

## s e c t i o n g

## NATIONAL SIGNIFICANCE

## 1. National Significance

An examination of resources for their national significance is the first step in the study process. The *Criteria for Parklands*, a National Park Service publication, lists the qualifications used for screening proposals for new park units to assure that only the most outstanding resources are added to the National Park System.

NPS applies ten specific standards to determine national significance. The Ice Age Floods study region meets four of these standards:

1. The Floods features are *an outstanding example of a particular type of resource*. Identified sites within the Ice Age Floods study area possess extraordinary features that exemplify catastrophic floods of the Ice Age.
2. The Floods region *possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage*. Existing Floods resources offer an outstanding opportunity to illustrate

and interpret an extraordinary natural phenomenon.

3. The region *offers superlative opportunities for recreation, public use and enjoyment, and/or scientific study*. The proposed Ice Age Floods region ties recreational and visitor use into a comprehensive and coordinated interpretive program across a four-state area. It also provides additional opportunities for scientific study by identifying significant Floods resource areas.
4. Many features in the Floods region *retain a high degree of integrity as true, accurate, and relatively unspoiled*

## s u m m a r y

The Floods region is reviewed to determine if it meets NPS requirements for “national significance,” and if the resources within the area are threatened in any way. Level of National Significance is established in part by examining NPS “service themes,” which look at both natural and historic themes. Based upon these criteria, the Floods region exceeds the basic requirements for consideration.



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Awesome signs of its passage  
are still visible to this day.

*Smithsonian Magazine, The Floods that  
Carved the West, April 1995.*

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NPS Photo

*The floods carved out more than 50 cubic miles of  
earth from western Montana to the Pacific Ocean.*

*examples of the resource.* Because of the immense size and extent of the Floods region, many features remain that have high degrees of integrity and are relatively unspoiled.

The *Criteria for Parklands* also includes examples of the types of characteristics that would help define an area or region as being truly unique and worthy of consideration. Four resource evaluations examples listed apply directly to the Ice Age Floods region:

- A landform or biotic area that has always been *extremely uncommon* in the region or the nation.
- A site that possesses *exceptional diversity* or ecological components (species, communities, or habitats) or *geological features* (landforms, observable manifestations of geological processes).
- An area that has outstanding scenic qualities such as *dramatic topographic features, unusual contrasts in landforms*

*and vegetation, spectacular vistas, or other special landscape features.*

- A site that is an invaluable ecological or *geological benchmark* due to an extensive and long-term record of research and scientific discovery.

There are seven National Natural Landmarks (NNLs) located within the Ice Age Floods region. A National Natural Landmark is a nationally significant area that has been designated by the Secretary of the Interior. To be nationally significant, a site must be one of the best examples of a type of biotic community or geologic feature in its physiographic province. The Floods-related NNLs are:

- Wallula Gap, Washington—Glacial outburst waters that crossed the Channeled Scablands during the Spokane floods were channeled through Wallula Gap. For several weeks, as much as 200 cubic miles of water per day was delivered to a gap

that could discharge less than 50 cubic miles per day. Pondered water filled the Pasco Basin and Yakima and Touchet valleys to form temporary Lake Lewis.

- The Great Gravel Bar of Moses Coulee, Washington—This bar is perhaps the largest example of bars created by outburst floods on the Channeled Scabland. The bars are well-preserved and have only sparse vegetation.
- Drumheller Channels, Washington—The site is a spectacular tract of butte-and-basin scabland and provides excellent geomorphic evidence for late Pleistocene catastrophic floods on the Columbia Plateau.
- Grand Coulee, Washington—Grand Coulee is the largest coulee in the Columbia Plateau and is probably the world's finest example of a recessional cataract gorge.
- Crown Point, Oregon—The Crown Point section of the Columbia Gorge

illustrates more gradual stream valley formation as downcutting kept pace with the rise of the Cascade Range. The Columbia River Gorge at Crown Point passes from the steeper, more rugged terrain of the western slopes of the Cascade Range to rolling cultivated plains. The promontory provides a strategic vantage point for observing this classic illustration of riverine process.

