

Low Head Dam Signage & Outreach

Examples throughout the U.S. and Canada



Bow River Weir, Calgary

Low Head Dam Signage & Outreach

- States with statutory authority to regulate public safety at low head dams
- States with programs or guidelines for low head dam safety
- Examples of low head dam signage in Canada
- Potential vendors

Low Head Dam Signage

State Regulated or Programs

States with Statutory Authority to Regulate Public Safety at Low Head Dams:

- Pennsylvania
- Illinois
- Virginia

States with Low Head Dam Programs, Guidelines and/or Safety Outreach:

- Iowa
- Minnesota
- Montana
- South Dakota
- Ohio

Canadian Guidelines

- Canada Dam Association – Guidelines for Public Safety around Dams
- Calgary, Alberta
- Ontario Power Generation

Low Head Dam Signage and Buoys

- Varying signage standards or guidelines, but many incorporate some or all of the following:
 - Size of sign based on river width and/or size/width of dam
 - Specific measurements/sizes of sign borders, spacing and lettering, based on size of river and/or dam
 - Specific placement and angle facing river/stream based on site specific conditions
 - Location/distance of signage and/or buoys above and below dam based on river and dam size
 - Signs for portage access above and below dams if available
 - Varying degree of installation and anchoring standards based on site specific conditions, such as along overbanks, on bridge, on trusses, from land, etc.
 - Most standards call for aluminum signs. Pennsylvania specifies 0.08 gauge
 - Other materials may be vinyl, or water resistant paper for smaller land based information signs

Low Head Dam Sign and Buoy Guidelines - Pennsylvania

Pennsylvania Title 30

Code 3510 – Marking of Dams

(Bulletin 1137: <http://fishandboat.com/damnot2.htm>)

- Requires owners or permittees to purchase, post and maintain a pair of exclusion zone signs on each side of their dams – one pair facing upstream, the other downstream
- The signs are 4' by 4' with a white reflective background, placed 200' upstream of the dam and 100' downstream of the boil
- Recommended that signs are constructed of .080 gauge aluminum
- Establishes a penalty for persons who enter “an exclusion zone marked under the provisions of this section”

Low Head Dam Exclusion Signs Pennsylvania

Upstream
Exclusion
4' by 4'



Downstream
Exclusion
4' by 4'



Strong currents and turbulent water above and below this dam can trap and drown a person

Penalty for Violation as Provided by Law — Pennsylvania Fish and Boat Commission

Low Head Dam Warning Signs Pennsylvania

Warning Sign
2' by 2'



Strong currents and turbulent water above and below this dam can trap and drown a person

- In limited circumstances, dams less than 200' length can be considered for warning signs
- Owners must purchase, post and maintain at least two (2) warning signs, one facing upstream and one downstream
- Warning Signs can only be used lieu of exclusion signs where dam is under entire control of one (1) owner, or all owners agree, and areas at and near the dam are sufficiently safe and controlled making it unnecessary to exclude the public
- A certification must be submitted to the state, and the owner shall assume responsibility and liability for all consequences of such a determination
- Warning Signs and Exclusion signs cannot both be used at one site to avoid confusion

Overbank and Pathway Signs Pennsylvania



- Vinyl or water resistant paper 11” by 14” signs may be posted along pathways leading to or banks within the exclusion area to provide additional warning
- These signs are available through the Pennsylvania Fish and Boat Commission at a cost of \$2.00 per sign

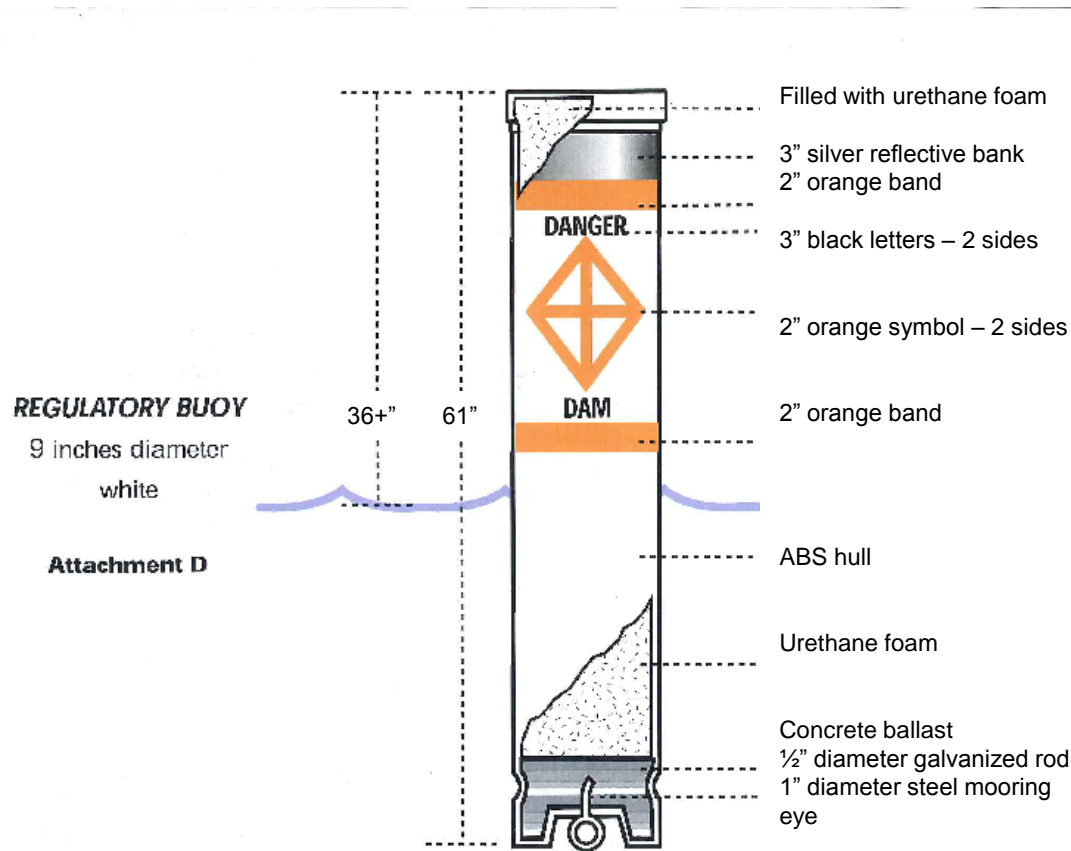
This dam may be dangerous due to strong currents and turbulent water above and below the dam that can trap and drown a person.

Any person who enters these waters on the upstream or downstream side where marked commits a summary offense and is subject to a fine.

