cycles of drought and wet years, much like “mean high tide”. For inland waters, the “ordinary high water mark” is the line below which the water impresses on soil by covering it for sufficient periods to deprive it of terrestrial vegetation and the soil loses its value for agriculture. (2) (See Image 1.4 below)

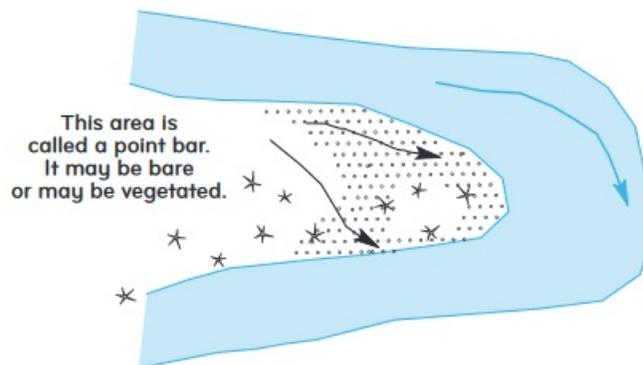


(Image 1.4)

Overflowed Lands: Areas of upland where the elevations were unfit for agriculture without construction of levees or drainage canals. Lands which are annually or periodically subject to natural flooding during the normal planting, growing or harvesting seasons of a region to such an extent that they are rendered wet and unfit for the cultivation of the staple crops of that region, unless artificially drained or protected. (2)(5)

Perfected Water Right/Perfect a Water Right: A water right for which the proof of completion of the development and application of water to the beneficial use has been submitted to the state legal authority and the state has acknowledged or accepted your proof by issuing a certificate or license. A perfected right is considered real property (see appropriate water right above). (1)

Point Bar: An accretion inside of a bend in a river. Over time, a point bar can become vegetated and classified upland. (2) (See Image 1.5 below)



(Image 1.5)

Quantification: The process of defining the amount and timing of water needed to support an intended beneficial use of water. (1)

Reappearance: The process of reemergence (defined below) and accretion (defined above). The term is the exposure of previously exposed land that has been inundated by water over a period of time. (2)

Rechannelization: The removal of a navigable river from its former channel and relocating it to an artificially constructed channel, leaving former riverbed exposed as upland. (2)

Reemergence: The process by which land is at one time submerged by water, followed by the reappearance of the same soil by the process of withdrawal of water or elevation of terrain. (2)

Reliction: It is the long continued and gradual uncovering of land caused by the recession of a body of water. (2)

Remeandering: The process of establishing new meanders in front of previously meandered Federal interest lands. (2)

Reserved Water Rights: This class of water rights may be claimed where Congress has by statute, withdrawn lands from the public domain for a particular Federal purpose or where the President has withdrawn lands from the public land for a particular Federal purpose, pursuant to congressional authorization. (1)

Riparian Rights: A doctrine pertaining to properties adjacent to a waterway that governs the use of surface water and gives all owners of land contiguous to streams, lakes, and ponds equal rights to the water, whether the right is exercised or not. The landowner does not own the water itself but instead enjoys a right to use the water and its surface. (6)

Rule of Decision: A settled principle based on precedents in previous decisions. It is considered a guide or a norm in a court's decision. (2)

Sandbars: A formation of soil on the bed of a lake or river that rise above the "ordinary high water mark" that consists of loose and unconsolidated material considered liable to be washed away during subsequent high water seasons. These sand and gravel bars are free from woody vegetation. (2)

Soil Examination: The presence and shape of banks on rivers, shelving along lakeshores, presence of sand and gravel bars and other physical forms or manifests of soil. (2)

Spring: A discrete natural flow of groundwater, which naturally emerges from the earth at a reasonably distinct location, whether or not such flow constitutes a source of water or is tributary to a watercourse, pond, or other body of water. (1)

State Appropriative Water Right: The right to use water in accordance with the appropriation doctrine obtained under State law. (1)

Submergence: The process of covering up upland with rising water, the opposite of emergence. This change usually is accompanied by changes in the “ordinary high water mark” of the water body or the depression of the upland. (2)

Swamp Lands: Lands including marshes and intermittent ponds that do not have effective natural drainage, such as to require drainage to fit them for cultivation, particularly where such conditions are long continued. (2) (See Image 1.6 below)

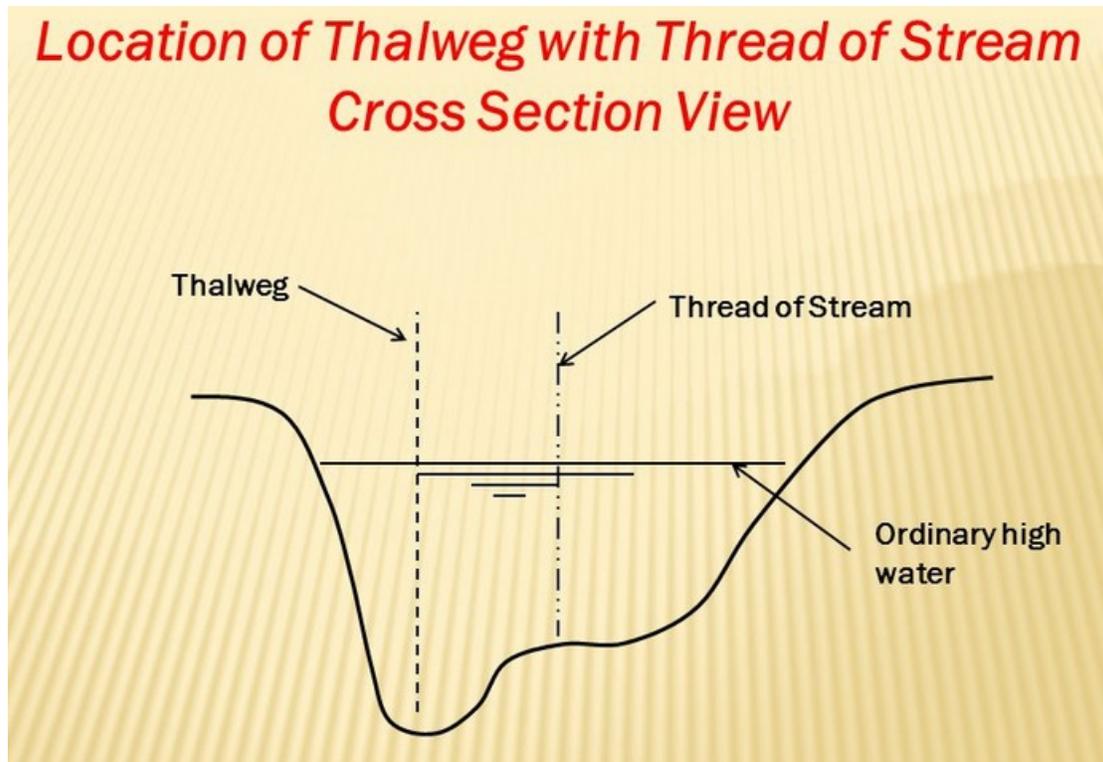


(Image 1.6)

Terrestrial Vegetation: Trees, shrubs and other woody-stemmed plants that are typically grown above the water’s edge and above the aquatic vegetation. (2)

Thalweg or Talweg: An ambulatory line often used to designate the division line between opposite nations or political subdivisions along navigable rivers or lakes. This line is the most commonly used for navigation and not necessarily the deepest. Its geometry can be determined by observation of river traffic or from charts used by river pilots. (2)

Thread: The line of deepest water often used to designate the division line between opposite upland owners along non-navigable rivers and lakes. When access to water is the primary issue and the thread occurs close to one bank, often the courts will use the medial line for division. (2) (See Image 1.7 below)



(Image 1.7)

Tidelands: The shore with respect to tidal waters. Referring to the space between the “line of mean lower low tide” and the line of “mean high tide”. This area is usually based off tidal gauges or by observation of physical conditions abutting the shore. (2)

Transitional Vegetation: An area between aquatic and terrestrial vegetation that include terrestrial species that exist in a very wet environment. (2)

Upland: The land that is on the opposite side of the meander line from swamp or overflowed lands. It is primarily dry and very rarely inundated by water. (2)

Vegetation Examination: This is conducted in the field to determine whether the grass, tree, shrub or plant is aquatic or terrestrial vegetation. (2)

Zero Accretion Points (ZAPs): Points used for starting and stopping the apportionment where there is no erosion or any accretions to the original meanders. (2)

Water Rights – History and Federal Law

“For some 200,000 years when man was nomadic, having safe water wasn’t a problem, we’d walk from one source to another and water our animals there and then if it began to smell we’d move on to avoid potential infection. And then, about 10,000 years ago, we moved into permanent settlements and many of today’s ailments began to surface as pathogens transmitted by contaminated water became a very serious health risk and guaranteeing pure water for people became a prerequisite for successful urbanization and state formation.” (7) Horses being great guides in the past as they will never drink unclean water.

With the Earth made up of around 70 percent water, an abundance of supply was available for the limited population. During this time, no laws or rights to water needed to be established. Even though the vast majority of the water was saline (containing salt). The earliest settlements often set up near a bountiful water supply like a stream or spring where the water would flow naturally.

Egyptian societies around 3000 B.C. began building wells and stone storage channels for rainwater. Like many other practices, water storage technology began and can date back to the Egyptians. “Urbanization in Europe occurred between 500 B.C. – 500 A.D. around the Mediterranean and the quality of the water was examined by the senses: taste, smell, appearance and temperature and the health of the people and animals using a water source. The ancient Greeks and Romans were also quite aware of the dangers of water coming from hills and mountains where mining was practiced.” (7)

Water purification began with the Romans and Greeks. They used sieves, filters, settling tanks and boiled water to make it potable. The scholars of the time wrote about the importance of boiling and filtering clean drinking water. Roman law was based off cultural practice and was the first to manage natural resources such as water. Their earliest documentation is not like modern day laws as most were Latin text inscribed on stone or bronze. The translation of some of these laws in stone has been difficult because it was written by and for the elites of society.

The biggest compilation of Roman law comes from the Digest of Justinian, which was compiled in 6 A.D. and included seven centuries of writings from Roman law experts and or jurists. The laws were separated into three categories being persons, property and contracts. The twelve tables (similar to the Bill of Rights for the American people) (See Image 2.1) were the oldest written Roman laws (450 B.C.) which described personal and public property including road widths, land ownership and water rights.



(Image 2.1)

“In the early days, Romans got their water from the river Tiber, wells and springs, until 312 B.C.”
(8) The first water rights issue in Rome arose after they built the first aqueduct (Aqua Appia, 312 B.C.). The infrastructure of Rome was public property and tensions arose as people wanted private access to the aqueduct. In 184 B.C., Censor Cato cut off illegal private taps. This 16km aqueduct was built completely underground.

Natural source water also created conflict in the second century when the Romans created an interdict to protect public access to rivers. An interdict was an expedited hearing regarding possession, and several were concerning water rights. Some decisions were final and others temporary awaiting a final decision.

“Roman discussions of fresh water began in Republican literature with the assumption that it should be free and open to all. Cicero listed running water, aqua profluente, first among the common goods that all humans share. The phrase, aqua profluens, is neither a common nor an exclusive expression nor is it a legal term. Aqua viva is similarly restricted, used for ‘spring’ primarily by surveyors when marking boundaries.” (9)

English Common Law on water (riparian rights doctrine) influenced how America would regulate water usage both public and private. “Stripped to its essentials, the riparian rights doctrine means that the only ones who hold the right to use water are those who have access to it through ownership of land. This is such a simple and seemingly practical rule that, quite possibly, riparianism was widely characteristic of an early stage in the development of water law. Local rules and influences apart, 19th-century Europe (especially France and England) became the main source of the riparian rights doctrine in its present form in other areas of the world. Since Roman law, the oldest legal system to which the roots of European water law can be traced with any certainty, was also a product of Europe, the riparian rights doctrine prevalent in the world today is fully a European doctrine.” (10)

Roman water law influenced the early Germanic codes in Spain and Spanish America. Rivers were considered public property regardless if they were navigable and if a stream flowed across private land, the owners needed no permission to access it or use it. After the development of feudalism, water rights were determined through royalty or government. Eventually, after the Moors conquest, the municipalities were given the right to determine access. “Present-day Spanish water law requires an

authorization for any use of public waters not accorded generally to the public, that is, all flowing surface waters except those which arise on private land as long as they remain on that land.” (10)

Flowing water on private land becomes public once it leaves the property, if it enters another private property they are entitled to make use of the flowing water as well. Navigable stream water on private owners land could be used for irrigation if the stream is not blocked from future flow. These Spanish practices were brought to South America, but it was put in place that all water that was not granted to a property owner or town became public domain.

“Generally, throughout continental Europe, the development of centralized political regimes contributed to the exclusion of navigable streams from the riparian rights system. On the contrary, in England and in the United States, riparian rights attached to navigable and non-navigable streams without distinction subject to the protection of navigation.” (10)

Since water laws have evolved over centuries, when dealing with Federal or public lands in the United States, it is customary to refer to the latest Manual of Surveying Instructions. The thirteen original colonies along with Hawaii, Kentucky, Maine, Tennessee, Texas, Vermont and West Virginia were formed by other means and are not considered “public domain states”. Some of these will be discussed in the State water rights portion.

