Stehekin River Corridor Implementation Plan

Summary of Draft Environmental Impact Statement

National Park Service

2010

SRCIP Purpose:

Provide more detailed and updated guidance from the 1995 General Management Plan following the record floods of 1995, 2003, and 2006.

SRCIP Scope:

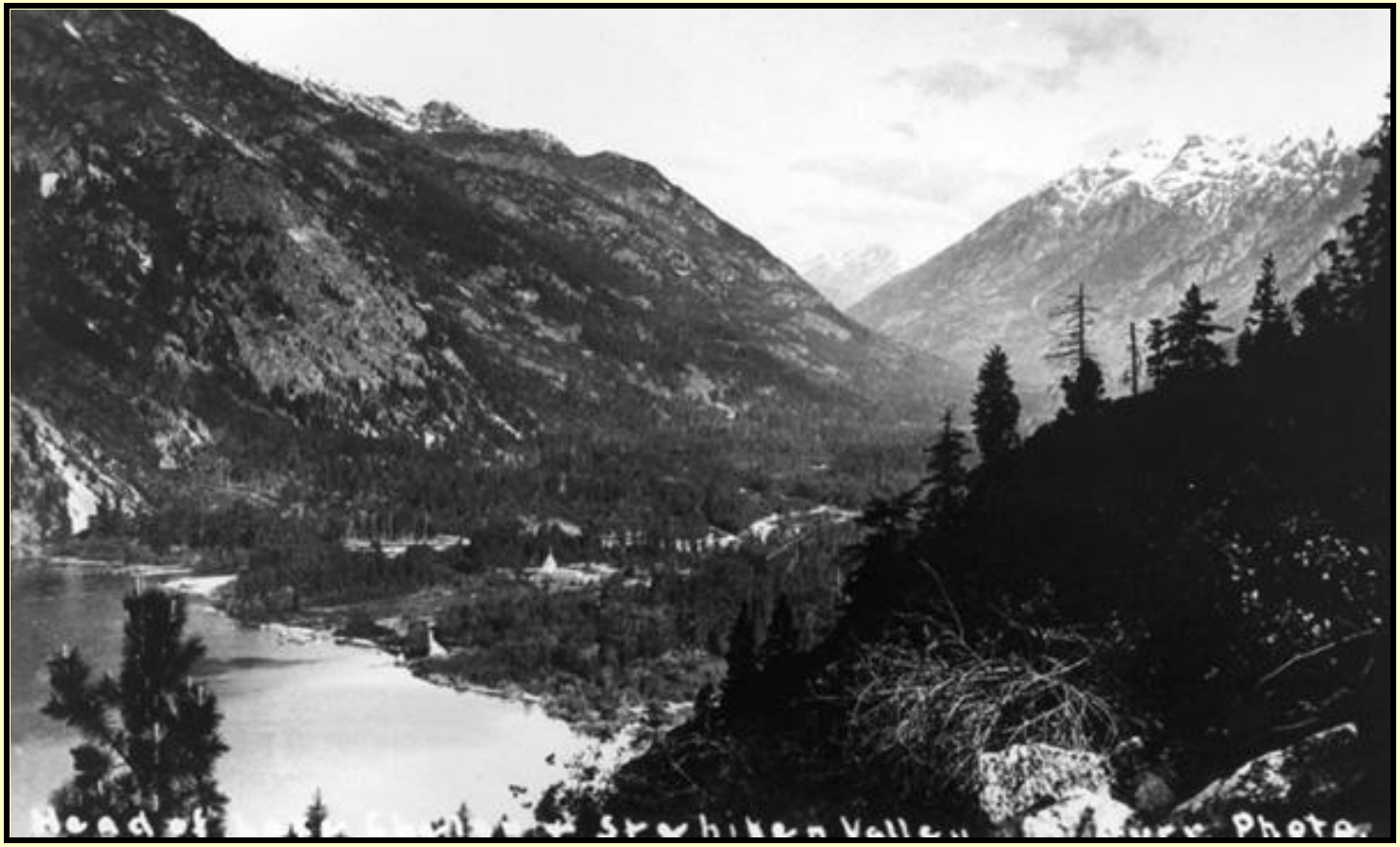
Lower Stehekin River valley below High Bridge and outside designated wilderness.

Issues:

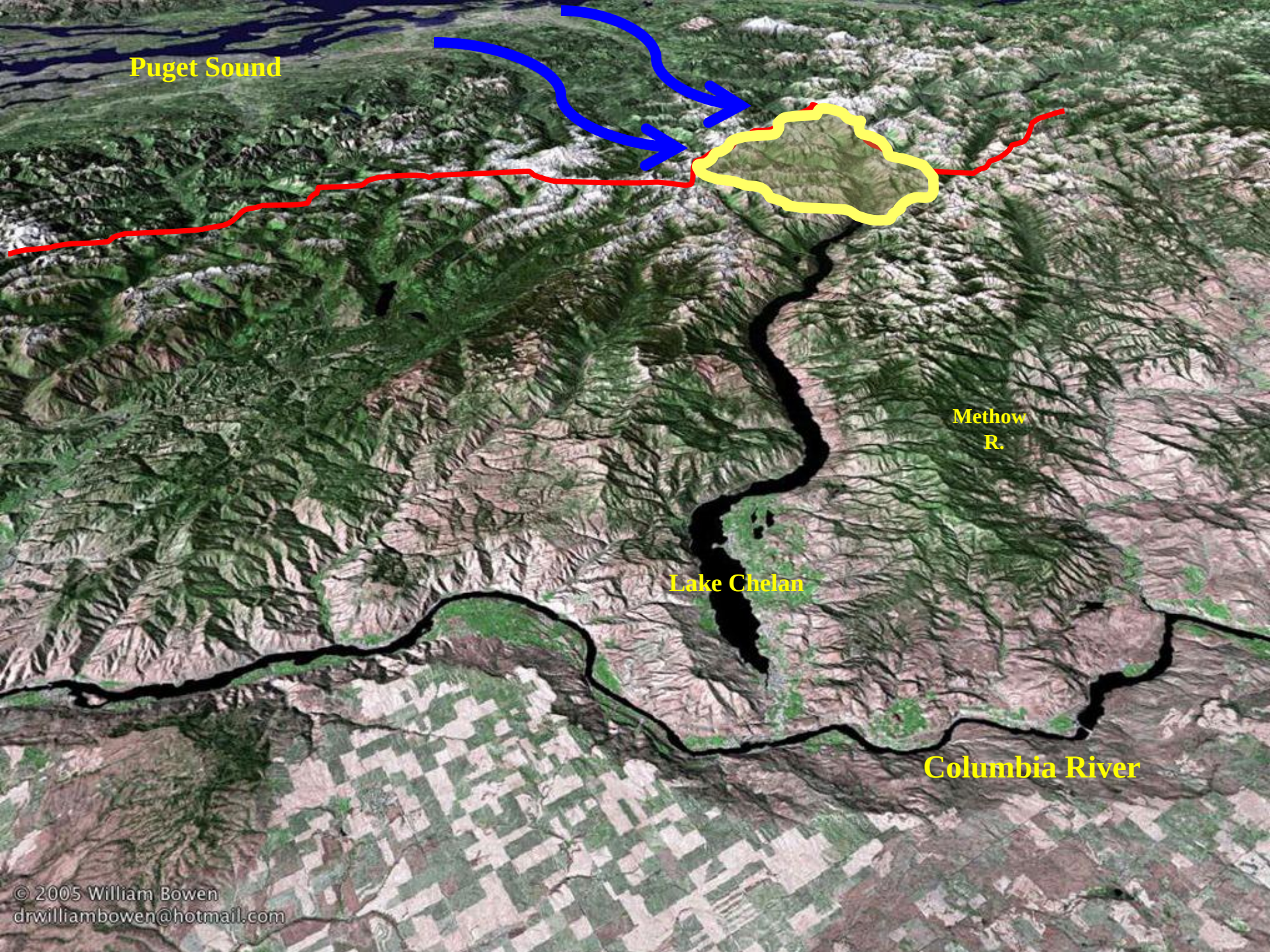
1) Larger and more frequent floods on a flood-prone river;
2) Unprecedented flood damage and channel changes since 1995;
3) Assess cumulative effects of past and proposed actions;
4) Manage limited funds; and
5) Sustain public facilities and community.