Fishing is permitted from banks unless otherwise posted

Penalty for Violation as Provided by Law – Pennsylvania Fish and Boat Commission

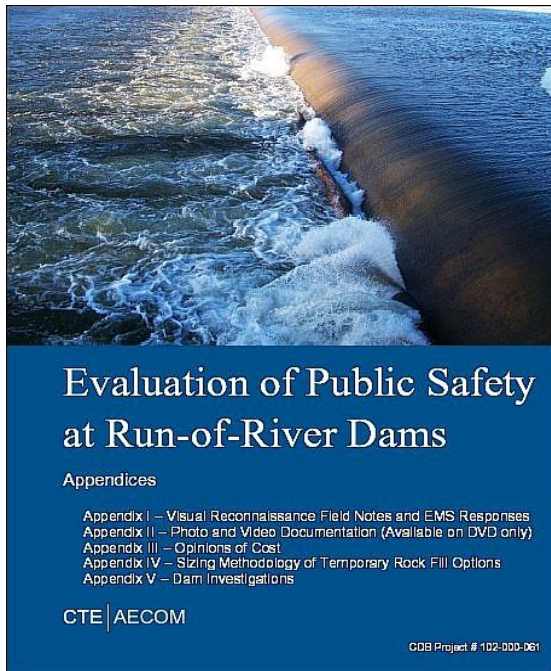
Low Head Dam Buoys Pennsylvania



- Dams 200' or more in length required to install buoys on the up and downstream side of dams when normal water low level is 3 feet or >
- A minimum of 200' upstream and 100' downstream of maximum boil line
- Must be spaced evenly, not more than 150' apart

Illinois Evaluation of Public Safety at Run-of-River Dams

Public Act 095-0020 amended the Rivers, Lakes and Streams Act, and mandates improved safety at run-of-river dams on public waters when those dams are not subject to federal regulations for safety. Development of administrative rules for Public Act 095-0020 and the development of signage, buoy and exclusion zone plans for each of the dams covered by the public act are components of this work. Structural modifications to dams are being considered to lessen the dangers passed by the low head dams.



- Completed a Safety at Dams Study in July 2007
 - 270 + page Report, including signage options, plan options for specific dams and public awareness program (still developing statewide standards for signage)
 - An additional five (5) Appendices:
 - Reconnaissance Notes and EMS Responses
 - Photo and Video Documentation
 - Opinions of Cost
 - Sizing Methodology of Temporary Rock Fill Options
 - Dam Investigations












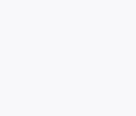
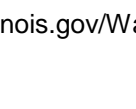
Illinois Evaluation of Public Safety at Run-of-River Dams - Signage

- Warning (Danger), Exclusion and Portage Signs
- Signs warning of Severe Drowning Hazard and Damage to Boat
- Violators Subject to Fine
- Upstream buoys with maximum spacing of 100' apart

Evaluation of Public Safety at Run-of-River Dams
An Illinois Statewide Program

July 20, 2007

Table 2.3-2 - Proposed Signage

Signage	Description	Signage Reference	Signage	Description	Signage Reference
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign must prominently display just the exclusion zone. Should be placed on the banks of the upstream exclusion zone boundary and angled towards approaching river users. Signs 1-2 and 1-3 are optional precautions. 	1.2.1		<ul style="list-style-type: none"> Warns downstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the banks of the downstream exclusion zone boundary and angled towards river users. 	1.2.2
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam. Should be placed on the banks of the upstream exclusion zone boundary when the exclusion zone boundary is not clearly defined or when the exclusion zone boundary is not clearly defined. Signs 3-4 and 3-5 are optional precautions. 	1.2.3		<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam. Sign should be placed on bridge piers, culverts, or other structures that are in the upstream exclusion zone and angled towards approaching river users. 	1.2.4
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam. Sign should be placed on the dam abutment and angled towards approaching river users. 	1.2.5		<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Signs 6-7 and 6-8 are optional precautions. 	1.2.6
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam. Signs 7-8 and 7-9 are optional precautions. 	1.2.7		<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the banks of the upstream exclusion zone boundary and angled towards approaching river users. 	1.2.8
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the dam abutment and angled towards river users. 	1.2.9		<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the banks of the upstream exclusion zone boundary and angled towards approaching river users. 	1.2.10
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the dam abutment and angled towards river users. 	1.2.11		<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the banks of the upstream exclusion zone boundary and angled towards approaching river users. 	1.2.12
	<ul style="list-style-type: none"> Warns upstream river users that they are approaching the dam and outlines their duty. Sign should be placed on the dam abutment and angled towards river users. 	1.2.13			

Illinois Dam Safety Poster – Public Awareness


DANGER DAM!

Dangers Posed by Low-Head Dams

The recirculating currents and turbulent waters below can swamp vessels and drown boaters.

The backwash below low-head dams can pull you towards the dam.

The current above low-head dams can sweep you over the dam.



http://www.boat-ed.com/images/animations/lowhead_dam.html

Keep Your Distance - Keep Your Life!

People Die
preventable deaths at dams every year.

Know the locations
of a low head dam and practice recreational safety at all times.

International Symbols

No Swimming Ninguna Natación	No Wading El ningún vadear	No Diving Ningún Salto
No Canoeing El Ningún Canoeing	Dam Ahead Presa a continuación	Warning Advertencia
No Boating Ninguna Canotaje	No Standing on Dam Ninguna Situación en la Presa	Danger Peligro

Dam Safety Websites:
<http://www.illinoispadding.org>

http://www.boat-ed.com/images/animations/lowhead_dam.html

http://www.standingupforillinois.org/cleanwater/ds_danger.php

<http://www.acanet.org>


¡PELIGRO! ¡PRESA!

Peligros Asociados con Las Presas de Vertedero:

Las corrientes de reflujo y las aguas turbulentas bajo la superficie pueden inundar una embarcación y ahogar a sus tripulantes.

La contracorriente bajo una presa de vertedero puede arrastrar hacia la presa.

La corriente sobre una presa de vertedero puede precipitarle hacia la presa.



http://www.boat-ed.com/images/animations/lowhead_dam.html

¡Conserve su distancia Conserve su vida!

Muchas personas mueren
cada año debido a accidentes prevenibles en las presas.

Conozca la señalización
de una presa de vertedero y sea cauto en su esparcimiento.

International Symbols

Ninguna Natación No Swimming	El ningún vadear No Wading	Ningún Salto No Diving
El Ningún Canoeing No Canoeing	Presa a continuación Dam Ahead	Advertencia Warning
Ninguna Canotaje No Boating	Ninguna Situación en la Presa No Standing on Dam	Peligro Danger

Sitios Web sobre seguridad en las presas:
<http://www.illinoispadding.org>

http://www.boat-ed.com/images/animations/lowhead_dam.html

http://www.standingupforillinois.org/cleanwater/ds_danger.php

<http://www.acanet.org>

Virginia Duty of Care and Liability Code

§ 29.1-509. Duty of care and liability for damages of landowners to hunters, fishermen, sightseers, etc.

D...Nothing contained in this section shall limit the liability of an owner of a low-head dam who fails to implement safety measures described in subsection F.

