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Agriculture

Forest Service

Region 1

Gallatin
National Forest

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Earthquake Lake Geologic Area Interpretive Plan



SHATTERING QUAKE LEAVES UP TO 16 PERSONS DEAD

**Mountainside Topples
Into River Below
Dam; Roads Blockaded**

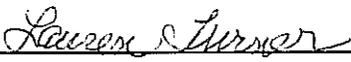
By L. S. ...
A massive landslide of mountainside rocks and debris tumbled into the river below the dam, blocking the road and cutting off the area. The quake was felt for miles and a number of persons were killed. The road was closed for several days.



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10/09/2009
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Earthquake Lake Geologic Area Interpretive Plan

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EXECUTIVE SUMMARY

The primary purpose and need for the Earthquake Lake Geologic Interpretive Plan is to provide direction for the rehabilitation of the wayside panels in the Madison River Canyon that are an integral part of the story interpreted at the Earthquake Lake Visitor Center. Restoration of old and development of new interpretive media will be used to enhance the Earthquake Lake Visitor Center experience and further visitor's understanding of the natural forces at work in the Earthquake Lake Geologic Area.

The Hebgen Ranger District identified eight management and visitor goals for Earthquake Lake Geological Area interpretation:

- **GOAL 1:** Increase visitation at wayfinding and visitor center sites by drawing in more of the existing visitor base traveling through the corridor. Increase understanding, and retention of stories at both the Visitor Center and along the Madison River Corridor for both existing and potential user groups.
- **GOAL 2:** Foster an understanding of, and appreciation for the fact that the Earthquake Lake Geologic Area is remarkable in its geology and recent (in geologic time) landslide activity.
- **GOAL 3:** Maintain the memory of the 28 victims and the survivors of the earthquake and landslide of 1959. Create an opportunity for emotional connection with their story.
- **GOAL 4:** Generate an understanding that all landscapes are dynamic
- **GOAL 5:** Provide ways and means for visitors to get information, orientation, and interpretation when the Visitor Center is closed.
- **GOAL 6:** Present interpretation in a variety of learning modes.
- **GOAL 7:** Create a sense of the shock, fear, and personal loss that earthquakes can cause. Inspire a sense of reverence for lives lost and those that survive.
- **GOAL 8:** Create a sense of awe at the power of earthquakes and other natural processes in the area including the Yellowstone caldera. Spark visitors' curiosity and desire to learn more.

The following are included in this Interpretive Plan:

1. Interpretive themes and storylines
2. Recommendations for waysides to retain, eliminate, redesign, or develop throughout the Earthquake Lake area and Madison River Canyon
3. Other interpretive media that will assist in meeting management goals and visitor expectations
4. Improvements to the Earthquake Lake Visitor Center exterior
5. Other site designs/improvements (such as trails or picnic areas associated with interpretive sites)
6. Design guidelines and material recommendations
7. Prioritization criteria
8. Cost estimates

The Earthquake Lake Geologic Area Interpretive Plan was developed through a team effort involving Hebgen Ranger District Staff, the Gallatin NF Landscape Architect/Developed Recreation Program Manager, and interpretive planners from the Forest Service's Center for Design and Interpretation. The Hebgen Ranger District is responsible for implementing this plan, with oversight and support from forest staff.

SECTION 1: PURPOSE AND NEED

Since the earthquake and slide of August 17, 1959, numerous interpretive signs and exhibits have been installed along the Madison River corridor, Highway 287. Many of these are now in need of repair and/or replacement. Others have been supplemented with non-earthquake related information, or their storylines are no longer relevant. Fifty years later, there is now also a need to review and reconsider agency management goals and determine visitor expectations for the corridor to ensure that we are meeting these expectations both in a cost-effective and high-quality manner.

The primary purpose and need for the Earthquake Lake Geologic Interpretive Plan is to provide direction for the rehabilitation of the wayside panels in the Madison River Canyon that are an integral part of the story interpreted at the Earthquake Lake Visitor Center. Restoration of old and development of new interpretive media will be used to enhance the Earthquake Lake Visitor Center experience and further visitor's understanding of the natural forces at work in the Earthquake Lake Geologic Area.

The corridor is currently lacking a cohesive unique identity. Existing styles of signs vary in color, material, size and placement, and style. On either end of the byway, there are standard *Welcome to Your National Forest* signs; however these do not create a sense of entry to the corridor nor do they provide a taste of corridor's story. The current look of the byway may partially be due to efforts to stretch limited budgets including ongoing deferred maintenance, use of short-term fixes, use of less expensive, less durable, less aesthetic materials and inconsistency in application of materials. As stated in the Built Environment Image Guide (BEIG), these practices tend to erode the agency's identity. This further reduces a *sense of place* within the corridor.

This Interpretive Plan identifies:

- Interpretive themes and storylines
- Interpretive waysides to retain, eliminate, redesign, or develop
- Other interpretive media that will assist in meeting management goals and visitor expectations
- Improvements to the Visitor Center exterior
- Other site designs/improvements (such as trails or picnic areas associated with interpretive sites)
- Design guidelines

SECTION 2: AUDIENCE ANALYSIS

Montana Department of Transportation Vehicle Counter

Montana Department of Transportation has a vehicle counter (A-019) at US 191 and US 287, 7.7 miles north of West Yellowstone. Average annual daily traffic (AADT) counts here indicate the majority of traffic occurs during the months of May through September.

The Institute of Tourism and Recreation Research

As part of the state of Montana's commerce and tourism efforts, geographic regions were created. The Institute of Tourism and Recreation Research (ITRR), out of the University of Montana, collects and analyses tourism data (www.itrr.umt.edu). Data was collected either by region, county, or statewide to get a better idea of who is coming to Montana.

The Earthquake Lake Geologic Area is located in both the Gold West Country region on the edge of Yellowstone Country region, as well as in both Madison and Gallatin Counties.

Montana Travel Regions



1. Gold West Country

According to ITRR, in 2005 and 2007 there were approximately 1.5 million out of state visitors to the Gold West Country region. They came primarily from Washington State (17%), Idaho (9%), California (7%), and Alberta, Canada (6%). Most travelers had an average income of \$40,000 - \$79,000. The average age of the traveler was 53 years, with 41% of travelers between the ages of 55-64. Survey numbers indicate that families were another top visitor. Most travelers come for the purpose of a vacation. The vast majority (85%) are repeat visitors. Over half (52%) listed driving for pleasure as one of their primary activities, 29% visited historical sites, and 21% visited museums. The typical visitor spent 5-6 nights in Montana, 59% in Gold West Country, and 11% in Yellowstone Country.

2. Yellowstone Country

Statistics for the Yellowstone Country region, which includes the town of West Yellowstone, were similar to the Gold Country Region. In 2007, it was estimated that approximately 2.7 million non-resident individuals visited the region. They matched the

Gold Country region on trip purpose, average income; place where traveler is from (minus Idaho), length of stay, and slightly less (77%) were repeat visitors. Over half (66%) were attracted to Yellowstone NP and 21% were attracted to the mountains and forests. Half of the respondents used the internet for trip planning. Information from automobile clubs, such as (AAA) was also widely used.

2001 Surveys for Yellowstone National Park found that 60% of the respondents stayed overnight in Yellowstone Country and 13% stayed in Gold West County. Respondents felt the amount of open space and camping availability were in a worse condition in the park. Within the Earthquake Lake Geologic Area there are 2 campgrounds: Beaver Creek Campground (64 units), and Cabin Creek Campground (15 units).

Resident surveys were not available specific to this geographic region. Of residents surveyed, over half of the trips residents took were somewhere in Montana. The greatest percentage (39%) went somewhere to visit relatives or friends, with the next most popular trip purpose being outdoor recreation. Resident travelers participated in watching wildlife (28%), fishing (17%), and nature photography (14%). Most (80%) drove their own vehicle to a destination.

Earthquake Lake Geologic Area Visitor Center

The Visitor Center reported 26,154 visitors in 2008. The number of reported visitors to the center has varied little since 2004. The season of operation for the visitor center is Memorial Day (May) through Labor Day (September).

The visitor center is estimated to reach less than 30% of the traffic that is already in the corridor.

During the summer of 2009, car counters at the Visitor Center have shown an average of 420 cars a day (average of 2.4 in vehicle, equates to approximately 1,008 people a day in parking lot). Sales of the fee pass for the Visitor Center show 300 individuals a day purchase the tag for their vehicle. Staff estimates that approximately one third of the visitors that drive into the parking lot do not come into the Visitor Center. They may just be using restroom facilities, coming after hours, or stopping for photos. Additional surveys will need to be conducted to more accurately answer these questions.

This is one of the few places where, with very little time or effort, people can see what happens when an earthquake takes place. It is very easy to get to sites along or just off the route to see this natural process.

Other Observations

The Hwy 287 corridor has a ready-made audience. West Yellowstone, a major portal to Yellowstone National Park (YNP), is less than 30 miles from the Visitor Center with stories and interpretive stops along the corridor located even closer. Including travel through YNP, highway 287 provides one of only 4 ways to get to West Yellowstone.

The interpretive sites along this corridor have to compete with many other resources such as residences and businesses to get visitors attention. This is especially true on the eastern edge of the corridor.

Over half of the travelers (54%) visited Montana in the summer season, May through September.

The top two most useful on-trip sources of information were service personnel (28%) and (27%) visitor centers. A 2007 survey found that found nearly half of respondent's utilized information given from business front line employees.

Looking at the ITRR statistics, around 2 million individuals are in the vicinity annually to vacation. Consider the highway department vehicle counts of approximately 500,000/year going through the Earthquake Lake Geologic Area, multiply by 2.4 people average in a party (this number would not account for bus tours figures), and there is well over a million people already in the area in a year.

2.A: Implications

(Note: the ITRR survey only included non-resident visitors. The Gallatin National Forest has an audience already living within the Earthquake Lake Geologic Area that is yet to be courted.)

People surveyed are generally on vacation in the area for 5-6 days, have an interest in the natural resources of the area and some money to spend. While a destination for most visitors is Yellowstone National Park (YNP), many enjoy driving for pleasure, visiting mountains and visiting historical sites. These are all amenities that the Earthquake Lake Geologic Area offers. As a unique resource only 30 minutes from a main entrance to the YNP (West Yellowstone), the "Quake Lake" area shares a major theme with the park and is a great added side trip.

Additionally, the survey helps show some of the better methods to get your message out to potential visitors. Half of the respondents used the internet for trip planning, which means there should be significant attention given to providing more and better information and interpretation here, kept fresh and current.

Over 80% of respondents are repeat visitors. This crowd is the "word of mouth" visitor who will share their experiences of your site, positive and not so positive, with others. If you provide the opportunity for a great experience they can be your best and cheapest advertisement.

During a trip, visitors rely on service personnel at business and visitor centers. It would be beneficial to get the correct information about your resource to these points of contact. Since personnel undoubtedly changes, exchange of this information would need to occur on a regular basis.

A strong and consistent identity in the design of these sites, structures, and messages will help to hold the visitors attention and limit distractions from existing residential and business development.

SECTION 3: EXISTING POLICY AND DIRECTION

3.A: Gallatin Forest Plan

Forest-wide Goals:

- Provide directional and interpretive signing for visitor information, as appropriate for the recreation setting (p. II-1)

Forest-wide Objectives:

- Recreation opportunity guides, in the form of booklets, displays, signs, or handouts, will be compiled for the Forest and made available to the public (II-3)
- Signing will be provided to aid in visitor information and national interpretation as appropriate for each recreation setting (II-3)

Forest Wide Standards:

- Interpret the 1959 earthquake, related events, and National Forest resource management for visitors through operation of the Quake Lake Visitor Information Center (II-16)

Earthquake Area Direction

1. Allow natural process to continue
2. Encourage multiple use of the area, consistent with #1
3. Interpret the 1959 earthquake, related events, and the national forest resource management for visitors through the operations of the visitor center.

Forest Plan Management Area – Management Area 1

Management Area 1 includes developed campgrounds, picnic areas, boat ramps, and visitor information sites plus potential developed sites. Manage to:

1. Maintain sites and facilities for the safety and enjoyment of users.
2. Provide additional facilities where analysis shows the need.

Forest Plan Management Area – Management Area 5

Management Area 2 includes travel corridors that receive heavy recreation use. These areas include highways 191 and 287 in the West Yellowstone vicinity.

- a) Maintain and improve the wildlife habitat values and natural attractiveness of these areas to provide opportunities for public enjoyment and safety. (Wildlife goals include nesting and feeding spots for eagle and osprey, and manage developed site use to minimize grizzly bear and human interactions)
- b) Allow a level of timber harvest consistent with goal 1. (VQO – retention or partial retention)

3.B: Regional Niche Statements

The Regional Niche touches on the Greater Yellowstone Area. Here, the earth's temperature nears the surface creating unique geothermal features such as geysers, mud pots, and hot springs. Major rivers with outstanding fisheries and intact habitats supporting ample populations of wildlife contribute to the uniqueness of Yellowstone country. The area's rich history of past lifestyles includes Native Americans, mining and ranching. Year-round recreation opportunities that accommodate extreme sports and younger visitors while complementing National Park offerings are a focus.