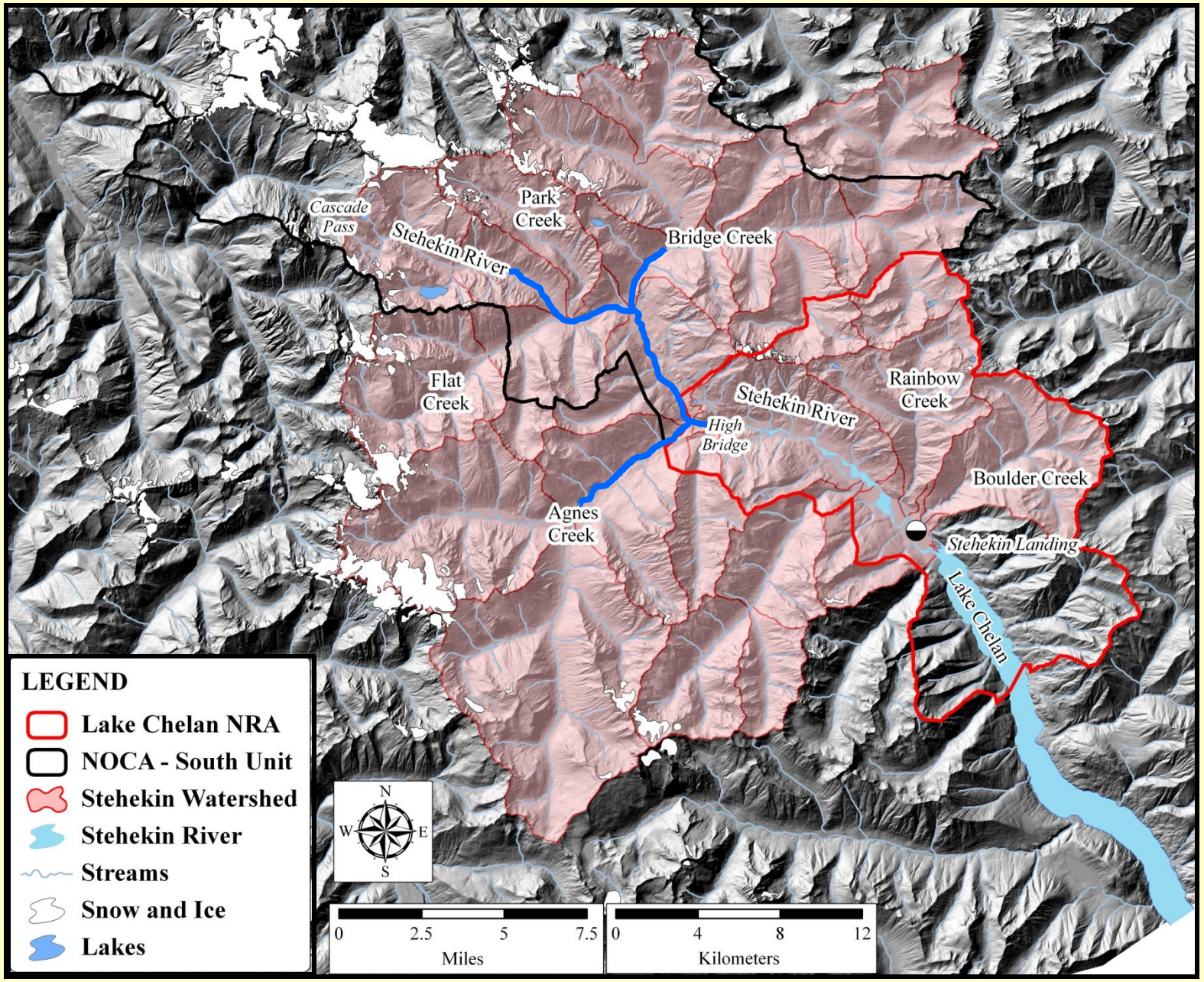

TIN
CANS

Background

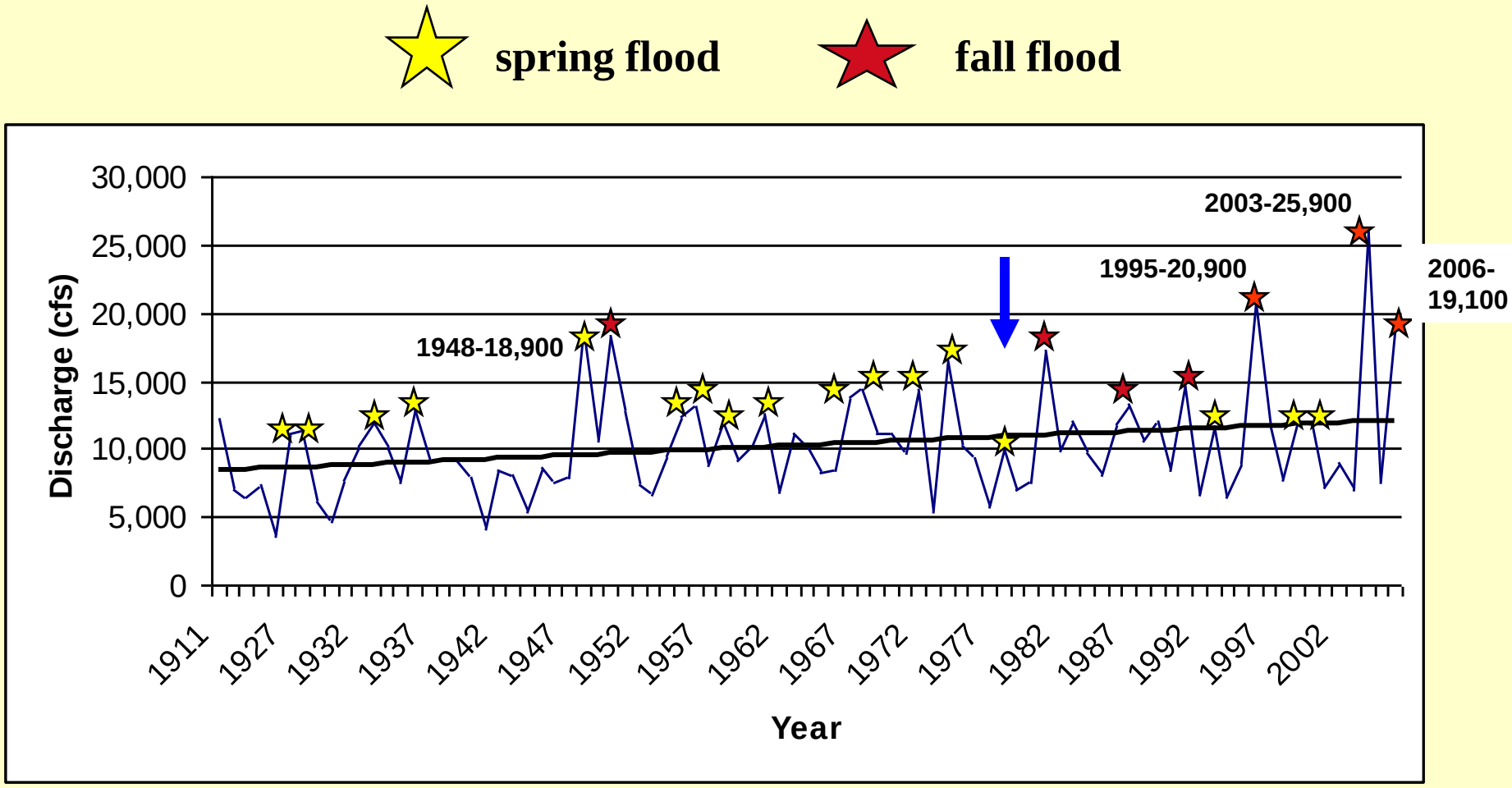


Stehekin River mouth circa 1920 (pre dam).

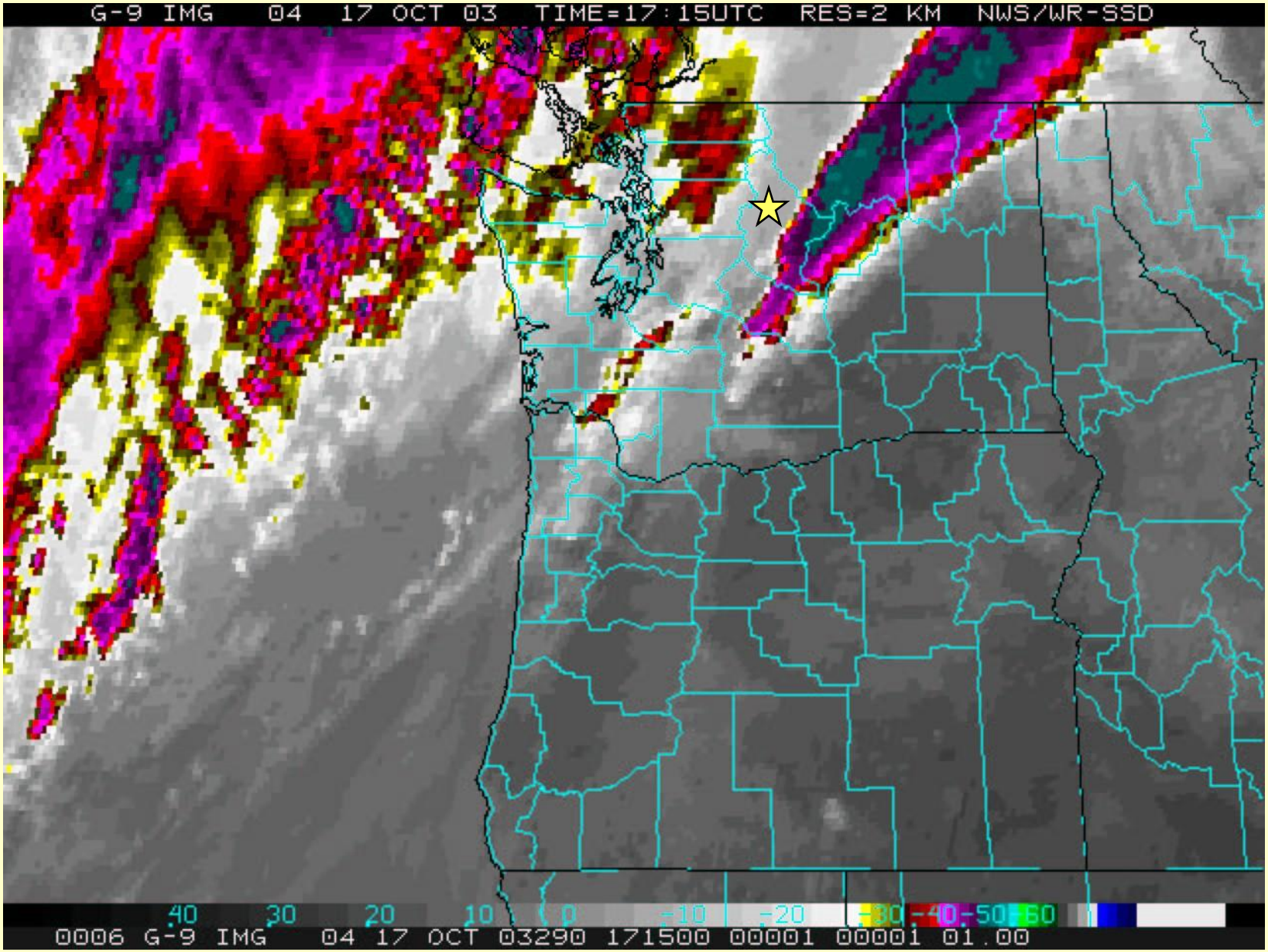

Puget Sound
Methow
R.
Lake Chelan
Columbia River
© 2005 William Bowen
drwilliambowen@hotmail.com

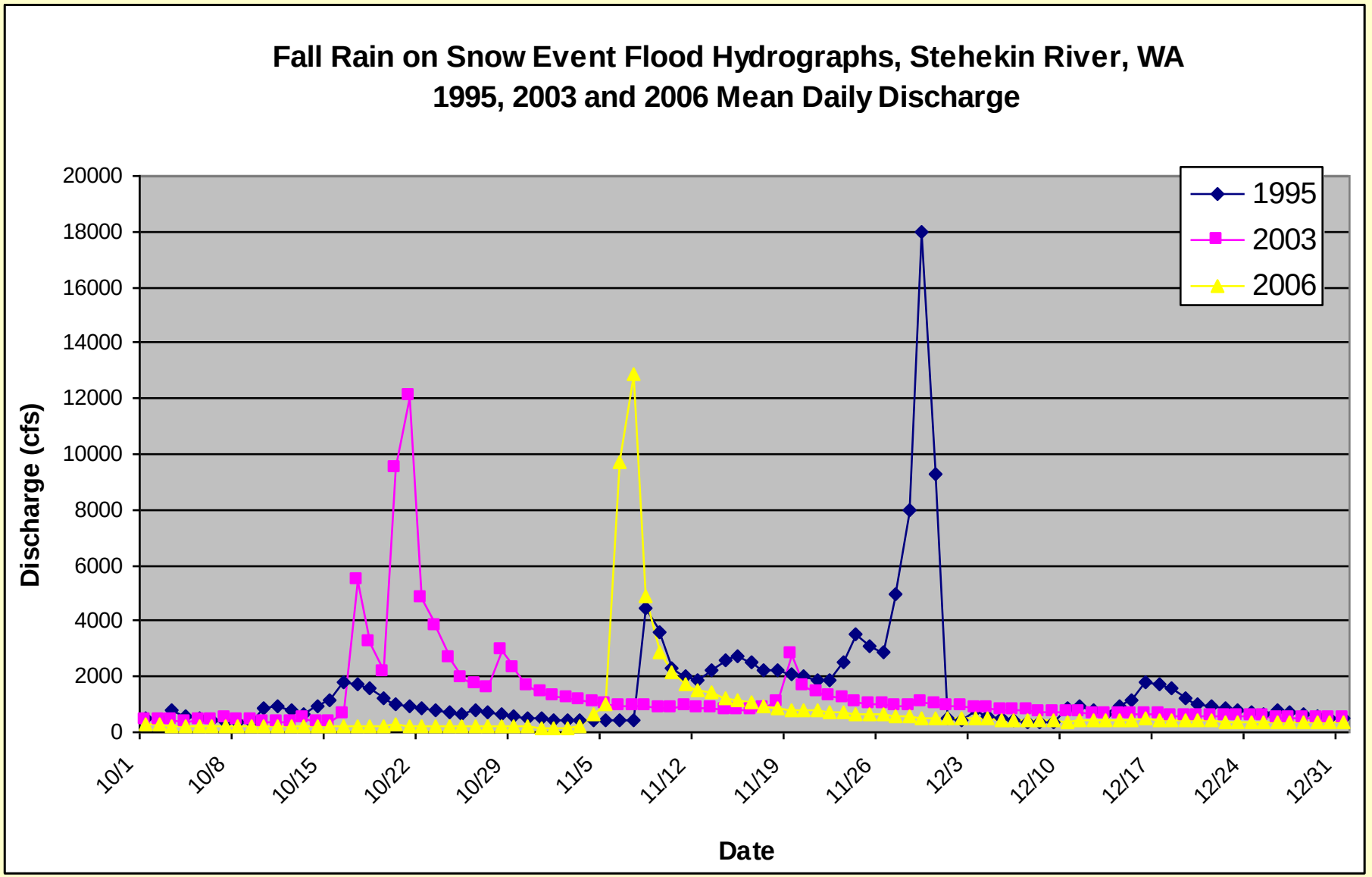

Cascade Pass
Park Creek
Stehekin River
Bridge Creek
Flat Creek
Stehekin River
Rainbow Creek
High Bridge
Boulder Creek
Agnes Creek
Stehekin Landing
Lake Chelan
LEGEND
Lake Chelan NRA
NOCA - South Unit
Stehekin Watershed
Stehekin River
Streams
Snow and Ice
Lakes
N
W
E
S
0 2.5 5 7.5
Miles
0 4 8 12
Kilometers