F. Any owner of a low-head dam may mark the areas above and below the dam and on the banks immediately adjacent to the dam with signs and buoys of a design and content, in accordance with the regulations of the Board, to warn the swimming, fishing, and boating public of the hazards posed by the dam. Any owner of a low-head dam who marks a low-head dam in accordance with this subsection shall be deemed to have met the duty of care for warning the public of the hazards posed by the dam. **Any owner of a low-head dam who fails to mark a low-head dam in accordance with this subsection shall be presumed not to have met the duty of care for warning the public of the hazards posed by the dam.**

Virginia Signage Standards

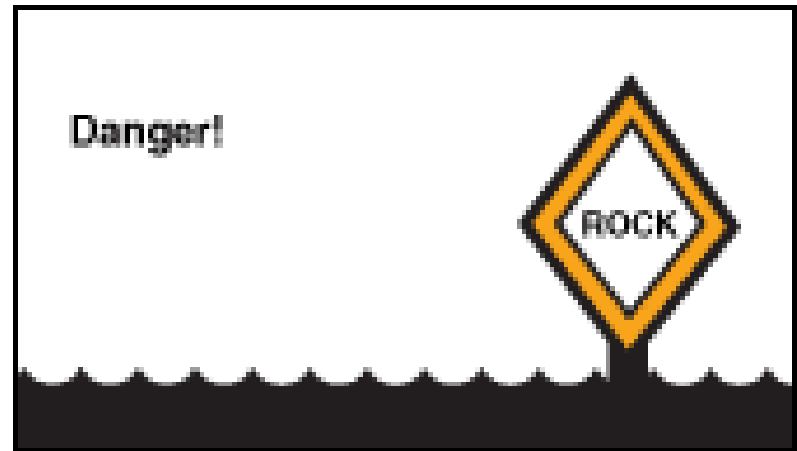
- Virginia's Game and Inland Fisheries adopted a Uniform State Waterway Marking System that mirrors the federal uniform waterway marking system
- Regulatory markers shall be placed where they are reasonably visible from boats approaching the marker and the visibility of the marker shall be maintained
- Written approval of the department must be obtained before relocation of any marker.
- The person responsible for the marker shall immediately notify the department when any approved marker is removed or destroyed, and marker shall be replaced without unnecessary delay

Virginia Signage Standards

- The size of the display area shall be as required by circumstances, except that no display area shall be smaller than one foot in height. The outside width of the diamond, the inner diameter of the circle, and the average of the inside and outside widths of a square shall be two-thirds of the display area. The side of the diamond shall slope at a 35 degree angle from the vertical on the plane surface. Approximate adjustments for curvature may be made when applied to a cylindrical surface.
- Explanatory words may be added outside the diamond with a center cross and the open diamond, and shall be added to the inside of the circle, square and rectangle. The letters of such words shall be black, in block characters of good proportion, spaced in a manner than will provide maximum legibility, and of a size which will provide the necessary degree of visibility.
- Regulatory markers are white with international orange bands

Virginia Signage Standards

- A vertical open-faced diamond shape with a white center shall denote danger: rock, snag, cable, dam, dredge, shoal, reef, wreck

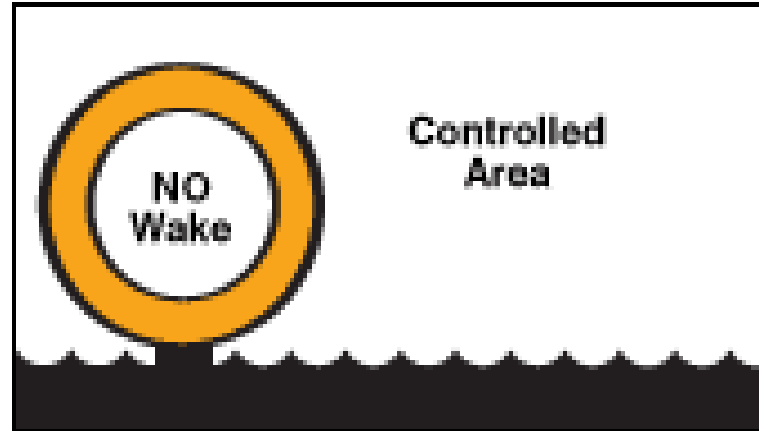


- A vertical open-faced diamond shape with an inside cross shall denote a prohibition of all vessels: dam, swim area, rapids, no boats

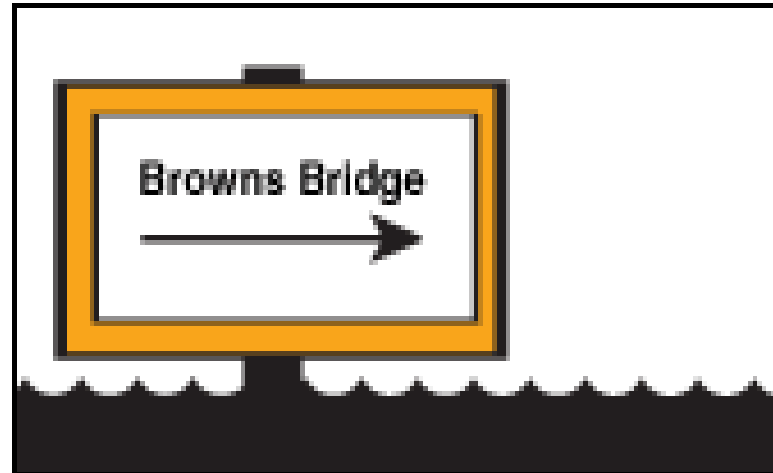


Virginia Signage Standards

- Circle: no skiing, no wake, no anchoring, no fishing, no scuba, no boats, ski only, fishing only, for wording inside the circle; and entering no wake zone, leaving no wake zone, for wording outside the circle



- A rectangular shape shall denote information other than a danger, control or restriction, may contribute to health, safety, or well-being of boaters, such as place names, limits of controlled areas, or approaching controlled area