3.C: Gallatin NF Recreation Facility Master Plan, 2007

Direction for Earthquake Lake Geologic Area Visitor Center is to initiate action to examine viability, determine options, and investigate feasibility of alternative ways to manage and operate the Visitor Center to reduce costs to the Forest Service and to improve and enhance services and educational opportunities for the public. In conjunction, staff should investigate tradeoffs between eliminating the fee and revenue (approximately \$12,500 per year) which mostly likely would encourage higher visitation, allow Visitor Center staff to offer more interpretive activities and may encourage more book sales, associated revenue and donations.

Gallatin NF Niche Statement

“River corridors and high mountain trails are the essence of the Gallatin National Forest. During any season, visitors and residents can enjoy world-class outdoor recreation opportunities. The Forest and its waterways: the Madison, Hyalite, Yellowstone, Shields, Gallatin, and Boulder Rivers sustain the lifestyle for nearby communities, while the spectacular peaks of the Absaroka, Beartooth, Bridger, Crazy, Gallatin and Madison Ranges are their backdrop.”

3.D: Gallatin NF I&CE Draft Plan, 2009

This Plan describes priority issues/subordinate issues for the forest. Among the issues listed is the need to develop an appreciation for our shared heritage (e.g. Upper Madison Prehistory, OTO Ranch, Quake Lake Anniversaries, and Horse Butte). The I&CE Plan then identified desired outputs, outcomes, and impacts associated with that issue as follows:

Outputs:

- Commemorate significant events (e.g. the 50th Anniversary of the 1959 Hebgen Lake Earthquake)
- Maintain and enhance partnerships, Travel Montana, Yellowstone Association, WY Chamber of Commerce, YNP, Montana Tech

Outcomes:

- Increased visitation
- Enhanced appreciation for heritage resources
- Participation in volunteer activities
- Participation in guided walks

Impacts:

- Less vandalism at heritage sites
- Increased funding via public donations
- Increased appreciation for the effects of earthquakes and landslides

3.E: Earthquake Lake Visitor Center Prospectus, 1990

This prospectus advertised for bids for the 1990 renovation of the Visitor Center exhibits and outside signs in the parking area. Goals and objectives as well as storylines were included in this prospectus but not themes. Applicable goals from this Prospectus include the following:

Program Goals:

- Goal 2: Increase visitation through marketing
- Goal 4: Provide an introduction to the area to after hours visitors

Interpretive Goals:

- Goal 1: Provide the visitor an orientation to the Greater Yellowstone Area (GYA) in terms of recreation, places to go, and things to do
- Goal 2: Update the geologic story

Outside Information:

Outside information needs to include space for Visitor Center name, hours of operations, contact information, and current map of the area. No specific storylines or themes were recommended for outside the Visitor Center although there was a general mention of the opportunity to provide interpretive messaging on the large outdoor patio could supplement Visitor Center interior messages. The concept of a relief model of the area was suggested as a learning tool and to direct visitor traffic.

3.F: Implications

In general, updating and expanding interpretation in along the Madison River corridor is consistent with, and supported by existing forest and regional policy and direction. Specific implications include the following:

1. While there are references for interpretation of “National Forest resource management,” they should not necessarily be construed to mean that multiple-use should be a theme or storyline along the corridor. Connecting visitors to the story of the land, the forces beneath, and the human interactions with the landscape is also national forest resource management.
2. Forest and Regional niche statements acknowledge the importance of the underlying geothermal energy of the GYA. This Interpretive Plan will ensure that this fact is emphasized in themes and storylines.
3. There is also recognition of the importance of river corridors (such as the Madison) to the economies of local communities. Therefore, marketing of the Madison River Canyon corridor should be developed in partnership with local Chambers of Commerce, tourism agencies, and regional development councils to ensure that mutual goals and benefits can be realized.
4. The need for after-hours information and orientation is highlighted in existing direction. Adequate structures and media will be described in this plan to address this need. According to the chamber of commerce staff, providing brochures along the corridor, not just at the main portals, would be beneficial to visitors.
5. Several references note the desire to increase visitation and generate more revenue. Improved and expanded interpretive media, along with increased marketing, will certainly help increase visitation. However, this direction also points to the need for the development of a Business and Marketing Plan for the Visitor Center and corridor, which is outside the scope of this Interpretive Plan.

SECTION 4: INTERPRETIVE GOALS AND OBJECTIVES

4.A: Management Goals and Objectives

Interpretation is:

- ✓ A teaching technique where the focus is on understanding and appreciation, although there is often an element of entertainment. The audience spans all ages, and the programs are usually conducted on-site. Waysides and interpretation is conducted where the story takes place and its aim is leave a lasting impression on either an intellectual or emotional level. Interpretation may also be designed to make behavioral changes in the audience, i.e. more people are picking up litter as a result of attending interpretive program.
- ✓ A management tool that can be used to increase visitors' appreciation for, and sensitivity to, the natural and cultural resources of the area. (*Forest Service Manual 2390*)

Managers can describe what they hope to achieve through interpretation by articulating goals and objectives. For the Madison River Canyon Earthquake Area, these interpretive management goals and objectives are:

GOAL 1: Increase visitation at wayfinding and visitor center sites by drawing in more of the existing visitor base traveling through the corridor. Increase understanding, and retention of stories at both the Visitor Center and along the Madison River Corridor for both existing and potential user groups (include commercial tours, school groups, and private individuals and groups). Engage the public personally and provide stories and setting that help to emotionally tie them to what happened here.

Objective 1.a: Tie into local community tourism in a manner that encourages longer stays in the area.

Objective 1.b: Market to user groups that are already coming to Yellowstone National Park, to provide a value-added national park experience.

GOAL 2: Foster an understanding of, and appreciation for the fact that the Earthquake Lake Geologic Area is remarkable in its geology and recent (in geologic time) landslide activity.

Objective 2.a: Develop an appreciation among users (both on and off-site) that the Earthquake Lake Geologic Area is part of the larger seismic story that encompasses all of the parks and forests in the Greater Yellowstone Area.

Objective 2.b: Develop a sense of humility among visitors, that as a species, we are dwarfed by natural forces almost too large to comprehend

GOAL 3: Maintain the memory of the 28 victims and the survivors of the earthquake and landslide of 1959. Create an opportunity for emotional connection with their story.

Objective 3.a: Provide an opportunity for families and friends of the deceased to remember them in a quiet and reverent setting.

Objective 3.b: Share the victims' stories in a manner that is respectful and enlightening.

GOAL 4: Generate an understanding that all landscapes are dynamic.

Objective 4.a: Create an intellectual bridge between the geologic events of 8/17/59 and other on-going changes in our environment.

4.B: Visitor Experience Goals

Visitor experience goals describe the needs and expectations of Earthquake Area visitors that the Forest Service intends to meet or exceed. (Visitor goals are numbered sequentially with the management goals shown above.)

Within the Earthquake Lake Geologic Area, the Gallatin NF will:

GOAL 5: Provide ways and means for visitors to get information, orientation, and interpretation when the Visitor Center is closed.

GOAL 6: Present interpretation in a variety of learning modes (e.g. visual, auditory, kinesthetic).

GOAL 7: Create a sense of the shock, fear, and personal loss that earthquakes can cause. Inspire a sense of reverence for lives lost and those that survive.

GOAL 8: Create a sense of awe at the power of earthquakes and other natural processes in the area including the Yellowstone caldera. Spark visitors' curiosity and desire to learn more.

SECTION 5: THEMES AND STORYLINES

5.A: *Statements of Significance*

1. The Earthquake Area is a part of a larger geologic story, and can be understood in the larger context of GYA and Yellowstone seismicity.
2. The 1959 Earthquake event was geology in action – the landslide, scarps, and associated damage the signs of which are easily viewed, accessed, interpreted, and experienced.
3. The Earthquake Area has the ability to generate an almost overwhelming emotional reaction when you begin to feel the fragility of human life and the enormity of the on-going natural forces underneath the earth's surface. It has a significant WOW factor.
4. There are numerous compelling human stories of not only loss and suffering, but also of the strength of character that came forth during the emergency.
5. The corridor is a beautiful drive, with a diversity of year-round recreation activities (fishing, hiking, snowmobiling, snowshoeing, camping and lodging, boating, hunting, bicycling, wildlife viewing, and other)
6. Visitors can see a landscape in recovery – scarps are revegetating, trees are growing, relatively new aquatic habitats have modified wildlife and fish species composition.
7. This 7.5 magnitude earthquake was one of the most “costly” of its day. It was felt in 8 states; claimed the lives of 28 individuals and injured many more; and damaged roads, the Hebgen dam, houses, and other structures.
8. The Earthquake Lake Geologic Area is easy to access. The dramatic event/story of 1959 can virtually be seen from a car.

5.B: *Primary Theme*

All interpretation in the Madison River Canyon corridor and at the Earthquake Lake Visitor Center should incorporate or tier to this theme.

What lies beneath the Greater Yellowstone Area is constantly morphing - an agent of both curiosities and catastrophes. Within the Earthquake Lake Geologic Area, you can see the resiliency of life and land to the turbulence below.

5.C: *Subthemes and Storyline*

Subtheme 1: There is tumult and heat beneath our feet.

Storylines:

- a) Geysers need earthquakes.
- b) The underlying caldera is shifting and restless.
- c) Yellowstone is the most earthquake prone area within the continental U.S. There are lots of small quakes happening on a regular basis that are rarely felt by humans.
- d) There are long periods of no apparent activity.
- e) Landslides and scarps happen from movement along fault lines.

Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories

Storylines:

- a) The human loss and suffering are memorialized along the Madison River Canyon Corridor.
- b) The event highlighted the strength of character and the resiliency of the human spirit.
- c) Today, we fish, camp, and hike in an area of tranquility, largely unaware of our juxtaposition to the violence beneath our feet.
- d) Ghost Village is a reminder of how lives and businesses were tossed around by the after-effects of the earthquake.
- e) Rock Creek Campground and its horrific memories are now submerged.
- f) The earthquake could be felt in 8 states, making it a significant geologic event.
- g) Spillway constructed was an emergency effort to reduce potential for this new lake and its potential failure and to prevent future (potential) flooding. There was need for an outlet for Earthquake Lake in order to avoid another catastrophic breach if land failed to hold new lake.

Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon.

Storylines:

- a) Lands were lost and lands were created. In places, the highway fell into the lake. Elsewhere, the lake submerged the highway.
- b) Habitats were lost and habitats were created. Alluvial fans are being created downstream.
 - 1. There is now more lake habitat and less stream habitat. Seven miles of river are now lake. There is more chub as a lake species, and more prey fish. The insect food base has changed so they have a change in life cycles and may spawn differently.
 - 2. Because there is now more rock habitat, there are more pika.
 - 3. The increase in lake surface area has attracted more birds of prey, such as cormorants.
- c) "Recovery" is defined by humans and attached to natural processes. The land is dynamic – we decide if it is good or bad; beneficial or not; beautiful or ugly.
- d) The power of the seiche waves and wind were as destructive as the falling of the mountain.
- e) The magnitude of the slide material was phenomenal. Enough debris was moved in the slide to build a 2-lane highway, 3 feet deep from site of slide to New York City.
- f) At some point in the future, the lake will become a river again.
- g) Trees are beginning to regenerate in the landslide area.

5.D: Other Information and Orientation

Before visitors can begin to enjoy, understand, and appreciate the stories of the Madison River Canyon, they must first have their basic needs met for comfort, safety, trip planning, and orientation. It is vital that clear, concise, and accurate information and orientation be provided at:

- a) East and West portal signs
- b) Exterior signs at the Visitor Center
- c) Quake Lake website(s)
- d) Publications
- e) Partner outlets (e.g. Chambers, cooperating agencies, outdoor vendors, and Madison Ranger District (Beaverhead-Deerlodge NF for a Cliff Lake Campground Memorial)
- f) Hebgen Lake Ranger District

5.D.1: Orientation

Orientation should be primarily in map form, to include a vicinity map of the GYA as well as a more detailed map of the Madison River Canyon. Driving times to popular destinations and service areas should be included (e.g. Yellowstone NP, Ennis, and Bozeman airport).

A large-scale detailed map should be developed for the portal kiosks and exterior signs. A smaller, less-detailed map should be available for download from a website and less than 3 MB to allow for easy emailing.

A third potential map would detail the geologic/topographic features of the GYA, showing the relationship of the Earthquake Area to the Yellowstone caldera and other pertinent geologic features.