Magnitude and Timing of the Annual Peak Flood on the Stehekin River



Satellite (IR) views of October 17 and 20, 2003 storms



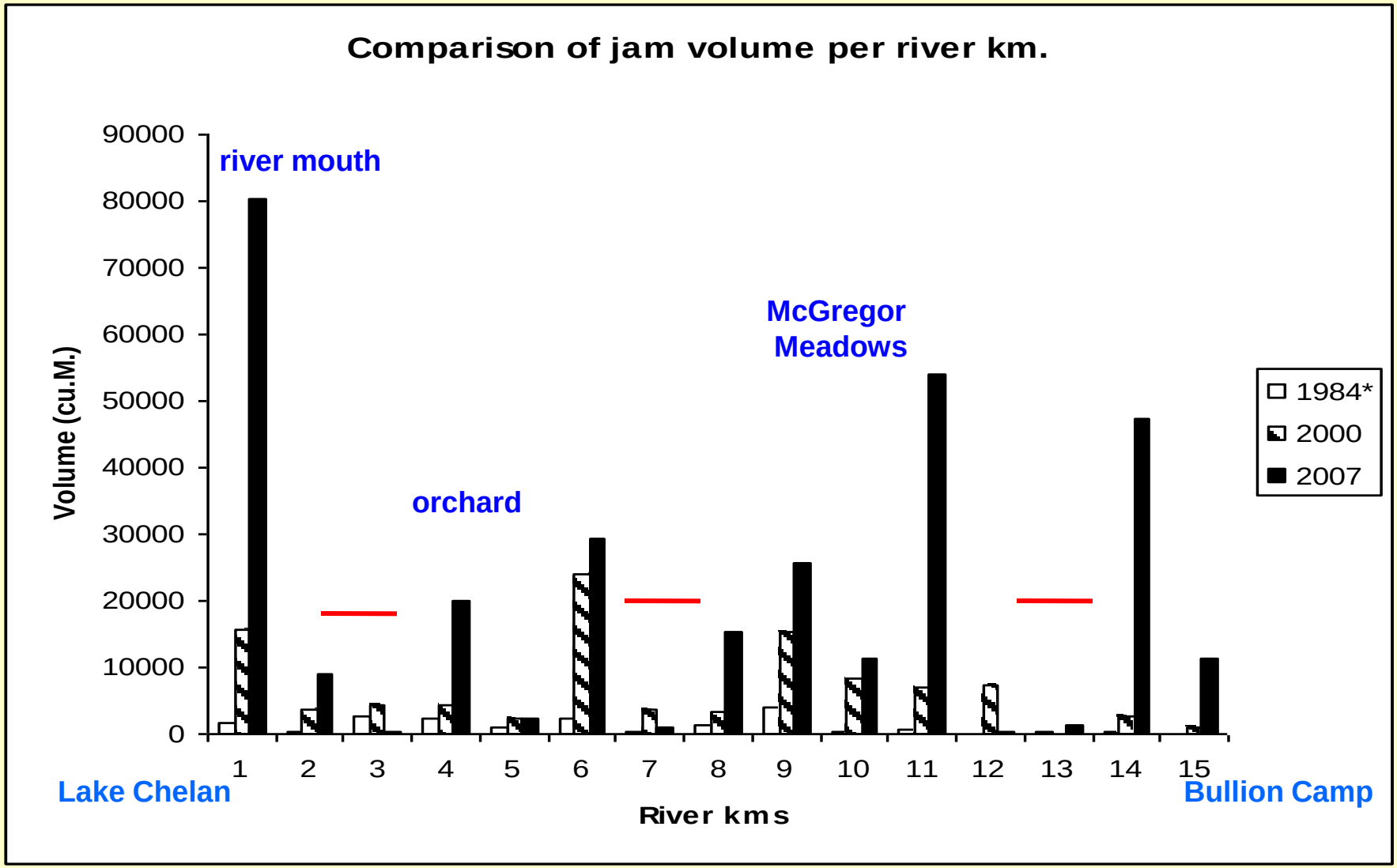

Fall Rain on Snow Event Flood Hydrographs, Stehekin River, WA
1995, 2003 and 2006 Mean Daily Discharge
Discharge (cfs)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
10/1
10/8
10/15
10/22
10/29
11/5
11/12
11/19
11/26
12/3
12/10
12/17
12/24
12/31
Date
1995
2003
2006

Comparison of two approaches for determining flood frequency and magnitude

Recurrence interval (probability in given year)	Discharge (cfs) for combined fall and spring floods (# events 85)	Discharge (cfs) for spring floods alone (# events = 70)	Discharge (cfs) for fall floods alone (#events = 16)
10 – year (0.1)	14,950	13,740	21,360 cfs
20 –year (0.04)	17,560	15,100	26,220 cfs
50 – year (0.02)	19,490	16,190	29,850 cfs
100 – year (0.01)	21,400	17,910	33,490 cfs

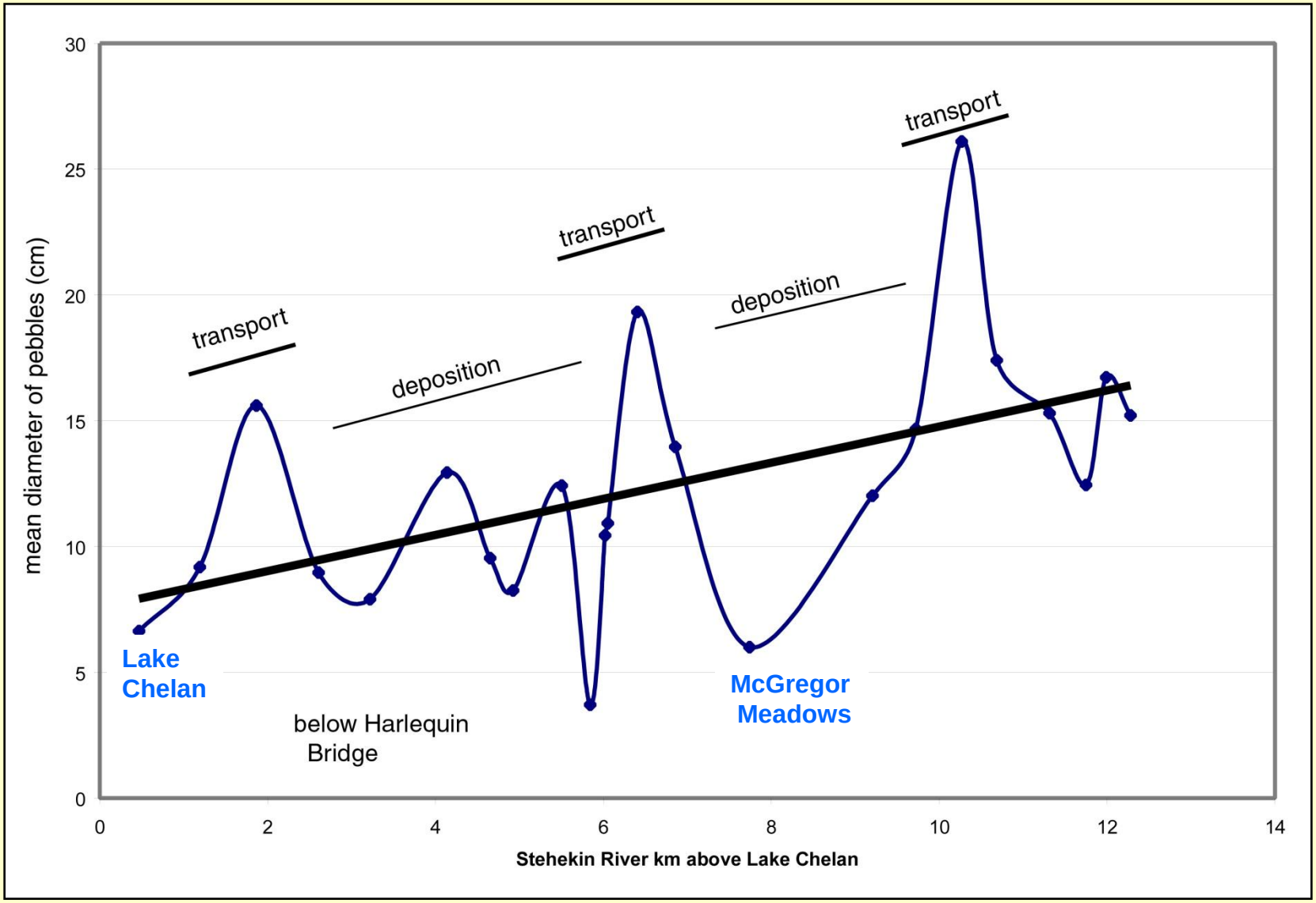
Rapid Accumulation of Large Woody Debris on the Stehekin River.