Virginia Department of Game and Inland Fisheries

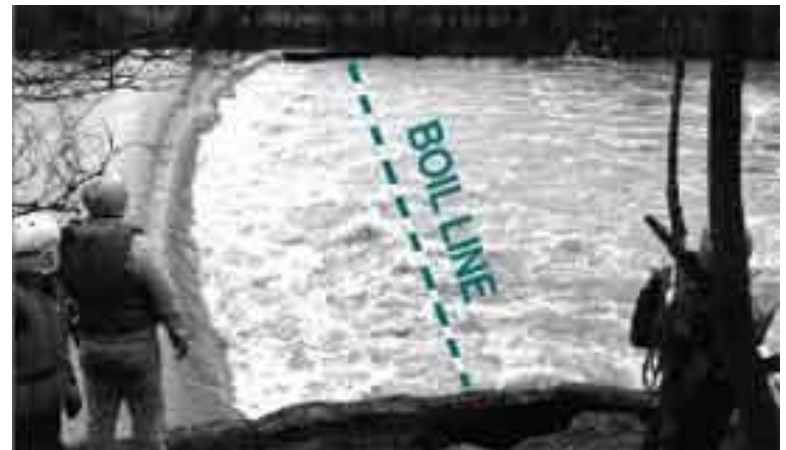
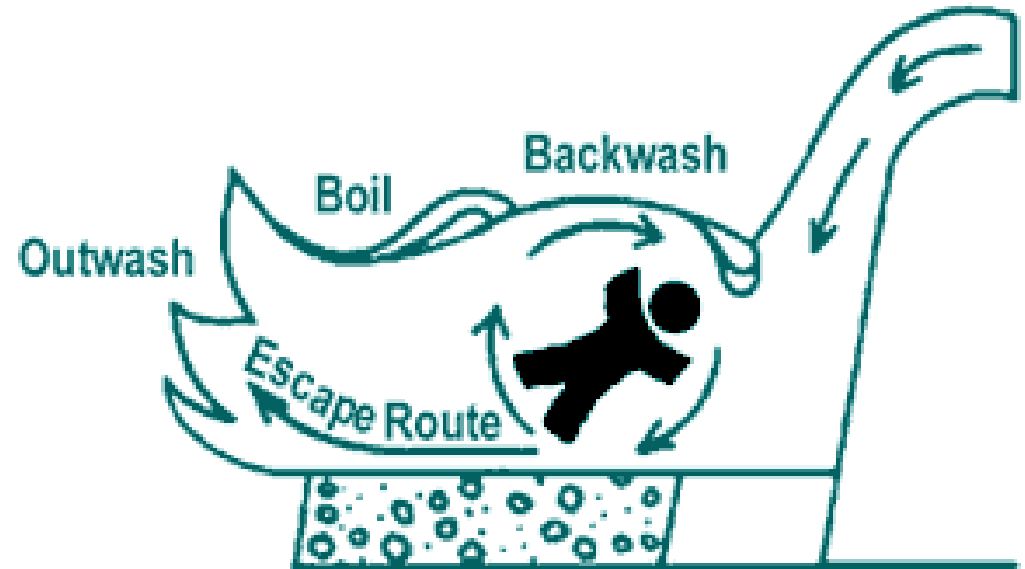
Boating Safety & Education – Lowhead Dams

Dangers to Boaters:

- Dams are difficult to spot from upstream and often are not marked by signs or buoys
- Dam hydraulics are unpredictable.
- Dams can deceive even experienced boaters.
- The concrete walls at the side of the dam face block the exit route for individuals trying to escape.
- Areas immediately downstream also present risk as the water is flowing upstream.
- Rescuing trapped individuals is dangerous and often unsuccessful.

Safety Tips to Follow:

- Scout the river and know the location of hazards. Talk with boaters who are familiar with the river to gain additional knowledge
- Boat with experienced, responsible boaters and learn from them.
- Watch for a smooth horizon line where the stream meets the sky. This potentially indicates the presence of a dam
- Look out for concrete retaining walls which are part of the dam structure and easier to spot
- Portage around all dams
- When portaging, re-enter the river at a point well downstream of the boil



Iowa Dam Mitigation and Safety Program

Solving Dam Problems: Iowa's 2010 Plan for Dam Mitigation

<http://www.iowadnr.gov/Recreation/CanoeingKayaking/LowHeadDams/DamMitigationSafety.aspx>

- Low Head Dam Inventory
- Dams and Rivers Ecology
- Mitigation Alternatives
- Strategies and Plan of Action
- Water Trails Program

Program created a Water Trails and Dams Sign Manual

<http://www.iowadnr.gov/portals/idnr/uploads/riverprograms/signmanual.pdf?amp;tabid=878>

- Water Trails Signage (wayfinding, navigation and use information, viewed from both land and water)
 - Low Head Dam Signage
 - Signage Installation
- Sign manual is 40 pages, very in depth, and signage criteria and installation are very site/scenario specific, based on formula(s) with many factors

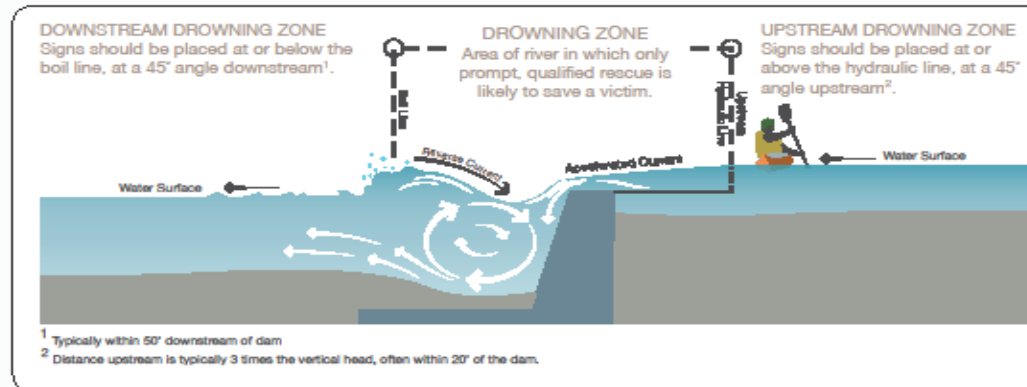
Iowa Dam Mitigation and Safety Program Sign Manual – Low Head Dam

- Signage is a voluntary program. The Iowa DNR, River Programs, conducts outreach to dam owners with periodic letters and funding opportunities
- Iowa DNR, Rivers Program designs most of the signage plans, paying for the signs, and sending them for the local entities to install themselves
- Prioritize outreach where they have established or are working on water trails
- The DNR also communicates the liability position dam owners are in when warnings are not present
 - 2007 Iowa Dept. of Justice Memorandum: WHEN IS A DAM OWNER LIABLE FOR RECREATION ACCIDENT?

Iowa Dam Mitigation and Safety Program Sign Manual – Low Head Dam

LOW-HEAD DAM WARNING SIGN SIZING & PLACEMENT

Figure 6B-1.
Drowning Zone Profile



The specific types and sizes of warning signs needed for each hazard on a state-designated water trail are determined individually using a consistent set of criteria. Once the sign design and size is determined, each sign is located adjacent to the hazard based on hydraulic criteria and other local conditions. Low-head dams, for example, include unsafe currents upstream, downstream and at the site of the dam for boaters and those wading (Figure 6B-1). These high current areas are known as “drowning zones.” Signs identifying drowning zone limits surrounding a hazard must allow a boater to reach shore before being carried over the dam.

All signs viewed from the water are typically sited on the bank at a 45-degree angle. Any sign placed on the banks should be as far above the bankfull water elevation as possible. Depending on the local conditions, alternative mounting systems such as buoys, overhanging cables, or bridges may be used, in which case the signs may face directly upstream or downstream.

Signs included in this manual can be ordered from vendors, including the Iowa Prison Industries (IPI). Note that size, color, and design of all signs corresponds to standards in this manual. Optional features include vandal proof coating using 3M Premium Protective Overlay Film Series 1160.