5.D.2: Information

Information to accompany the map should include:

- a) Recreational opportunities
- b) Applicable regulations (not a full listing; include only those for which managers have a special concern)
- c) Safety tips, along with a disclaimer that visitors should take responsibility for their own safety while visiting the national forest.
- d) Availability of lodging and visitor services (e.g. showers, bathrooms, dump stations, gas)
- e) Earthquake Lake Geologic Area Visitor Center hours of operation
- f) Leave No Trace and Tread Lightly messages
- g) Other places and sources for more information

SECTION 6: CORRIDOR WAYSIDE RECOMMENDATIONS

6.A: Wayside Exhibits

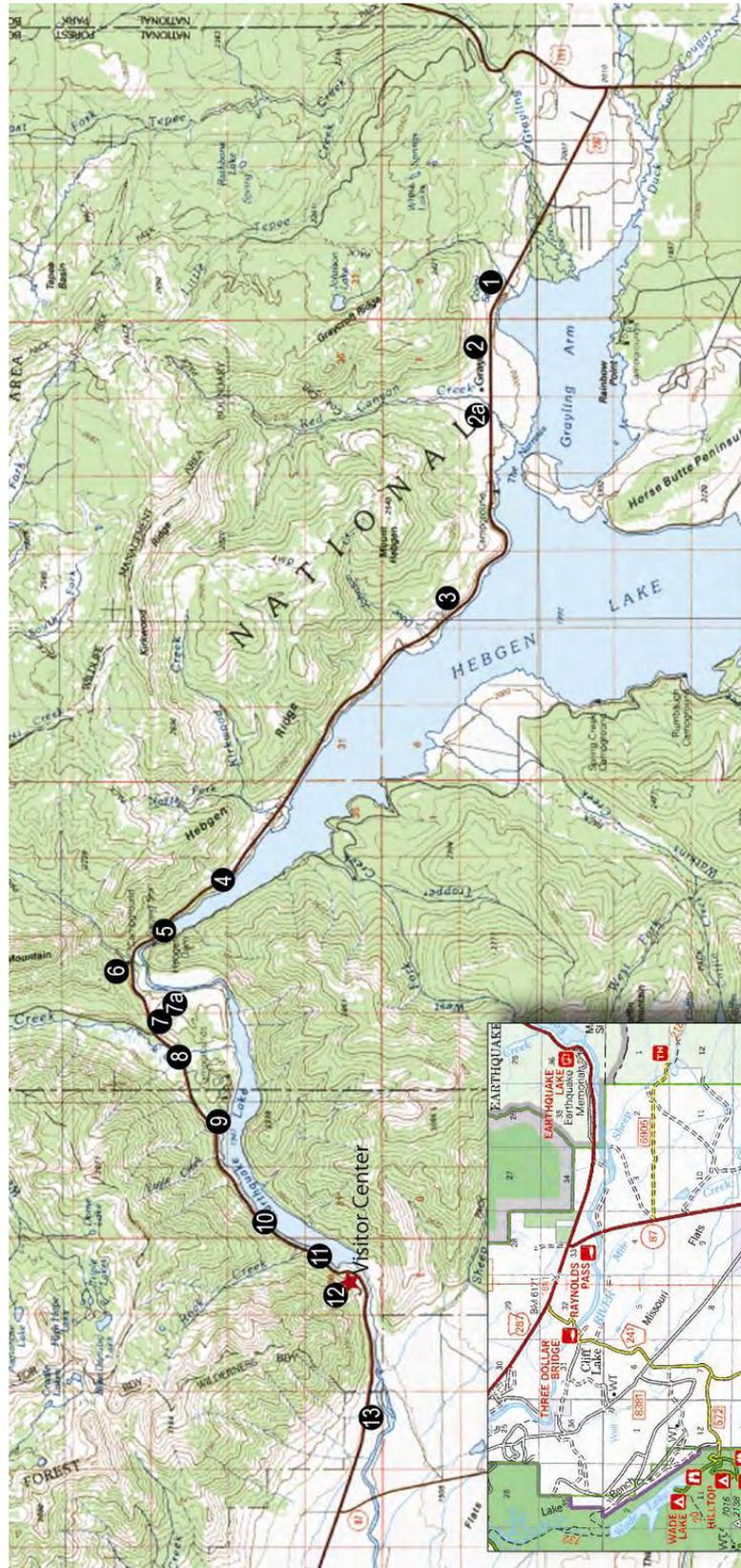
The corridor along Highway 287 is a primary through traffic route and a main Yellowstone National Park entrance via the community of West Yellowstone. No other highway corridors pass/bisect this area. There are locations on either end of the corridor that make good portals entrances that can set the stage for the story of the canyon. These are identified on the map as numbers 1 and 13.

Travel goes in both directions on the predominately two lane Highway 287, with district specialists estimating that approximately 50% travel from the east and the other half from the west. Wayside exhibits along the corridor need to tell relate to the larger themes, but also be able to stand alone as an independent story in the event that a visitor does not make all of the stops.

6.A.1: Current Wayside Inventory and Recommendations

**Figure 1:
Recommendations
Map**

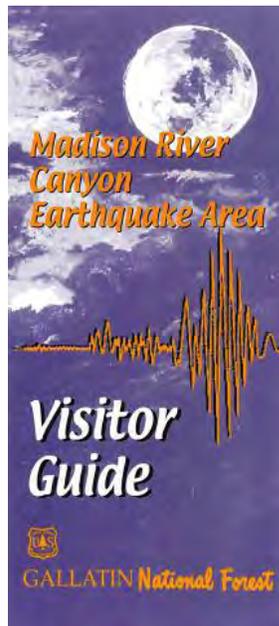
Numbers shown on this map correspond to the recommendations in the following section.



Cliff Point CG on the Beaverhead-Deerlodge was also the site of tragic events on the night of the earthquake. A dislodged boulder killed 2 parents in a tent; their children in a nearby tent survived.

Map #	1 (north side of road)
Site Name	East Portal
Current Condition	<ul style="list-style-type: none"> • Forest Service portal sign (in need of repair or replacement) • Historic sign from the Montana Cultural Trust and the Gallatin County Historical Society (good condition) • Monument contains “Madison River Canyon Earthquake Area Visitor Guide” (brochure holder falling apart) • The site is not shown on the Madison River Canyon Visitor Guide, but the guides are available from a brochure pocket in the monument. • The site is plowed in the winter
Recommendations	<p>Convert this site to the East Portal to create a sense of arrival at a special area</p> <ul style="list-style-type: none"> • Remove monument • Remove historic sign or, incorporate into it or information from it into new kiosk depending on input from partner. • In order to be consistent and to reduce the cumbersome title, this area should be referred to as the “Earthquake Lake Geologic Area.” • Work with MDOT for better signage at intersection of 287 and 191 (i.e. Earthquake Lake Geologic Area turn in X miles) • Install site approach signs and announcing area of interest. • Install a 3-panel portal kiosk with the following themes <p>Panel 1: Size: 48”h X 36”w, vertical Primary theme: What lies beneath the Greater Yellowstone Area is constantly morphing - an agent of both curiosities and catastrophes. Along the Madison River Canyon Corridor, you can see the resiliency of life and land to the turbulence below.</p> <p style="text-align: center;">Subtheme 1: There is tumult and heat beneath our feet.</p> <p style="text-align: center;">Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon.</p> <p style="text-align: center;">Geologic/topographic map of Madison River Canyon and its relationship to the GYA</p> <p>Panel 2: Size: 48”h X 36”w, vertical Orientation map of the area showing visitor activities and services Brochure holder for Visitor Guide</p> <p>Panel 3: Size: 48”h X 36”w, vertical Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories Storyline: c) Today, we fish, camp, and hike in an area of tranquility, largely</p>

unaware of our juxtaposition to the violence beneath our feet.
f) The earthquake could be felt in 8 states, making it a significant geologic event.



Map #	2 (north side of road)
Site Name	Red Canyon (Visitor Guide site #11)
Current Condition	<ul style="list-style-type: none"> • Small pull-out with parking for 2-4 vehicles. • Existing interpretive panel discusses the scarp that was once very visible but is now largely re-vegetated and not visible. • The site is very significant to geologists (Hebgen fault dropped 22 feet here – very rare • Site is plowed in the winter • Sign is approximately 5 years old and starting to fade • Sign base is in relatively good condition • Can see Douglas fir beetle kill easily here
Recommendation	<p>Because the scarp is no longer very visible (nor is any other evidence of the earthquake), this stop is anticlimactic. Recommend eliminating this site.</p> <p>Describe the Hebgen fault in the Visitor Guide and encourage visitors to hike the trail at the end of Red Canyon Rd. for an up-close view of the scarp as a point of interest.</p>



Map #	2a (north side of road)
Site Name	Red Canyon Access Road
Current Condition	<ul style="list-style-type: none"> • There is currently nothing at this site • Road accesses Red Canyon Trail (10 minute drive to trailhead and 20 minute hike to scarp)
Recommendations	Indicate on the road sign that the road leads to the Hebgen scarp. Include information on the Hebgen scarp in the Visitor Guide as a point of interest (see site 2, above.) Add Quake Lake logo to sign.



Map #	3 (south side of road)
Site Name	Hebgen Lake
Current Condition	<ul style="list-style-type: none"> • Large pull-out area • Site is not shown on Madison River Canyon Visitor Guide • Existing brown routed panel shows map of lake • Additional signs tell multiple-use story, but don't coordinate with map panel • Panel base is in relatively good condition, but not consistent with Design Guidelines in this plan.
Recommendations	Remove all signs. Replace rock base with a seat wall.

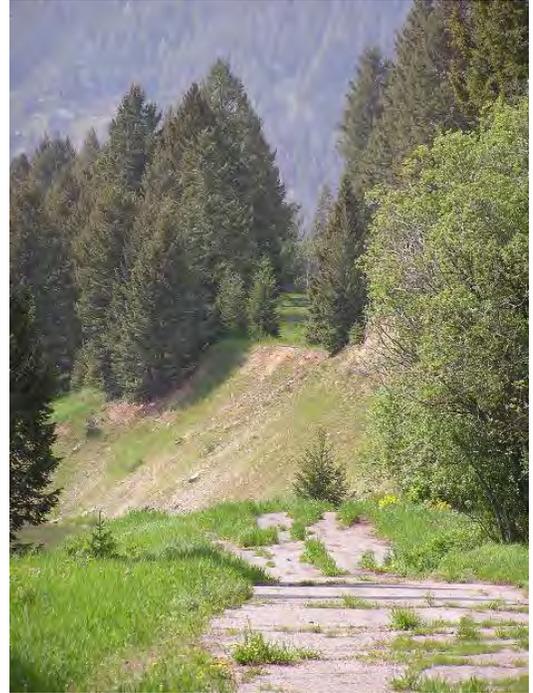


Map #	4 (south side of road)
Site Name	Building Destruction (Visitor Guide site #10)
Current Condition	<ul style="list-style-type: none"> • Parking lot is located on a segment of the old highway. Road extends to the east and to the west down to the edge of the lake. There is 1 panel at parking lot. • There are two entrances to this site, the west entrance being currently used. • Asphalt trail (not very accessible) to building site leads from parking area; no trail directional sign at parking area. • 2 wood signs at lakeside a ¼ mile walk from the parking area site that describes how the ground shook and the resort was washed into lake. • Remnants of buildings are sliding into lake. • Parking lot is larger than needed.
Recommendations	<p>Reconfigure the parking area to provide more focus to the trailhead and new interpretive panels. Create a new east entrance and direct traffic one-way traffic out the existing west entrance. Replace all existing signs and bases with new thematic panels that follow Design Guidelines in this plan.</p> <p><i>Parking Area Panel 1:</i> Size: 36" h X 24" w, vertical Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories Storylines:</p> <ol style="list-style-type: none"> a) The human loss and suffering are memorialized along the Madison River Canyon Corridor. b) The event highlighted the strength of character and the resiliency of the human spirit. <p><i>Parking Area Panel 2:</i> Size: 36" h X 24" w, vertical Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon. Storylines:</p> <ol style="list-style-type: none"> a) Lands were lost and lands were created. In places, the highway fell into the lake. Elsewhere, the lake submerged the highway. d) The power of the seiche waves and wind were as destructive as the falling of the mountain. (Seiches waves were 4 feet high; and took 17 minutes to go from 1 shore to the other; lasted for 12 hours.) <p><i>Parking Area Panel 3:</i> Size: 36" h X 24" w, vertical Site map of the Building Destruction area to orient visitors to the trail</p> <p><i>Lakeside Panel (at building ruins):</i> Size: 24" h x 36" w, low-profile Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories. Tell the personal stories of the resort, its owner, and her loyal dog. The 2nd sign is about seiche waves.</p>

End-of-road Panel on west side of site:

Size: 24" h x 36" w, low-profile

Subtheme 3: Story about geology/landslide message. (Consult with Jack Epstein on story.) Recommend developing a walking trail to connect panels from building ruins to this site. A short trail can be developed and tie in with the old highway bed that lies at the west edge of site.