“Federal lands” or “Federal interest lands,” as used in the Manual, refer to any lands in which the United States holds title, an estate, or other interest. Federal lands or Federal interest lands include, but are not limited to: public domain lands, or those lands that were acquired by the United States from another sovereign and have never left Federal ownership (public domain lands were classified into, among others, agricultural lands, mineral lands, and Indian lands; for administrative purposes, these lands may now be administered by any one of several Federal agencies), private land claims (which were never part of the public domain), and acquired lands (which may or may not have ever been part of the public domain and which may be administered by any one of several Federal agencies). While the primary focus of the Manual is the PLSS States, Federal interest lands can be located anywhere. (2)

When Federal law and State law (also known as foreign sovereign law) conflict over water rights and boundary evidence, the surveyor must determine which would be controlling. The principle is typically based off the method the boundary was created. When dealing with a section line, Federal law will generally control. Surveyors are not able to resolve legal issues when it comes to water rights or boundary, but must provide proper judgement and technical advice.

“Sovereignty over the lands beneath navigable waters lies with the individual States upon statehood, unless explicitly declared otherwise by competent authority. Beds of navigable bodies of water are not public domain lands and are not subject to survey and disposal by the United States.” (2) Many states such as Alabama, California, Florida, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Mississippi, Ohio, Oregon and Wisconsin were granted the swamps and overflowed lands through the Public Domain. Arkansas is an exception to the rule where the Federal government kept the overflowed and swamplands.

The United States set precedence about navigable waters stating they have always been used as common highways including tidewater streams and permanent bodies of water whose natural condition at the date of statehood would be to classify them navigable waters. This is more well defined in the Act

of May 18, 1796 which states “All navigable rivers, within the territory occupied by the public lands, shall remain and be deemed public highways; and, in all cases where the opposite banks of any streams not navigable belong to different persons, the stream and the bed thereof shall become common to both” (Rev. Stat. 2476; 43 U.S.C. 931).” (2)

An original survey had to be completed before the land could pass to individual ownership. When a body of water fell within a section of land, the process for mapping it is called meandering. These traverse lines around the permanent natural body of water was to exclude the bed from the adjoining upland owner and calculate the amount of land that would not be included in the parcel. The meander line would not be looked at as the true boundary because ownership would go to the “ordinary high water mark” or “mean high tide”. These meanders must be executed properly to uphold the upland parcels riparian rights.

“The general rule is that when the Federal Government conveys title to a lot fronting on a navigable body of water, it conveys title to the water’s edge, meaning the OHWM or line of MHT. Such riparian boundaries are ambulatory, not fixed in position. When an exception to the general rule is shown, the consequence is that the meander line becomes fixed and can become a fixed and limiting property boundary. Meander lines may be held fixed because of (1) an avulsive change, (2) gross error or fraud, (3) substantial accretion after survey but before entry, or (4) where the facts and circumstances disclose an intention to limit a grant or conveyance to the actual traverse lines. But the mere fact that an irregular or sinuous line must be run, as in the case of a reservation boundary, does not entitle it to be called a meander line except where it closely follows the bank of a stream, lake or tidewater.” (2)

Inland waters typically go through wet and dry cycles that can last multiple years. Defined above, the “ordinary high water mark” is taken as an average of one lunar cycle being 18.6 years. As a surveyor, determining the mark can vary due to topography and flow of the body of water. When determining the “ordinary high water mark”, the surveyor must check for the line that the water imprints into the soil.

A vegetation examination is also a good indicator for said mark. Terrestrial vegetation, transitional species and aquatic vegetation are indicators of what plants are typically inundated with water. Terrestrial being upland species are typically found above the “ordinary high water mark”. One must also determine if the vegetation is seasonal or reproducing. The terrestrial species that is closest to the water is the best indicator of the “ordinary high water mark”.

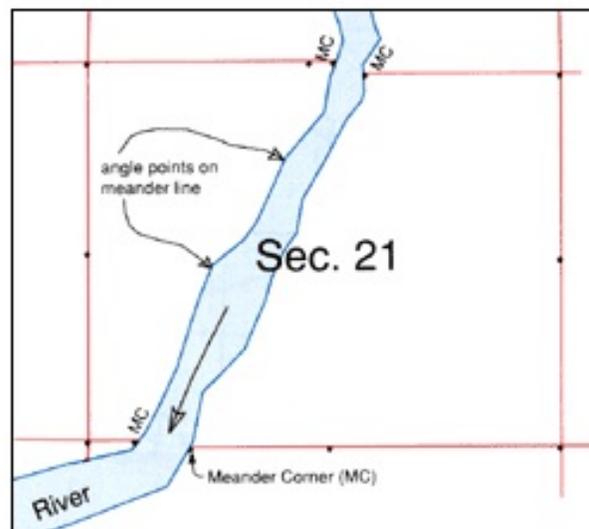
“The soils examination is the next complementary examination. The leading court opinions regarding OHWM with reference to soils did not rely on or intend the use of laboratory tests of soils for this purpose. Accordingly, when a court decision dated before the 1940s refers to the character of the soil, it usually refers to the presence and shape of banks on rivers, shelving along lake shores, presence of sandbars and gravel bars, and other physical forms or manifestations of soil.” (2)

This test is usually to back up the vegetation test and a more extended look at data. When investigating a stream or river, different striations and formations of silt, soil and rock occur at different levels of water. Bedrock for instance is typically the bottom or substructure composed of mainly hard rock and other chemical and mineral compositions.

The Litter Examination is another test used to complement the vegetation examination. This test looks for a litter line (trash, twigs and other floating material) that congregates at the top of a river, lake or banks and shorelines of tidal water. This test is better served to determine “mean high tide” than “ordinary high water”, but is still ancillary evidence for both.

The agricultural test is another process of investigation in determining “mean high tide” or “ordinary high water”. “For tidal waters, the shore, also called the tideland, is the space between the line of mean lower low tide and the line of MHT. For tidal water, in the interest of certainty, the line of MHT is the average elevation of all the high tides occurring over a period of 18.6 years. Because it is based on elevations, meanders along the tidelands are run either by reference to tide gages and their reported elevations or by observation of physical conditions abutting the shore. Special instructions will provide guidance in selecting the method to be used.” (2)

When running original survey lines or resurveying a section or township, meander corners (See Image 2.2 below) must be established where a controlling line intersects the “ordinary high water mark” or “mean high tide” for tidal waters. These are controlling monuments on the surveyed line and are to be treated the same as established monuments.



(Image 2.2)

“A “special meander corner” (SMC) is established at the intersection of the OHWM or line of MHT with a run and marked subdivision-of-section line. “Auxiliary meander corners” (AMC) are used where there is no intersection of a surveyed line with the OHWM or line of MHT, as in the case of a meanderable lake found completely within a section not requiring subdivision. Auxiliary meander corners are also established at the intersection of avulsed lands with riparian lands, at the intersection of omitted land parcels with riparian lands, at the intersection between fixed and limiting original meanders and the current meanders, on the meander line of a previously unsurveyed island not intersected by a surveyed line, and at other intersections of riparian boundaries where use of a special meander corner is not appropriate.” (2)

If the location of the corner at “ordinary high water mark” or “mean high tide” will devalue the quality with the possibility of it become lost or obliterated, a witness corner can be set in the place of

the monument and the information recorded on the plat and field notes. When dealing with meander lines, not every angle point is needed because the actual boundary is constantly changing due to erosion and accretion. Most of the time, the angle points are not monumented.

“The following items will be noted along the meander line in the field notes or on the plat: (1) all streams flowing into a river, lake, ocean, or meander-able bayou, with the width at their mouths and their course; (2) the position, size, and depth of springs, and whether the water is pure or mineral; (3) the heads and mouths of all bayous; (4) all islands, rapids, and bars, with intersections to the upper and lower ends; (5) the height of the banks of lakes, streams, and tidelands, the height of falls and cascades, and the length and fall of rapids; and (6) artificial structures and other notables such as improvements in both land and water areas. Except for original survey meander lines, the above items may be noted when administratively necessary.” (2)

The original survey of a water boundary is accurate to the date when it was created. The Federal Government typically conveys land to the “ordinary high water mark” if the water is navigable. Non-navigable, the upland owners will typically get to the medial line. At times, after changes in the water body, it is sometimes necessary to complete a resurvey of the meander lines. Many waterways can greatly change paths over time creating large differences in the meanders and high water marks.

Navigability

Non-navigable bodies of water (prior to change in definition) such as ponds, creeks, shallow streams and washes do not have a history of being used for commercial trade or transportation at statehood. Determining navigability at statehood consists of the following rules:

- (1) Rivers and lakes that are navigable in fact have a history of use as highways of commerce over which trade and travel were conducted at the time of statehood.
- (2) Rivers and lakes navigable in fact at the date of statehood are navigable in law.
- (3) “Navigable waters of the United States” are those to which congressional acts apply and they must interconnect to permit navigation to navigable waters in other States or countries. Navigable waters of the United States do not confer title to the soil under those waters to the United States.
- (4) “Navigable waters of the State” are those navigable in law that does not interconnect with navigation in other States or countries. The navigable waters of the State include ownership of the soil under the waters.
- (5) Rivers and lakes in States that were undeveloped at the time of statehood will be navigable in law if they were susceptible of being used in their natural condition as highways of commerce, over which trade and travel could have been conducted, at statehood. (2)

Over the last year or so, legislation has been being passed on “WOTUS” or Waters of the United States to protect waters that connect navigable waterways. In 2015, the definition of navigable waters

was expanded to include tributaries and other waters that connect larger bodies. “Those areas, the EPA contended, should be considered WOTUS because they are linked to streams, rivers and other traditional navigable waters by a so-called significant nexus. Agriculture, other industry groups and state governments across the country alleged the WOTUS rule expanded federal jurisdiction to waters not traditionally protected by the Clean Water Act.” (11)

The Environmental Protection Agency and United States Army Corps of Engineers are the two agencies that redefined “navigability” leading for an update on the 2009 Manual of Survey Instructions. The new definition includes territorial seas, waters which are currently used or have been used or may be susceptible to use in foreign or interstate commerce, waters that are subject to the ebb and flow of tide, tributaries, ponds, lakes, impoundment or jurisdictional waters and adjacent wetlands.

The waters excluded from the new “WOTUS” (See Image 3.1 below) are groundwater, subsurface drain water, ephemeral streams, swales, gullies, rills and pools. Also, storm water run-off, directional sheet flow over upland, converted cropland, certain ditches, artificially irrigated areas, artificial lakes and ponds, including water reservoirs for storage, waste treatment systems, ground water recharge and retention basins and ponds that were constructed in upland and water filled depressions.

EPA'S PROPOSED CHANGE TO CLEAN WATER RULES	
WOULD BE FEDERALLY PROTECTED	WOULD NOT BE FEDERALLY PROTECTED
<ul style="list-style-type: none"> • Major “navigable waters,” including major rivers 	<ul style="list-style-type: none"> • Areas that only contain water during on in response to rainfall
<ul style="list-style-type: none"> • Tributaries to major bodies of water 	<ul style="list-style-type: none"> • Groundwater
<ul style="list-style-type: none"> • Ditches used for navigation or affected by tides 	<ul style="list-style-type: none"> • Most roadside or agricultural ditches
<ul style="list-style-type: none"> • Some lakes and ponds 	<ul style="list-style-type: none"> • Agricultural land abandoned the last five years
<ul style="list-style-type: none"> • Dams or reservoirs connected to protected bodies of water 	<ul style="list-style-type: none"> • Features used to capture or treat stormwater runoff
<ul style="list-style-type: none"> • Wetlands adjacent to protected bodies of water 	<ul style="list-style-type: none"> • Basins or ponds used to treat wastewater

(Image 3.1)

Given that water bodies have recently been redefined, we may have legislative changes regarding water rights. The Manual of Survey Instructions (2009) states that the Federal Courts have final say on navigability when Federal Interests are involved. The new definitions will most likely lead to new court cases and boundary disputes. The change to the definition was to protect running bodies of water and saving as much clean water as possible.

“In early European history, the right to use the waters was reserved to the ruler. Roman law made the distinction between non-navigable and navigable waters and this concept was incorporated into the Common Law of England and subsequently into American law. English Common Law held that the beds of all tidally influenced waters belonged to the Crown up to the edge of land that could be cultivated for agriculture. When the early courts and settlers in New England tried to apply those rules it became clear that rivers such as the Hudson and the Ohio were clearly navigable even though not tidally influenced.” (2)

When states entered into the union, the beds of navigable waters have historically passed to them. These rights were not granted by the constitution, but were reserved for the entering states. The laws in the past have been ambiguous to say the least when determining navigation. “An EPA spokesperson confirmed there are generally more non-perennial streams in the west and southwest parts of the country. Some states like California already have strict clean water rules on the local level, but other states may not have as many resources to enforce rules as the federal government.” (13)

States Water Rights

Before we declared independence, our system was derived from English Common Law including water rights. “English water law was relatively simple and undeveloped, having unfolded in a land where water was abundant and conflicts over its use were correspondingly rare. The navigable waters of England belonged to the Crown and were available to the public for the purposes of navigation and fishing. The Crown's ownership prevented these important economic activities from being monopolized by individuals, thereby reducing the potential for conflict. Rights to the use of waters not being used for navigation were held by those who owned the banks of the streams, and were therefore known as riparian rights.” (12)

With the abundance of water available compared to the population, the original colonies did not have a reason to deviate from the rules set forth by England. The Riparian Doctrine was basically the foundation of our system and stated rivers were a valuable commodity and each upland owner along the river was granted equal access. These upland landowners were only allowed to use water from streams for specific reasons like cooking food, drinking, bathing and water for livestock.