Iowa Dam Mitigation and Safety Program Sign Manual – Low Head Dam

HAZARD SIGN SCENARIOS

River users are minimally provided with two upstream warnings to prepare to leave the stream before reaching a drowning zone and dam. Because rivers often damage signs during flood times and because sign vandalism can be a regular occurrence, some redundancy is programmed into this system to allow time for maintenance responses. River users are directed to a specific side of a stream to reach portage routes or launch locations to avoid the drowning zone. The sequence of signs included for each dam is summarized in Figure 6B-2. Note the differences in sign working exist based on the course of action available to paddlers as they near hazards. Options include portage trails around hazards or launches before the drowning zones (which may or may not be the end of the water trail).

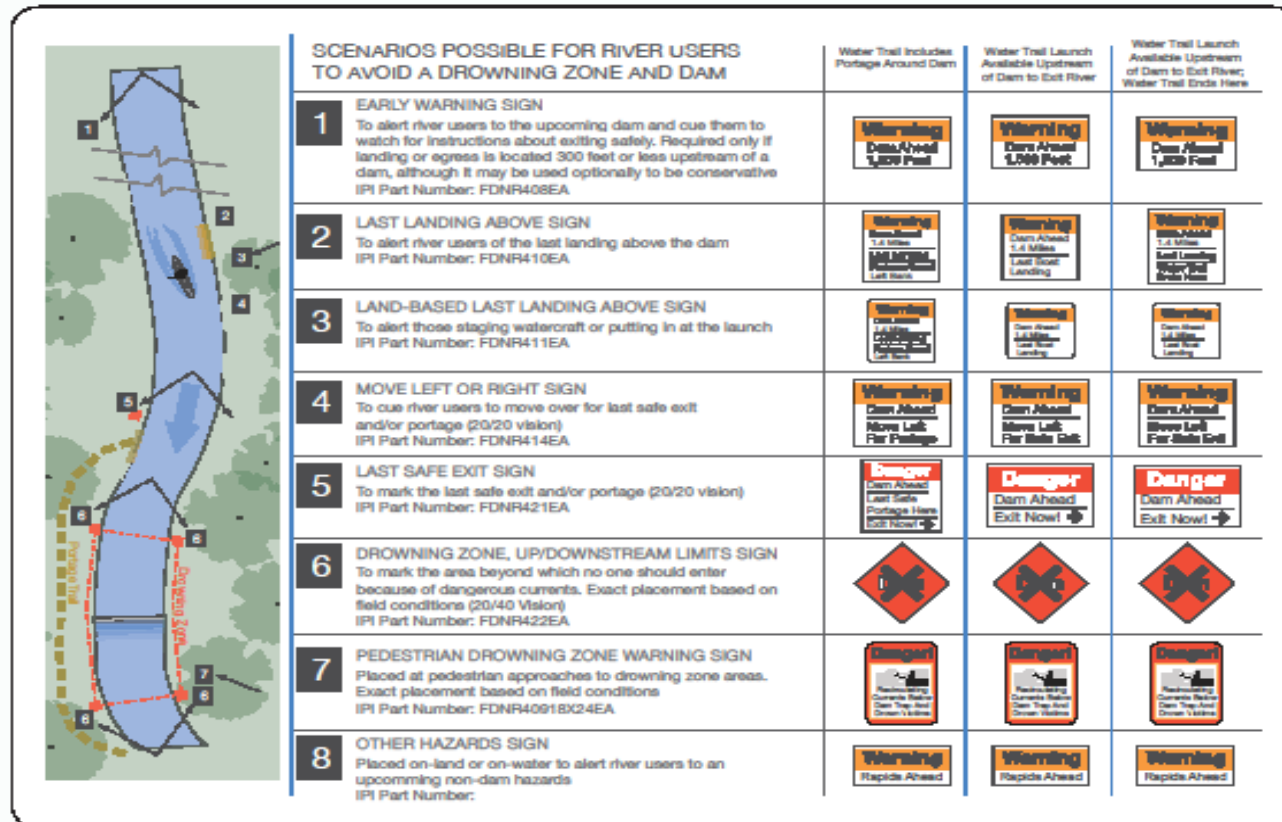


Figure 6B-2.
General Sign Locations
for Use with Dams

Iowa Dam Mitigation and Safety Program Sign Manual – Low Head Dam

SIGN LETTER HEIGHT CALCULATIONS

Criteria used to size all aspects of signs viewed from the water are related to river width at the sign location and includes text height, sign panel size, and text spacing. Text is based on a modified version of the Army Corps of Engineers sign manual standards. The minimum text height for the main message for all water-viewed signs is 4 inches, regardless of river width. The font for all text is Arial.

Begin calculations for text height by detaining river width where each sign is to be located. Width can be measured on the Iowa DNR Interactive Mapping Site using aerial photographs.

The formula for calculating text height is illustrated on the right. Figure 6B-3 and Table 6B-1 are provided to calculate the 20/40 vision viewing distance (V). The value is used to calculate the height of the capital letter text (A) that would be legible from the viewing distance. The sign panel size is then determined based on the proportions of the capital letter height and text-spacing requirements.

$$V (\text{ft}) = (M1 - M2) / \cos 45^\circ$$

$$M1 - M2 = 0.5 \text{ river width (ft) (for } 45^\circ \text{ only)}$$

$$V (\text{ft}) = (0.5 \text{ river width (ft)}) / 0.707$$

$$A (\text{in}) = V28$$

$$20/40 A (\text{in}) \times 0.50 = 20/20 A (\text{in})$$

$$20/40 A (\text{in}) \times 0.75 = 20/30 A (\text{in})$$

(Always round up to nearest inch.)

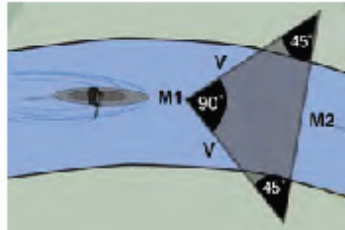


Figure 6B-3.
Calculating Viewing Distance
Based on River Width

20/40-VISION CHART FOR DROWNING ZONE SIGNS

River Width (ft)	Capital Letter Height (in)	River Width (ft)	Capital Letter Height (in)	River Width (ft)	Capital Letter Height (in)
0-158	4	791-830	21	1464-1503	38
159-197	5	831-870	22	1504-1543	39
198-236	6	871-909	23	1544-1582	40
237-276	7	910-949	24	1583-1622	41
277-315	8	950-988	25	1623-1661	42
316-355	9	989-1028	26	1662-1701	43
356-395	10	1029-1068	27	1702-1741	44
396-434	11	1069-1107	28	1742-1780	45
435-474	12	1108-1147	29	1781-1820	46
475-513	13	1148-1186	30	1821-1859	47
514-553	14	1187-1226	31	1860-1899	48
554-592	15	1227-1266	32	1900-1939	49
593-632	16	1267-1305	33	1940-1978	50
633-672	17	1306-1345	34	1979-2018	51
673-711	18	1346-1384	35	2019-2057	52
712-751	19	1385-1424	36	2058-2097	53
752-790	20	1425-1463	37	2098-2137	54

Table 6B-1.