Map #	6 (north side of road)
Site Name	Cabin Creek (Visitor Guide site #8)
Current Condition	<ul style="list-style-type: none"> • 1 interpretive panel tells the story of how a campsite at Cabin Creek Campground was “split in two” by the Hebgen scarp. • Panel is mounted in a standard NPS-style metal frame. • Panel is 3-dimensional with a clever scarp breaking through the middle. • There used to be a picnic table on the upper edge of the scarp and a fire ring below but they are gone • The earthquake eliminated access between this site and the campground • Great view of the Hebgen scarp; is now a 3’ waterfall over scarp that is a popular fishing spot.
Recommendations	<p>Coordinate approach signs with campground signs (entrance sign says “Cabin Creek Scarp Area”). Return a picnic table on the upper level and fire grate at lower level. Replace existing panel with 2 new panels. Panel design should incorporate a 2-level “scarp” running across both panels to mimic the existing panel design.</p> <p>Panel 1: Size: 24” h X 36” w, low-profile Subtheme 1: There is tumult and heat beneath our feet. Storyline: e) Landslides and scarps happen from movement along fault lines.</p> <p>Panel 2: Size: 24” h X 36” w, low-profile Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories Storylines: b) The event highlighted the strength of character and the resiliency of the human spirit. (Tell how people were trapped here; they remember the tremendous winds.) c) Today, we fish, camp, and hike in an area of tranquility, largely unaware of our juxtaposition to the violence beneath our feet.</p> <p>Reevaluate site plan. The site needs to tie in with campground and trailhead. Determine if moving trailhead to scarp side of creek is feasible.</p>



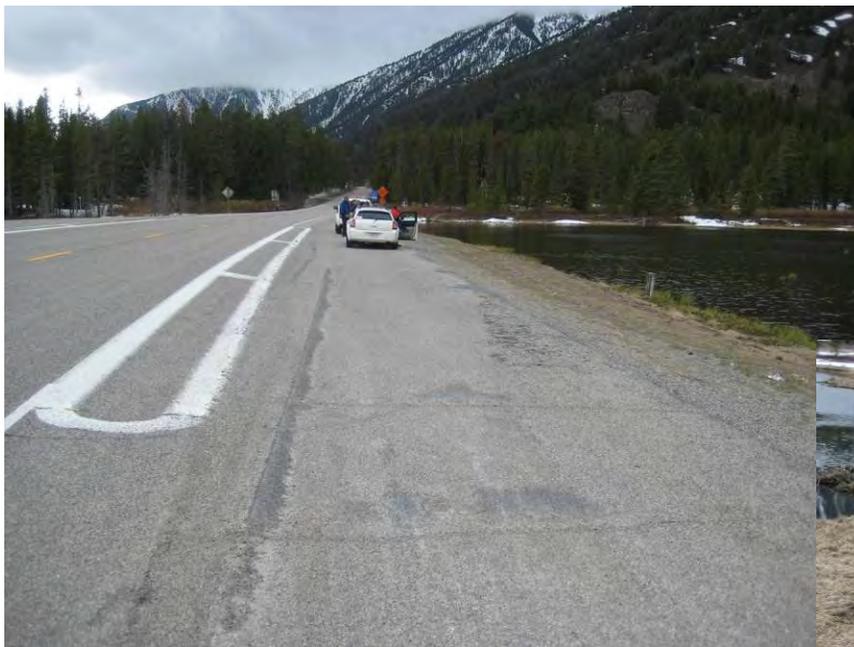
Map #	7 (south side of road)
Site Name	Refuge Point (Visitor Guide site #6)
Current Condition	<ul style="list-style-type: none"> • 1 painted wood interpretive panel with very unique artwork, tells the story of how people took refuge here at this high point away from rising waters after the earthquake and were eventually rescued by Forest Service smokejumpers • Rock base is starting to deteriorate • Large parking area with good site distance • Winter snowshoe walks start from here; there is also an opportunity for a trail that leads to a viewpoint of Ghost Village. The Hebgen RD constructed a system (24" width, non-motorized) trail here during the summer of 2009.
Recommendations	<p>Replace sign – to stay in keeping with new design guidelines. (Keep the existing one sign <i>somewhere</i> since it is so cool—even in an administrative site.)</p> <p>Size: 36" h X 24" w, vertical Orientation sign with map of trail and a teaser of the Ghost Lake story</p> <p>Size: 36" h X 24" w, vertical Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories Storylines: b) The event highlighted the strength of character and the resiliency of the human spirit. (Tell Refuge Point rescue story.)</p>



Map #	7a (south side of road)
Site Name	Ghost Village (Visitor Guide site #7)
Current Condition	<ul style="list-style-type: none"> • No sign at private campground directing people to Ghost Village; no access for buses or RVs because of road condition. The site has a restroom, picnic table, and wildlife signs off the fishing access road. • Story: Ghost Village has remnants of Halford's Camp (a recreational camp on national forest). After the earthquake, the cabins were flooded and floated away from their foundations into Earthquake Lake. When the lake dropped after the spillway was cut, the cabins ended up in their current location.
Recommendations	<p>Design and install 1 interpretive panel at the new overlook.</p> <p>Size: 24: h X 36" w, low-profile</p> <p>Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories</p> <p>Storylines:</p> <p>d) Ghost Village is a reminder of how lives and businesses were tossed around by the after-effects of the earthquake.</p>



Map #	8 (north and south side of road)
Site Name	Beaver Creek
Current Condition	<ul style="list-style-type: none"> • Interpretive panels (1 on each side of the road) are fiberglass on wooden posts with Watchable Wildlife stories. North side is a bird story; south side is an aquatic story. • Pull-outs are located on both sides of the highway and paved, but not very large • Excellent place for birding and spotting wetland species
Recommendations	Install a point of interest or “Watchable Wildlife” binocular icon on an approach sign to the pull-offs. <i>(Note: Need to confirm the protocol with these signs.)</i> Include as a point of interest on the revised Visitor Guide. Do not reinstall the existing interpretive panels.



Map #	9 (south side of road)
Site Name	Quake Lake Boat Launch (Visitor Guide site #5)
Current Condition	<ul style="list-style-type: none"> • Remains of old highway lead to lake • No interpretation at this site; is mostly used by anglers
Recommendations	<p>Do not do any on-site interpretation and remove from the visitor guide because:</p> <ul style="list-style-type: none"> • There is poor access and limited turn-around space • The District does not want to encourage more use here • The highway destruction story is just as easily told at the Building Destruction site.



Map #	10 (south side of road)
Site Name	Earthquake Lake Geologic Area Overlook (Visitor Guide site #4)
Current Condition	<ul style="list-style-type: none"> • Wooden panel tells the story of the formation of Earthquake Lake • Rock base is deteriorating • Parking area is adequate • Great view of the lake, submerged trees, and the slide area. This is a dramatic place to tell the big story.
Recommendations	<p>This site should be the premiere wayside exhibit location along the corridor because of its views of multiple earthquake stories. Install a 2 -panel wayside exhibit. (Be sure to include the date of the Earthquake in the story.)</p> <p>Panel 1: Size: 48”h X 36”w, vertical Subtheme 1: There is tumult and heat beneath our feet. Storylines: c) There are lots of small quakes happening on a regular basis that are rarely felt by humans. d) There are long periods of no apparent activity. e) Landslides and scarps happen from movement along fault lines.</p> <p>Panel 2 Size: 48”h X 36”w, vertical Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon. Storylines: b) Habitats were lost and habitats were created. Alluvial fans are being created downstream.</p> <ol style="list-style-type: none"> 1. There is now more lake habitat and less stream habitat. Seven miles of river are now lake. There is more chub as a lake species, and more prey fish. The insect food base has changed so they have a change in life cycles (they spawn differently). 2. The increase in lake surface area has attracted more birds of prey, such as cormorants.



Map #	11 (south side of road)
Site Name	Rock Creek Turn-out (Visitor Guide site #3)
Current Condition	<ul style="list-style-type: none"> • Gravel pull-out with a view over the former location of the Rock Creek campground, now under water • No interpretation currently.
Recommendations	<p>Recommend developing this site with a 1-panel wayside exhibit</p> <p>Size: 48" h X 36" w, vertical</p> <p>Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories</p> <p>Storylines:</p> <p>e) Rock Creek Campground and its horrific memories are now submerged.</p>



Map #	12
Site Name	Visitor Center – Exterior Interpretation (Visitor Guide site #2)
Current Condition	Exhibit Area A - Visitor Center Exterior Interpretation and Information: There is a sign on the building wall next to the front door. A second sign was installed in the rock garden but was blown over. There is no site identification at the Visitor Center itself. In the parking lot there is one picnic table with wind breaking fence.
Recommendations	<p>Exhibit Area A - Visitor Center Exterior Area:</p> <p>1. Visitor Center Exterior: Design and fabricate a 2-panel exhibit on the Visitor Center exterior wall to the right of the front door. Each panel 3' high by 9' wide, to span the width of the individual wall segments. The primary function of the panels would be site and agency identification and after-hours information, similar to the east and west portal kiosk panels. The secondary function would be to introduce the primary themes to give an overview of the area's stories.</p>  <p>Replace the current rock garden areas with a colored concrete sculpture that mimics the general topography of the Madison River Canyon. The canyon walls would provide climbing space for kids and seating areas for other visitors. Both the river and the GYA caldera would be “mapped” on the patio within and around the sculpture, via colored and stamped concrete. The thematic objective of the sculpture and patio concrete work is to demonstrate the size, scale, and orientation of the area's underlying seismicity, the river canyon, and the landslide. The sculpture must be located in a manner that encourages traffic flow into the Visitor Center, but does not impede traffic to the restrooms or viewing area. It should be also be correctly oriented to the real world. The flagpole will need to be relocated.</p>

Center of Yellowstone caldera
(shown on patio in relative distance from the canyon)

Molded and colored concrete mountains

Scarp lines shown in mountains

Slide area

For the northern edge of the sculpture, or on a separate large boulder facing the parking area (determination pending further design work on sculpture location and design), install a professional, highly-visible and attractive agency and Visitor Center identification sign.

2. Exterior Materials: Ideally, the current rock fascia should be replaced with a pattern that is more contemporary and representative of the surrounding landscape. In the event that this is cost-prohibitive, any new rockwork (e.g. seat walls or interpretive panel bases) should be complementary to the extent possible. Repaint the Visitor Center and restroom with a lighter brown that blends better with the surrounding rock material and environment.

Replace the patio railing with a low rock masonry wall. Install metal railing on the top 12" that incorporates the seismic line and/or ghost tree images. This railing will hold 2 new interpretive mounted in, but cantilevered over the rock wall in the same manner as the low-profile wayside exhibits (see item 3 below).

3. Exterior Interpretive Panels: Design and install 2 interpretive panels into the rock wall that surrounds the patio.

Panel 1:
Size: 24" h X 36" w, low-profile
Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories
Storyline:
 e) Rock Creek Campground and its horrific memories are now submerged. (Note: create a slightly different emphasis for the storyline)

so that it is not an exact duplicate of Site 11 (Rock Creek Overlook).

Panel 2:

Size: 24”h X 36”w, low-profile

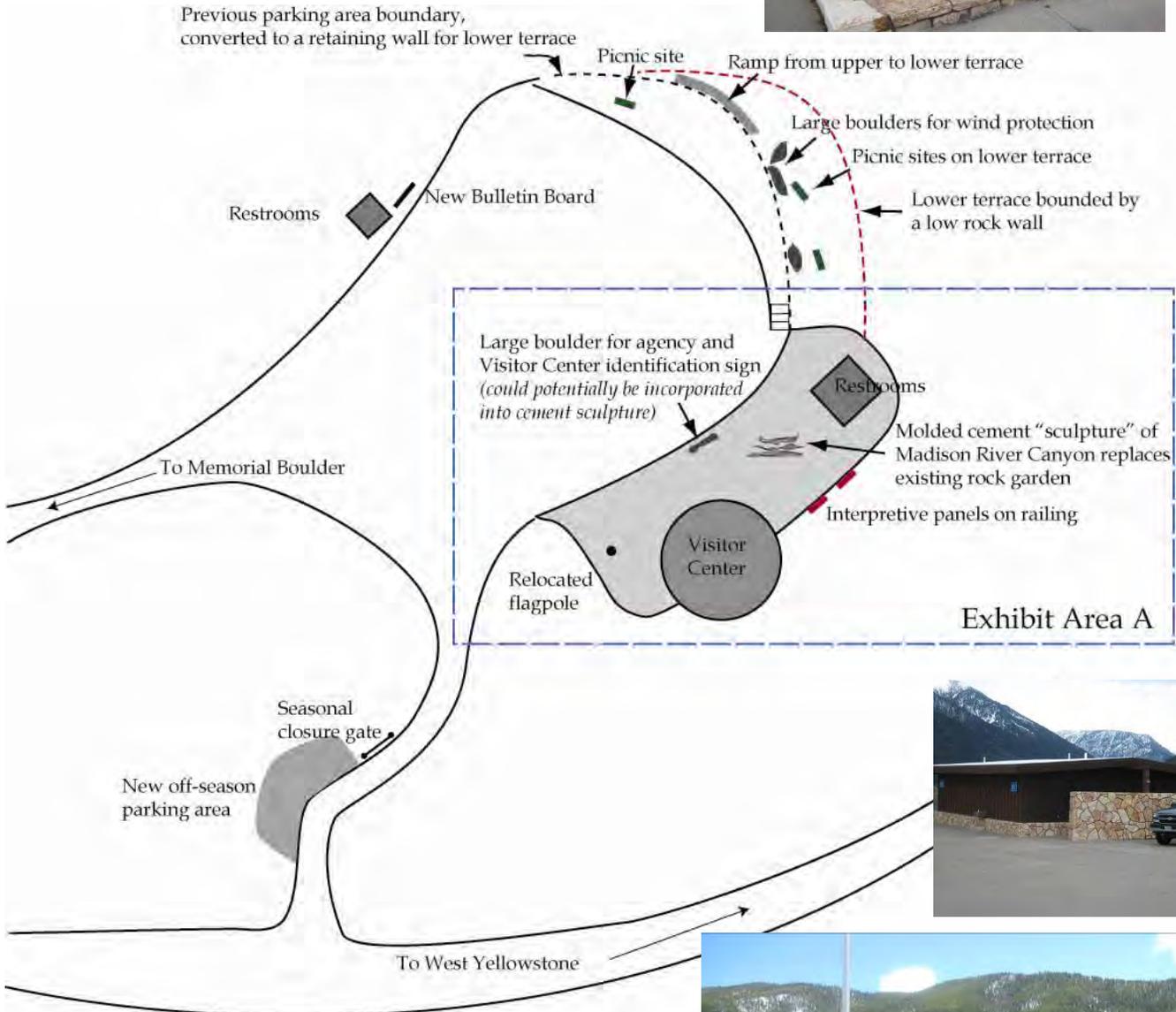
Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon

Storyline:

g) At some point in the future, the lake will become a river again.

