# ORDINARY HIGH WATER MARK (OHWM)

Bureau of Fisheries Management and Habitat Protection

Public waters subject to state public trust responsibilities are those lakes, ponds, flowages, rivers, streams and associated enlargements declared navigable under s. 30.10, Wis. Stats. These public waters are by the Wisconsin Constitution held in trust by the state for the benefit of all of its citizens.

The limits within which these water bodies are held in trust by the state extend from the open water, landward to the ordinary high water mark (OHWM). The OHWM is the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation or other easily recognized characteristic. *Diana Shooting Club v. Husting* (1914), 156 Wis. 261, 272. The land between the waters edge and the OHWM **need not be navigable in fact** to be protected under the public trust. If the land is part of a navigable lake, then the fact that the specific area cannot be navigated is irrelevant to the state's claim. **Lakebed may be heavily vegetated by plants rising far above the water.** *State of Wisconsin v. Trudeau*, 139 W. 2d 91 (1987).

Ownership of the beds of public waters vary significantly, but state public trust responsibilities remain paramount regardless of bed ownership. The beds of all rivers and streams are owned by the adjacent riparian to the middle of the stream thread. The beds of all natural lakes are owned by the state up to the OHWM. Riparian owners of property adjacent to natural lakes, rivers and streams have exclusive use and some privileges of the exposed lakebed not otherwise afforded the public. Regardless of ownership, access to public waters must be gained legally. If the property surrounding a natural land locked lake were owned by one person then access to the lake could be achieved by obtaining the landowner's consent or in limited instances flying into the lake with a sea plane. Access to a public river or stream must be gained from the riparian owner or via another public access such as from a public boat landing or in many instances from a public highway that traverses the river or stream.

Considerations prior to making an OHWM Determination

1. The ultimate decision you make should, whenever possible, meet the "reasonable-prudent test". Could a prudent person come to the same conclusion as you. However, there will be situations where even the prudent person test will not apply (usually large rivers and lakes with high energy factors or where there are contiguous wetland complexes regardless of the size of the waterbody or energy factor.)

2. What kind of documentation will you rely upon to verify your determination? (Plants, water stains, wash marks, etc.) How can someone else verify the location of the OHWM? Will you take photos? Do you need a survey and benchmarks? How and where will you retain a record of your determination? What information should I have in the file that constitutes adequate documentation?

3. Can you defend your determination in court? OHWM determinations should be sufficiently documented with field observation notes, photographs, survey notes etc., to support your conclusions. Documented OHWM determinations can be included in the comments section of the Chapter 30/31 data base and a hard copy with your exhibits should be filed in your water body files where you keep lake maps, surface water resource publications, water level records or similar archives that should be in your office. Another option is to place a copy of your documentation with the waterbody files that are maintained by fisheries management for fish surveys and the like.

   It is common to have physical and biological evidence of more than one OHWM, particularly on land locked lakes with no outlet, frequently flooded waterbodies and waterbodies with high energy forces. OHWM determinations should also be able to stand the test of time. A question you should always ask and answer yourself is have recent hydrologic events (major storms) created OHWM indicators that are not indicative of long term conditions (20 or more years).

4. Department liability. As a representative of the state, you make a decision that carries great weight. Not only in the sense of determining public and private rights and ownership, but your decision is also a potential liability to the state. Legislation allows one who is regulated to recover costs and damages for invalid determinations where the judicial system finds the state has erred (see s. 227.115, Stats.). In other words, mistakes can be costly.

5. Are you dealing with an altered body of water? Is it a

flowage, perched lake or a stream with beaver problems? What has the average annual precipitation been in the past? What is it for the existing year? Are water levels too high (e.g., spring)? Is the waterway frozen (this can have a significant bearing on floating bogs)? All of these factors and more can have a bearing on your ultimate OHWM determination. What time of the year did you make your determination?

Water marks similar to OHWMs can be established in a short period of time. Rely upon OHWM indicators that reflect a long time period.
An ordinary high water mark that is indicative of the longest time period will <u>generally</u> be the easiest to defend.