During the Industrial Revolution, the doctrine was changed to allow upland (riparian) landowners to make reasonable use of the flowing rivers they were entitled too. “Miners provided the primary impetus for changing the rules allocating water in the American West, especially after gold was discovered in California in 1848. The population of California, and later the entire West, increased enormously as mining became the principal industry in California and the rest of the West.” (12)

Water was essential as mining techniques advanced and some could make more money providing water than actually digging for gold. Companies were being paid to reroute water through the use of dam and canals. Since it was Spanish Colonists who settled the western United States, they carried over the established systems. This settlement was not officially part of the United States at this

time, so little to no rules on property existed. When the miners created an independent system for both land and water usage, it did not fall under Federal or State law.

This differed a great deal from the riparian rights on the eastern side of the United States, because they basically had a first right system and a use it or lose it. When California was admitted into the Union as an official state (1850) mining camps were primarily on public land. It was not clear whether state or federal government controlled the law. The first year they tried a riparian system, but quickly switched back to the use of prior appropriation. *Irwin v. Phillips* (1855) was the case that established the prior appropriation doctrine.

The basis of this prior appropriation doctrine is

1. The right to use water could be obtained by taking the water and putting it to beneficial use.
2. The right was limited to the amount of water that is beneficially used.
3. First in time was first in right.
4. The water must be used or the right was lost. (12)

“The shift to the prior appropriation doctrine was handled differently by each state. Some states, particularly those where rainfall was more abundant, saw no reason to completely eliminate the riparian doctrine as they expanded the appropriation doctrine, and so made great efforts to accommodate both doctrines.. The Pacific states of California, Oregon, and Washington, and the states of North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas all tried to take advantage of the developmental benefits of the new prior appropriation doctrine without upsetting the expectations of citizens who based their water claims on the common law riparian doctrine.” (12)

Prior to 1890, the United States government was more focused on settling the west and properly dividing the land, so water law was handled on a state by state basis. The riparian doctrine was of concern in this area due to the transfer of title from public to private lands. “Under the assumption that there would be no lands retained in federal ownership, Congress addressed this issue through a series of laws passed in the 1800's that rejected the riparian doctrine, but did not develop an independent, federal system for allocating water on federal lands Through laws such as the General Mining Law of 1862, the Act of 1870, and the Desert Land Act of 1877, Congress acquiesced the allocation of water to the states.” (12)

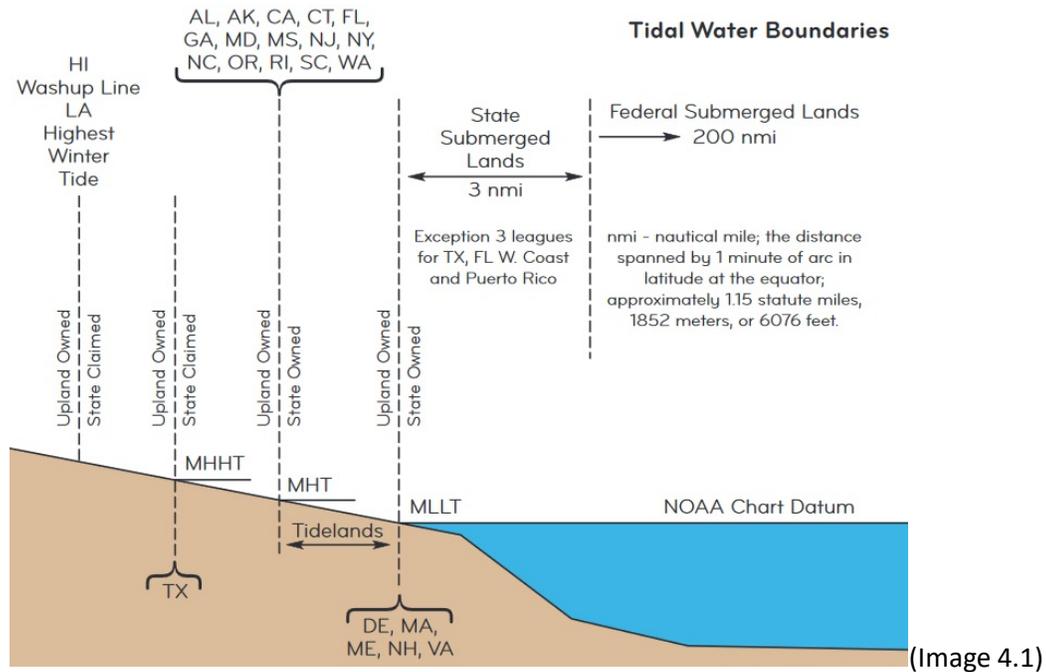
Around 1890, Congress decided it would keep and maintain public lands for National Parks, Forests and other uses. Twelve years later, the Federal government began water management and development (1902 Reclamation Act & 1920 Federal Power Act). The Federal government realized it would need a fair supply of water for its land policies.

Though ownership of land was public, most misunderstood they only were given use to the water instead of actual ownership in most cases. This was addressed in State law to clarify any misunderstandings. Each state has unique policies and have left the decision up to State officials and lawmakers.

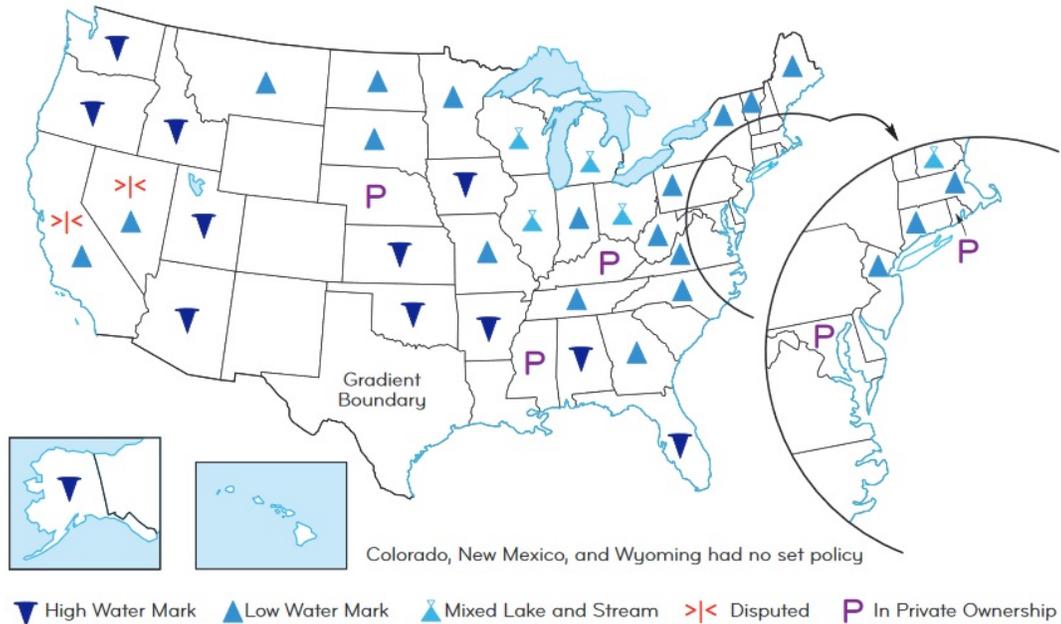
“Presently, water for domestic and for municipal needs receives the highest priority in all of the states that have established preferences, although there is considerable variation in other preferred uses among the states. For instance, the use of water for agriculture is favored over all but domestic uses in most states because agricultural interests dominated state legislatures in the early part of the century when preference statutes were written. Industrial, manufacturing, and electrical generation purposes are usually less preferred, and the use of water for recreation, fish, and wildlife purposes is usually at or near the bottom of preference lists, if listed at all. The order of these preferences may have recently changed with the requirements of the Endangered Species Act.” (12)

Due to the ever-increasing population, water rights still remain an issue (primarily in western states). It is prevalent that each state takes into account the increasing population when determining water rights. The Western Water Policy Review Advisory Commission was established in 1992 by the Federal government so they could properly assess the situation over time with regards to water rights and water use. During very dry seasons, some of these states experience droughts and water shortages.

The graphic below are the coastal states decisions on tidal waters: (See Image 4.1 below)



The next graphic is a state by state analysis of inland navigable water rights for upland owners (the state typically maintains the bed): *Exceptions to the rules exist/*When dealing with non-navigable waters the two upland owners own part of the bed with many methods of proper division of multiple owners on a state by state and case by case basis (See Image 4.2 on next page)



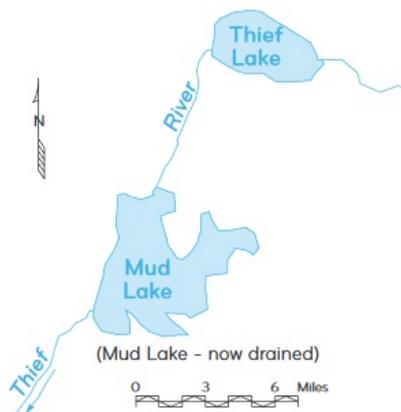
(Image 4.2)

Case Studies

Navigability

United States v. Holt State Bank, 270 U.S. 49 (1926)

“This case centered on the issue of title to land. Mud Lake in Minnesota was claimed by the United States to have been a marsh covering about 5,000 acres at the date of Minnesota’s statehood. The United States claimed that the GLO surveyors should have extended the survey across the “lake,” breaking it up into sections for sale. This case is helpful in determining navigability of a lake that had been drained or was difficult to navigate at time of statehood. The Court found that in its natural condition the lake area was traversed by Mud River, a tributary of the Thief River, a navigable river leading into Canada. Mud Lake was formerly part of the Red Lake Indian Reservation for Chippewa Indians. Most of the reservation was ceded back to the United States and surveyed for sale after classification as “agricultural” lands or “pine” lands.” (2) (See Image 5.1 below)



(Image 5.1)

This lake was dry by 1912, due to a ditch that passed through and emptied into a nearby river. This land was claimed by the Federal Government and sold to benefit the native Chippewa Tribe. Minnesota's argument was that the lake was once navigable and it was the rightful owner of the drained bed. The state trial went in favor of Holt State Bank, but was eventually appealed by the United States Supreme Court. The lake was found navigable and the dispersed to the upland owners, but the riverbed did not prove to be.

United States v. Appalachian Electric Power Co., 311 U.S. 377 (1940), reh'g denied, 312 U.S. 712 (1941)

"This case centered on the issue of the Commerce Clause and decided whether the bed of New River in Virginia and West Virginia was a navigable water of the United States. The Appellate Court held that navigability in fact must exist under natural and ordinary conditions rather than by human-made improvements. We study this case because the effect of improvements must be considered in all navigability questions.



(Image 5.2)

Appalachian Power had obtained a license from the State of Virginia to construct a dam in New River at a point just upstream from the town of Radford." (2) (See Image 5.2 above)

The dam was claimed to have a negative effect on navigation as the Federal Government asked to stop construction and return New River to a navigable body of water. The power company claimed that the dam site made the waters non-navigable, but the overall navigability was the final issue at trial.

The District court presented evidence on New River including a substantial amount of evidence on hydraulics, hydrology and geography. The Federal Government claimed that New River and Kanawha River were the same and deemed them navigable. The history of the river is that it was always navigable prior to the construction of the dam and was used for commerce in the past.

District court pleaded at the time the river was not navigable and refused to cease construction. The Supreme Court noted several areas where they've improved the river for navigability purposes. The Supreme Court said "Use of a stream long abandoned by water commerce is difficult to prove by

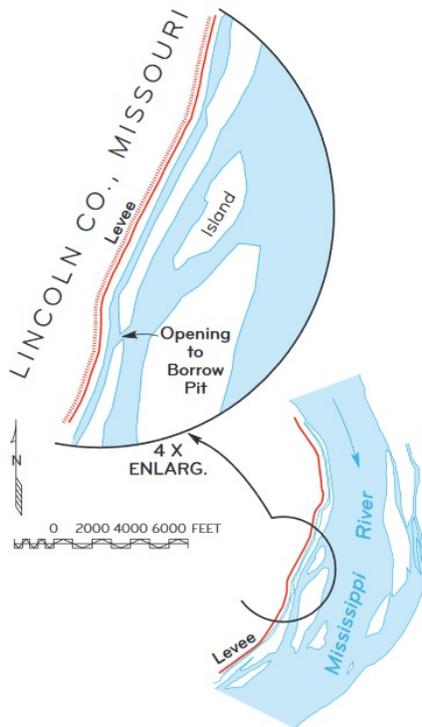
abundant evidence. Fourteen authenticated instances of use in a century and a half by explorers and trappers, coupled with general historical references to the river as a water route for the early fur traders and their supplies in pirogues and Durham or flat-bottomed craft similar to the keelboats of the New River had been found adequate for proof of navigability in an earlier case, *Economy Light and Power Company v. United States*, 256 F. 792 (1919), a f f 'd, 256 U.S. 113 (1921)” (2)

Therefore, each of the three parts of the river were deemed navigable and the dam could be built through regulations set forth by the United States Corps of Engineers. The power company then needed to obtain a Federal license and to comply with the construction.