4. **Parking Lot and Picnic Area:** Reduce the size of the parking lot by pulling the edge in on the north and east sides (see Figure 2). Remove the existing picnic table and wind screen. Construct a picnic area in 2 levels: one on the current parking lot level and 1 on the lower terrace, accessible via a ramp on one end and stairs on the other. Strategically place large boulders for wind protection. *Note: site construction needs to consider the location of power and water lines in this vicinity.*

Figure 2: Visitor Center Area Map

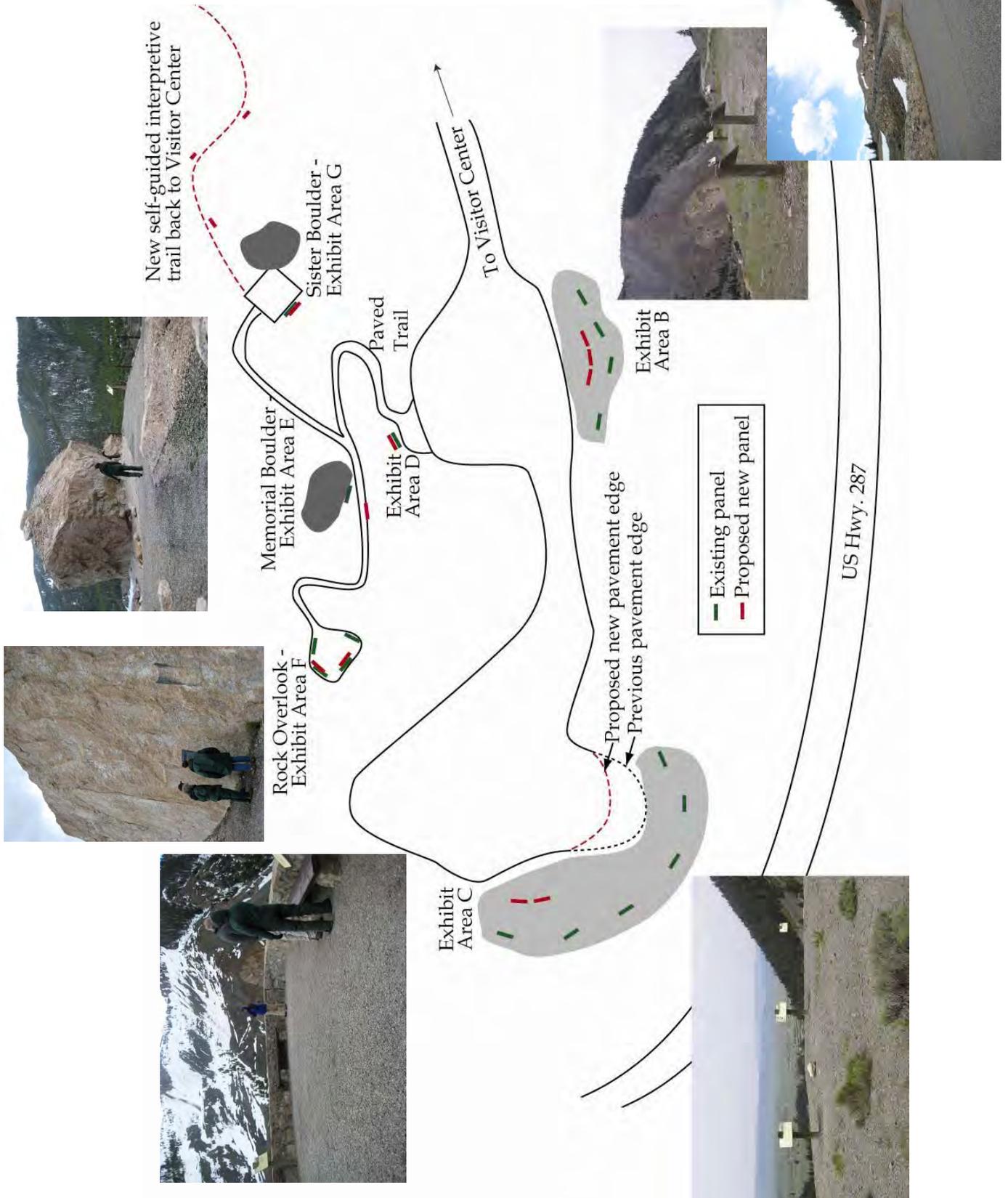


Map #	12
Site Name	Visitor Center – Exterior Interpretation (Visitor Guide site #2)
Current Condition	Exhibit Area B – Memorial Boulder Parking Area: Five interpretive panels discuss a wide range of topics (some are earthquake-related and some are not). Parking is adequate.
Recommendations	<p>Exhibit Area B – Memorial Boulder Parking Area: Ensure that this site meets accessibility standards. Replace the existing interpretive panels with 1 3-panel exhibit that focuses on the slide itself.</p> <p>Panel 1 and 2: Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories Size: 24”h X 36”h, low-profile Storylines: a) The human loss and suffering are memorialized along the Madison River Canyon Corridor. b) The event highlighted the strength of character and the resiliency of the human spirit.</p> <p>Panel 3: Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon. Size: 24”h X 36”h, low-profile Storylines: e) The magnitude of the slide material was phenomenal. g) Trees are beginning to regenerate in the landslide area.</p>
Current Condition	Exhibit Area C – Turn-around Loop: At the end of the Memorial Boulder access road, there is a turn-around loop area that contains a picnic table behind a wind screen, and several interpretive signs on a wide range of topics (some are earthquake-related and some are not).
Recommendations	<p>Exhibit Area C – Turn-around Loop: Ensure that this site meets accessibility standards. Remove the picnic table and wind screen. Decrease the size of the paved footprint of the site where gravel and signs currently. Replace existing interpretive panels with one 2-panel exhibit that tells the spillway story:</p> <p>Panels 1 and 2: Size: 24”h X 36”h, low profile Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon. Storylines: b) Habitats were lost and habitats were created. Alluvial fans are being created downstream. g) Trees are beginning to regenerate in the landslide area.</p>
Current Condition	Exhibit Area D – Lower Memorial Boulder Trailhead: A panel at the beginning of the trail to Memorial Boulder describes the loss of life at this location.
Recommendations	Exhibit Area D – Lower Memorial Boulder Trailhead: Replace panel at trailhead, but keep the same basic memorial message. Size: 48”h X 36”h, vertical

	<p>Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories</p> <p>Storylines:</p> <ul style="list-style-type: none"> a) The human loss and suffering are memorialized along the Madison River Canyon Corridor. b) The event highlighted the strength of character and the resiliency of the human spirit
Current Condition	<p>Exhibit Area E - Memorial Boulder</p> <p>A short paved trail (not accessible) leads to the imposing Memorial Boulder with a simple metal plaque that lists all the names of the individuals that died from the earthquake.</p>
Recommendations	<p>Exhibit Area E - Memorial Boulder:</p> <p>At the Boulder, keep this area very respectful and serene. Add a low profile panel (set apart from the plaque on the boulder) that gives a more substantial story of the victims. Panel may be of a different material (e.g. anodized aluminum) to include a photo and a 1-2 sentence acknowledgement of the individual and their life – it could be a quote or a family memory of a beloved character trait, something more personal.</p> <p>Size: Unique size that fits within the ledge of the rock wall by bench (long and narrow)</p> <p>Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories</p> <p>Storylines:</p> <ul style="list-style-type: none"> a) The human loss and suffering are memorialized along the Madison River Canyon Corridor
Current Condition	<p>Exhibit Area F - Memorial Boulder Rock Overlook</p> <p>Rock wall and patio overlooks the Madison River to the west. Braided channels and the valley below can be seen. To the south the visitor faces the landslide area. Part of the rock wall is in disrepair, there are 4 interpretive panels about wildlife and multiple-use themes.</p>
Recommendations	<p>Exhibit Area F - Memorial Boulder Rock Overlook</p> <p>At this overlook, repair the rock wall and seating area and replace all 4 interpretive panels with 2 new ones.</p> <p>Panels 1 and 2:</p> <p>Size: 24”h X 36”w, low-profile, angled on rock wall</p> <p>Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon.</p> <p>Storylines:</p> <ul style="list-style-type: none"> a) Lands were lost and lands were created. In places, the highway fell into the lake. Elsewhere, the lake submerged the highway. b) Habitats were lost and habitats were created. Alluvial fans are being created downstream. c) “Recovery” is defined by humans and attached to natural processes. The land is dynamic – we decide if it is good or bad; beneficial or not; beautiful or ugly.

<p>Current Condition</p>	<p>Exhibit Area G - Sister Boulder The Sister Boulder is to the east of Memorial Boulder at approximately the same elevation. Both the Sister and Memorial Boulder were moved across the canyon by the force of the earthquake and slide. There is a barrier fence/rail of cable strung between metal posts, and one interpretive panel that talks about this dolomite boulder and how it got here.</p>
<p>Recommendations</p>	<p>Exhibit Area G - Sister Boulder Replace current wall with rock wall and railing to match the one at the Visitor Center patio. Replace the existing interpretive panel with a new one.</p> <p>Size: 24”h X 36”h, low-profile (similar to Visitor Center panels in rock wall/railing) Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon. Storyline: e) The magnitude of the slide material was phenomenal.</p> <p>Sister Boulder Interpretive Trail Construct a connector trail going back down to the Visitor Center parking lot. The trail will serve not only as an interpretive opportunity, but also to divert pedestrian traffic off of the road. Several tactile geology panels would be located along the route. Design a geocache site(s) along the trail to further tell the story.</p> <p>Panels: Size: 12”h X 24”w, low-profile Subtheme 1: There is tumult and heat beneath our feet. Storylines: b) The underlying caldera is shifting and restless. c) Yellowstone is the most earthquake prone area within the continental U.S. There are lots of small quakes happening on a regular basis that are rarely felt by humans. e) Landslides and scarps happen from movement along fault lines.</p>

Figure 3: Visitor Center Trail Area Map



Map #	13 (south side of road)
Site Name	West Portal
Current Condition	<ul style="list-style-type: none"> • Forest Service portal sign in good condition • Gravel parking lot with adequate parking space, but not formalized
Recommendations	<p>Convert this site to the West Portal to create a sense of arrival at a special area.</p> <ul style="list-style-type: none"> • Work with MDOT for better signage at intersection of 287 and 87. (Earthquake Lake Geologic Area turn in X miles) <p>Replicate the structure, themes, storylines, and maps as described for Site 1 – East Portal</p>

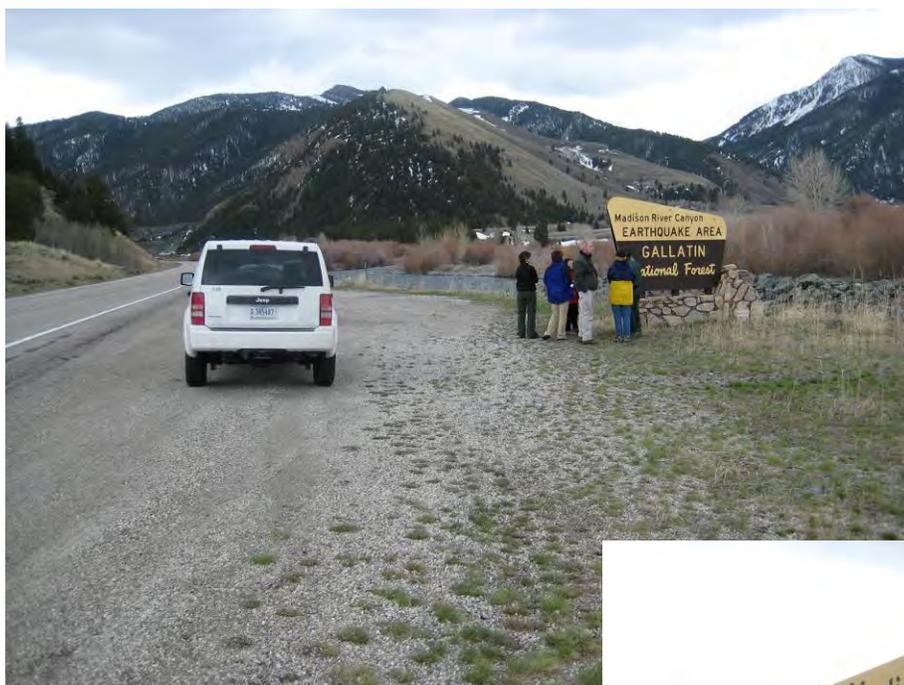


Table 1: Matrix of Interpretive Themes by Location

	East Portal	Site 4: Bldg. Destruct.	Site 5: Dam	Site 6: Cabin Cr.	Site 7: Refuge Pt.	Site 7a: Ghost Village	Site 10: Lake OL	Site 11: Rock Cr.	Site 12: VC Area A (Building Exterior)	Site 12: VC Area B (Mem. Boulder Parking)	Site 12: VC Area C Turn-around Loop)	Site 12: VC Area D (Mem. Boulder TH)	Site 12: VC Area E (Mem. Boulder)	Site 12: VC Area F (Rock Overlook)	Site 12: VC Area G (Sister Boulder/new Trl.)	Site 13: West Portal
Theme																
Primary Theme: What lies beneath ...	X	X		X			X		X						X	X
Subtheme 1: There is tumult and heat beneath our feet.	X	X		X			X								X	
a. Geysers need earthquakes.		X														
b. The underlying caldera is shifting and restless.		X													X	
c. Yellowstone is the most earthquake prone area within the continental US							X		X						X	
d. There are long periods of no apparent activity.							X									
e. Landslides and scarps happen from movement along fault lines.				X			X		X						X	
Subtheme 2: The events of August 17, 1959 resulted in many compelling human stories	X	X			X	X		X	X	X		X	X			X
a. The human loss and suffering are memorialized along the Madison River Canyon Corridor.		X								X		X	X			
b. The event highlighted the strength of character and the resiliency of the human spirit			X	X	X					X		X				
c. Today, we fish, camp, and hike in an area of tranquility, largely unaware of our juxtaposition to the violence beneath our feet.	X			X					X							X
d. Ghost Village is a reminder of how lives and businesses were tossed around by the after-effects of the earthquake.						X										
e. Rock Creek Campground and its horrific memories are now submerged.								X	X							
f. The earthquake could be felt	X								X							X