Capital Letter Height for 20/40 Vision (Required for all drowning zone signs)

Iowa Dam Mitigation and Safety Program Sign Manual – Low Head Dam

ANNOTATED SIGN GUIDELINES

EARLY WARNING (ON-WATER) SIGN

Purpose:

To alert river users about an upcoming dam.

Band Color: Orange

Reflective: Yes

Material: Aluminum

This sign is optional. If the last launch is less than 300 feet upstream from the dam, then this sign, along with the **Last Landing Above (On-Water)** sign, is required. It may also be used as an extra precaution where high-speed boat traffic is common, or areas where local land managers determine a high hazard.

Figure 6B-4 describes required dimensions and spacing. "Warning" is in Arial bold font.

Placement is guided by local site conditions. There is no minimum length upstream of dam. The sign may be placed anywhere along the river. More than one sign may be needed, depending on site conditions.

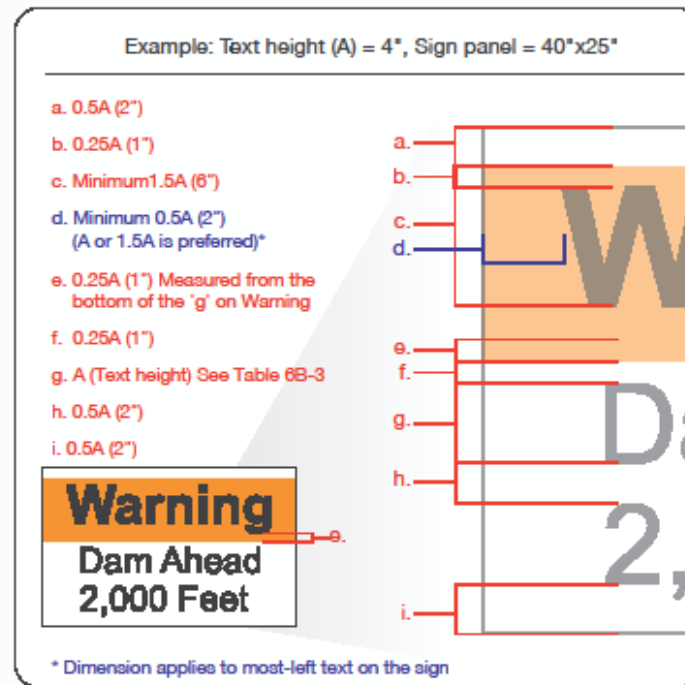


Figure 6B-4.
Early Warning (On-Water) Sign Face
Dimensions

Iowa Dam Mitigation and Safety Program Sign Manual – Low Head Dam

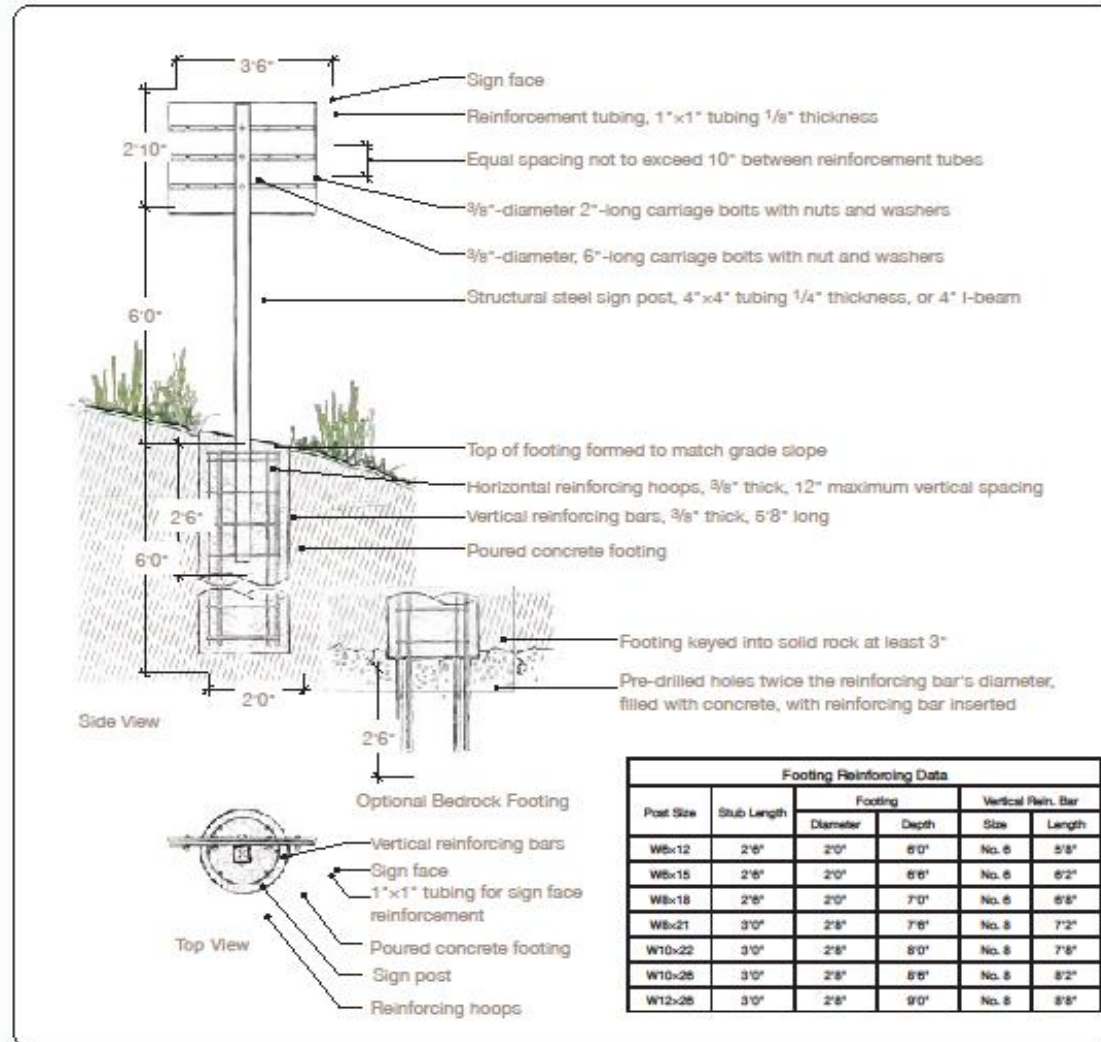


Figure 6C-1

Single or Double Steel Post Installation

Minnesota Boating Guide

Drowning Machines

This sign, installed at many dam sites around the state, warns people of the Potential dangers of a lowhead dam

THE DROWNING MACHINE

★**Lowhead dams** have claimed 14 lives over the last 20 years. These dams are usually small structures no more than 10 feet high, although some are as low as six inches. Because of their small size, they do not appear to be dangerous, especially from a boat or canoe upstream. In the spring and during other periods of high runoff, however, the dams become very dangerous. The recirculating current created by the water pouring over the dam creates a backwash. This current takes any object - including people wearing life jackets - to the bottom of the stream, releases it to the surface, sucks it back to the face of the dam, and pushes it back to the bottom; the cycle can continue indefinitely. Swimmers, anglers, canoeists and people in motorboats all have fallen victim to this perfect drowning machine. Keep well clear of these structures.