The recommended procedure for determining an OHWM is to identify mature woody upland vegetation and work your way waterward. As you progress waterward you will find transitional plants (plants found above and below the OHWM) and aquatics (plants almost always found below the OHWM). Fine tuning of an OHWM can be accomplished with physical indicators. Those generally being wash marks, water stains and soil conditions (gleyed, mottled, redoxomorphic). These procedures should be repeated on the same water body at various locations to verify your original determination (multiple indicators work fine on ponds and lakes (with exception to very large water bodies). OHWM indicators on rivers and streams must take gradient into account as the OHWM changes in elevation with the gradient. Consistent multiple determinations will contribute to your credibility and ability to defend your final decision. Although you cannot use only water level records for the basis of your determination, this data can be used to support or validate your decision. The same holds true for historic photographs and other ancillary data.

<u>Multiple Ordinary High Watermarks</u> - "The Dilemma"

Occasionally you will find yourself in the situation of deciding which one of several distinguishable OHWM indicators are the right ones. The primary factor governing your decision should be which OHWM stands the test of time in combination with your confidence and ability to defend your determination. Secondary factors affecting your decision would include parameters generally associated with public interest values such as fishing, swimming, navigation, flora and fauna and associated habitat, etc. An OHWM that provides protection to these public values can be used in your defense of an OHWM determination. That is not to say that public interest values should dictate your decision, the criteria in <u>Diana</u> dictates your decision, however one can effectively argue public interest benefits associated with your determination versus a lower OHWM that does not include those public benefits.

**Regardless of where your determination is finally selected, it is**

**just as important for you to be able to explain why you didn't select the other OHWM indicators. This helps explain your scientific reasoning and will only add credibility to your final decision.**

Problem Areas

As previously indicated, the prudent person test should be applied to OHWM determinations. However there are exceptions to the prudent person test. Generally, the prudent person test does not work for jurisdictional determinations where one is evaluating a pond/lake/deepwater marsh that may or may not have standing water present throughout the year. Another difficult determination is where you have either a river/stream/lake, particularly bog lake, with contiguous wetlands adjacent to the open water that can extend a great distance from open water to upland. Other situations where the prudent person test doesn't fit well is on waterbodies with extreme energy forces such as Lake's Michigan and Superior and the Mississippi, St. Croix, Chippewa and Wisconsin Rivers to name a few. We'll take a closer look at these potentially difficult situations.

**HYDROLOGY AND ENERGY**

The hydrology of waterbodies (ponds, lakes, deepwater marshes) can be driven by a variety of factors. depending on whether or not the waterbody is a drainage lake, seepage lake, spring lake or drained lake. Drained lakes are those most likely to fall under this difficult category. That is primarily due to the facts that their hydrology is driven by precipitation, land use and evapotranspiration. These systems are frequently freeze-out lakes lacking a fishery, but have significant wildlife value including, but not limited to, waterfowl, shorebirds, amphibians and reptiles. These systems have major precipitation inputs during the spring and fall with an occasional input during the summer but have a tendency to become extremely shallow in late summer or sometimes even dry up during periods of drought.

When standing water is not present in a drained lake there should be areas within the dried lakebed that are lacking any vegetative cover surrounded by areas of persistent hydrophytes. The areas lacking vegetation are those that normally have standing water present throughout the growing season and are of sufficient depth to support the non-persistent aquatics such as coontail, bladderwort or pondweed. The observations combined with other historic information help one establish the basis that we are first dealing with a public waterbody.

The next step in determining the OHWM in these systems is to start at the upland and work your way waterward looking for observations such as the presence or absence of woody vegetation, wash marks, water stains, hummocks, adventitious roots, buttressing of woody plants and other characteristics normally

employed in a OHWM determination. Once the OHWM is identified this elevation should be surveyed in to a permanent benchmark whenever possible. Then the elevation of the OHWM can be transferred around the perimeter of the waterbody for purposes of zoning setbacks or chapter 30 permit requirements when appropriate. Large water bodies having great energy factors will result in varying OHWM elevations and should be determined independently for each site along the shoreline where the energy forces vary.