United States v. Ross, 74 F.Supp. 6 (E.D. Md. 1947)

“This case centered on the issue of jurisdiction for admiralty purposes. The U.S. Attorney wanted to prosecute Howard Ross. In order to make the charge stick, the crime had to have been committed on navigable waters of the United States. We take up this case because it shows how the courts have considered small but deep channels alongside a navigable river to be non-navigable. Contrast this case with *Packer v. Bird*, 137 U.S. 661 (1891).

Howard Ross was charged with reckless operation of a boat in violation of a Federal law. The incident occurred in a borrow pit alongside a levee on the Missouri side of the Mississippi River. The borrow pit was filled with river water at the time. Ross had loaded his boat with 10 hunters and, when it sank, three passengers drowned.” (2) (See Image 5.3 below)



(Image 5.3)

This case dealt with the old definition of navigability and today’s new definition would probably consider this waterway navigable. Most of the year this waterway was not navigable and the only evidence of

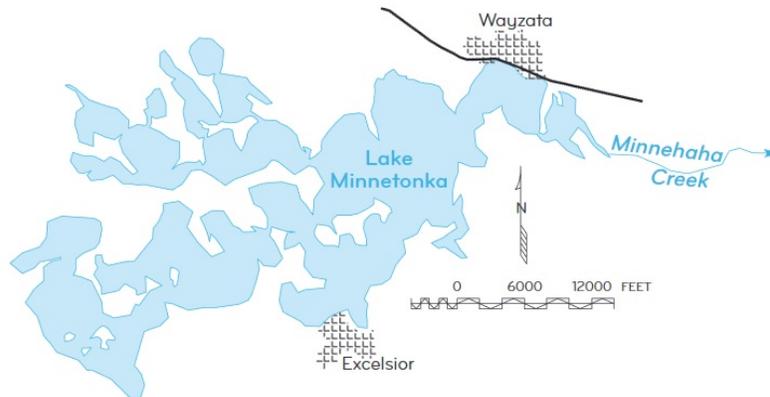
commerce was a duck hunting expedition. The courts then found that the depth of water, without profitable utility, would not be considered as navigable. If this went to trial with the new definition of navigability, we'd possibly have a different outcome.

Minnehaha Creek v. Corps of Engineers, 449 F.Supp. 876 (1978), aff'd in part & rev'd in part, 597 F.2d 617 (1979)

"This case centered on the issue of the Commerce Clause. It concerned the navigability of Lake Minnetonka and Minnehaha Creek in Minnesota among other issues. Navigability claimed by the Corps of Engineers was disputed. If the waters were classed as "navigable waters of the United States", local owners were required to get a permit from the U.S. Corps of Engineers for any construction involving the bed of the lake or stream.

Findings of fact by the Court relating to navigability were:

- (1) Lake Minnetonka's water levels were controlled by a fixed crest dam constructed in 1852. The depth of the lake averages 40 feet with some depths up to 100 feet. Minnehaha Creek is the lake's single outlet.
- (2) Minnehaha Creek flows into the Mississippi some 20 miles from the lake outlet. Flow is variable and intermittent. During the summer and fall there is not enough depth for any form of navigation.
- (3) There is no history of navigation, private or commercial, on Minnehaha Creek.
- (4) The history of navigation on Lake Minnetonka included canoe travel prior to settlement. After the dam raised the lake level, steam powered boats used the lake as well as log rafts. Luxury steamboats operated on the lake from Civil War times until 1926. After 1867, steamers carried rail passengers from a railroad at Wayzata across the lake to Excelsior, a major town on the lakeshore. Mail was carried by boat to Minnehaha Creek and thence by horse-drawn stage to other points. Grain and lumber products were carried to mills and shipped by rail from that point on.
- (5) In 1916, the Corps of Engineers had advised a railroad company that their permit was required for construction of a bridge across an arm of Lake Minnetonka. No other action by the U.S. Corps of Engineers had exercised any authority over the lake from 1916 until 1945.
- (6) In 1945, the U.S. Corps of Engineers advised the State of Minnesota that Minnehaha Creek was navigable and the State had treated the stream in that manner since 1945.
- (7) The 1976 use of the lake was limited to recreational use by small boats, except that three excursion boats carried passengers for hire and several marinas rented out boats for recreation.
- (8) The St. Paul District of the Corps of Engineers issued a report in 1975 declaring Lake Minnetonka and Minnehaha Creek to be navigable waters of the United States." (2) (See Image 5.4 on next page)



(Image 5.4)

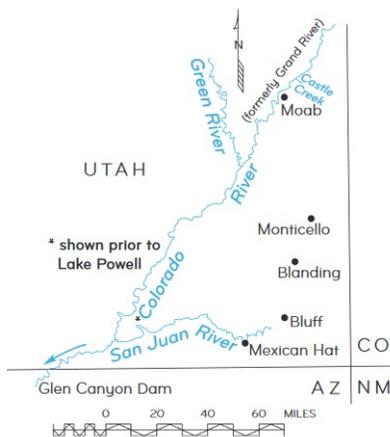
This is an interesting case because both the lake and the creek were deemed navigable. It set a precedent that a creek could be considered navigable because the waters were used for interstate commerce even though it wasn't directly traveled by boat. The creek was deemed navigable due to the fact it aided the railroad and horse drawn stage. The lake was found to be navigable only by the States test and was not considered navigable waters of the United States.

Given the new definition of navigability, both the lake and creek would be deemed "Waters of the United States".

United States v. Utah, No. 14 Original; 283 U.S. 64 (1931)

"This case concerned title to the beds of the Green River, the Grand River and the Colorado River within the State of Utah. What was then called the Grand River is now named as part of the Colorado River in the States of Utah and Colorado.

This case is particularly important to us because it sets out clearly that a river need not be navigable in all of its reaches. The same river can be not navigable in part mixed in with navigable stretches. The case also sets out that the susceptibility or capability for navigation at the time of statehood must also be considered." (2) (See Image 5.5 below)



(Image 5.5)

Canyon Lands National Park and additional public land owned by the United States were upland properties and the Government issued oil and gas prospecting permits in the bed of the dry river. If the river was deemed navigable per Utah statute, Utah would be the owner of the dry riverbeds. Utah also issued oil and gas prospecting permits within the bed.

The first ruling stated that some of the river was navigable and other parts were not. Both Utah and the United States Government disagreed. The courts decided the extent of existing commerce does not decide navigability. This river had been navigable at statehood and the court also ruled that sand bars, although difficult to navigate through, did not disqualify this river as navigable.

Oklahoma v. Texas, No. 20 Original; 258 U.S. 574 (1922)

“A series of cases of the Supreme Court resulting in 19 opinions and 33 decrees address the boundary between Texas and Oklahoma along the bed of the Red River. The segment of the bed of the Red River from the 100th to the 96th meridian is the most thoroughly surveyed and litigated riverbed in the history of the United States. The Court found that the Red River bed was a braided stream that ranged in width from 3 to 15 miles. Eventually it was decided that the boundary between Texas and Oklahoma was along the right bank of the Red River when it is full but not in flood. The Court undertook the determination of navigability under the Property Clause and all of the facts in the bed of the river and its history that border on that answer.” (2)

So in this case, Oklahoma (riparian owners) owns half the riverbank and the other half is owned by the United States because the river was found non-navigable. Texas was not able to own any property outside its boundary so that portion remains unsurveyed public domain land. This is probably the biggest water boundary case in United States history. The Red River rivalry is known to most American’s, but not many know Texas could not own a portion of the bed.

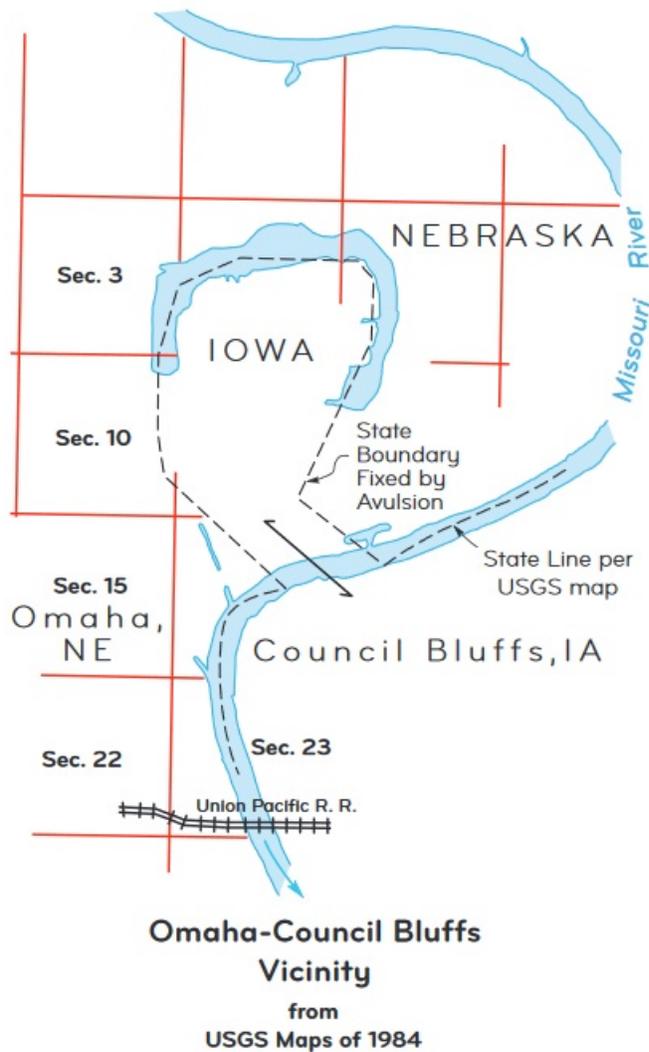
Avulsion and Boundaries

Nebraska v. Iowa, No.4 Original; 143 U.S. 359 (1892)

“The State of Nebraska claimed that the soil along the Missouri River was so sandy, and avulsive changes in channel occurred so often, that the common law rule of avulsion should not apply. Immediately above Omaha, Nebraska, an oxbow bend was created rapidly by the river and then cut through by an avulsion. Nebraska claimed Iowa should not get to keep the island left behind.

This case is among those of the most important to surveyors because here the U.S. Supreme Court distinguished between rapid erosion and an avulsion. The Court determined that rapid erosion and accretion was not the legal equivalent of avulsion. The Court also defined an avulsion in clearly understandable terms, especially where areas of river bank have been alleged to cave off into the river during flood.” (2)

The state line between Iowa and Nebraska was in question and this matter was discussed in the Supreme Court to see if it was truly avulsion that caused this. The courts wound up rejecting Nebraska’s argument and determined it was avulsion that caused the change. Avulsive change in river boundaries that divide states will leave the former boundary fixed. (See Image 5.6 on next page)



(Image 5.6)

Arkansas v. Tennessee, No. 4 Original; 246 U. S. 158 (1918)

“Following an 1876 avulsion of the Mississippi River, both Arkansas and Tennessee agreed that the prior boundaries became fixed but Tennessee claimed the middle of the river should be used according to the original 1823 meanders. Arkansas claimed that all erosion and accretion between 1823 and the time the avulsion was complete should belong to Arkansas. As shown by the original surveys of 1823, the Mississippi River had a channel averaging about a mile in width and, in the contested area, formed a large loop nearly 20 miles long.

This case is included for study because the U.S. Supreme Court defined the completion of an avulsive change, especially as it concerns the time at which the abandoned channel becomes a fixed boundary.”

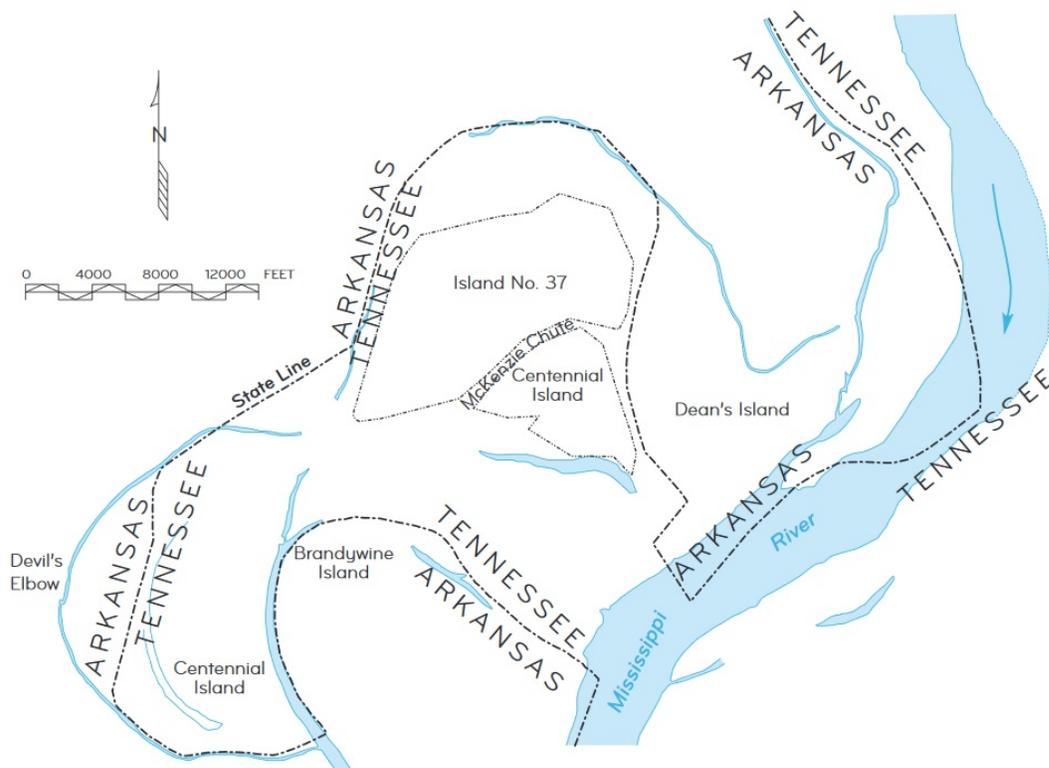
(2) (See Image 5.7 on next page)

The change was so sudden in this case that around two thousand acres of previously cultivated land including barns and houses fell victim to the new channelization created. By 1880, the beds of the old channel were completely dried up. The old bed became suitable for agriculture and gained value. Arkansas was gaining all the valuable land due to the shift, but the two states disagreed on where the boundary should be.