- Willamette Flood Plain, Oregon—The site represents the largest remaining native and unplowed example of bottomland interior valley grasslands in the North Pacific Border natural region.
- Giant Flood Ripples, Montana—During its maximum stages, Glacial Lake Missoula had a surface area of 2,900 square miles and contained more than 500 cubic miles of water. With the failure of the ice dam near Cabinet Gorge, the lake drained in just a few days, releasing catastrophic floods of enormous magnitude across

the Columbia Plateau. This catastrophic flood withdrawal was recognized by J. T. Pardee. He described various types of evidence such as scouring, high eddy deposits of flood debris, flood bars of boulders and coarse gravel, and a succession of giant arcuate ripples or ridges of gravel resting on bedrock surfaces.

The finest examples of these giant flood ripples are found 12 miles north of Perma, Montana. The giant ripples appear as ridges 15 to 50 feet high, 100 to 250 feet wide and from 100 yards to a half mile long. They generally traverse the direction of the current. The form, structure, and arrangement of these features are similar to those of ordinary current ripple marks, but the features are so large that the term “ripple mark” seems inappropriate. It is believed that the giant ripple marks could only have been formed by water at least 800 feet deep, moving over Markle Pass at velocities up to 55 miles per hour.



F l o o d s

***Highest Velocity of the Flood Waters***

Along the entire flood route between Glacial Lake Missoula and the Pacific Ocean, the great floods spread out over wide areas and then funneled through constrictions. The narrowest constriction of all was near Crown Point in the Columbia River Gorge, where all 500 cubic miles of water were forced between tall cliffs only 1.5 miles apart. Like a jet of water exiting a nozzle, the flow accelerated from the narrow opening, probably reaching speeds of 80 miles an hour before slowing and spreading out over the Portland Basin.

F a c t s

The national significance of these seven NNLs has already been established, and with the addition of a multitude of other Floods-related resources, combine to make the Ice Age Floods region a spectacular assemblage of Floods resources that exceed the requirements for recognition of a nationally significant resource.

***Conclusion***

Based upon the requirements established in the NPS *Criteria for Parklands*, the Ice Age Floods region exceeds the basic requirements for consideration under the criteria for national significance. These Floods are the greatest scientifically documented floods known to have occurred in North America and are one of three documented geologic areas in the world that experienced catastrophic Ice Age floods of a similar magnitude. In addition, NASA intensely studied the Channeled Scablands for comparisons to similar catastrophic flooding that scientists believe occurred on the planet Mars.



NPS Photo

*Palouse Falls State Park, Washington*



NPS Photo

*Moses Coulee gravel bar, Douglas County, Washington*

## 2. Integrity

The term “integrity” has two definitions, both of which are closely related. The first refers to a state or quality of being complete, and the second addresses the quality of being unimpaired or unmarred. One interesting feature of the Ice Age Floods resources is the fact that many Flood resources are still visible and have not been damaged by human development or natural processes over more than 13,000 years. The existing Floods resources captured the interest of Pardee and Bretz, who were able to develop their theories from the things that they could see. The huge scale of the Ice Age Floods region helps in preserving the integrity of the resource; most changes seem minor when considering the enormity of the region and the sheer size of individual features. The immensity of the ripple marks in Camas Prairie, Montana, the width of Dry Falls, and depth of the plunge pools, and 800-foot flood strandlines that are still visible all contribute to exceptional integrity of the Ice Age Floods resources. A number of Floods resources are virtually untouched, and many are so resistant to change that even large-scale mining operations have not had much impact.

The fact that several Floods features are within protective management on public lands helps ensure the integrity of the resources. Some private landowners also protect Flood features on their property through voluntary stewardship. Some of these features are designated as National Natural Landmark sites.

Driving through the landscape, a motorist familiar with the story of the Floods and with a knowledge of specific types of

Floods features can't help but notice the evidence left behind. This evidence is much the same as it was when Bretz and Pardee made their discoveries.

### **Conclusion**

The Ice Age Floods resources, the majority of which have been largely unchanged for thousands of years, possess a very high degree of “integrity” and meet the requirements of PL 105-391.