	East Portal	Site 4: Bldg. Destruct.	Site 5: Dam	Site 6: Cabin Cr.	Site 7: Refuge Pt.	Site 7a: Ghost Village	Site 10: Lake OL	Site 11: Rock Cr.	Site 12: VC Area A (Building Exterior)	Site 12: VC Area B (Mem. Boulder Parking)	Site 12: VC Area C (Turn-around Loop)	Site 12: VC Area D (Mem. Boulder TH)	Site 12: VC Area E (Mem. Boulder)	Site 12: VC Area F (Rock Overlook)	Site 12: VC Area G (Sister Boulder/new Trl.)	Site 13: West Portal
in 8 states, making it a significant geologic event.																
Subtheme 3: The earthquake transformed lands and habitats of the Madison River Canyon.	X	X					X					X		X		X
a. Lands were lost and lands were created. In places, the highway fell into the lake. Elsewhere, the lake submerged the highway.		X										X		X		
b. Habitats were lost and habitats were created. Alluvial fans are being created downstream.							X				X	X		X		
c. "Recovery" is defined by humans and attached to natural processes. The land is dynamic – we decide if it is good or bad; beneficial or not; beautiful or ugly.												X		X		
d. The power of the seiche waves and wind were as destructive as the falling of the mountain.		X														
e. The magnitude of the slide material was phenomenal.										X					X	
f. At some point in the future, the lake will become a river again.								X	X							
g. Trees are beginning to regenerate in the landslide area.										X	X					
Information and Orientation	X								X							X

6.B Directional Signing

Forest Road Destination Signs

Forest Road Destination (FRD) signs are used to alert motorists of the relative vicinity of a recreation site by indicating distances and directions. For the Madison River Canyon corridor, these would be used on Highway 191 as you approach the corridor from the east, as well as on the west end of the corridor on Highways 87 and 287. FRD signs may



also be appropriate within the corridor to indicate the distance to the Visitor Center. The Earthquake Lake Geologic Area logo may be attached to the same sign post beneath the FRD sign.



FRD signs should be consistent when referring to the Visitor Center, i.e: “**Earthquake Lake Visitor Center.**” (Using the full name - Earthquake Lake Geologic Area Visitor Center - would be too much text.)

Site Approach Signs

Per the Forest Service’s Sign and Poster Guidelines (EM 7100-15), “Site approach signs serve the important traffic control function of preparing drivers for the slowing, braking, and turning maneuvers necessary for safe entry to recreation sites.” Site Approach (SA) signs for the corridor should be inventoried and analyzed to determine the needs for replacement, additions, or consolidation.

Use the non-rectangular site approach sign when only one recreation symbol or message is displayed. For destinations with multiple recreation activities, use the rectangular version with international symbols. With both versions, the Earthquake Lake Geologic Area logo may be attached to the same sign post beneath the site approach sign.



Refer to EM 7100-15 for further direction: http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/

SECTION 7: OTHER INTERPRETIVE MEDIA RECOMMENDATIONS

7.A: Publications

- Update Madison River Canyon Earthquake Area visitor guide brochure. Place “*you are here*” dots on the correct side of the highway, and match style to design guidelines. Incorporate new information from recommendations. Add a larger map of the area, in relation to GYA and caldera. Add tidbits of information about the sites that are not included on wayfinding signs. You could pose questions that can only be answered if you visit the sites and look at the signs.
- Contact chamber of commerce and annual visitor brochures producers to update info (such as name consistency, Visitor Center typical hours, phone number, website addresses, etc) for future publications and reprints. Inquire as to updating the National Geographic map and text to include the Gallatin National Forest contact information and a website address.

7.B: Electronic and Other Media

- Approximately 50% of visitors get their travel information to this area, prior to their trip, via the internet. Update Forest Service website with current information, provide relevant links to other sites. Increase web search vocabulary so when people are looking for Yellowstone NP information, Earthquake Lake Geographic Area information and sites pop up also.
- Develop podcasts where travelers can download information about the area. Podcasts can tell more details of the story at the sites than the signs (written text) allows.
- If a self guided interpretive trail is developed from the Visitor Center to Sister/Memorial Boulders, consider development of a geocache trail and stash relevant interpretive messages about the earthquake / geology of the area.
- Since ITRR surveys indicate that over half of travelers seeking information about the area received it from front line business people. This would include front desk personnel at hotels and restaurants, and stores. Another way to get out information about the Earthquake Lake story is for the Forest Service and/or partners offer annual marketing / information tours to local chamber of commerce’s and businesses.

7.C: The Name

Various names for the byway corridor and visitor center have been used with little consistency.

- State Hwy directional signs (green) Markers refer to “Quake Lake”
- Brochure is “Madison River Canyon Earthquake Area”
- Various signs say Earthquake Lake.
- Visitor Center is “Earthquake Lake Visitor Center”

- Secondary sign in VC “Madison River Canyon Earthquake Area”
- Forest Visitor Map “Madison River Canyon Earthquake Area”.
- Montana State Highway Map “Madison Canyon Earthquake Area” (note there is no ‘river’ in the title).
- USGS Hebgen Lake Earthquake
- Annual publications, Montana Vacation Planner “Madison Canyon Earthquake Lake Visitor Center”, Yellowstone Country Travel Guide “Madison River Canyon Earthquake Area Visitor Center”, and West Yellowstone Vacation Planner this area listed as “Earthquake Lake”

For the purposes of this interpretive plan and for the development of all future interpretive media, the name for this area is **The Earthquake Lake Geologic Area.**

SECTION 8: MARKETING

Marketing and products have often been words or concepts that many in the Forest Service will steer clear of. However, marketing should be viewed as a way to get the right information to the right locations to our target visitors. By taking a look at efforts that have included this area, the Forest Service can play an active role in deciding how content of the information is being distributed.

National Geographic's Geotourism Map highlights the earthquake area with brief text and a photo of Earthquake Lake:

http://www.yellowstonegeotourism.org/pdf/Greater_Yellowstone_Side2.pdf

- 1) Check out what they say. Map text includes: "Hebgen Lake Earthquake. The six-mile long Quake Lake began to fill in 1959 when a landslide plugged the Madison River canyon. The slide buried 19 campers, but protected the lower Madison Valley from the tsunamis' that sloshed over Hebgen Dam higher up the canyon."
- 2) Statements in the Beyond National Parks paragraph of the map states: "For every day that you vacation in the national parks spend a day at the nearby Shoshone or Caribou-Targhee National Forest, or visit a local community such as Cody, WY or Driggs, ID. Government, businesses, and conservationists can suggest tips on trails to hike, scenic byways to drive, and wildlife to watch." Where is the Gallatin NF? Where are the local communities to reference on this map?
- 3) Submit corrections to National Geographic to include in their next update of map.

Within Sections 6 &7, recommendations contain specific tasks that help to address your marketing needs. For example, creating podcasts are one way to reach your technically savvy audience. Using consistent design elements and a logo is another way to improved familiarity and visibility.

Attract the Nearby Audiences

Fortunately for the Earthquake Lake Geologic Area, there is a ready-made audience. A large percentage of this audience base is seeking information and experiences related to Yellowstone National Park. Many visitors are already traveling through the corridor on their way to somewhere else and do not know about your surprising resource.

Visitor Center Sales

Work with interpretive association to evaluate offering more diverse sales items at Visitor Center. Current sales are primarily from books and maps. Possible products:

- A customized car bingo game for kids where they have to look for things along the monument or corridor areas?
- Posters of vintage designs (e.g. Paul Lanquist). Some are only 11X17 in size, others are bigger. (http://www.discovernw.org/store_yellowstone-national-park-poster-paul-a-lanquist-pal_17764.html)
- Request local photographers to donate pictures of the area to produce into postcards or note cards.
- Food has been tried in the past but is not recommended.

SECTION 9: DESIGN GUIDELINES

9.A: Color Palette

The colors used in Earthquake Lake Geographic Area interpretive media are representative of the landscape of both the Madison River corridor and the environment immediately surrounding the Visitor Center. Colors shown are identified by their Pantone Matching System (PMS) number in order to communicate exact formulas to potential graphic designers, fabricators, and/or other vendors.

Figure 4: Earthquake Lake Geographic Area Color Palette



PMS 7515 C



PMS 5265 C

The actual slide area presents a number of dark cool colors. The purple-grey and the darker purple are two of the more saturated hues that catch the eye.

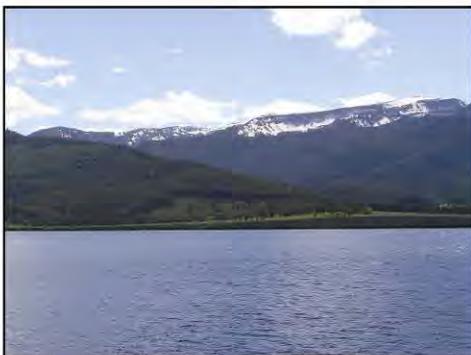


PMS 719 C



PMS 437 C

In the slide debris, lighter and warmer sandstone colors predominate.



PMS 652 C



PMS 554 C

Along the corridor, the water of the lakes and Madison River dominates. In the sun, they take on a steely-blue sheen with a slight violet cast.

The deep green of the forest is influenced by the blues of the spruce and fir, giving a more blue-green hue than a yellow-green.

9.B: Interpretive Panel Guidelines

All panels should be fabricated out of a ½” high-pressure laminate or equivalent, with a minimum of a 10-year warranty. Because the panels will not be set in frames, it will be important to specify edge treatments in the contract (e.g. beveled, solid black).

The exception to this may be at the Visitor Center for the panels attached to the exterior of the building. In this case, a product such as full-color aluminum “Alto” (produced by Systeme Huntington) would be more appropriate because of its increased durability.

Vertical and low-profile panels are located as follows (number of panels in parenthesis):

Vertical (48” high by 36” wide)	Low-profile (24” high by 36” wide)
East Portal (3)	Building Destruction at lakeshore (1)
Building Destruction Parking Area (3)	Hebgen Dam at fishing pier (1)
Refuge Point (2)	Cabin Creek (2)
Earthquake Lake Overlook (2)	Ghost Village (1)
Rock Creek Overlook (1)	Visitor Center Exhibit Area A (2)
Visitor Center Exhibit Area D, Memorial Boulder Trailhead (1)	Visitor Center Exhibit Area B, Memorial Boulder Parking Area (3)
	Visitor Center Exhibit Area C, Turn-around Loop (2)
	Visitor Center Exhibit Area E, Memorial Boulder (1)
	Visitor Center Exhibit Area F, Memorial Boulder Overlook (2)
	Sister Boulder (1)

Panels should not be rectangular, but should incorporate a shape into the top border of each panel, such as a mountain and scarp profile. The ghost tree graphic should be used, and can extend beyond the top edge of the panel if protected via a metal frame backing. The ghost tree could also be fabricated of a 2nd piece of laminate and attached on top of the base layer, separated by spaces to give dimension to the panel.

The lower right corner of the panel should incorporate the Forest Service shield, the Gallatin NF name (with “National Forest” in the standard agency graphic), and the Earthquake Lake Geologic Area logo. When grouped in a multi-panel setting, the logos may appear on the right panel only.