101 logjams 2000, 166 logjams in 2007

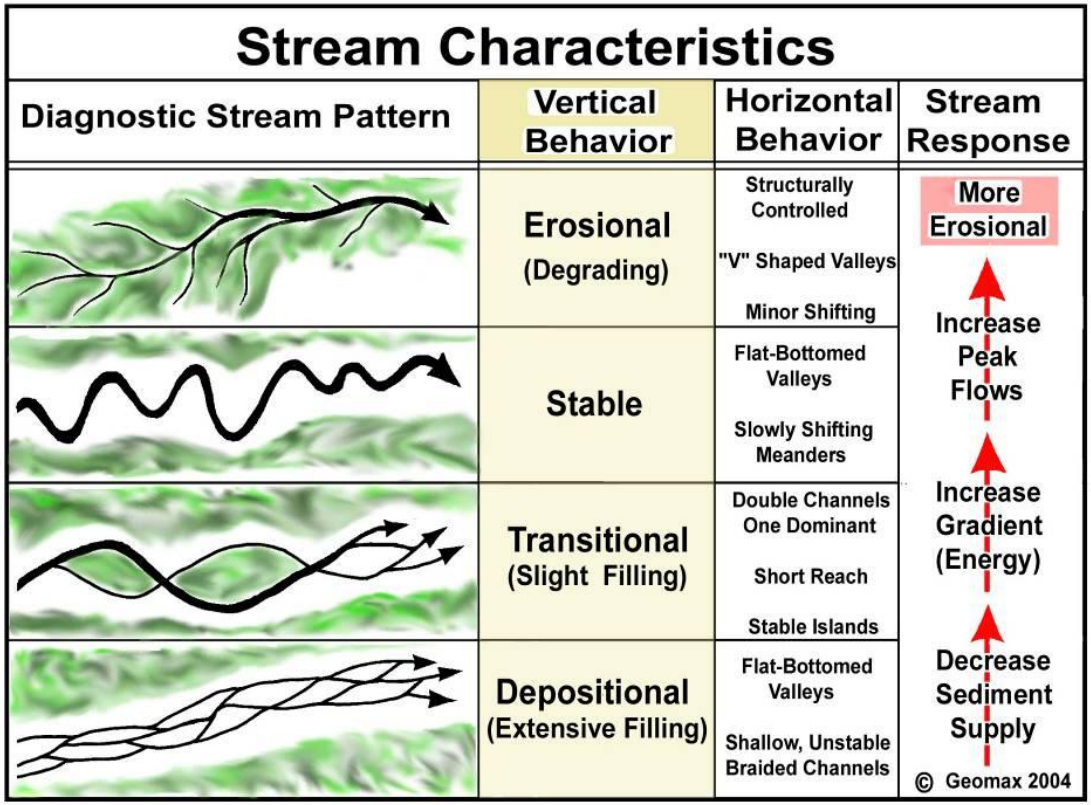


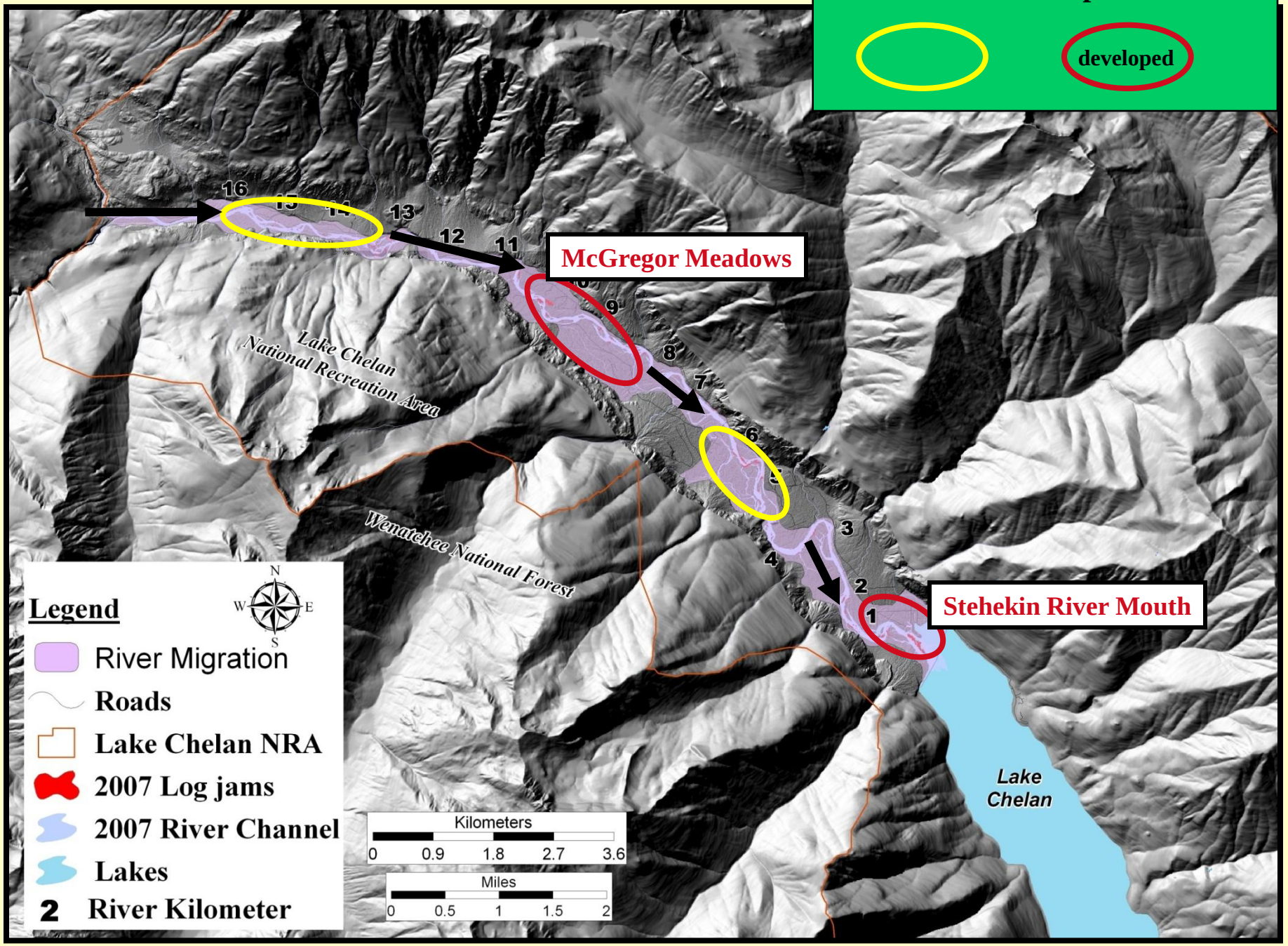
2000 volume 130,000 yd^3; 2007 volume 370,000 yd^3

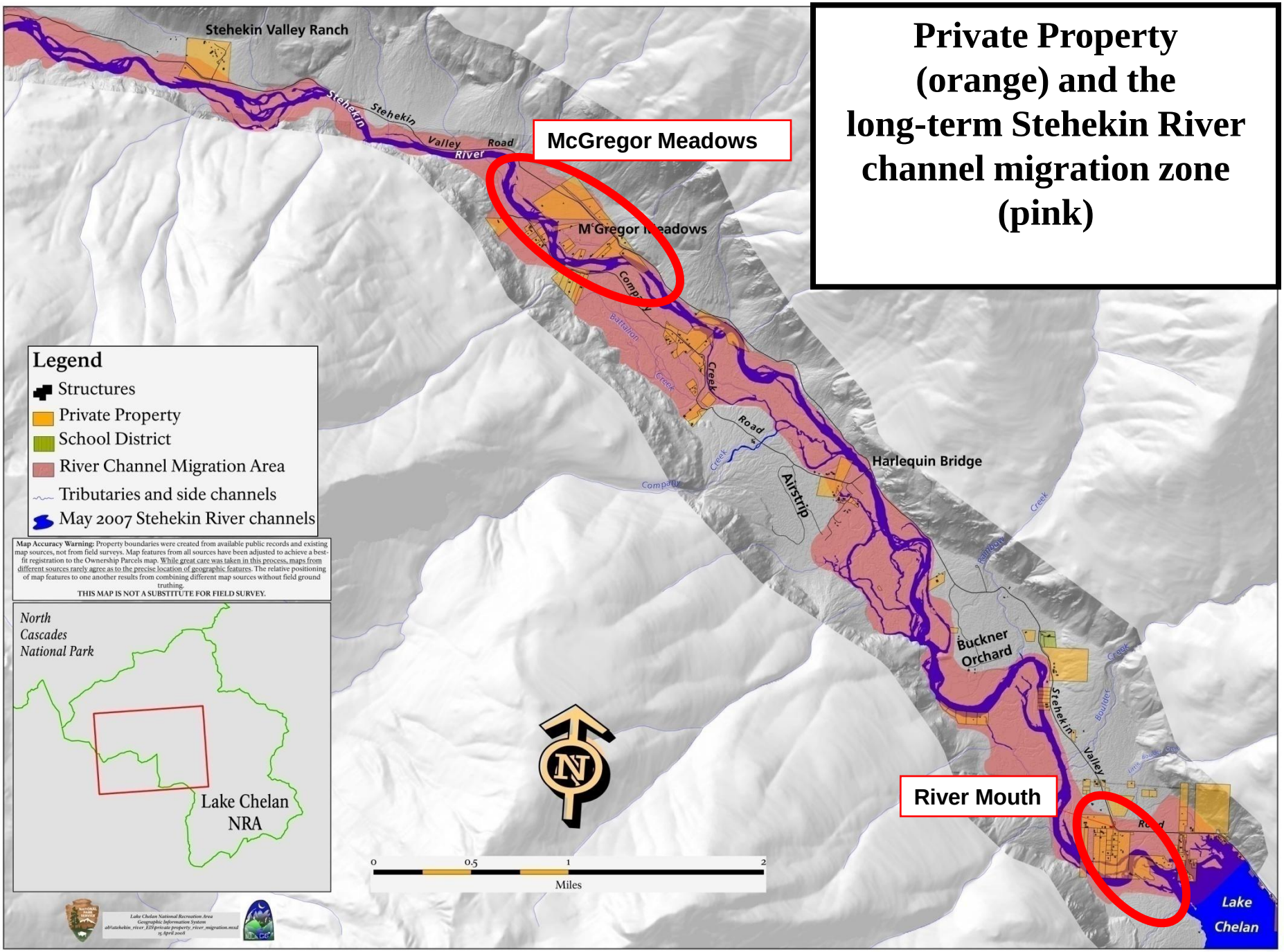
Changes in Gravel Size Along Lower Stehekin River