Another problem area where the prudent person test generally does not work is when you're dealing with an aquatic system that has vast quantities of wetland complexes contiguous with the waterbody. This type of a system can occur with any aquatic environment but is usually prevalent with larger riverine complexes, flowages, and any of the lake types previously mentioned. The most common system exhibiting these characteristics are the bog lakes in northern Wisconsin.

The bog lakes and associated aquatic plant communities can expand vastly making an OHWM determination not only difficult but extremely time consuming. A few of the common problems associated with these systems are anchored and floating vegetative mats, substrate (mineral vs organic), and hyrology. Are the aquatic plant communities present because of the surface water in the bog or are the plant communities not associated with the lake but rather groundwater discharge or the water table. Many of the smaller bog lakes have floating vegetative mats around the perimeter of the open water where they abut upland or they have a perimeter of open water adjacent to the upland with a floating vegetative mat in the center of the lake. These bog lake systems are relatively easy to document the OHWM using conventional methods mentioned earlier. Other bog lakes aren't as easy to determine the OHWM relative to the wetlands contiguous with the lake. Under these circumstances, the use of surveying equipment, a soils probe or sharpshooter are essential tools that will help you pinpoint the location of the OHWM within or adjacent to the aquatic vegetative complex.

If you're fortunate enough to have an exposed shoreline lacking a bog complex in front of it, that will be the general location to select your OHWM. Certain circumstances will require you to locate the OHWM off site and transfer that elevation to the desired location with the use of surveying equipment (Remember transferring OHWM elevations from one site to another has been determined by the courts to be an acceptable method. *State v. McDonald Lumber Co.*, Inc., 18 Wis.2d 173 (1962)). This may be due to disturbances caused by man induced activities or the force of nature. Regardless select sites that are stable. Remember when transferring elevations avoid the use of the lake's surface water elevation as a turning point unless you know weather patterns are relatively stable and your survey will take a short period of time to accomplish (less than one hour). External

forces can create a seiche (An oscillation of the water in a lake, bay, etc., caused by changes in barometric pressure, seismic disturbances, winds or waves, etc. Take the time to do a little more research into seiches, it's a fascinating subject.) that can alter the elevation of the lake surface within a relatively short period of time. Therefore using the lake surface water elevation as a survey turning point can induce elevation errors into your survey.

When transferring your OHWM elevation back into the bog complex, one should constantly be checking a few items in particular. The first is to determine if the bog is floating or anchored and then probe through the bog in search of terra firma, generally sand, densely compacted peat or muck. Take note of the distance between terra firma and the lowest point on the surface. When taking water levels within the bog, stand as far as possible away from the stadia rod to avoid false water level elevations that can be created by your weight while standing next to the rod. Surface elevation on the bog mat should be taken at the lowest level since the vegetative surface of the bog is undulating. Continue this process in a landward direction until you have come to the point where the elevation of terra firma and your OHWM elevation are relatively the same. This location would be the maximum lateral extent of the OHWM. Substantiate your determination with the vegetation (remember the standard in *Diana* that point up to which upland vegetation is destroyed). One reason why you are documenting terra firma is to ensure that the contour of the substrate is below the elevation of the OHWM. This will also help corroborate the hydrophytic vegetation present is associated with the lake and not groundwater.

Lastly let's venture into aquatic systems that really have a significant energy component associated with them. In particular we will address the great lakes of Superior and Michigan and large riverine systems such as the mighty Mississippi and any other riverine system that is utilized for hydropower.