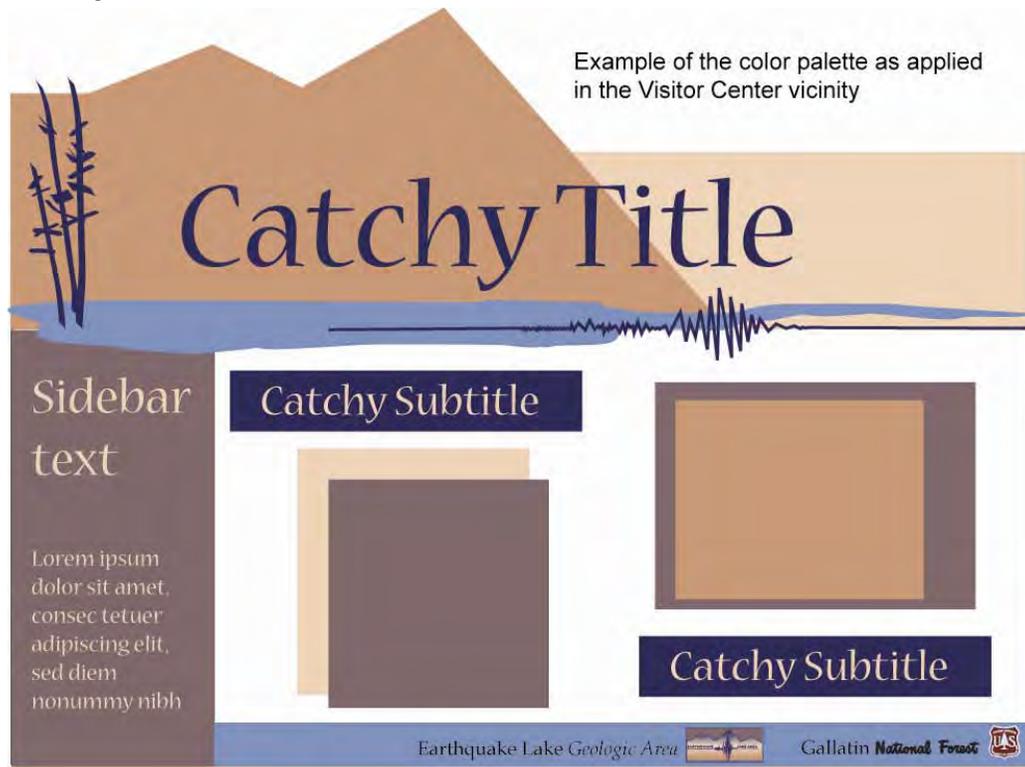
Somewhere on each exhibit – either on the panel or on the structure – the name of the site should be indicated. This name should be included in the updated brochure on both the map and in the text.

The color palette should be applied with different emphasis colors based on the location of the interpretive panel. Panels in the Madison River Canyon should show an emphasis on the blues and greens, whereas panels at the Visitor Center and immediate environment should emphasize the tans and purples.

Interpretive panel text should follow these guidelines:

- 1) Follow the 3-30-3 rule: a panel has 3 seconds to grab someone's attention, 30 seconds to get the main concept across, and 3 minutes be read in depth.
- 2) People tend to remember themes, not facts.

Figure 5: Example of Shapes, Graphic Placement, and Color Palette in Panel Templates



9.C: Logo

The logo for the Earthquake Lake Geologic Area should quickly communicate the identity of the area. The viewer of a logo should be able to associate an interpretive product or structure as part of the Earthquake Lake Geologic Area family of media, without having to read anything on the logo. By keeping the logo simple, we will ensure that it can be recognized in a fraction of a second without any significant cognitive work on the part of the viewer. By keeping a logo simple, it will also be easily reproducible in a number of formats (black and white; in print; on-line; on a site approach sign; even on a T-shirt).

Elements that must be included on the logo are 1) seismic line, and 2) ghost trees.

Figure 6: Examples of potential Earthquake Lake Geologic Area Logos

Option 1



Option 2



Option 3



Jane's Idea



9.D: Structures

Wayside exhibit and kiosk structures should be a part of the story themselves by conveying the influences of the landscape through their materials, structure, and colors.

According to the Built Environment Image Guide, there are several cultural influences in the Rocky Mountain Province, but the most applicable to the Earthquake Lake Geologic Area would be the “rustic” (as opposed to ranching, Native American, mining, or railroad influences). The rustic influence in this province is expressed through large timbers, large boulders, and natural stone pavers. Substantial structural members should be visible (such as brackets, beams, and posts). Colors should reflect those in the immediate natural landscape.

Climatic influences that should affect the design of structures in the Earthquake Lake Geologic Area include high winds, sparse precipitation/low humidity, deep and thin soils. The seismic story of the GYA brings to mind violence and destruction, which can be displayed in materials that are course, ripped, bent, or otherwise “mangled” from seismic activity.

9.C.1: Materials

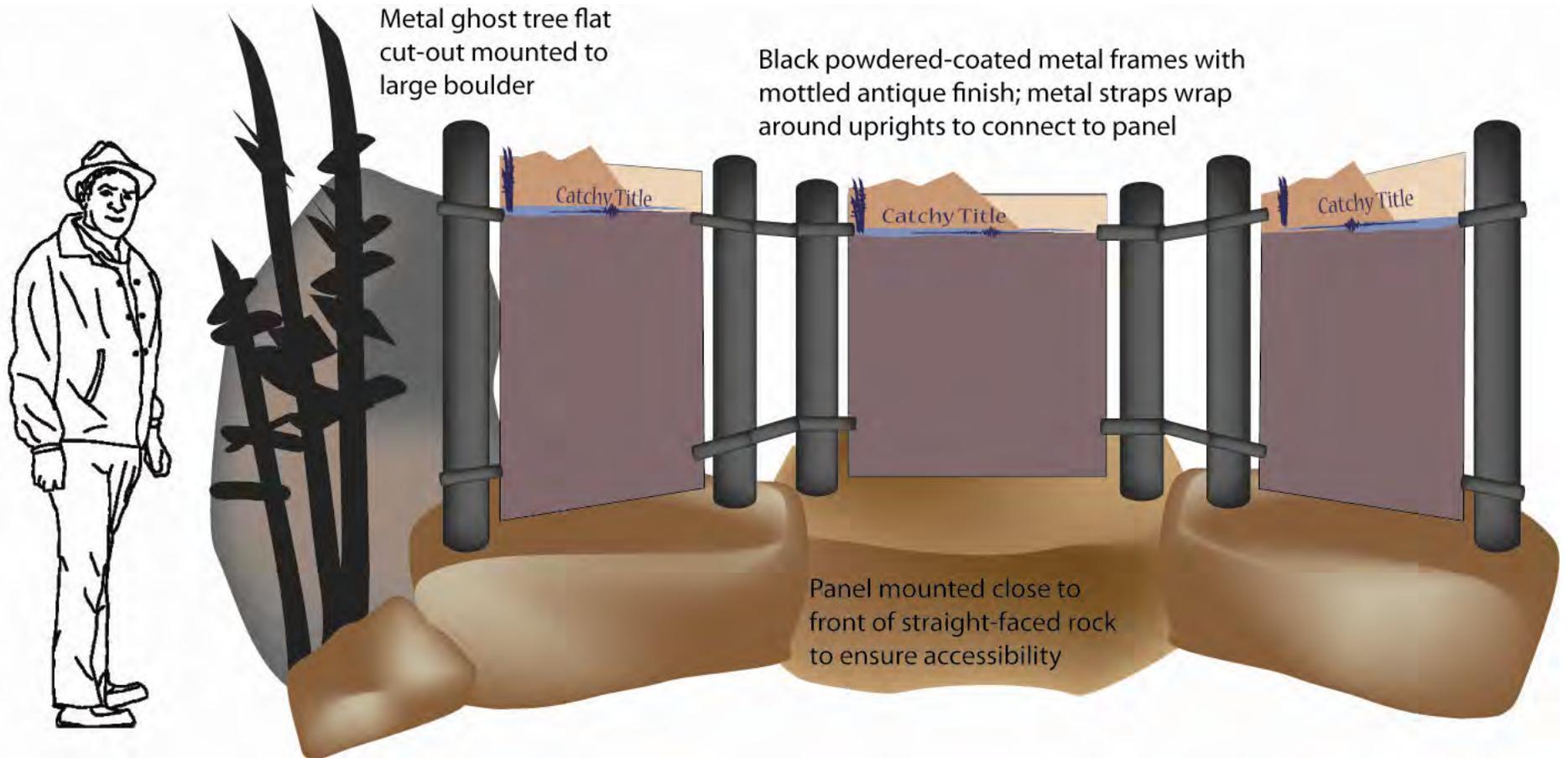
Earthquake Lake Geologic Area kiosk and wayside exhibit materials include:

- **Rock** – The slide itself as well as the surrounding area showcase the insides of the mountains, and should be carried throughout the corridor. The jumbled piles and rubble fields of the slide area can be incorporated into wayside bases, seat walls, and mounting structures. Angular dolomite is a predominate rock-type that should be used or mimicked.
- **Metal trim** – The Earthquake Lake Geologic Area can be harsh in its environment, climate, and geothermal action. Sturdy steel, iron, or other metal materials would be appropriate elements to incorporate into kiosk and exhibit design. Steel strapping on steel posts are functional and fit with the vernacular of seismology

9.C.2: Portal Kiosks

The two portal kiosks at the east and west end of the canyon are the initial statement made to the visitor that there is something special about this place and it is worth investigating. They should present a striking visual from a distance and be easily identifiable as a source of information and orientation. See sections 5.D.1 and 5.D.2 for a description of the contents of these panels.

Figure 7: Portal Kiosk Example

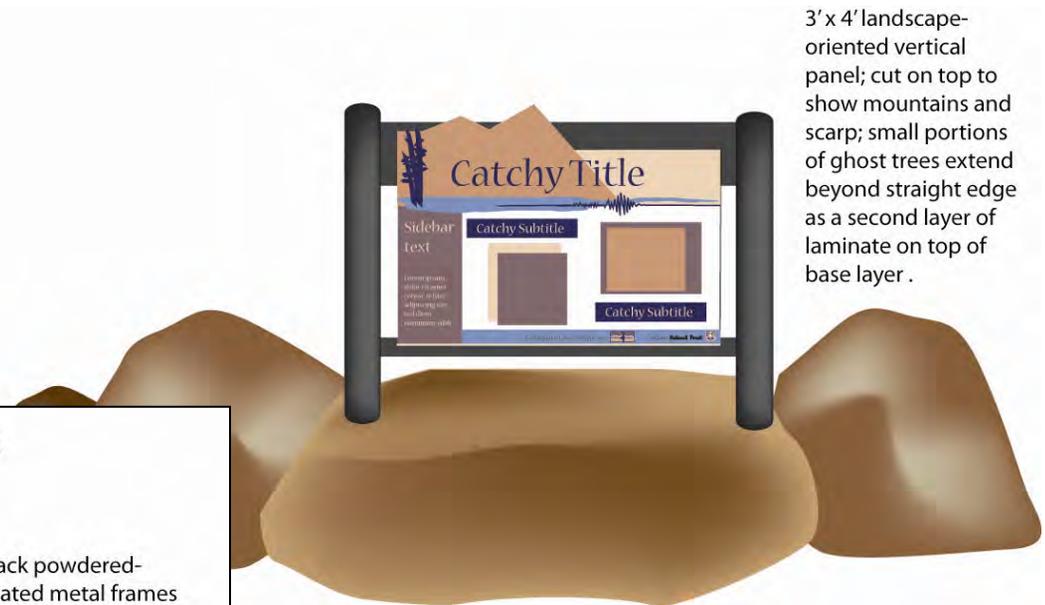
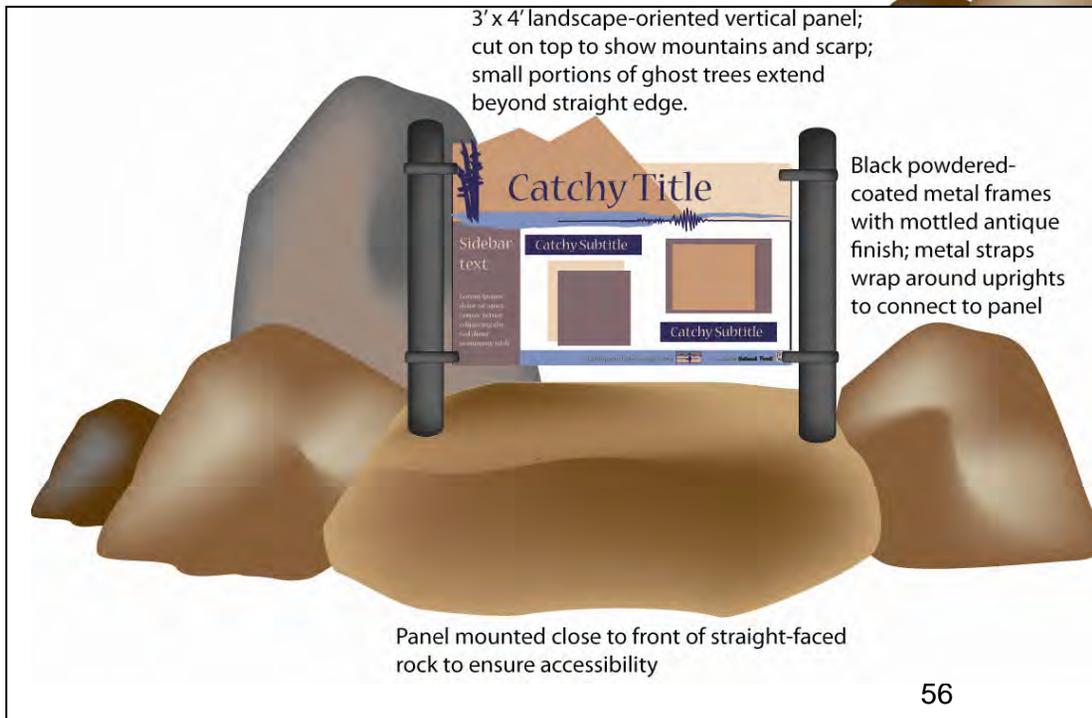