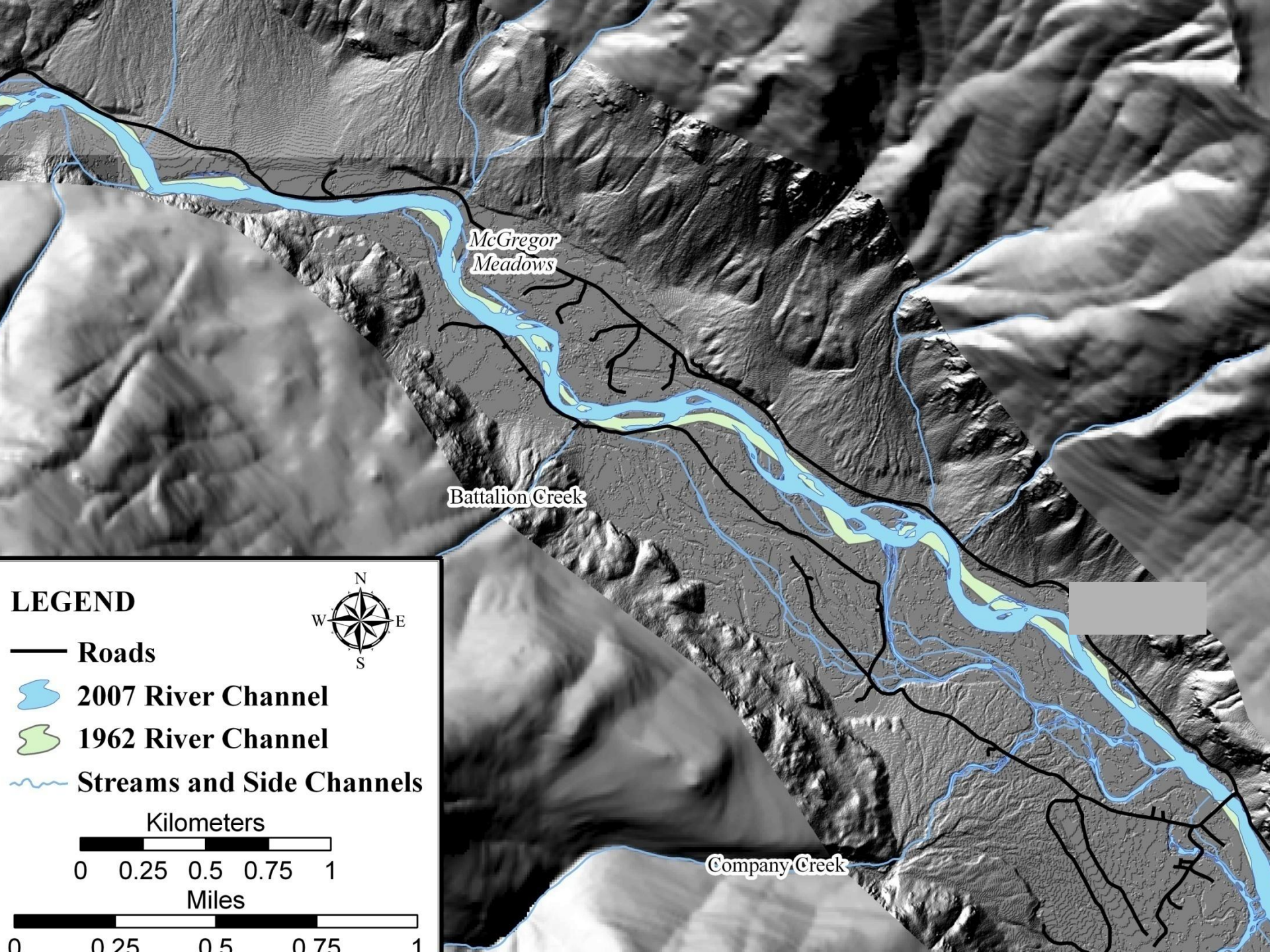


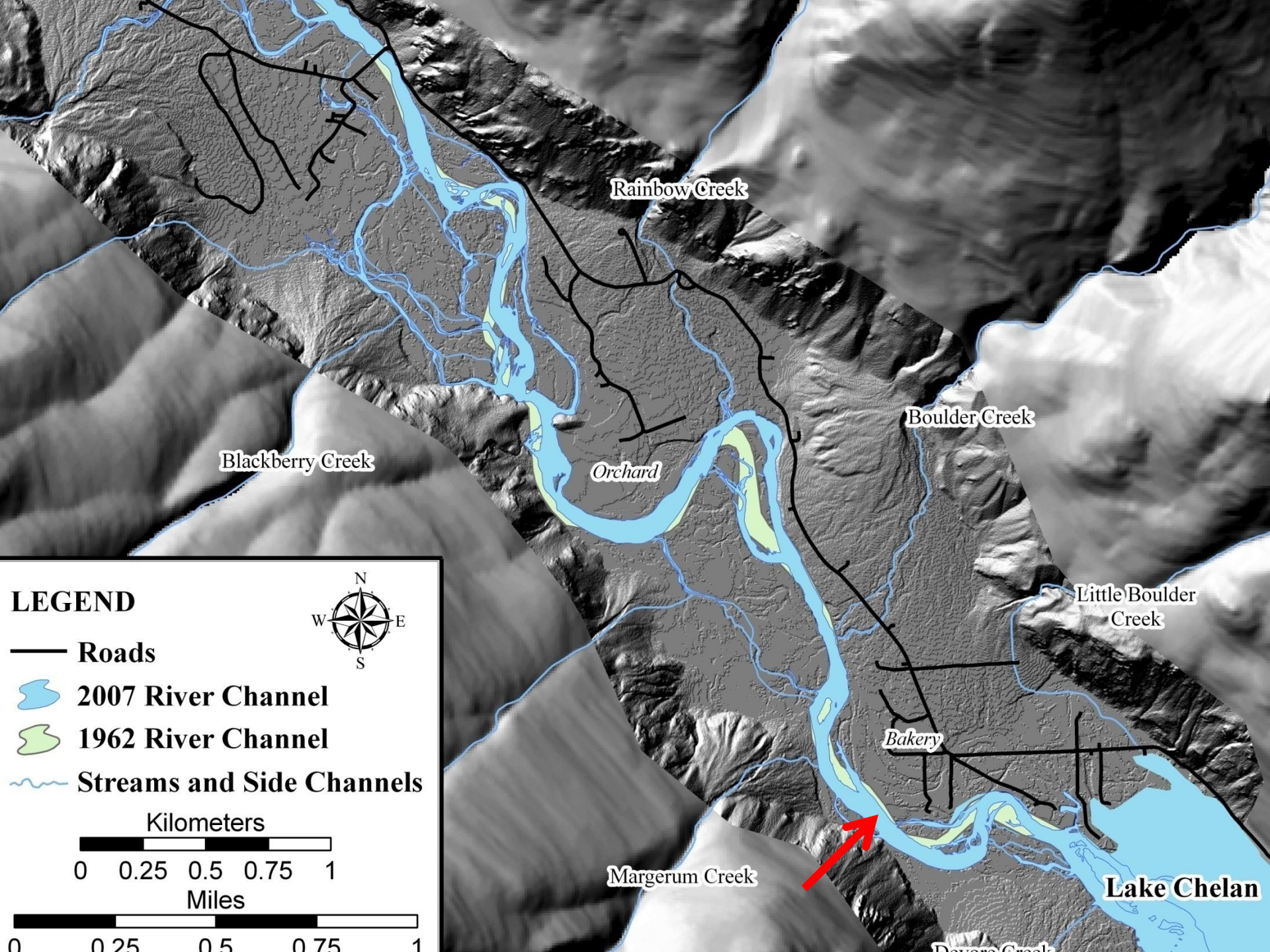
Stehekin


Stream Characteristics
Diagnostic Stream Pattern
Vertical Behavior
Horizontal Behavior
Stream Response
Erosional (Degrading)
Structurally Controlled
"V" Shaped Valleys
Minor Shifting
Stable
Flat-Bottomed Valleys
Slowly Shifting Meanders
Transitional (Slight Filling)
Double Channels One Dominant
Short Reach
Stable Islands
Depositional (Extensive Filling)
Flat-Bottomed Valleys
Shallow, Unstable Braided Channels
More Erosional
Increase Peak Flows
Increase Gradient (Energy)
Decrease Sediment Supply
© Geomax 2004


Wood-Sediment Deposition Zones
developed
McGregor Meadows
Stehekin River Mouth
Lake Chelan National Recreation Area
Wenatchee National Forest
Lake Chelan
16
13
12
11
9
8
7
6
4
3
2
1
Legend
River Migration
Roads
Lake Chelan NRA
2007 Log jams
2007 River Channel
Lakes
2 River Kilometer
N
W
E
S
Kilometers
0 0.9 1.8 2.7 3.6
Miles
0 0.5 1 1.5 2

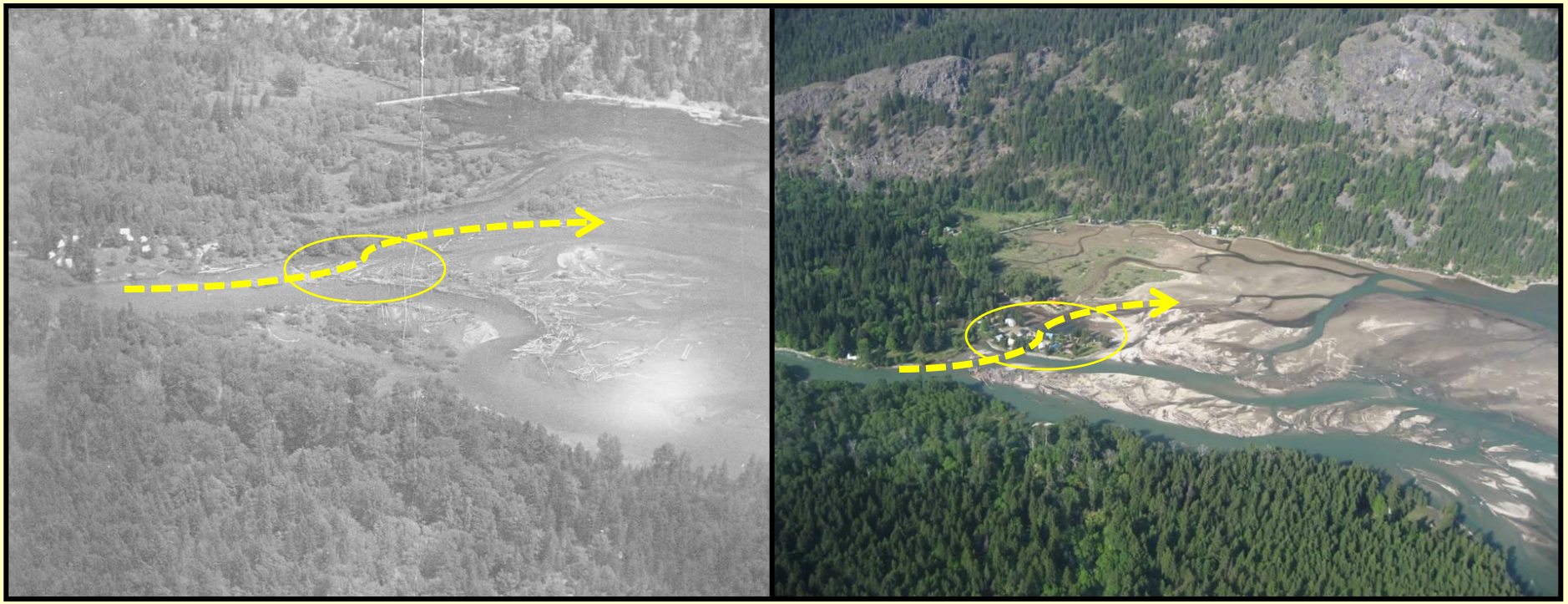

Private Property (orange) and the long-term Stehekin River channel migration zone (pink)
Stehekin Valley Ranch
Stehekin Valley Road
Stehekin River
McGregor Meadows
Harlequin Bridge
Airstrip
Buckner Orchard
River Mouth
Lake Chelan
Legend
Structures
Private Property
School District
River Channel Migration Area
Tributaries and side channels
May 2007 Stehekin River channels
Map Accuracy Warning: Property boundaries were created from available public records and existing map sources, not from field surveys. Map features from all sources have been adjusted to achieve a best-fit registration to the Ownership Parcels map. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field ground truthing.
THIS MAP IS NOT A SUBSTITUTE FOR FIELD SURVEY.
North Cascades National Park
Lake Chelan NRA
N
0 0.5 1 2
Miles
Lake Chelan National Recreation Area
Geographic Information System
ab\stehekin_river_EIS\private property_river_migration.mxd
15 April 2008


McGregor
Meadows
Battalion Creek
Company Creek
LEGEND
N
W
E
S
Roads
2007 River Channel
1962 River Channel
Streams and Side Channels
Kilometers
0 0.25 0.5 0.75 1
Miles
0 0.25 0.5 0.75 1


Rainbow Creek
Blackberry Creek
Orchard
Boulder Creek
Little Boulder Creek
Bakery
Margerum Creek
Lake Chelan
LEGEND
N
W
E
S
Roads
2007 River Channel
1962 River Channel
Streams and Side Channels
Kilometers
0 0.25 0.5 0.75 1
Miles
0 0.25 0.5 0.75 1

Stehekin River Mouth

1956 **2007**



Stehekin River Corridor Implementation Plan Schedule

Date	Activity-Milestone
January 2008	Public Scoping Meetings Seattle, Stehekin, Wenatchee
March 2008	NPS Alternatives Workshop
April 2008	Technical Committee Review Issues
June 2008	Public Information Newsletter on Preliminary Alternatives
August 2008	Public Newsletter and Open Houses Stehekin and Seattle
November 19-21, 2008	NPS Choosing By Advantage Alternative Workshop
April 2009	Technical Committee Review Actions
Sept. 2009– January 2010	Internal NPS, Regional Office, FHWA, Solicitor Reviews
June 2010	Technical Committee Review DEIS
July-September 2010	Print and Distribute Draft EIS and Land Protection Plan
September 2010	Public Site Visits
October 2010	Public Meetings Stehekin, Wenatchee, Seattle
Summer 2011	Release Final Plan and EIS
Fall 2011	Record of Decision
Summer 2012	Begin Plan Implementation

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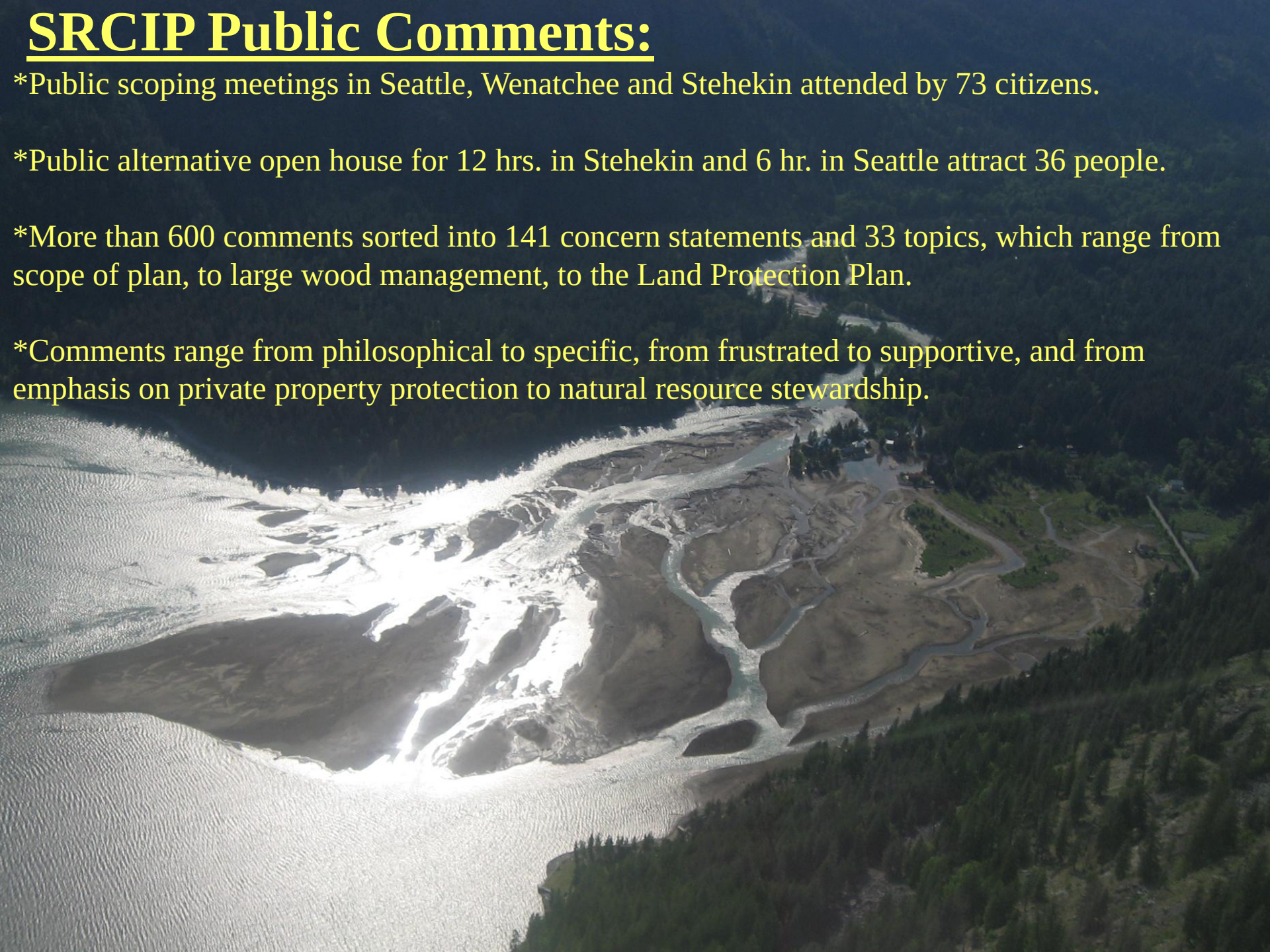
SRCIP Public Comments:

*Public scoping meetings in Seattle, Wenatchee and Stehekin attended by 73 citizens.