We've mentioned seiches before and its potential affect on water levels. As previous mentioned seiches may be a result of a change in barometric pressure. For example a seiche in Green Bay caused by a significant change in barometric pressure can cause the water level to fluctuate by as much as two feet in a matter of hours. Seiches, specifically those associated with a change in barometric pressure may cause changes in surface water elevations but their relationship to the OHWM is extremely limited. Seiches associated with wind waves have a very strong relationship with the OHWM. Fetch, wind velocity and direction of wind are very critical components that determine where the presence of water is so continuous that it creates the OHWM. OHWM determinations for Lakes Superior and Michigan should be established along shorelines where there is some protection from high energy forces. For example, the ten year storm event can create what would appear to be the ordinary high water mark along the

shoreline because there will be a very distinct wash mark and vegetation line. However the wash mark created by this storm event is a result of an event that may only happen once every ten years and is therefore not normal or ordinary. The stability of the shoreline will dictate where you make your determination. Avoid sandy shores where possible. In some locations the lack of upland vegetation is attributed to wind action and not wave action. Remember we're making a determination based upon what was created by the presence of water (wave action) on a fairly routine basis. Because of the energy forces associated with Lakes Superior and Michigan, these are probably the two most difficult waterbodies to determine an OHWM.

Large riverine systems such as the Mighty Mississippi and the St. Croix have several other energy components that influence the OHWM. Ordinary high water marks are generally established by the presence of water or wave action at an given elevation for a minimum of 30-70 (not necessarily consecutive) days a year, over a twenty year period. Keep in mind the Mississippi River is a controlled system, a series of locks and dams that are managed primarily for commercial navigation and flood control. Generally, during ice out in the spring through parts of June the water levels within each pool are normally held above flat control pool. These sustained periods of higher water levels combined with commercial and some recreational navigation have the greatest influence upon establishing the OHWM. The variability is directly attributed to management, use and position in the landscape. The pools lower in the system are first to thaw, first to be used for commercial navigation and play a more important role in flood control since they receive more water from the landscape. They will have a higher OHWM above flat control pool than pools located further upstream in the system.

Riverine systems utilized for hydropower are another rather unique ecosystem whose OHWM is primarily dictated by people management. Many of our large riverine systems were damed in the earlier part of the 20$^{th}$ Century for the purpose of producing electricity. Those hydropower dams were operated as peaking systems whereby during the night water is held back in the flowage with very little flow being released and during the day when energy demands were higher substantial flows would be pass through turbines to generate electricity. This peaking operation would cause water level fluctuations in the flowage as well as the river downstream from the dam. The greatest fluctuation in level being the river downstream. These fluctuations would occur on a daily basis and thus the OHWM would then be determined by the highest flow passed on a regular basis as would the highest operating water level in the flowage. We've come a long way since the early 1900's and have in recent years began to understand the detrimental environmental impacts associated with a peaking operation. Most of our larger hydropower dams are no longer operated as a peaking system but rather as a run of river

system (e.g. what goes in to the flowage goes out of the flowage). This flow regime mimics best would might occur under natural conditions. As a result, flows released through the dams are more uniform than a peaking operation and generally lower in flow and elevation. Therefore, riverine systems that are utilized for hydropower and that have since changed from a peaking to a run of river system will have remnants of an old OHWM higher than what the modern day OHWM currently is. The bottom line, do your homework, investigate the historical use of a riverine system and understand how that may or may not influence your OHWM determination. Always remember it is just as important for you to explain why you selected the OHWM indicators you did as well as those you didn't.

**Using Vegetation Indicators**

Plant species can often be very useful in determining your OHWM. Some species are almost exclusively found above or below the OHWM. However, many wetland species are capable of growing in either position. The main consideration when deciding whether to include vegetation as a major factor in your determination is whether the plant species or community is associated with a lake, pond or stream or whether the plants may be growing within a wetland unconnected to another surface water. The wetland may be contiguous and even discharging flow to a waterbody, but it may be elevated above the OHWM. Often, groundwater discharge wetlands which experience almost constant saturation may build organic matter above the OHWM of adjacent waterbodies. These wetlands may be located below the OHWM if they flood for a significant period of time.