Tennessee wanted the boundary at the center of the previous channel, which was now dry. Arkansas claimed the new channel was navigable and wanted the middle of the channel to be the fixed boundary between states. The US Supreme Court stated that the boundary of the channel should be fixed at the middle of the navigable channel and legal principle of avulsion states that the boundary would not change if the bed switched from one area to another.

This case also touched on the doctrine of submergence and reappearance of land because of an island that was created due to the change. The Court had a commission place the boundary in the middle of the channel as it was at which the current ceased to flow as a result of erosion, also granting the Centennial Island as part of Tennessee.

(Image 5.7)



Uhlhorn v. U.S. Gypsum Company, 366 F.2d. 211 (8th Cir. 1966), cert. denied, 385 U.S. 1026 (1967)

“In the same locality as Arkansas v. Tennessee, this case involved a change of channel where the “island” formed was 4 feet below the OHWM of the river. Mrs. Uhlhorn claimed to own an “island,” or towhead, which was the disputed area. The Massey Towhead was located off Brandywine Island as shown on the maps of the case immediately above. If avulsion applied, the State boundary would not

move to the newer and dredged channel. If the State line moved, she could have an earlier trial thrown out for want of jurisdiction.

The case is important to us because the facts describe an artificial channel change that took place within the bed of the river and in a suit between private landowners whose common boundary was a State boundary. The Court's final ruling accepted the change as an avulsion." (2)

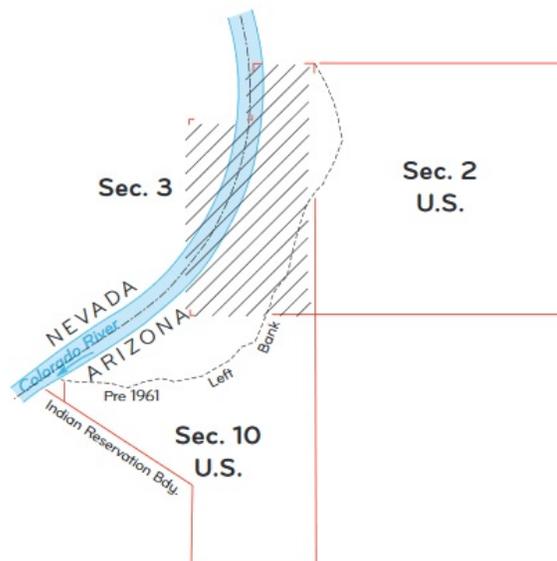
Per the 1883 map, Brandywine Island was on the left bank of the river and remained in Arkansas. The Bendway Channel was the area in consideration and between the 1883 and 1920, the river had been moving and eroded into Centennial Island and accretion wound up on the Brandywine Island.

This area was tough to navigate and the United States Corps of Engineers began dredging in the 1930's to allow ships to better travel this area of river. A new channel was then created between Massey Towhead and Brandywine Island. This new Pointway Channel became useable due to a flood in 1938.

Brandywine Island was now completely separated from the Massey Towhead due to the formation of the Pointway Channel. During normal water conditions, the Towhead was four feet below the water. The boundary remained fixed at the Bendway Channel because the court decided it was avulsion that took place. This situation was called channelization avulsion by the courts.

Bonelli Cattle Co. v. Arizona, 414 U.S. 313 (1973), *reh'g denied*, 434 U.S. 1090 (1978), *partially over-ruled by Oregon ex rel. State Land Board v. Corvallis Sand and Gravel Co.*, 429 U.S. 363 (1977)

"Bonelli bought land that consisted mostly of sandy riverbed. When the land was originally patented in 1910, it was on the Arizona bank of the Colorado River, a navigable river in this reach. A few years after Bonelli bought the land, the Bureau of Reclamation began a levee project to correct sediment problems and to permit navigation. The river was changed from a wide sandy bed to a much narrower channel. The channelization left a large area of former riverbed exposed that the State of Arizona claimed as State lands although it was identical in location with the Bonelli purchase. If the river had avulsed, the State would get the land; but if the process was accretion, Bonelli would get the land." (2) (See Image 5.8 below)



(Image 5.8)

The riverbed was changed due to construction and channelization, but Bonelli was originally entitled to part of the land per deed. The General Land Office (at that time) surveyed a section of land in Arizona that was patented to Atlantic and Pacific Railroad. Hoover Dam was about 75 miles upstream from this property.

The Bureau of Reclamation built levees in areas that were previously dry riverbed. The local court ruled that the land on the Bonelli side belonged to him due to accretions, but the state appealed. The Appellate judges also accepted Bonelli's rights to the land. Arizona law stated that any manmade change to a river fixes the boundaries of state-owned beds. The case went all the way to the U.S. Supreme Court, where it was determined that federal law and the doctrine of accretion could be the rule.

Peterson v. Morton, 465 F.Supp. 986 (D.Nev. 1979), remanded by, vacated by, in part on other grounds
Peterson v. Watt, 666 F.2d 361 (9th Cir. Nev. 1982)

"Blanche Peterson held a deed, which was based on a 1910 patent to the Santa Fe Railroad, to land on the Arizona side of the Colorado River. Movements of the river, erosion on the Arizona side and accretion on the Nevada side, eventually created land at the same geographic location as her Arizona deed but on the Nevada side of the river. Peterson claimed that the river moved by a series of small but frequent avulsions rather than by erosion and accretion. She also claimed that these small avulsions fixed the boundaries at each event such that the now emerged Nevada land was still her land in Arizona." (2)

This being a modern case, that rejected channel changes within the riverbed were caused by avulsion, the court ruled the movement was from erosion and accretion on opposite sides of the river. The Federal Government owned the accretions that accrued.

Gradual Changes and Boundaries

Wallace v. Driver, 61 Ark. 429 (1896)

"Driver owned upland along the Mississippi River in the State of Arkansas. Some of his upland had been eroded by the river but, after a 25-year interval, an island began to form in the location where his former holdings had been. Wallace moved onto the island and Driver brought suit. A jury found that Wallace was unlawfully in possession; Wallace appealed.

This case is presented first so as to affirm that accretions must form against the claimant's upland shores." (2)

The court ruled that Driver did not own the area of accretion because it did not occur on his bank, but rather formed an island. The original meander lines no longer existed due to the submergence and reemergence of an area not along his upland ownership. The court did not rule that Wallace was entitled to use of the island, just that it does not belong to Driver.

Beaver v. United States, 350 F.2d 4 (9th Cir. 1965), cert. denied, 383 U.S. 937 (1966)

“R. A. Beaver and others claimed to own 11.8 acres along the Colorado River needed by the Bureau of Reclamation for levee construction. Their claim was based on a 1914 patent for the land issued on the Arizona side of the river. The geographic location of the record description (in Arizona) was on the California side of the river because of river movements.

This case holds that accretion can be claimed only on the side of the river where the patented upland is located. It also holds that human-made changes that cause accretion to form do not void the claim for accretions,” (2)

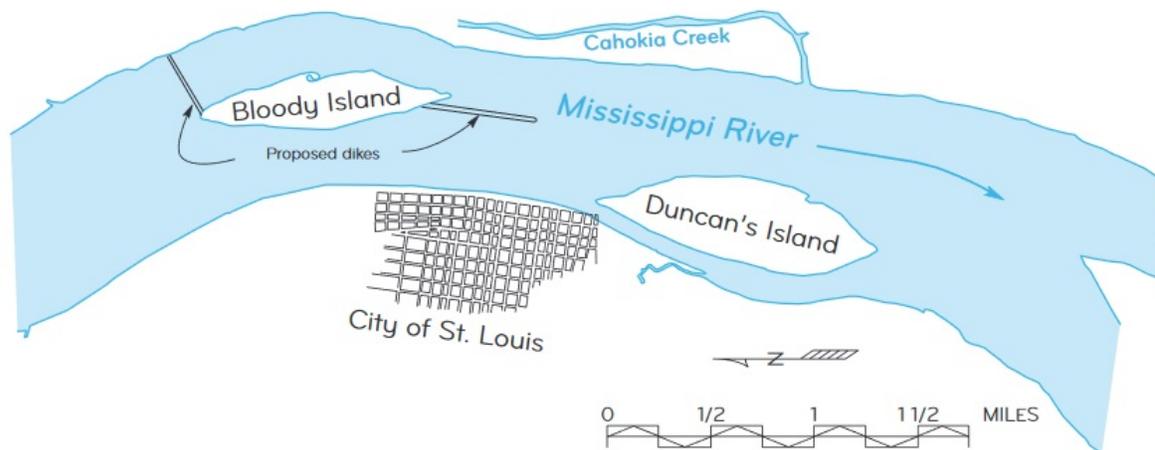
The trial court rejected Beaver’s theory of the doctrine of reemergence and the Government inducing the accretions. The appellate court agreed that the Government produced enough evidence using historical maps. The Beavers lost land was due to erosion on the Arizona side and accretion on the California side. Federal decisions state that accretions must be on the same side of the river.

County of St. Clair v. Lovington, 90 U.S. 46 (1874)

“East St. Louis, a city in Illinois, is on the eastern (left) bank of the Mississippi. It has been an important rail center since the 1850s because of the shipping down the river as well as the gateway from the east to the larger city of St. Louis, Missouri, just across the river.

The land in question was formerly river bed that was dried up by a dike extending from the Illinois bank upstream to connect to Bloody Island. The island was so named because it was chosen by a number of hot-heads who fought their duels on the island. The site was chosen for dueling because it was considered unclear whether Bloody Island was in the State of Missouri or Illinois and that fact would hinder any prosecution.” (2) (See Image 5.9 below)

(Image 5.9)



This case is very pertinent because it outlines whether accretion is slow and imperceptible. The nature in the boundary description is important for surveyor’s determination. Being navigable since the 1790’s, this area changed quite a bit over time. The travel route had been diverted to run on the east side of Bloody Island.

Illinois was trying to prevent the United States Army Corps of Engineers from building the dike that would divert travel (it was eventually built). The county of St. Clair claimed that land had accreted because of the dike being built in with respect to the upland property of Wiggins. The Wiggins property was bound point to point per description with a fixed boundary prohibiting Wiggins to the accreted land now attached to his property.

The call for the two upland surveys called for corners specifically on the river's boundary. The river was specifically called out as the west boundary with one properties deed stating "up the river and binding thereon" and the other "beginning on the banks of the Mississippi". A call to a natural object is higher weight than a bearing and distance.

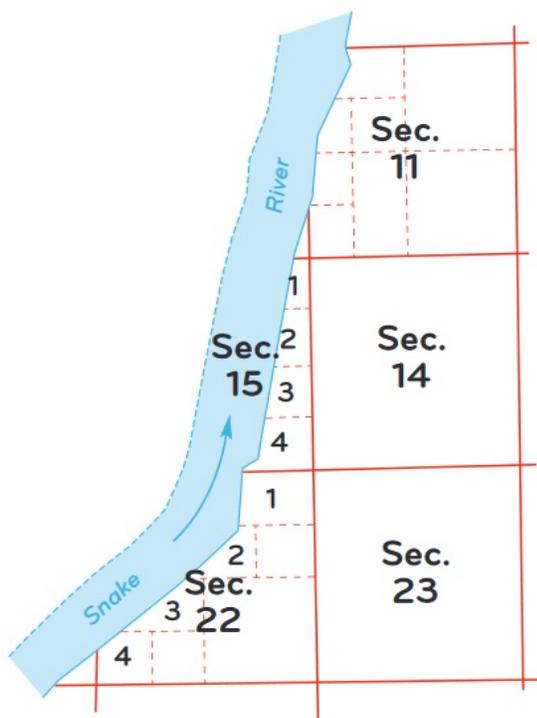
The accreted land belonged to Wiggins and fellow upland owner Livingston. The U.S. Government never held title to the strips along the two properties.

Islands

Scott v. Lattig, 227 U.S. 229 (1913), re v'g, 17 Idaho 506 (1910)

"Title to a large island was at issue. The Idaho State Supreme Court had found that Poole Island in the Snake River between Idaho and Oregon had been "left out of" the 1868 survey by the GLO. In the field notes there was no mention of an island adjacent to sections 15 and 22 nor did the plat show an island.