*Public alternative open house for 12 hrs. in Stehekin and 6 hr. in Seattle attract 36 people.

*More than 600 comments sorted into 141 concern statements and 33 topics, which range from scope of plan, to large wood management, to the Land Protection Plan.

*Comments range from philosophical to specific, from frustrated to supportive, and from emphasis on private property protection to natural resource stewardship.



Concepts for SRCIP Draft Alternatives

1) No Action - Continues Current Management Practices from 1995 GMP and Other Existing Plans.

2) At Risk Public Facilities Removed from the Channel Migration Zone Where Possible (preferred); Slightly More High Priority Land Exchange/Acquisition in the CMZ.

3) At Risk Public Facilities Removed from the Channel Migration Zone in Most Areas; Same Land Exchange/Acquisition as in Alterantive 2.

4) At Risk Public Facilities Removed from the Channel Migration Zone in Some Areas; Less High Priority Land Acquisition in CMZ.

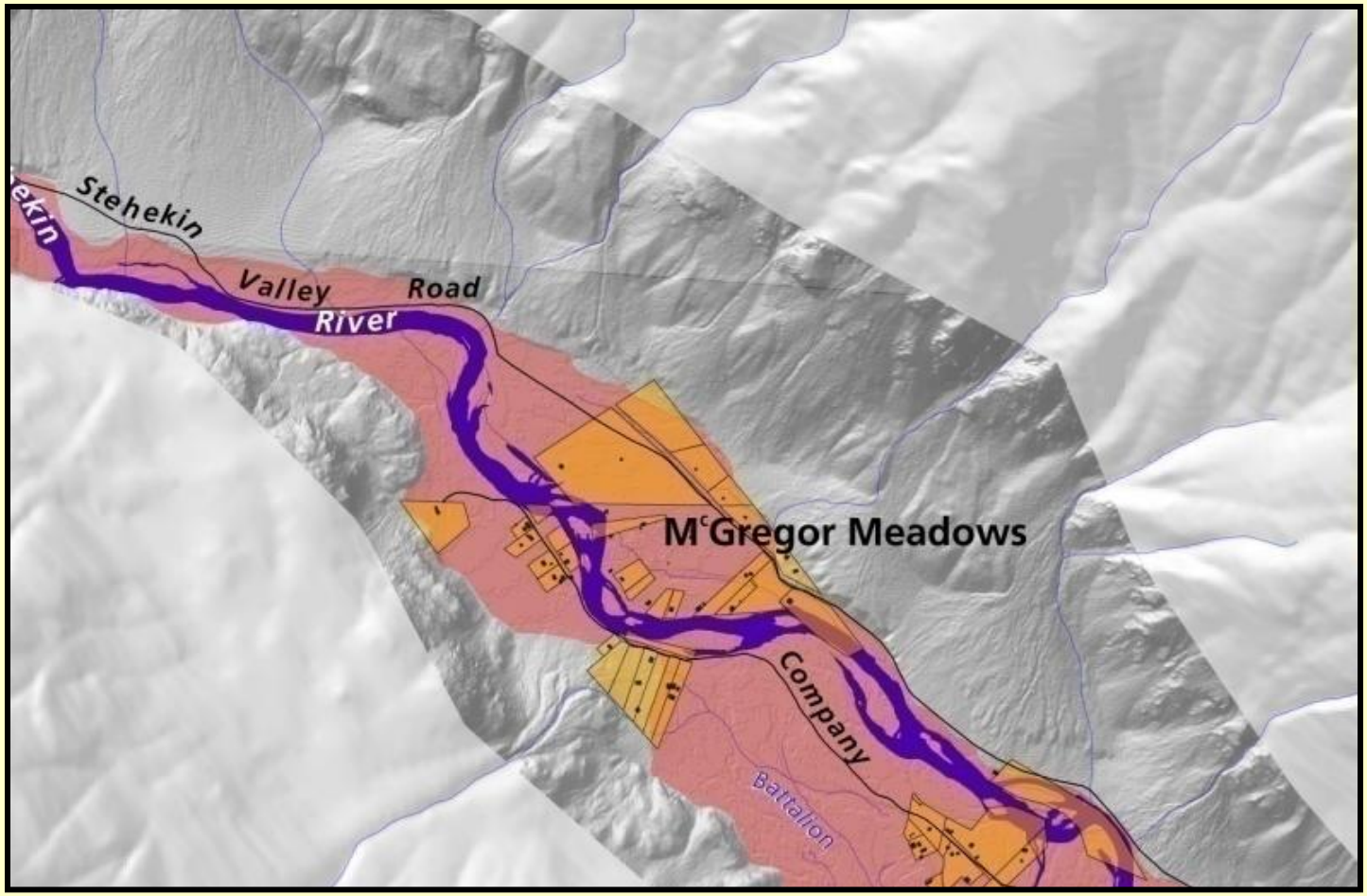
Floodplain Utilization – allows flood water to spread-out across the floodplain during large flood events; rejects heavy river manipulation tactics for these benefits:

-lower downstream flood velocity;
-increased base flow;
-wetland maintenance;
-sediment movement minimized;
- allows for pool and riffle development; and
-sustainable development.

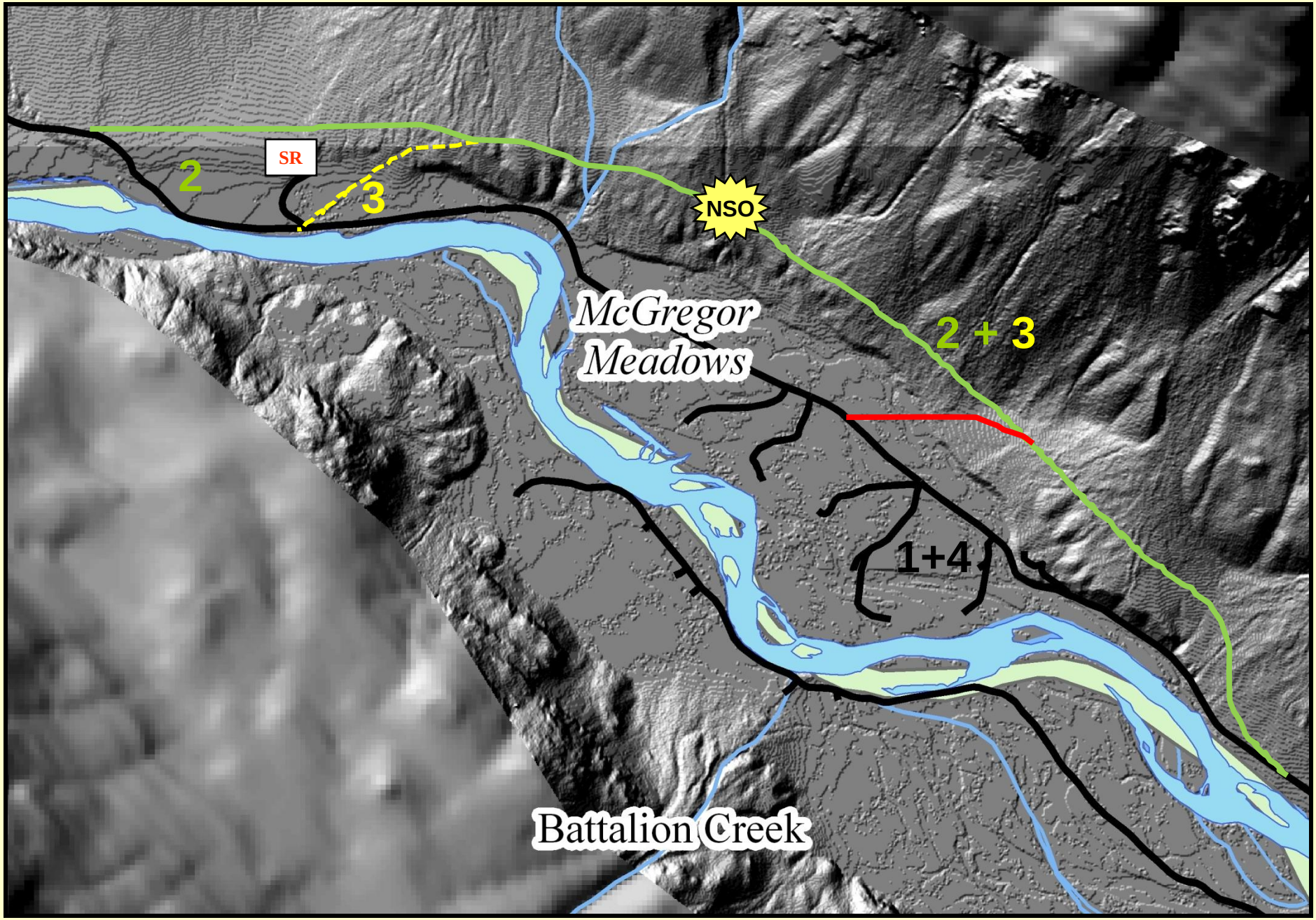
Photo from Field Hotel courtesy of Lake Chelan Historical Society

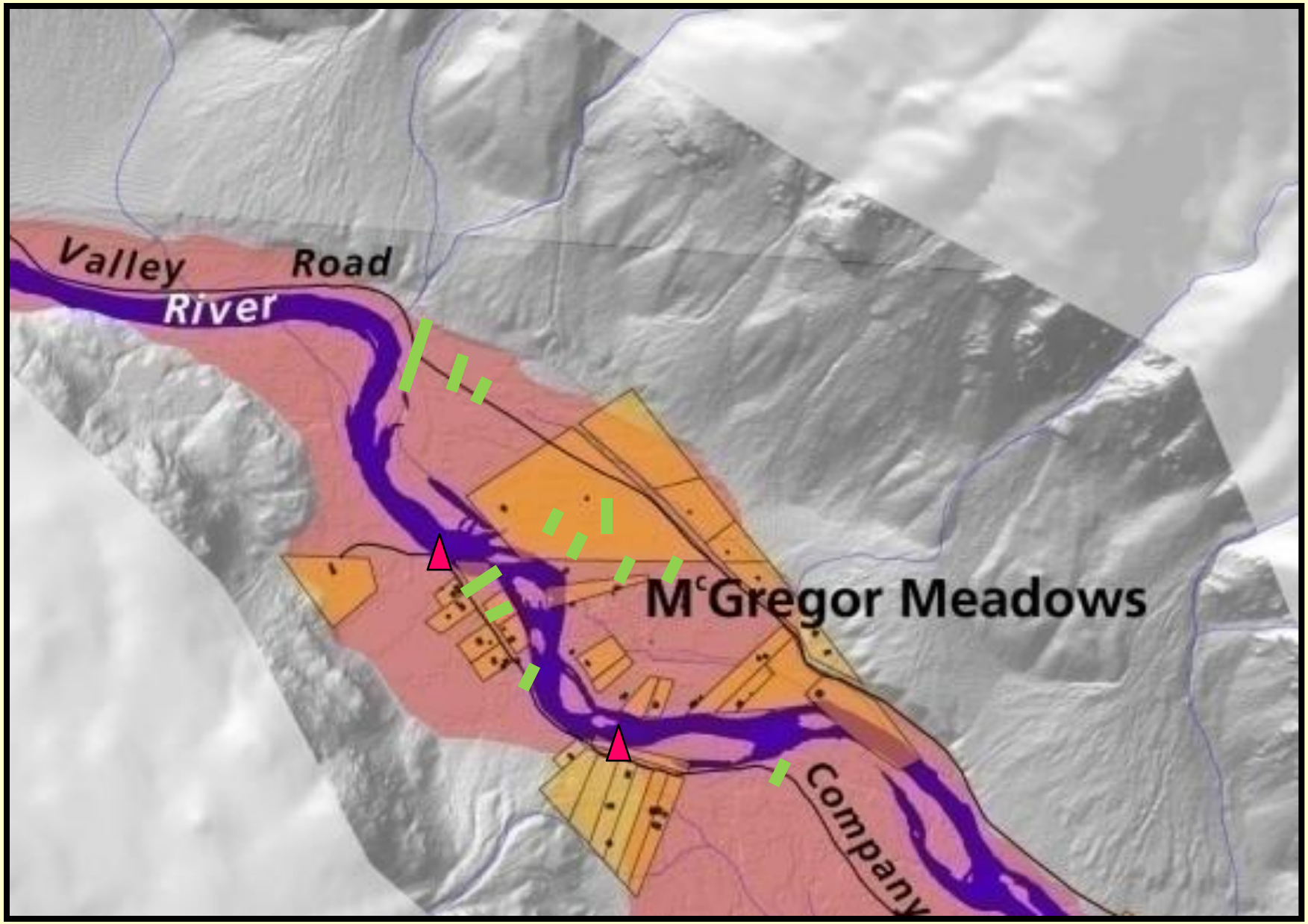
McGregor Meadows Deposition Zone Management Strategies:

- reroute main valley road;
- maintain sheet flow in floodplain (grade control);
- rehabilitate floodplain riparian areas;
- create opportunity for land exchange/acquisition in CMZ;



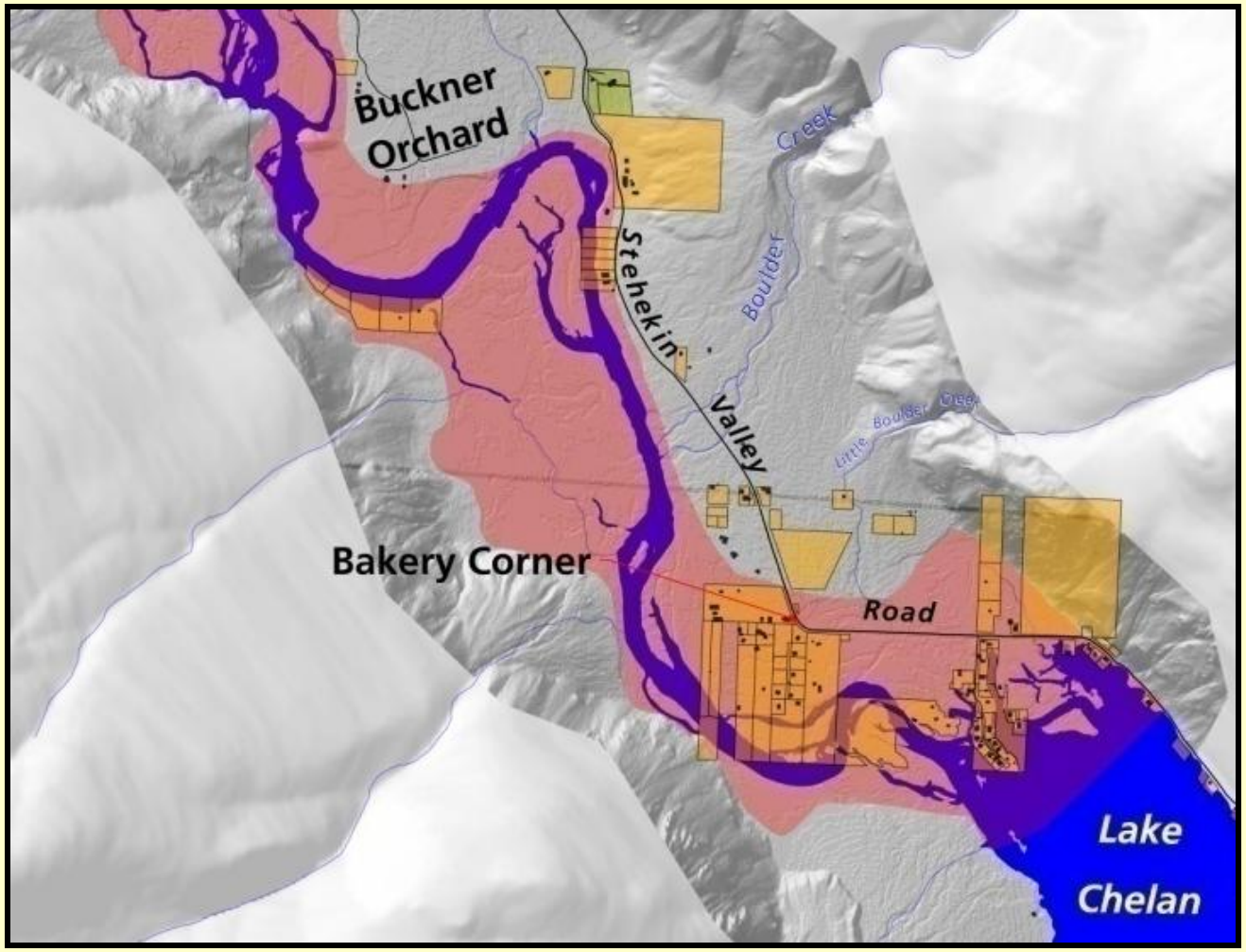
McGregor Meadows Road 2006 Flood


SR
2
3
NSO
McGregor
Meadows
2 + 3
1+4
Battalion Creek


Valley Road
River
McGregor Meadows
Company

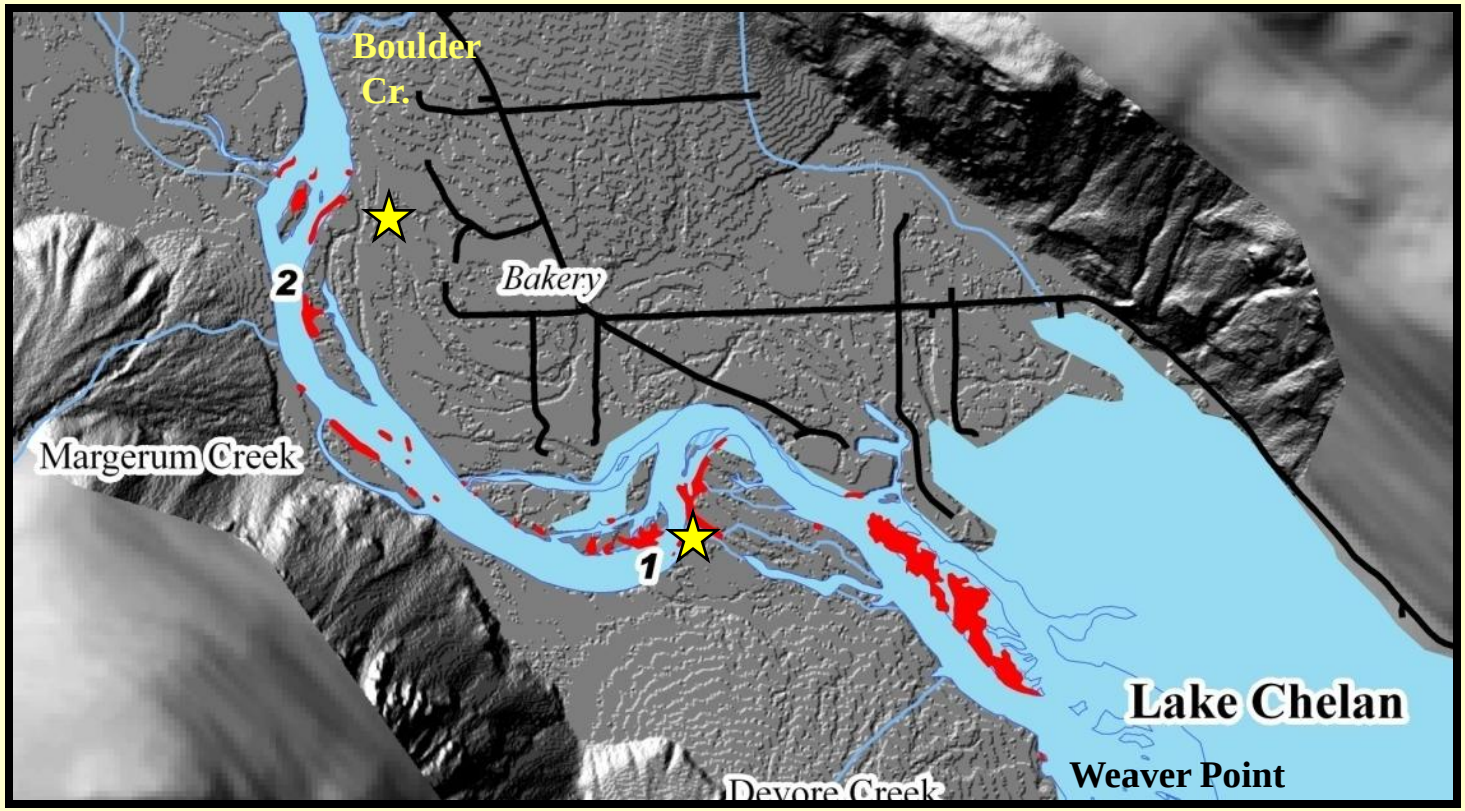
River Mouth Deposition Zone Management Strategies:

- restoration and rock barbs at river mouth;
- grade control/logjam extension below Boulder Cr.
- continue cooperative effort to keep 1948 channel open;
-create opportunities for land exchange/acquisition in CMZ;
- land exchange out of floodplain onto Boulder fan.



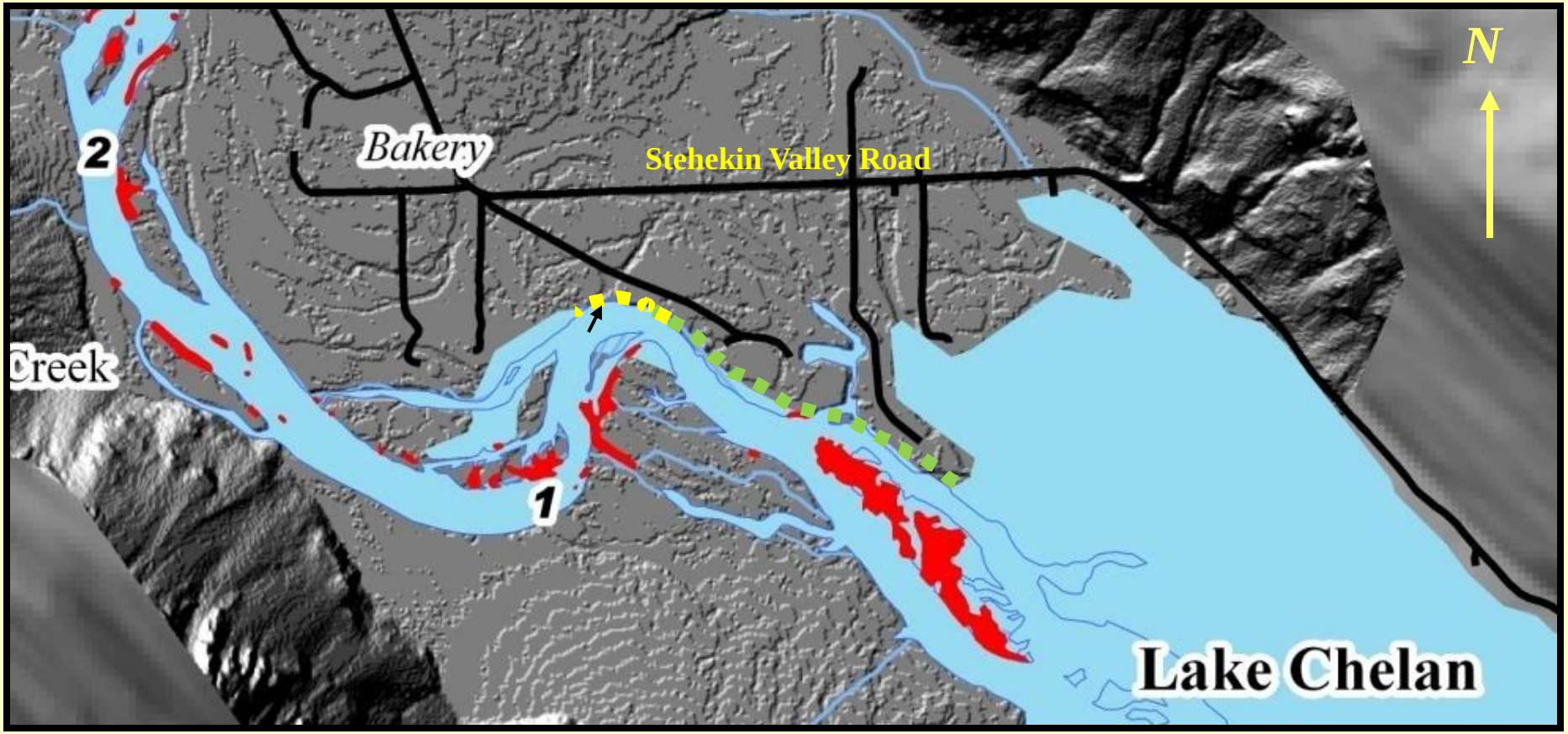
Major Plan Elements

* Allow manipulation of logjams at river mouth and Harlequin Bridge under strict conditions associated with flooding to alleviate threats to water quality and access. All wood stays in CMZ.
* Use wood from some logjam tops below Boulder Cr. for bank protection. ☆
* Continue to Assist Private Land Owner in Management of '1948' channel. ☆