The following list of plants are indicators that you can use in your OHWM determinations. As time progresses this list will expand. If you have additional species that you would recommend we add to the list, please share your information. Information about these and other Wisconsin vascular plant species can be found at the UW - Wisconsin State Herbarium web site at: http://wiscinfo.doit.wisc.edu/herbarium/.

Plants Generally Found Below the OHWM (Not inclusive)

If you are in an area adjacent to or connected to a lake or stream and aquatic plants are dominant, you are almost certain to be below the OHWM. Aquatic plants tolerate long periods of inundation, although they can survive short-period (1 week or less) dry-downs on an annual basis. Deep and shallow marshes may also be directly connected to lakes and streams. If you are in a wetland adjacent to a lake or stream and encounter the plants listed here or others which are designated as "obligate" wetland plants on the USFWS's "National List of Plant Species that Occur in Wetlands" (Indicator List), this area is generally below the OHWM. Listed below are the aquatic, semi-aquatic and marsh species you will commonly encounter in areas below the OHWM.

## Aquatics

| | |
|---|---|
| *Armoracia lacustris* | Lake cress |
| *Callitriche* spp. | Water starworts |
| *Ceratophyllum demersum* | Coontail |
| *C. echinatum* | Coontail |
| *Chara* spp. | Muskgrasses |
| *Elatine minima, E. triandra* | Waterwort |
| *Elodea canadensis, E. nuttallii* | Waterweed |
| *Eriocaulon aquaticum* | Pipewort |
| *Isoetes* spp. | Quillworts |
| *Litorella uniflora* | Plantain shoreweed |
| *Lobelia dortmanna* | Water lobelia |
| *Megalodonta beckii* | Water marigold |
| *Myriophyllum* spp. | Water milfoil |
| *Nasturtium officianale* | Watercress |
| *Najas* spp. | Slender naiad |
| *Nitella* spp. | Nitellas |
| *Potomogeton* spp. | Pondweeds[1] |
| *Ranunculus aquatilis* | Water crowfoot |
| *R. flabellaris* | Water crowfoot |
| *R. gmelinii* | Water crowfoot |
| *Ruppia cirrhosa* | Ditch-grass |
| *Sparganium* spp. | Bur-reed |
| *Utricularia* spp. | Bladderwort |
| *Vallisneria americana* | Wild celery |
| *Zannichellia palustris* | Horned pondweed |
| *Zosterella dubia* | Water stargrass |

[1] *Potamogeton gramineus* may also occur on wet shores.

## Floating-leaf Aquatic Plants

| | |
|---|---|
| *Brasenia schreberi* | Watershield |
| *Lemna* spp. | Duckweeds |
| *Nelumbo lutea* | American lotus |
| *Nuphar* spp. | Yellow pond-lily |
| *Nymphaea odorata* | White water-lily |
| *Polygonum amphibium* | Water smartweed[2] |
| *Riccia fluitans* | Slender riccia |
| *Spirodela polyrrhiza* | Giant duckweed |
| *Wolffia* spp. | Watermeal |

[2] *Polygonum amphibium* will also move out onto wet shores.

## Marsh Species & Semi-Aquatics

| | |
|---|---|
| *Alisma* spp. | Water-plantain |
| *Dulichium arundinaceum* | Three-way sedge |
| *Eleocharis acicularis* | Needle spikerush |
| *Iris* spp. | Iris species |
| *Phragmites australis* | Common reed grass |
| *Pontederia cordata* | Pickerel weed |
| *Sagittaria latifolia* | Arrowhead |
| *Schoenoplectus acutus* | Hard-stem bulrush |
| *S. pungens* | Three-square bulrush |
| *S. tabernaemontani* | Soft-stem bulrush |
| *Sium suave* | Water parsnip |
| *Sparganium americanum* | Bur-reed |
| *S. eurycarpum* | Bur-reed |
| *Typha angustifolia* | Narrow-leaved cattail |
| *T. latifolia* | Broad-leaved cattail |
| *T. X glauca* | Hybrid cattail |
| *Zizania aquatica* | Wild rice |