9.C.3: Wayside Exhibits

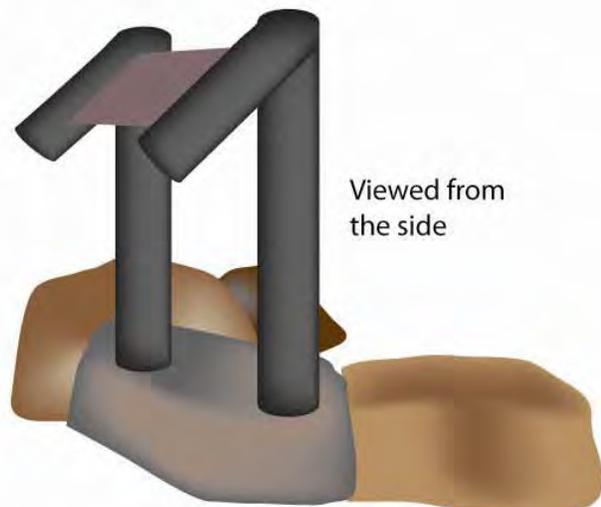
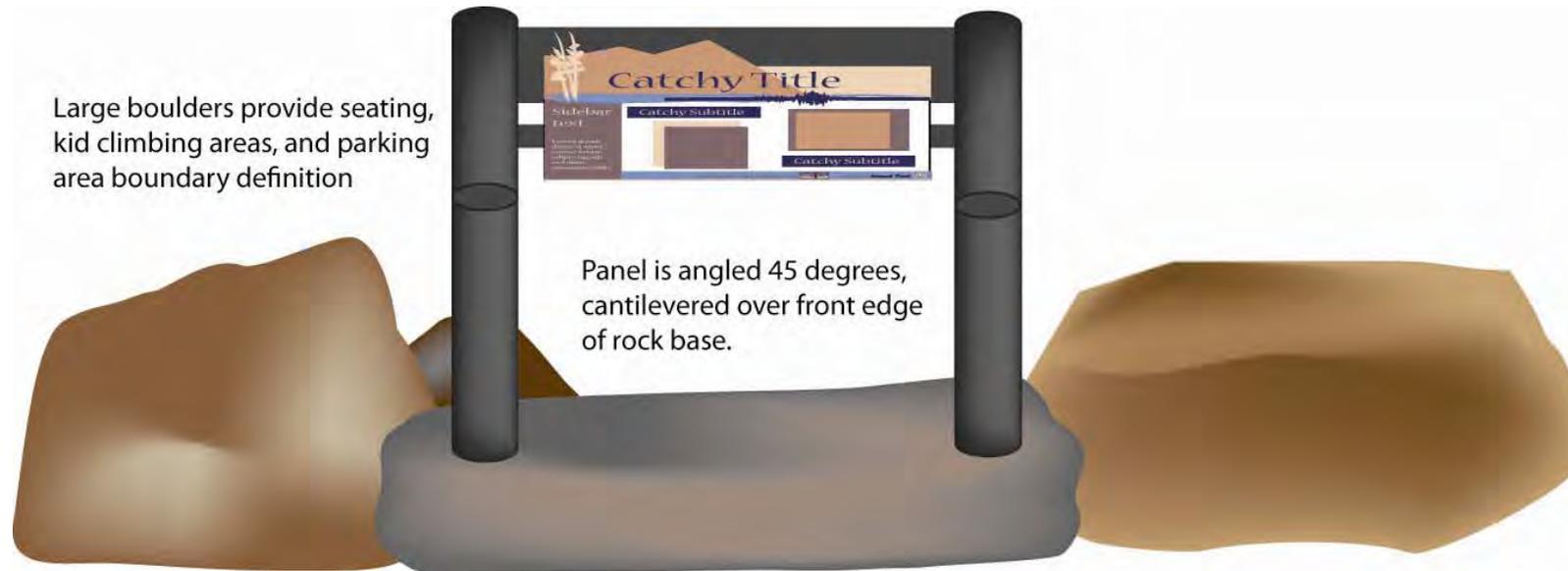
Because of the significant expression of rock (in the slide and elsewhere), native, or native-appearing rock is a logical element for inclusion into Earthquake Lake Geologic Area exhibit structures. Interpretive messages can actually be mounted on top of, or into, natural or constructed rocks, and would work well especially at the Visitor Center. Exhibits with more than one panel would be linked together via the metal straps, similar to the portal kiosk example.

Figure 8: Examples of Wayside Exhibit Structures

This structure shows the interpretive panel mounted vertically, appropriate at sites such as Earthquake Lake Overlook and Building Destruction parking area. Multiple panels can be linked together by connecting the metal vertical posts with metal strapping as with the portal kiosks. A multi-panel exhibit could be aligned in a semi-circle or in a stretched “Z” depending on the site.

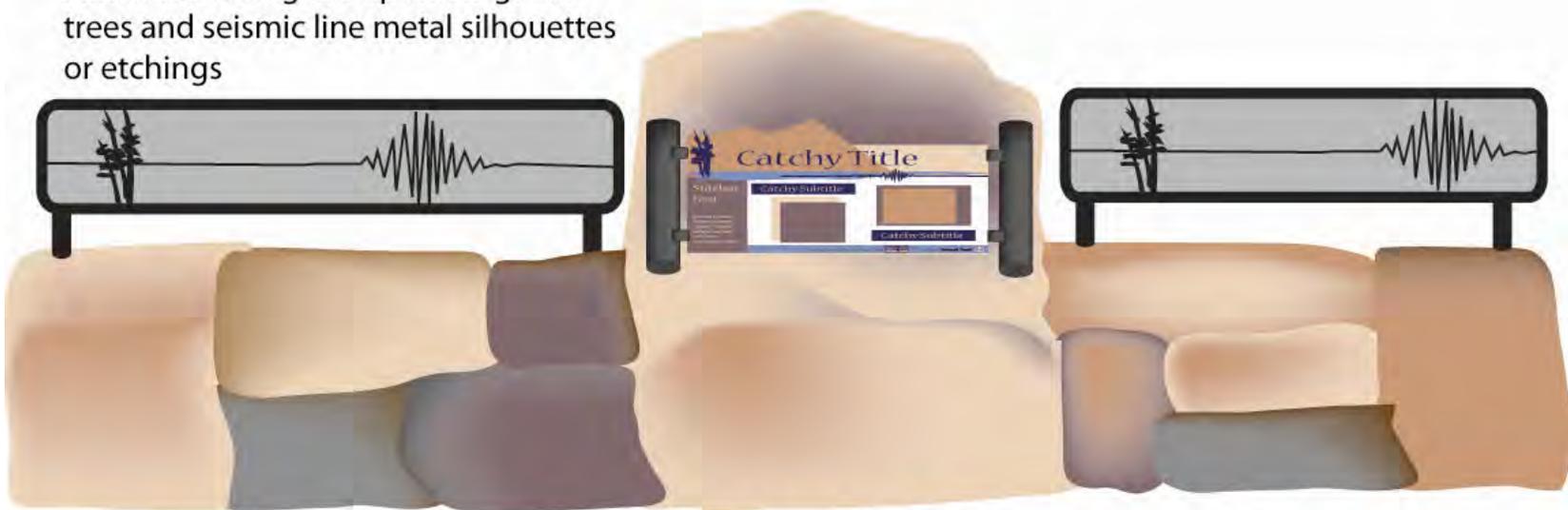


Low-profile exhibits are appropriate where the view should not be obscured, such as near the lake at the Building Destruction site, and at the Cabin Creek scarp.



Panels can be mounted into rock as part of the railing for the site (e.g. at the Visitor Center patio, Sister Boulder)

Flat metal railing incorporates ghost trees and seismic line metal silhouettes or etchings



Panel cantilevered over front of straight-faced rock to ensure accessibility (similar to low-profile example)

SECTION 10: COST ESTIMATES AND PRIORITIES

10.A: Prioritization Criteria

The following criteria, in order of importance, were used to prioritize sites for development:

1. How critical is this site to the overall theme, subthemes, and the Visitor Center experience?
2. Does the site have multiple themes, subthemes, or storylines?
3. Does this site draw a large audience?
4. Is site construction necessary?

Once prioritized, district staff will further discriminate priorities based on available funding and partnerships.

Table 2 – Cost Estimates and Priorities

Map #	Site	Item	Panel Design	Panel Fabricate	Structure, base, & site construct.	Removal of existing structure	Total	Priority
1	East Portal	3-panel kiosk	\$ 6,000	\$ 1,950		\$ 300	\$ 8,250	9
2	Red Canyon	Decommission				\$ 300	\$ 300	
2a	Red Canyon Access Road	Hebgen scarp road access sign		\$ 100		\$ 250	\$ 350	16
3	Hebgen Lake	Remove panels and construct a seat wall				\$ 500	\$ 500	
4	Building Destruction	3-panel exhibit at parking area	\$ 6,000	\$ 1,950		\$ 250	\$ 8,200	6
		1 panel at lakeshore	\$ 2,000	\$ 500			\$ 2,500	6
5	Hebgen Dam	1 panel at fishing pier	\$ 2,000	\$ 500			\$ 2,500	15
6	Cabin Creek	2 panels	\$ 4,000	\$ 1,000		\$ 300	\$ 5,300	8
		Picnic table and fire grate				\$ 200	\$ 200	8
7	Refuge Point	1-panel exhibit	\$ 2,000	\$ 650		\$ 250	\$ 2,900	7
7a	Ghost Village	1-panel exhibit	\$ 2,000	\$ 500			\$ 2,500	7
8	Beaver Creek	Watchable Wildlife Signs		\$ 300		\$ 250	\$ 550	17
							\$ -	

Map #	Site	Item	Panel Design	Panel Fabricate	Structure, base, & site construct.	Removal of existing structure	Total	Priority
10	Earthquake Lake Overlook	2-panel exhibit	\$ 4,000	\$ 1,300		\$ 300	\$ 5,600	5
							\$ -	
11	Rock Creek	1-panel exhibit	\$ 2,000	\$ 650			\$ 2,650	13
							\$ -	
12	VC Area A - Exterior	2 panels on building exterior	\$ 4,000	\$ 3,000			\$ 7,000	1
		Update rock fascia on VC and Restroom					\$ -	
		Concrete sculpture					\$ -	1
		2 panels on patio rock wall/railing	\$ 4,000	\$ 1,000			\$ 5,000	1
							\$ -	
12	VC Area B - Memorial Boulder Parking	3-panel exhibit	\$ 6,000	\$ 1,500		\$ 100	\$ 7,600	2
							\$ -	
12	VC Area C - Turn-around Loop	2-panel exhibit	\$ 4,000	\$ 1,000		\$ 100	\$ 5,100	4
							\$ -	
12	VC Area D - Memorial Boulder Trailhead	1-panel exhibit	\$ 2,000	\$ 500		\$ 250	\$ 2,750	3
							\$ -	
12	VC Area E - Memorial Boulder	1-panel exhibit (memorial)	\$ 2,000	\$ 500				11
12	VC Area F - Rock Overlook	2 panels	\$ 4,000	\$ 1,000				10
12	VC Area G - Sister Boulder	New rock wall and railing					\$ -	
		1 panel mounted to rock wall/railing	\$ 2,000	\$ 500			\$ 2,500	12

Map #	Site	Item	Panel Design	Panel Fabricate	Structure, base, & site construct.	Removal of existing structure	Total	Priority
		Trail to VC parking area					\$ -	14
		Tactile geology exhibits along new trail					\$ -	14
							\$ -	
13	West Portal	3-panel kiosk (no design costs-replicas of East Portal)	\$ -	\$ 1,950			\$ 1,950	9
<i>Sub-total</i>			\$ 58,000	\$ 20,350		\$ 3,350	\$74,200	
<i>Contract Administration (20%)</i>			<i>\$11,600</i>	<i>\$ 4,070</i>		<i>\$ 670</i>	<i>\$ 4,840</i>	
TOTAL			\$ 69,600	\$ 24,420		\$ 4,020	\$89,040	
Assumptions:								
Design costs are \$2,000 per panel								
All portal kiosk panels are 48" high by 36" wide, fabricated in high-pressure digital laminate or equivalent (\$650)								
All low-profile panels are 24" high by 36" wide, fabricated in high-pressure digital laminate or equivalent (\$500)								
For item 12, if the exterior building panels are fabricated of "Alto" material, the cost would increase to \$10,000								
All panels are estimated as if they were each designed and fabricated individually. There would be cost savings if done in "packages."								
Columns in red to be completed with architectural and engineering assistance.								

Summary of Priorities

1. Visitor Center Exhibit Area A – exterior panels for building and rock wall, and concrete sculpture
2. Visitor Center Exhibit Area B – Memorial Boulder parking area wayside exhibit
3. Visitor Center Exhibit Area D – Memorial Boulder Trailhead panel
4. Visitor Center Exhibit Area C – Turn-around loop wayside exhibit
5. Earthquake Lake overlook wayside exhibit
6. Building Destruction parking area wayside exhibit and lakeshore panel
7. Refuge Point parking area wayside exhibit and Ghost Village overlook panel
8. Cabin Creek wayside exhibit
9. East and west portal kiosks
10. Visitor Center Exhibit Area F – Memorial Boulder rock overlook panels
11. Visitor Center Exhibit Area E – Memorial Boulder panel
12. Visitor Center Exhibit Area G – Sister Boulder panel
13. Rock Creek wayside exhibit
14. Visitor Center Exhibit Area G – Sister Boulder interpretive trail to Visitor Center
15. Hebgen Dam fishing pier panel
16. Red Canyon/Hebgen Scarp access road directional sign
17. Beaver Creek Watchable Wildlife approach signs