We study this case because it is a leading case for unsurveyed islands and because the State law in Idaho was that upland owners held title to the center of navigable streams." (2) (See Image 5.10 below)



(Image 5.10)

Poole acquired lots 2,3 and 4 of Section 15 by patent in 1894 and around half the island set adjacent to the west side of his lots. He lived on the island from 1883 through 1912. Robert Green occupied the other half of the island that was adjacent to his property in Section 22. The sketch from 1868 GLO plat showed no island in the Snake River.

Scott lived on the island as well and worked for Poole. He requested the land be surveyed as part of the public domain (he was granted a patent to the island). Poole sold his patented land in Section 15 to Lattig, who along with two others, sued Scott. Lattig had maintained and paid taxes on the island for 20 years.

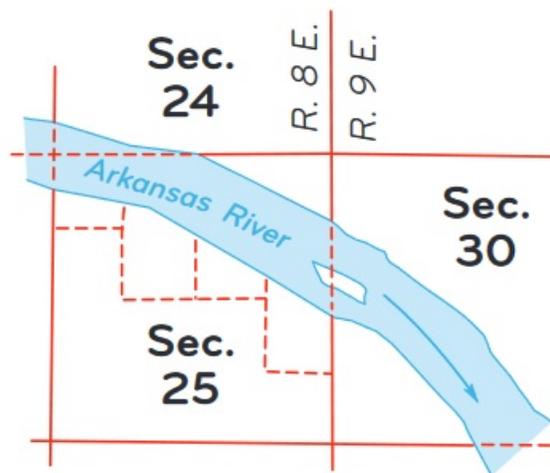
The main channel of the river was on the opposite side of the island adjacent to Sections 15 and 22. The State trial court ruled in favor of Lattig and Scott appealed the decision to the Idaho Supreme Court. The State law was upland owners owned to the center of the river whether the river was navigable or not.

Being the land was not accounted for in the original survey, the State court ruled that the upland owner had right to the center of the river and the patent given to Scott was invalidated. Also, that given the fact it was omitted from the original survey, it could very well have just been a sandbar at the time of the original survey.

Scott appealed to the Supreme Court where they ruled his 1906 patent valid, due to the fact that the island was still part of the United States public lands when the others acquired their respective properties.

United States v. Hutchings, 252 F. 841 (D. Okla. 1918), *aff'd*, *Commissioners of Land Office of State of Oklahoma v. United States*, 270 F. 110 (8th Cir. 1920), *appeal dismissed*, 260 U.S. 753 (1922)

"Title to the same island described in Commissioners on the Arkansas River in Oklahoma was at stake. The original surveys in 1871 and 1872 showed the island but the GLO did not survey it as part of the Indian Reservation until 1908. This case illustrates how facts may affect application of legal theories." (2) (See Image 5.11 below)



(Image 5.11)

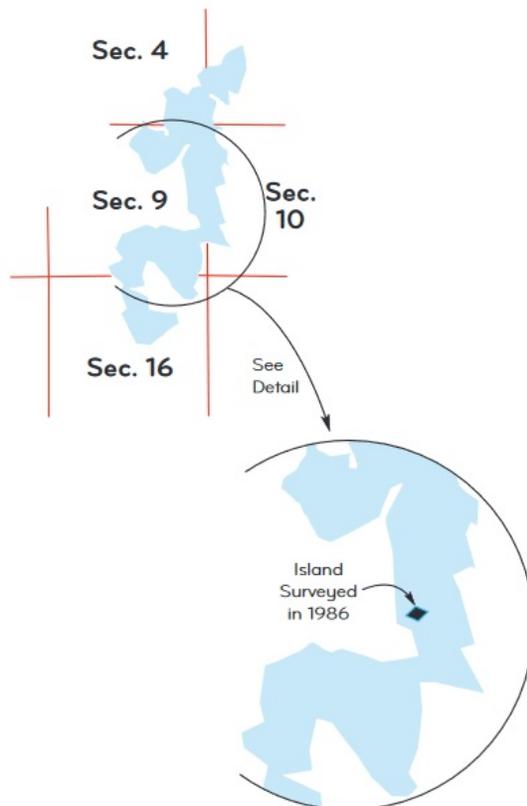
Oklahoma believed the island to be a part of a navigable stream while the United States Government claimed it for a native tribe of Osage Indians. Additional defendants in the case were fighting for the oil

and gas leases and stated no island existed because it was not surveyed for patent in the original survey and they owned the uplands on the south bank.

The Government's stance was that the river was not considered to be navigable and the Osage Indians owned to the center. The state's claim was lost when the river was confirmed to not be classified as a navigable body of water. The case of the upland riparian owners was upheld because they found the southern channel to be the widest and have the most flow in 1872 during the original surveys even though the island wasn't meandered or divided into lots at that time.

Wolff v. United States, 967 F.2d 222 (6th Cir. 1992), *reh'g denied*, 974 F.2d 702 (1992) *Olive Wheeler*, 108 IBLA 296 (1989)

"Huckleberry Island, approximately 0.9 acres in size located in Arbutus Lake in northern Michigan, was left unsurveyed by the GLO in 1839 and 1852. BLM surveyed the island in 1985 and filed a plat in 1986, claiming the island was public domain land. The island occupant protested the survey, claiming ownership stemming from a Federal railroad grant of the adjacent uplands that they ultimately purchased. The protest was dismissed by the BLM. The plaintiff appealed that decision to the IBLA, where the BLM's decision was affirmed. The occupant sued in District Court and won in *Wheeler v. United States*, 770 F.Supp. 1205 (W.D. Mich. 1991). The Government appealed." (2) (See Image 5.12 below)



(Image 5.12)

This case is another one that features an island that was not originally surveyed and the decision does not coincide with other rulings, so this is another evaluating tool for surveyors. The original GLO survey was in 1839 and was found to be a defective survey, so it was resurveyed in 1852. Section 9 did not include the island or acreage breakdown from total because the island was thought to be unsuitable for cultivation.

The islands occupants paid taxes on the originally conveyed railroad section starting in 1921, but the island was identified as tract 39 from the BLM survey done in 1985. In Michigan, the upland owners have claim to the beds of navigable and non-navigable waters. Many other island cases were evaluated and the district court came up with these seven rules.

“Rule: Where the government has not made any reservation in its grant, under the common law, a riparian owner on a navigable river cannot take title to islands in the river by way of his ownership of the riparian tract.

Rule: Where the government has not made any reservations in its grant, under the common law, a riparian owner on a lake, without regard to the lake’s navigability, takes title to any unsurveyed islands that fall within the area bounded by lines drawn from the edges of the riparian tract to the center of the lake.

Rule: Where an island was not surveyed because it did not appear to be of sufficient value to survey (and not because of mistake or fraud), without regard to the navigability of the water, the riparian owner cannot be divested of title to the island by way of a later survey.

Rule: Title to islands in unsurveyed navigable, tidal waters remains in the United States, although ownership of the bed underlying those unsurveyed waters is determined according to state law.

Rule: Where the government chooses not to survey an island, by operation of common law a riparian owner’s title to that island is superior to anybody else’s title, except perhaps the governments.

Rule: Where the United States fails to survey an island because the island is of no apparent value, title to the island passes to the riparian landholder.

Rule: Where an island is clearly in existence at the time of survey, and the surveyor had a duty to survey the island but was negligent in that duty, title to the island remains in the United States.” (2)

This premise states that lands that are bounded by streams and other bodies of water are to be examined according to the state law that governs them. Federal law has always controlled the interpretation of the land grants until taken by the state and then passed to individual ownership. This case is extremely significant concerning islands that were not surveyed by the Sixth Circuit Court of Appeals.

Koch v. United States, 824 F.Supp. 996 (D. Colo. 1993), *aff’d*, 47 F.3d 1015 (10th Cir. 1995), *cert. denied*, 516 U.S. 915 (1995) *Exxon Corp. v. Bureau of Land Management*, 118 IBLA 38 (1991)

“In 1975, the United States began survey investigations on 22 land masses in the Colorado River near the town of Rifle, Colorado to determine if they were unsurveyed islands.

Nine unsurveyed island surveys were eventually accepted and were announced in the Federal Register for filing. Filing the surveys constitutes a Federal claim of ownership. Interested landowners protested the proposed findings. The Colorado State Director of the BLM dismissed the protests. That decision was then appealed, and after a hearing before an Administrative Law Judge, was reversed. The Government appealed to the Interior Board of Land Appeals. The IBLA reversed the Hearings Judge and declared the islands had been omitted from the original survey and remained the property of the Federal Government. Exxon Corp.

Koch and other upland owners brought suit in Federal Court.” (2)

The Colorado River in this area was deemed non-navigable by all parties involved because all islands were above “ordinary high water mark” and they dated trees on each island back prior to the original GLO survey. Due to the descriptions in the original field notes, the Appeals court believed that these islands were to be included in the patents of riparian lands.

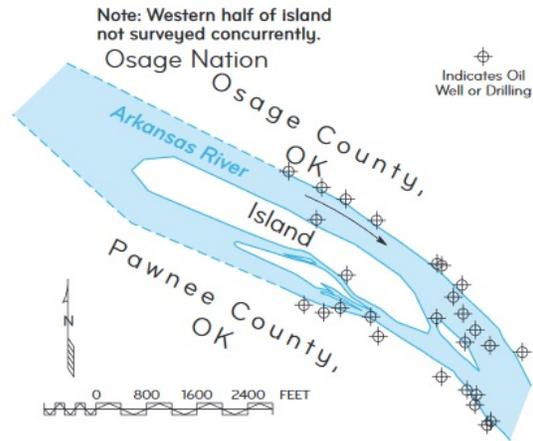
These islands were not specifically reserved by the Federal Government and they were not of significant value at the time of the original survey so they passed to adjacent owners. The court’s ruling was that the Government was not explicitly trying to keep these islands. This is a very rare case due to the descriptions of the original field notes as “bar or low lands” and “long low island, overflowing and unfit for cultivation” the Appeals court ruled the Government had no intent on keeping them under Federal ownership and passing them in title. The Government would be entitled to keep them is necessarily a Federal decision.

The Island Rule

Commissioners of Land Office of State of Oklahoma v. United States, 270 F. 110 (8th Cir. 1920), appeal dis-missed, 260 U.S. 753 (1922)

“Ownership of a valuable island in an Oklahoma river was at stake. This is the same island at issue in *United States v. Hutchings, 252 F. 841 (D. Okla. 1918)*. The island would belong to the Osage Indians if it was located in the north half of the riverbed when the Reservation was established. This case is a leading case under Federal holdings on the island rule.

Commissioners of the Land Office of the State of Oklahoma claimed an island in the Arkansas River on the theory that the river was navigable at the date of statehood in 1907. The State further claimed that the island was part of the bed. Aligned with the State was a group of upland owners on the south bank of the river. That group claimed the island as part of their riparian rights.” (2) (See Image 5.13 on next page)



(Image 5.13)

The reason why this island was highly coveted was the subsurface oil. As mentioned earlier, the main channel was south of the island in 1872 (date of original survey) even though when the case arose in court the channel was more prevalent on the north side. When the thread moves slowly through accretion and reliction the boundary moves with it, but when it moves quickly through avulsion the boundary remains where it previously was.

The Court holds the south thread as the boundary because the island never became an accretion to the lands.

St. Louis v. Rutz, 138 U.S. 226 (1891)

“The case began as *Rutz v. Seeger*, 35 F. 188, in Circuit Court of the Southern District of Illinois, decided February 11, 1888. Rutz had bought his land from one August A. Blumenthal, who had acquired it in 1849. At the time of Blumenthal’s purchases, the land was bounded by the Mississippi River on the narrow end of the tract. This case is cited in nearly all briefs on water boundary litigation.

The tract, as surveyed, extended from the Mississippi River to the bluffs above the valley on the Illinois side, left bank, and was relatively long and narrow.” (2) (See Image 5.14 below)



(Image 5.14)

Rutz was also granted rights to an accretion/sand bar lying northwesterly of his deed, but the trial court claimed no dry ground existed in 1850 along the banks of the Mississippi near the water's edge. No additional land existed in front of Rutz original deeded property at the time.

The issue being that the land Rutz acquired by deed from Blumenthal was being washed away in chunks due to a dike in the river and eventually carried away a part of the foundation. Part of Arsenal Island, belonging to Seeger was on Rutz deeded description. The Circuit court ruled in favor of Rutz, but an Appeal to the U.S. Supreme court by the city of St. Louis claimed that Rutz did not own any of the riverbed.