## Floodplain Forests and Hardwood Swamps

Streams may have floodplains which flood regularly enough to meet the criteria for areas below the OHWM. For an area to be considered below the OHWM, it must be inundated for a sufficient period of time (at least 30 days, not necessarily consecutive). Woody vegetation generally does not tolerate long-duration flooding without stress which may result ultimately in death. However, some species have adapted to tolerate saturated root zones for various lengths of time. For example, when silver maples (*Acer saccarinum*) are actively growing they may be able to tolerate seasonal flooding but its relative sugar maple (*Acer saccarrum*) cannot. Flooding often occurs in late winter or early spring when trees are still partially dormant. Flooding for shorter duration in the height of the growing season may not cause significant stress to the plants.

Old lacustrine basins may flood regularly and of sufficient duration to develop an OHWM. Hardwood swamps may develop in these basins and all or parts of these wetlands may be below the OHWM.

Use caution when using plants to determine the OHWM in floodplain forests and hardwood swamps. Aquatic plants are generally found below the OHWM, but many of the dominant species are trees, shrubs and forbes which are only seasonally inundated. These species can generally occur both above and below the OHWM. In these areas it is crucial that you either use documented hydrology data, erosion marks or other hydrology indicators to verify your OHWM determination.

## Floodplain Forest and Hardwood Swamp Species

| | |
|---|---|
| *Acer rubra* | Red maple |
| *Acer saccarinum* | Silver maple |
| *Betula nigra* | River birch |
| *Carex* spp. | Sedge species |
| *Celtis occidentalis* | Hackberry |
| *Fraxinus nigra* | Black ash |
| *F. pennsylvanica* | Green ash |
| *Laportea canadensis* | Wood nettle |
| *Matteucia struthiopteris* | Ostrich fern |
| *Populus deltoides* | Eastern cottonwood |
| *Quercus bicolor* | Swamp white oak |
| *Rudbeckia laciniata* | Cut-leaved coneflower |
| *Salix nigra* | Black willow |
| *Ulmus americana* | American elm |

## Other Transitional Areas

Open wetland areas adjacent to waterways may be marsh, wet meadow, sedge meadow, fen or open bog plant communities. As with floodplain forests, you need to use caution when determining the OHWM. Most important is determining if the wetland is directly connected to the waterway or if there is a significant difference in the source of the hydrology. For instance, some wetlands may be adjacent to lakes or streams but may be fed by groundwater discharge that is essentially separate from the water feeding the lake or stream. These wetlands are often substantially above the elevation of the waterway, and also above the OHWM. Make sure that the wetland area is influenced by the waterway's hydrology on a regular basis. Also, if the area is dominated by drier end wetland community types such as wet prairie or wet meadow, the plants are not likely to tolerate a lot of water on their roots. These plant communities endure short-duration saturation but will not survive if the saturation or inundation lasts well into the growing season. There may be exeptions if the inundation occurs early or late in the growing season. As with floodplain forests, document your OHWM determination with hydrology data and additional indicators.

Sedge (Cyperaceae) and rush (Juncaceae) families include species often encountered both above and below the OHWM. Common genera of the sedge family include *Carex* (sedge); *Eleocharis* (spike-rush); *Eriophorum* (cotton-grass); *Schoenoplectus, Bolboschoenus* and *Scirpus* (bulrushes) and *Cyperus* (nut sedge). Rushes (*Juncus*) are also often found both above and below the OHWM. These families are notorious for their difficult taxonomy. Although many of the sedges are obligate wetland plants, there are also many species of sedges found almost exclusively in uplands. Although it would be difficult to impossible to learn to identify all of the sedges, knowing some common species can be critical in making both OHWM and wetland determinations. There are no

absolutes, but there are some general rules of thumb for sedges. For instance, lake sedge (*Carex lacustris*) and aquatic sedge (*C. aquatilis*) will often be found growing below the OHWM. Also, the bottlebrush-like sedges (*C. comosa, C. hystericina* and *C. pseudo-cyperus*), tend to grow below the OHWM when found adjacent to waterways.