This sign, installed at many dam sites around the state, warns people of the potential dangers of a lowhead dam.



Montana Boating Laws Guide

Safety Tips Page

SAFETY TIPS

Courtesy – Because many different types of recreators may be sharing a boating area, show respect by operating at safe speeds and keeping an adequate distance from others. Due to their limited maneuverability, give sailboats and other non-motorized craft a wide berth. Remember, you are responsible for any damage your boat, or the wake from your boat, may cause.

Weather – It's unpredictable in Montana, so watch carefully for changing conditions. Be prepared to protect your passengers and yourself in case of foul weather.

Tell somebody – Make sure a friend, relative or neighbor knows of your boating plans. Leave your destination, time of departure and expected time of return, because this information may save your life in the event of an accident.

Safety equipment – The items covered in this booklet cover only the bare essentials. Additional recommended equipment which could allow you an extra margin of safety might include an extra fire extinguisher, extra life jackets, a tool kit, spare parts, a bailing bucket, an anchor and line, a flashlight, a paddle, a radio, a towline, extra fuel and oil, and a first aid kit.

Cliff and bridge diving – Look before you jump and check the water for hidden rocks, trees, etc. Make sure the water is deep enough. Always jump feet first; never dive head first.

Hypothermia – When a body loses heat faster than it can produce it, the body temperature goes below normal. That's hypothermia, and it can be deadly. Immersion in Montana's cold water (less than 70 F) will cause a body's core temperature to decrease. Symptoms can include shivering, poor coordination, and numb hands and feet. Learning how to treat hypothermia could save a life.

Dams – Currents above dams can suck boats into the water going through the dam. The currents and turbulent waters below can swamp boats and drown boaters. Even low head dams, which sometimes seem to have a very small drop, are dangerous, because the water going over the dam circulates back toward the face of the dam and can trap a person or boat.

Dams – Currents above dams can suck boats into the water going through the dam. The currents and turbulent waters below can swamp boats and drown boaters. Even low head dams, which sometimes seem to have a very small drop, are dangerous, because the water going over the dam circulates back toward the face of the dam and can trap a person or boat.

South Dakota – Dam Safety

Dangerous “Drowning Machine” Dams



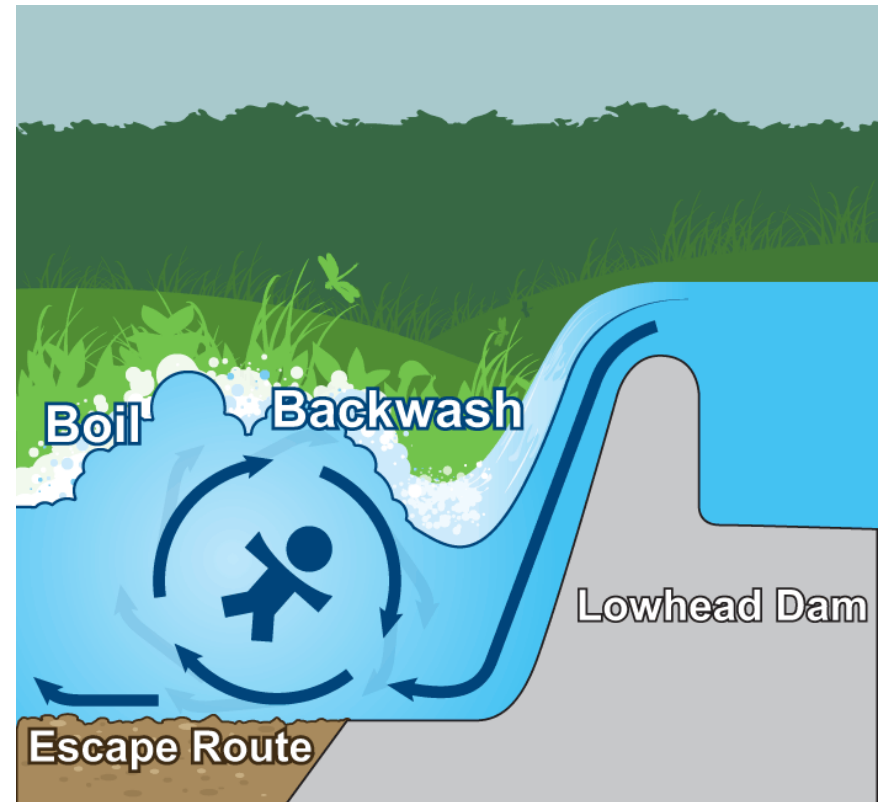
Ohio - DNR – Division of Watercraft

Safety Tips – Lowhead Dams

Dangers to Boaters:

- Dams are difficult to spot from upstream and often are not marked by signs or buoys
- Dam hydraulics are unpredictable
- Dams can deceive even experienced boaters
- The concrete walls at the side of the dam face block the exit route for individuals trying to escape
- Areas immediately downstream also present risk as the water is flowing upstream.
- Rescuing trapped individuals is dangerous and often unsuccessful.

(same “Dangers to Boaters” language as Virginia Department of Game and Inland Fisheries, Boating Safety & Education, Lowhead dams website)