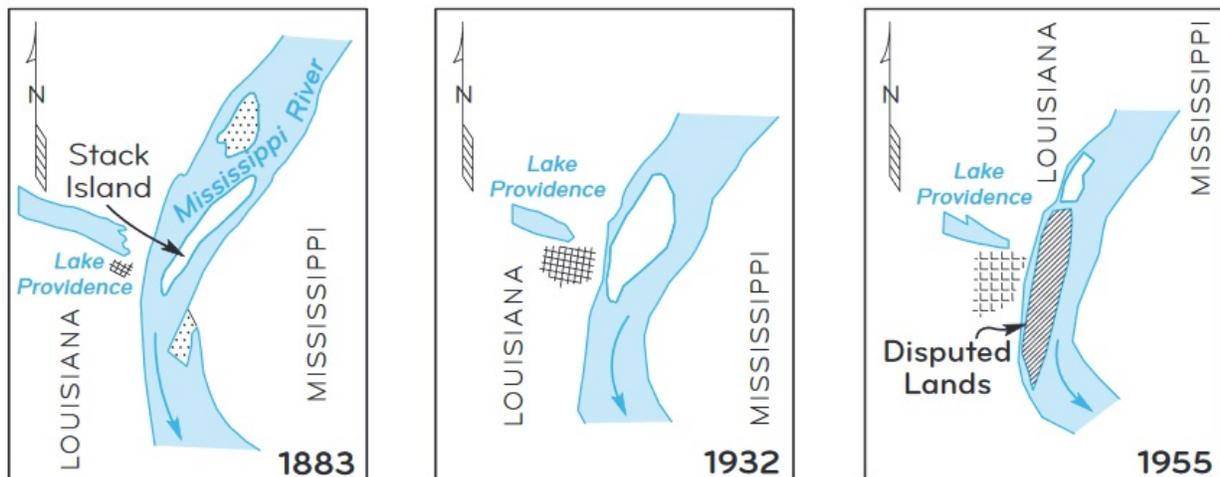
The Supreme Court also ruled in favor of Rutz, being he was the riparian owner and owned any land formed in the bed by accretion. The boundary of Missouri and Illinois was the middle of the main channel and Arsenal Island was an island in Illinois and not Missouri. Also, the right to the moving mass (Arsenal Island was deemed not an island) cannot be extended lengthwise of the river to exclude upland proprietors above or below an accreted land mass from access to the river.

Houston v. Thomas, 937 F.2d 247 (5th Cir. 1991) Louisiana v. Mississippi, No. 121 Original; 506 U.S. 73 (1992), 516 U.S. 22 (1995)

“Houston claimed ownership of land attached to the Louisiana bank of the Mississippi River based on an 1881 GLO patent to Island No. 94, T. 11 N., R. 9 W., Choctaw Meridian, Mississippi.

Thomas and other Louisiana owners claimed the disputed land as accretions to their property.

We study this case because the fact situation is quite similar to the facts presented over 100 years earlier in *St. Louis v. Rutz, 138 U.S. 226 (1891)*, above. History really does repeat itself.” (2) (See Image 5.15 below)



(Image 5.15)

The property boundary between Louisiana and Mississippi is the middle of the primary navigable channel (Thalweg) of the Mississippi River. Stack Island was close to the Mississippi bank when the

original survey and the thalweg was west of the island. The question is where would the case be resolved?

Louisiana made claims that the main channel was east of the island and two avulsions changed the side of the main channel to the west and then back east. The original Stack Island being eroded and forming on the Louisiana side of the channel. The trial court claimed the disputed island is presently located in Mississippi. Louisiana then disputed and asked the Supreme Court to get involved, which was denied due to private ownership on each side of the island.

The court of Appeals relied solely on a shoreline survey that did not show depths or prove where the thalweg was located in regards to the island. The Appeals court ruled in favor of Louisiana and soon after all the upland owners deeded their rights to the island to the state.

The Supreme Court got involved once the ownership changed and then ruled for Mississippi and that Stack Island was a part of Mississippi.

Port of Portland v. Island in the Columbia River, 479 F.2d 549 (9th Cir. 1973)

“Sand Island formed in the Columbia River at a time after the boundary between the states of Washington and Oregon was fixed by Congress at statehood. The island first appeared on navigation charts as shoal water and as a sand bar. At the time of trial the island was used for recreation and as a source of sand and gravel. It was flooded at high water.

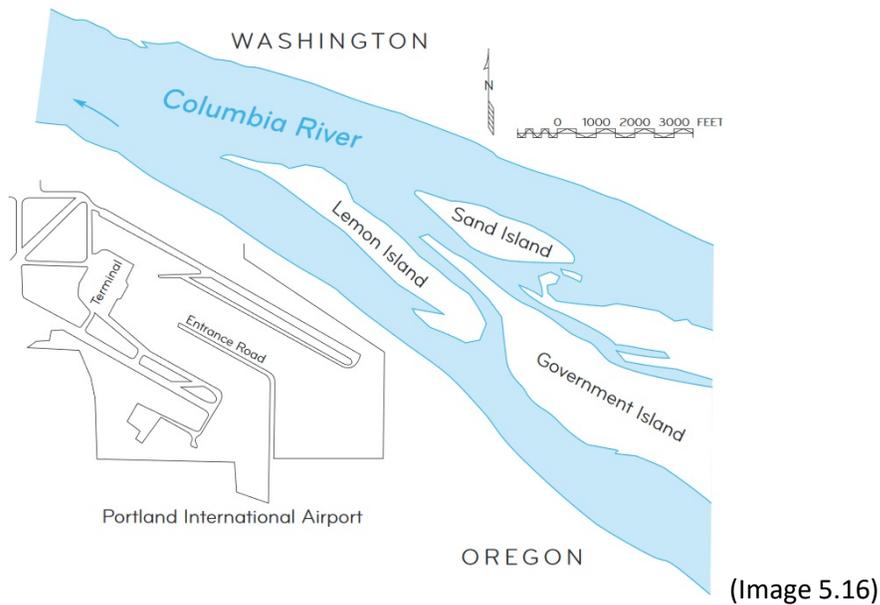
Port of Portland is a municipal corporation that received a deed from the State of Oregon for the disputed land in 1970.

The name of the case indicates that the port authority started out to condemn the land. The defendants in the case held deeds from the State of Washington dating from 1929. The State of Washington also claimed the mineral rights under the island that they reserved in the 1929 deed.

Ownership of the island depended upon the location of the boundary between the two states at the time they were admitted to the Union. We study the case for that reason.” (2) (See Image 5.16 on next page)

The original boundary between the two states calls for the middle channel of the river and where it is divided by islands, up the widest channel. The widest channel not being a distance in width, but the area that could be used for boats and ships in the river. The charts of navigation had placed this channel between the Washington bank and the island in question.

Washington deeded the land mass at a time when the thalweg or shipping channel was on the Oregon side of the island. The trial judge ruled in favor of the Port of Portland and that the Washington stating deeds were not properly issued. The Appellate Court held that the island was not present when granting statehood and the widest channel did not apply. In addition, if it was formed by gradual deposits, it was owned by the state with possessory rights of that area of riverbed. The ruling does not divide the boundary between the two states and implies it arose in only one state.



Georgia v. South Carolina, No. 16 Original; 257 U.S. 516 (1922)

“By agreement, the boundary between Georgia and South Carolina was to be at the middle of the Savannah River regardless of the navigation channel. South Carolina insisted that the low water line on the southern or Georgia shore was the true boundary. South Carolina acknowledged, however, that the middle line could be used where there were no islands.

Georgia maintained that the middle of the channel should be used for the boundary as determined at the ordinary stage of the water rather than at low water position.” (2)

The states were in disagreement of who would control the islands and which water mark would be used for determination. The Court was in agreement that South Carolina’s middle line being the physical “middle of the river” using opposite banks for delineation.

Supreme Court’s previous decisions and international law states where there is no navigable channel, both Georgia and South Carolina have equal access to the water. This river was navigable, but a treaty between the two states (in 1787) stated that both would have equal access to navigation.

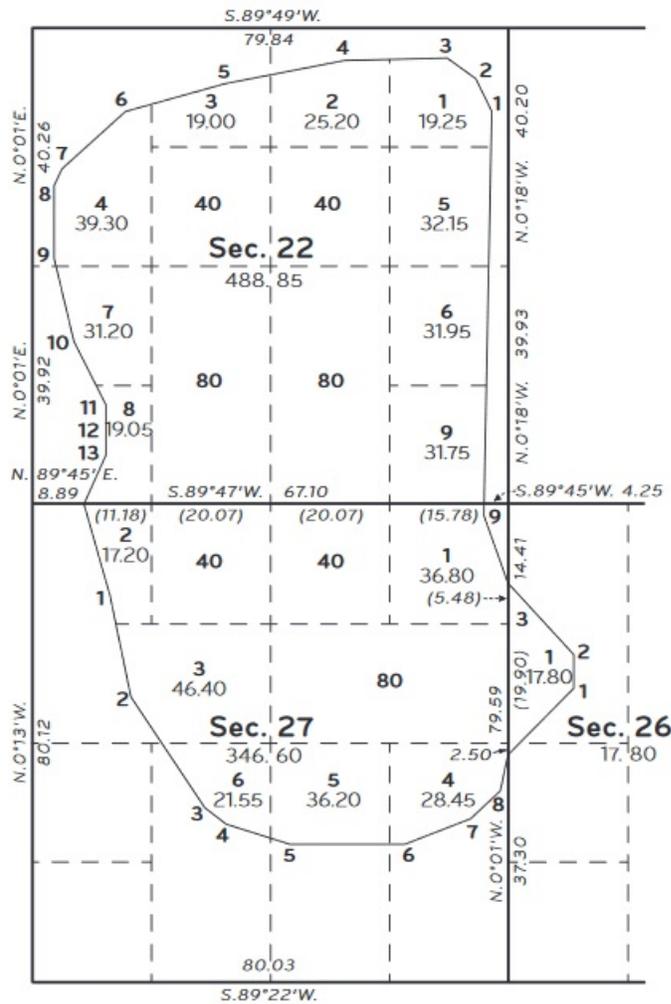
The middle line held where no islands existed and defined the boundary between an island and South Carolina’s shore.

Erroneously Omitted Lands

Lee Wilson and Company v. United States, 245 U.S. 24 (1917), aff’g, 227 F. 630 (8th Cir. 1915), aff’g, United States v. Lee Wilson and Company, 214 F. 630 (E.D. Ark. 1914) Arkansas Sunk Lands, 37 Pub. Lands Dec. 345 (1908), Arkansas Sunk Lands (On Review), 37 Pub. Lands Dec. 462 (1909)

Nonexistent Moon Lake

“The plat of T. 12 N., R. 9 E., Fifth Principal Meridian, Arkansas, approved October 27, 1845, shows a meandered lake occupying the greater part of sections 22 and 27, and extending a short distance into section 26. The field notes of the line between sections 26 and 27 call for an intersection with the southeast side of “Sunk Lake,” here classed as impassable and navigable. The surrounding fractional subdivisions as surveyed were all patented to the State under the provisions of the swamp land grant.” (2) (See Image 5.17 below)



(Image 5.17)

The original report of the lake classified it as “high, dry land covered in timber” that was similar in topography as the rest of the original subdivision. Some of the trees dated back 300 years, which indicated this “lake” was similar in elevation and make-up of the surrounding upland.

In 1909, the commissioner of the GLO decided that the 853.25 acres was not a navigable lake at the time Arkansas was admitted into the Union (1836). It was also not recognized during the original subdivision in 1841. It remained part of the public domain and title did not pass to Arkansas.

The Supreme Court (in 1917) denied a riparian claim within the meander line of the area, the two previous legal propositions were held.

“First. Where, in a survey of the public domain a body of water or lake is found to exist and is meandered, the result of such meander is to exclude the area from the survey and to cause it as thus separated to become subject to the riparian rights of the respective owners abutting on the meander line in accordance with the laws of the several States. *Hardin v. Jordan*, 140 U.S. 371 (1891); *Kean v. Calumet Canal Co.*, 190 U.S. 452 (1903); *Hardin v. Shedd*, 190 U.S. 508 (1903).

Second. But where upon the assumption of the existence of a body of water or lake a meander line is through fraud or error mistakenly run because there is no such body of water, riparian rights do not attach because in the nature of things the condition upon which they depend does not exist and upon the discovery of the mistake it is within the power of the Land Department of the United States to deal with the area which was excluded from the survey, to cause it to be surveyed and to lawfully dispose of it. *Niles v. Cedar Point Club*, 175 U.S. 300 (1899); *French-Glenn Live Stock Co. v. Springer*, 185 U.S. 47 (1902); *Security Land & Exploration Co. v. Burns*, 193 U.S. 167 (1904); *Chapman & Dewey Lumber Co. v. St. Francis Levee District*, 232 U.S. 186 (1914)” (2)

The Government has the legal ability to change its decision and from this came “The Swamp Land Act” of September 28, 1850, which did not convey the land of its own force, without it being surveyed, selected or patented. The survey in the area of Moon Lake retraced the boundaries, restored corners, remonumented lost and obliterated corners and reestablished the meanders with angle points and fractional section lines.

Jeems Bayou Fishing and Hunting Club v. United States, 260 U.S. 561 (1923), *aff’d*, 274 F. 18 (5th Cir. 1921) *State of Louisiana*, 47 Pub. Lands Dec. 366 (1920)

Erroneously Meandered Ferry Lake

“Ferry Lake is one of the lakes formed by the “Great Raft” of the Red River. The “Great Raft” was a complex series of logjams, which probably began to form in the 15th century. Over a long period of time, the raft moved upstream as the lower end decayed and additional material lodged against the upper end. As the raft moved, it blocked off tributaries and forced the main river into new channels. Numerous lakes and bayous were formed which extended almost to the Arkansas-Louisiana State line. Ferry Lake was formed near the close of the 18th century. It was a permanent, navigable body of water in 1812 when Louisiana was admitted into the Union. Because the “Great Raft” was a hindrance to navigation and transportation, Congress provided funds by the Act of May 23, 1828, to remove it. Clearing the river was a slow process, and the removal of the “Great Raft” was not completed until 1873. Most of the lakes were thereby artificially lowered or drained, and the State retained the uncovered portions of the beds. Only lands above the OHWM before reliction were considered in determining if there had been an erroneous omission from the original survey. Location of the OHWM was one of the complications of the case.” (2)

The original township plat, approved in 1839 showed the north boundary discontinued at the bank of the lake. The original meander bears no relation to the actual bank at the time of survey. Fractional sections resurveyed in 1871, did not show relevance of actual meanders ran in certain areas. In 1909, the area including the lakebed was discovered to bear oil. The lake was deemed navigable in 1812, but had noticeably less water in 1910.