Transitional species are often those plants you will find listed on the Indicator List as FACW (67% to 99% of the time growing in wetlands). This indicates that the species has adapted to wet conditions. These species are good indicators that water is present for a significant period of time. However, look for other indicators of long-term hydrology to substantiate your OHWM determination.

Fen Species (found both above & below the OHWM, not inclusive)

| | |
|---|---|
| *Aster firmus* | Swamp aster |
| *Bromus ciliatus* | Fringed brome |
| *Carex sterilis* | Sterile sedge |
| *Gentianopsis procera* | Lesser fringed gentian |
| *Lobelia kalmii* | Kalms lobelia |
| *Lycopus uniflorus* | Northern bugleweed |
| *Parnassia glauca* | Grass-of-parnassus |
| *Pedicularis lanceolata* | Swamp lousewort |
| *Pentaphylloides floribunda* | Shrubby cinquefoil |
| *Solidago ohioensis* | Ohio goldenrod |
| *S. riddellii* | Riddell's goldenrod |

Bog Species Found Both Above & Below the OHWM (Not inclusive)

| | |
|---|---|
| *Andromeda glaucophylla* | Bog rosemary |
| *Betula pumila* | Bog birch |
| *Calla palustris* | Water arum* |
| *Carex oligosperma* | Few-seeded sedge |
| *C. pauciflora* | Few-flowered sedge |
| *C. magellanica* | Boreal bog sedge |
| *Chamaedaphne calyculata* | Leatherleaf |
| *Comarum palustre* | Marsh cinquefoil |
| *Cypripedium acaule* | Moccasin flower |
| *Drosera intermedia* | Narrow-leaved sundew |
| *D. rotundifolia* | Round-leaved sundew |
| *Eriophorum vaginatum* subsp. *spissum* | Tussock cotton-grass |
| *Eriophorum virginicum* | Rusty cotton-grass |
| *Gaultheria hispidula* | Creeping wintergreen |
| *Ilex mucronata* | Mountain holly |
| *Kalmia polifolia* | Bog-laurel |
| *Larix laricina* | Tamarack |
| *Ledum groenlandicum* | Labrador-tea |
| *Lycopus uniflorus* | Northern bugleweed |
| *Menyanthes trifoliata* | Common buckbean |
| *Sarracenia purpurea* | Pitcher-plant |
| *Sphagnum* spp. | Sphagnum moss |

| | |
|---|---|
| *Vaccinium angustifolium* | Early low blueberry |
| *Vaccinium macrocarpon* | Large cranberry |
| *Vaccinium myrtilloides* | Velvet-leaf blueberry |
| *Vaccinium oxycoccos* | Small cranberry |

Other Transitional Plants Found Above & Below the OHWM (Not inclusive)

| | |
|---|---|
| *Acorus calamus* | Sweet flag* |
| *Alnus incana* subsp. *rugosa* | Tag alder |
| *Asclepias incarnata* | Swamp milkweed* |
| *Aster simplex* | Lowland white aster |
| *Aster umbellatus* | Flattop aster |
| *Calamagrostis canadensis* | Bluejoint reedgrass |
| *Calopogon tuberosus* | Grass pink |
| *Campanula aparinoides* | Marsh bellflower |
| *Carex muskingumensis* | Muskingum sedge |
| *Carex trisperma* | Three-seeded sedge |
| *Chamaedaphne calyculata* | Leatherleaf |
| *Chelone glabra* | Turtlehead |
| *Circuta maculata* | Water hemlock |
| *Equisetum* spp. | Horsetail species |
| *Eriophorum angustifolium* | Cotton-grass |
| *Eupatorium maculatum* | Spotted joe-pye weed |
| *Eupatorium perfoliatum* | Boneset |
| *Fraxinus nigra* | Black ash |
| *Galium boreale* | Northern bedstraw |
| *Glyceria striata* | Fowl mannagrass |
| *Iris virginica* var. *shrevei* | Southern blue flag |
| *Iris pseudacorus* | Yellow iris |
| *Impatiens capensis* | Jewelweed* |
| *Lathyrus palustris* | Marsh pea |
| *Leersia oryzoides* | Cutgrass* |
| *Lobelia siphilitica* | Great Lobelia |
| *Mentha arvensis* | Wild mint |
| *Phalaris arundinacea* | Reed canary grass |
| *Phragmites australis* | Common reed grass |
| *Pilea pumila* | Clearweed |
| *Polygonum punctatum* | Smartweed |
| *Salix* spp. | Willow species |
| *Solanum dulcamara* | Purple nightshade |
| *Solidago gigantea* | Late goldenrod |
| *Symplocarpus foetidus* | Skunk cabbage |
| *Urtica dioica* | Stinging nettle |
| *Viola cucullata* | Marsh blue violet |
| *Valeriana edulis* | Valerian |