Canada Dam Association

Guidelines for Public Safety Around Dams

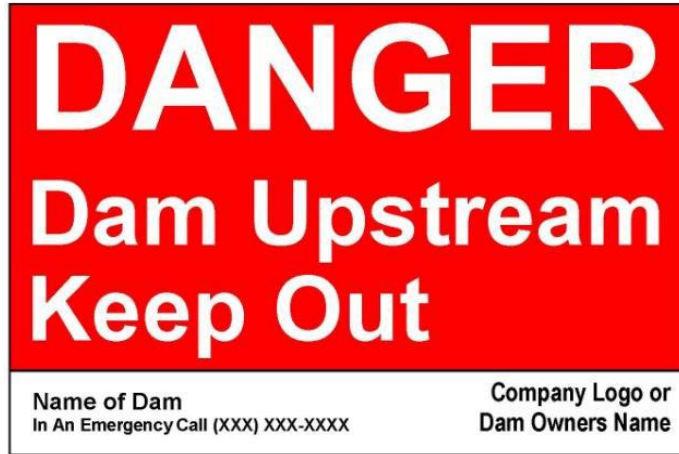
Upstream - Headwater Signage Examples



Canada Dam Association

Guidelines for Public Safety Around Dams

Downstream - Tailwater Signage Examples

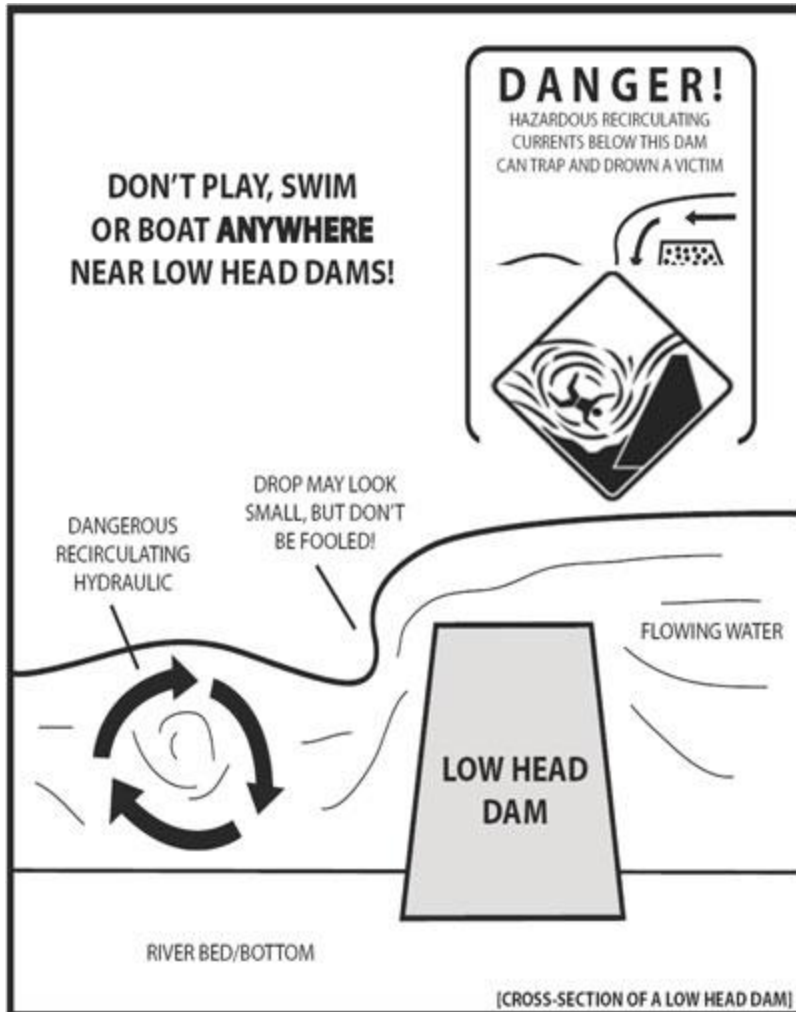


Low Head Dam

Calgary, Alberta, Canada



Ontario Power Generation Water Safety



DANGER

No Trespassing

Access To Riverbed Is Prohibited

Access Beyond This Point May Result In Drowning

Trespassers Will Be Prosecuted

ONTARIO POWER GENERATION

The sign is a vertical rectangle with a red top half and a white bottom half. The top half contains the word 'DANGER' in large white letters, followed by 'No Trespassing', 'Access To Riverbed Is Prohibited', and 'Access Beyond This Point May Result In Drowning' in white text. The bottom half features a diamond-shaped warning sign of a person being pulled into a whirlpool, the text 'Trespassers Will Be Prosecuted', and the 'ONTARIO POWER GENERATION' logo.

Potential Vendor Sources

Most “Safety” sign vendors provide OSHA workplace hazard signage,

Example Vendors:

- Compliance Signs (compliancesigns.com)
- Safety Sign (safetysign.com)
- Build A Sign (buildasign.com)
- My Safety Sign (mysafetysign.com)

Worthington Products

<http://www.tuffboom.com/prod-tuffbuoy.aspx>

WORTHINGTON PRODUCTS

TUFFBOUY REGULATORY SPAR BUOY 9" & 13" Diameters



Features (At-A-Glance)

1. Seamless one-piece ultra-strong high-density polyethylene plastic with UV stabilizers. No ABS, No CAPS.
2. Completely foam filled with urethane foam meeting or exceeding U.S. Coast Guard requirements.
3. Standard STAINLESS STEEL mooring eye recessed with access channels for easy connection. Units stand flat for easy storage.
4. Internal concrete counterweight.
5. Graphics are solid vinyl with a 5-year factory warranty not to fade. No Silk-screening.
6. 3" reflective band your choice of silver or orange.
7. Standard symbols and messages.

Options

USCG retroreflective tape
Owner or agency identification graphics
Heavier wall thickness
Alternate colors
Pickup eyes
Hardware for mounting lights

Specifications

Part Number	RB-961W	RB-1362W
Diameter	9"	13"
Length	61"	62"
Exposure	36"	38"
Submerged Buoyancy	84 lbs	180 lbs
Net Weight	49 lbs	110 lbs
Shipping Weight	56 lbs	116 lbs

See Reverse Side for Signage Options

GSA Contract Holder

www.tuffboom.com

Inland Waterway Symbols & Messages



CONTROLLED AREA SYMBOL



2" Band Width

STANDARD MESSAGES

SLOW 5 MPH
SLOW NO WAKE
SKI AREA
NO SKI
SLOW 10 MPH
SPEED ZONE
NO WAKE IDLE SPEED

12" DIAMETER

HAZARD WARNING SYMBOL



2" Band Width

STANDARD MESSAGES

ROCK
DANGER
RAPIDS
SHOAL
STUMP
SHALLOW AREA
HAZARD AREA
DANGER DAM
11" WIDE X 14" HIGH

RESTRICTED AREA SYMBOL



2" Band Width

STANDARD MESSAGES

SWIM AREA
KEEP OUT
NO BOATS
BOATS KEEP OUT
CLOSED AREA
NO BOATING
DANGER DAM

11" WIDE X 14" HIGH

www.tuffboom.com

GSA Contract Holder

Worthington Products Inc.
3405 Kuerner Ave NE
Canton, OH 44705
Tel: (800) 899-2977
Fax: (330) 452-7495

Last Revision Date: 02/25/2011

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3405 Kuerner Ave NE
Canton, OH 44705
TOLL FREE: 1-800-899-2977

Rolyan Buoys

<http://www.rolyanbuoys.com/index.htm>

Regulatory Buoys: Approved and universally used by local, state and federal agencies to ensure water safety. Ideal for private applications.

Model B1147R (9" diameter x 61" height)

Includes choice of standard symbols and messages

Features

- Easy reconditioning of weather-worn buoys with excellent adhesion of restoration materials.
- 9" diameter, white, seamless, tough ABS plastic exterior. Will not rust, chip or peel. Ultraviolet inhibited.
- Completely urethane foam filled. Virtually unsinkable
- 3" wide silver reflective band at the top provides excellent night time visibility
- Self-righting without tackle
- Recessed cap allows buoy to stand upright
- Heavy steel galvanized anchoring eye cast in an internal concrete ballast.
- Symbols and messages impregnated into buoy surface