The improperly run meanders created omitted lines and it was hard to distinguish a lake of any kind. The forest grown on the omitted land appeared to have existed for centuries. The omitted lands were around 229.67 total acres within the township. The Attorney General agreed that this error constituted unsurveyed public lands.

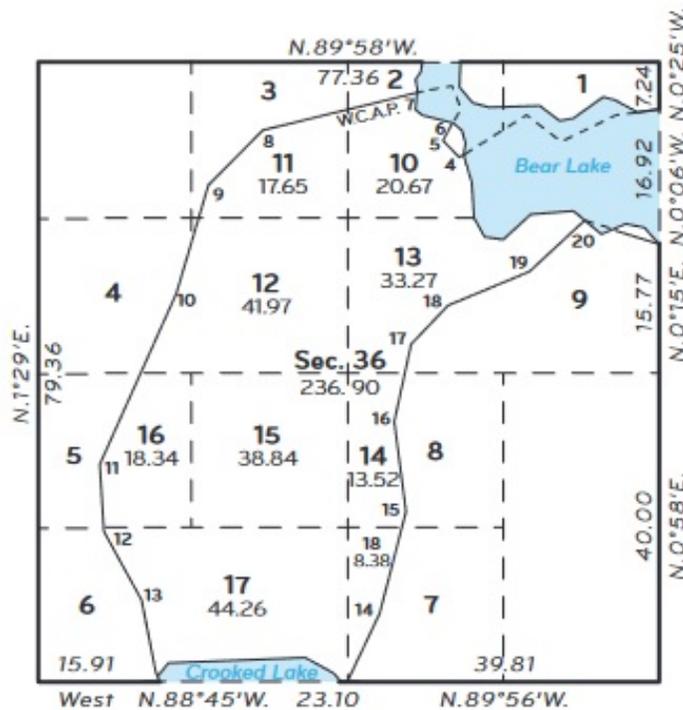
The area had to be resurveyed much like the Moon Lake case above with monuments set along the “ordinary high water mark” in 1812.

Crooked Lake and Bear Lake, Letter from Commissioner of the General Land Office (April 16, 1923)

“The plat of T. 43 N., R. 6 E., Fourth Principal Meridian, Wisconsin, approved April 6, 1863, shows a meandered lake in section 36. Meander corners were established regularly on the south and east boundaries of the section. The field notes show the running of meander courses through the section on opposite sides of the lake, and call for high banks, along timbered land. No mention is made of an arm of a lake extending northwesterly into section 25. The fractional lottings were disposed of according to the representations of the plat.” (2) (See Image 5.18 below)

The commissioner of the GLO advised the Secretary of the interior of a pending application (1923) to make a forest lieu section, which would be encompassed inside a meandered lake. The finding of facts by examination in the field pointed out that this must be resurveyed. The forest in the section outside the banks indicated it was there for a long time.

The area had to be resurveyed like the Moon Lake and Ferry Lake cases above.



(Image 5.18)

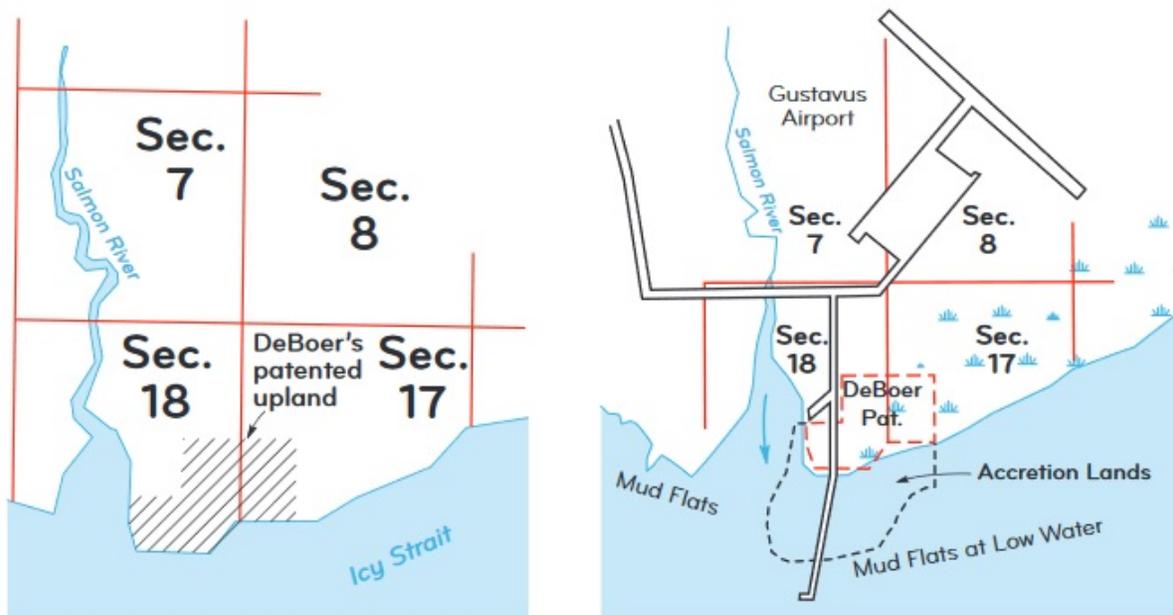
Accretion Prior to Entry: The Basart Doctrine

DeBoer v. United States, 470 F.Supp. 1137 (D. Alaska 1979), *rev'd on other grounds*, 653 F.2d 1313 (9th Cir. 1981)

“In Alaska, some upland lots were originally surveyed in 1920 and contained 165.05 acres. Thirty-nine years later DeBoer made entry on the lots in question and was granted a patent in 1961.

Between the time of the 1920 survey and the entry, some 105 more acres had been added by naturally occurring accretions. By 1977, an additional 107 acres had accreted, making the total acreage held by DeBoer at about 377 acres.” (2) (See Image 5.19 below)

The State of Alaska discovered a surplus of land patented to DeBoer being accreted lands that occurred after the survey of the lots done in 1920. DeBoer was forced to quiet his title after the United States agreed with Alaska on the excess land.



(Image 5.19)

The judge disapproved the Basart Doctrine and the question on hand was if the additional 105.22 acres would be deemed substantial to add to the already acquired 165.05 acres. The ruling in *Madison v. Basart* was an applicable case to determine if the land would be attached to the riparian owner. The Court found that the 105.22 acres was substantial (along with the 107 acres added after) and the Federal Government kept title to the land (appellate court agreed).

Land Outside Meanders with No Gross Survey in Error

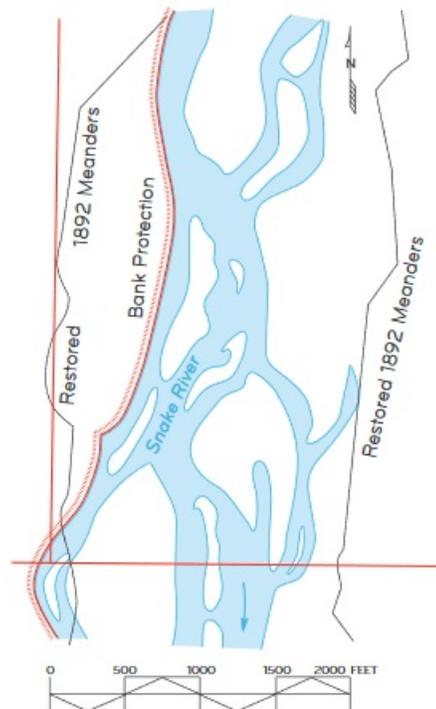
Walton v. United States, 415 F. 2d 121 (10th Cir. Wyo. 1969)

“Walton owned riparian lots along the Snake River in Wyoming, which were located on bench land overlooking the river. The record area of the lots was 111.55 acres. Between Walton’s lots and the river were an additional 323.59 acres of relatively flat pasture land containing large cottonwood trees. Some of the trees were dated to a time before the original surveys were executed.

The Government brought suit in 1967 claiming the 323 acres as erroneously omitted lands. The suit was initiated because Walton had prevented government surveyors from restoring the meander line.” (2) (See Image 5.20 below)

At the district level, witnesses on both sides found that the meander line was not suitable for locating the river. The area of traverse was extremely rough terrain with a 140 feet elevation above the river. The Snake River is fast flowing and changes very rapidly, but it would not erode rapidly in its normal state. The river changed course a great deal during spring runoff creating braided streams.

The surveyor had difficulty identifying the correct bank of the river and accidentally called out the outer most braided stream. Trial court held the additional acreage (322 acres) belonged to the United States because they were omitted lands. The appellate court held the ruling, and believed that an island may have existed that would belong to the United States.



(Image 5.20)

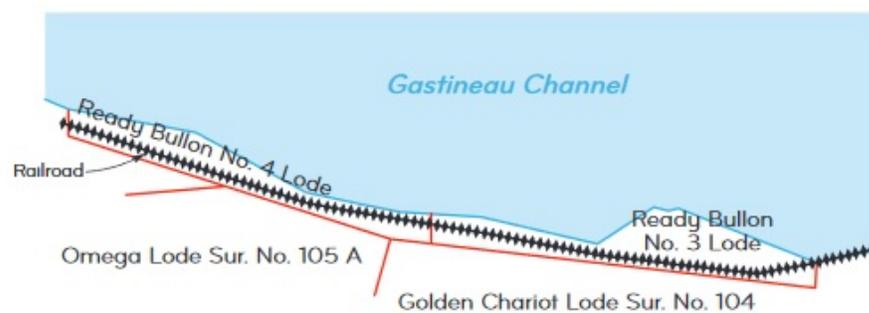
The reputable surveyor had been held in high regard for his work. With the official plat being part of the conveyance and the area being significant, the land was sovereign by rule.

Mineral Lands Survey and Water Boundaries

Alaska United Gold Mining Co. v. Cincinnati-Alaska Mining Co., 45 Pub. Lands Dec. 330 (1916), reh'g denied, 45 Pub. Lands Dec. 344 (1916)

“Alaska United Gold Mining Company had patent for lode mining claims that lay along the Gastineau Channel, a navigable body of water. Accretions, which probably contained gold, had occurred between the mineral survey meander line and the line of MHT, and adverse claimants located mining claims on the lands formed by accretion. Alaska United argued that the lands conveyed under the patent were bounded, as described in the plat and field notes, by the meander line and thus included the accreted lands; consequently, those lands were not open to location by the adverse claimants. The adverse claimants argued that the description in the patent only mentioned the water’s edge of the channel at one corner, and that the plat and field notes were not admissible to explain the patent description. The Assistant Secretary disagreed, showing that the plat corresponding to the patent showed the area of the grant to lie along the meander line for several courses. The field notes also described the meander line on those courses.” (2) (See Image 5.21 below)

The patent plat and field notes were deemed acceptable by the Assistant Secretary, who also stated that the accretions and patent land were completely bounded by “mean high tide”. The original plat of survey holding similar weight to the deeded description as far as limits are concerned. The United States surveyor general plat of patent are a part of the description.



The rejected claims were squeezed into a 120 ft. average width between the channel and the patented lodes and mill site.

(Image 5.21)

About The Author

Robert T Loane III, is a Professional Land Surveyor currently located in the Denver, Colorado area. Robert has around thirteen years of various experience in the Surveying and Mapping industry. He has worked on high profile construction projects across the United States from Florida to Alaska, most notable the Port of Miami Tunnel Project and the Urenco USA Uranium Enrichment Facility. Robert has been featured in both “the American Surveyor” and “POB” magazines for projects throughout the United States. He has completed his Bachelor’s of Science in Geomatics Engineering from Florida Atlantic University. Robert has also earned his graduate certificate in Geospatial Analysis and his Master’s Degree. Robert currently holds the role of Senior Survey Project Manager at Tri-State Generation and Transmission and handles the surveying responsibilities in New Mexico, Wyoming, and Colorado.

- (1) https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual7250.pdf
- (2) Manual of Surveying Instructions (2009).
- (3) <https://www.fema.gov/>
- (4) <https://www.britannica.com/science/lake>
- (5) <https://thelandpatents.com/dictionary/overflowed-lands>
- (6) <https://www.britannica.com/topic/riparian-right>
- (7) <https://www2.advantech.com/water/Industry%20Focus/CFA61B68-1E3B-4AF6-96D4-2F61495D4E5B/>
- (8) <http://www.romanaqueducts.info/aquasite/roma.html>
- (9) <https://doi.org/10.1017/S007543581700079X>
- (10) Ludwik A. Teclaff, What You Have Always Wanted to Know about Riparian Rights, but Were Afraid to Ask, 12 Nat. Resources J.30 (1972).
- (11) <https://www.dtnpf.com/agriculture/web/ag/news/business-inputs/article/2020/06/23/navigable-waters-protection-rule>
- (12) https://www.fs.fed.us/research/publications/wo/wo_2001_apple_d001.pdf
- (13) <https://abcnews.go.com/Politics/trump-administration-clean-water-rule-wide-ranging-impact/story?id=59748091>