*Most often located below the OHWM

Plants More Commonly Found Above the OHWM (Not inclusive)

| | |
|---|---|
| *Abies balsamea* | Balsam fir |
| *Acer rubrum* | Red maple |
| *Apocynum androsaemifolium* | Spreading Dogbane |

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|---|---|
| *Apocynum cannabinum* | Indian Hemp |
| *Asclepias syriaca* | Common milkweed |
| *Betula lutea* | Yellow birch |
| *Betula papyrifera* | White birch |
| *Calystegia sepium* | Hedge birchweed |
| *Cannabis sativa* | Marijuana |
| *Capsella bursa-pastoris* | Shepherd's purse |
| *Carya ovata* | Shagbark hickory |
| *Chenopodium album* | Lamb's quarters |
| *Cichorium intybus* | Chicory |
| *Cypripedium candidum* | Small white ladyslipper |
| *Daucus carota* | Queen Anne's lace |
| *Dryopteris cristata* | Crested shieldfern |
| *Erigeron annus* | Daisy fleabone |
| *Euthamia graminifolia* | Grass-leaved goldenrod |
| *Fragaria virginiana* | Common strawberry |
| *Fraxinum americana* | White ash |
| *Heracleum lanatum* | Cow-parsnip |
| *Hypericum perforatum* | St. John's-wort |
| *Juglans nigra* | Black Walnut |
| *Juniperus virginica* | Red cedar |
| *Oenothera biennis* | Evening primrose |
| *Oxalis stricta* | Yellow wood sorrel |
| *Parthenorissus quinquefolia* | Virginia creeper |
| *Picea glauca* | White spruce |
| *Pinus* spp. | All species of pine |
| *Plantago lanceolata* | English plantain |
| *Plantago major* | Common plantain |
| *Populus tremuloides* | Quaking aspen |
| *Prunella vulgaris* | Heal-all |
| *Pycnanthemum virginianum* | Virginia basil |
| *Quercus rubra* | Red oak |
| *Quercus alba* | White oak |
| *Ratibida pinnata* | Prairie coneflower |
| *Rhamnus cathartica* | Common buckthorn |
| *Rudbeckia hirta* | Black-eyed susan |
| *Setaria* spp. | Foxtail grass species |
| *Solidago altissima* | Tall goldenrod |
| *Rosa arkansana* | Prairie rose |
| *Rubus occidentalis* | Black raspberry |
| *Spartina pectinata* | Prairie cordgrass |
| *Spiraea tomentosa* | Steeplebush |
| *Taxus canadensis* | Canada yew |
| *Tilia americana* | American basswood |
| *Tradescantia ohiensis* | Spiderwort |
| *Tragopogon dubius* | Yellow goatsbeard |
| *Trifolium pratense* | Red clover |
| *Tsuga canadensis* | Eastern hemlock |
| *Verbascum thapsus* | Common mullein |
| *Viburnum lentago* | Nannyberry |
| *Vitis* spp. | Grape species |
| *Xanthium strumarium* | Cocklebur |

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