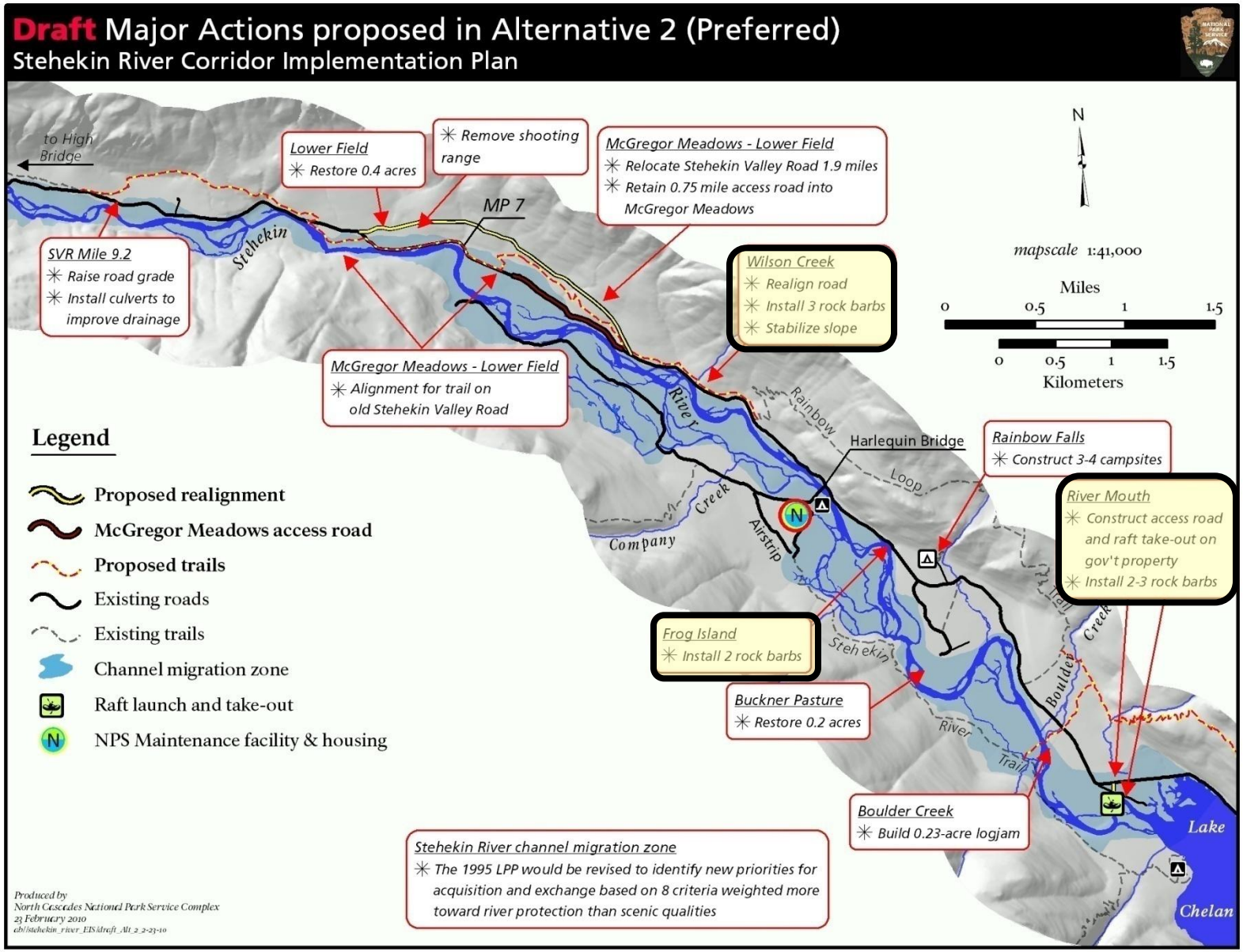
Major Plan Elements

* Extend (300 ft upstream) and replace (100 ft.) of erosion control on public land at Stehekin River mouth.

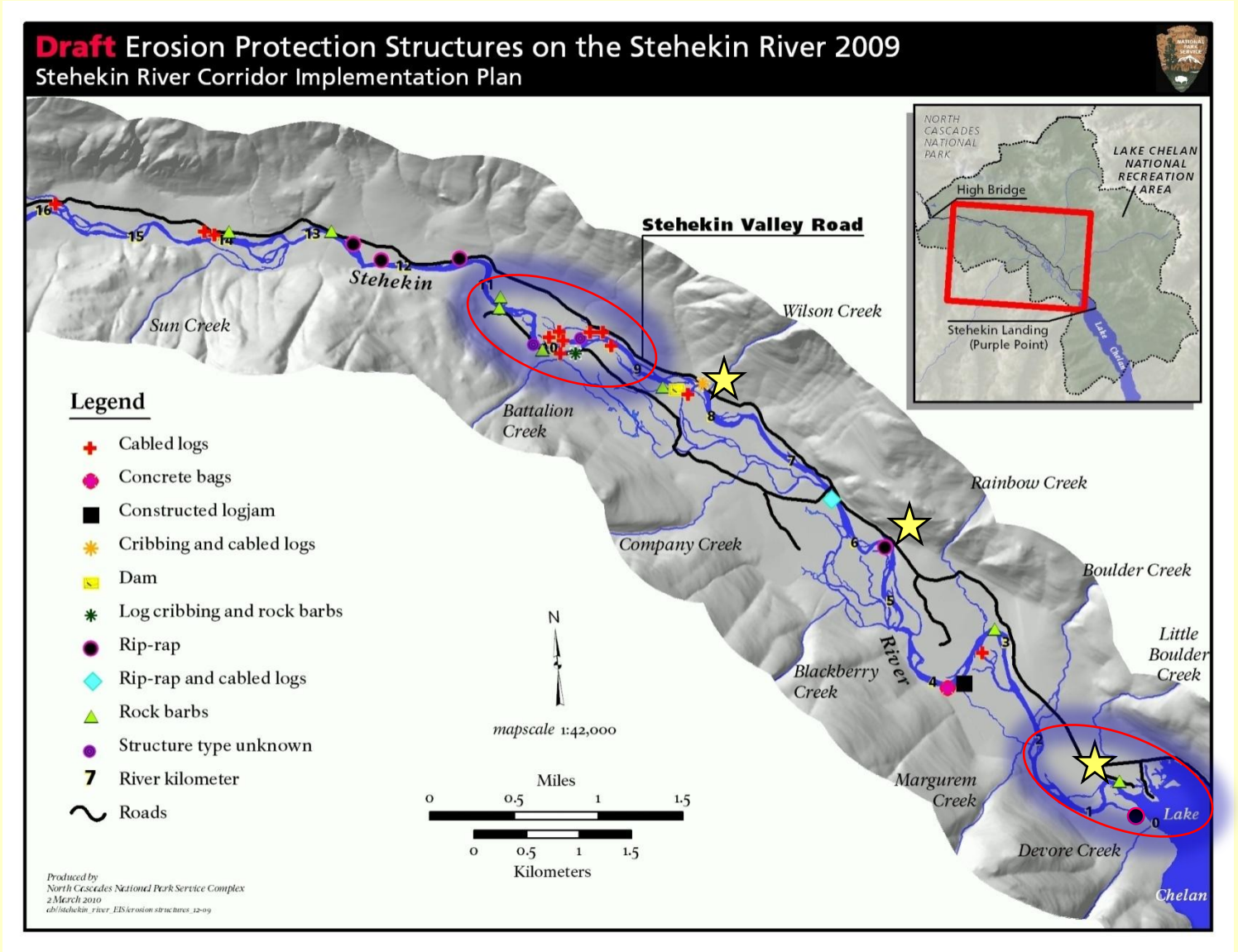


Major Elements of Alternative 2 (preferred)

* Stehekin River Road Erosion Management Actions



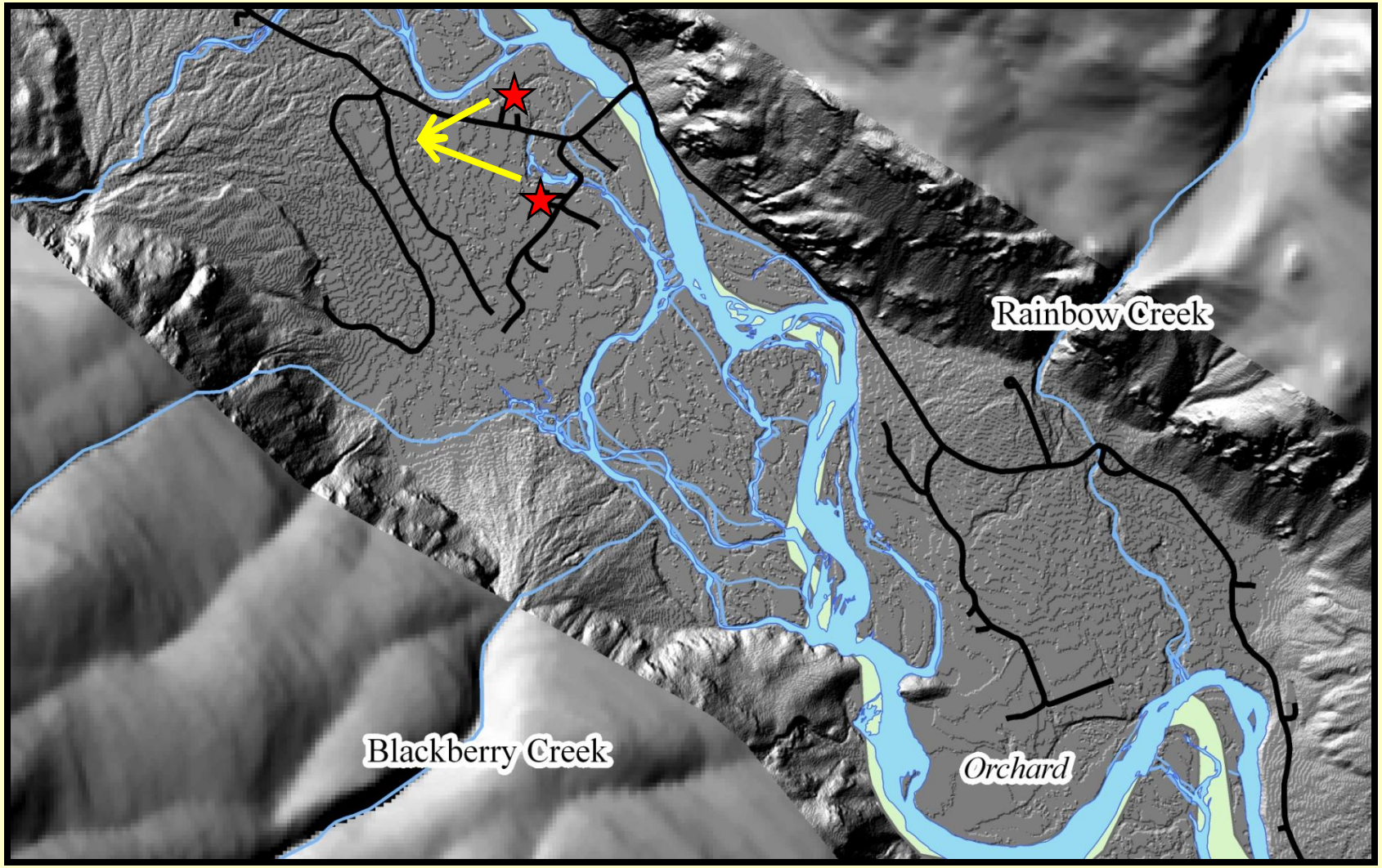
Cumulative Effects of Riverbank Structures



*There are currently erosion management structures at 46sites effecting 6.5% of the lower Stehekin River. Alt. 2 would add 6-8 barbs at three sites ☆ and would increase effected stream-bank length to 8.3%; two sites at edge CMZ.

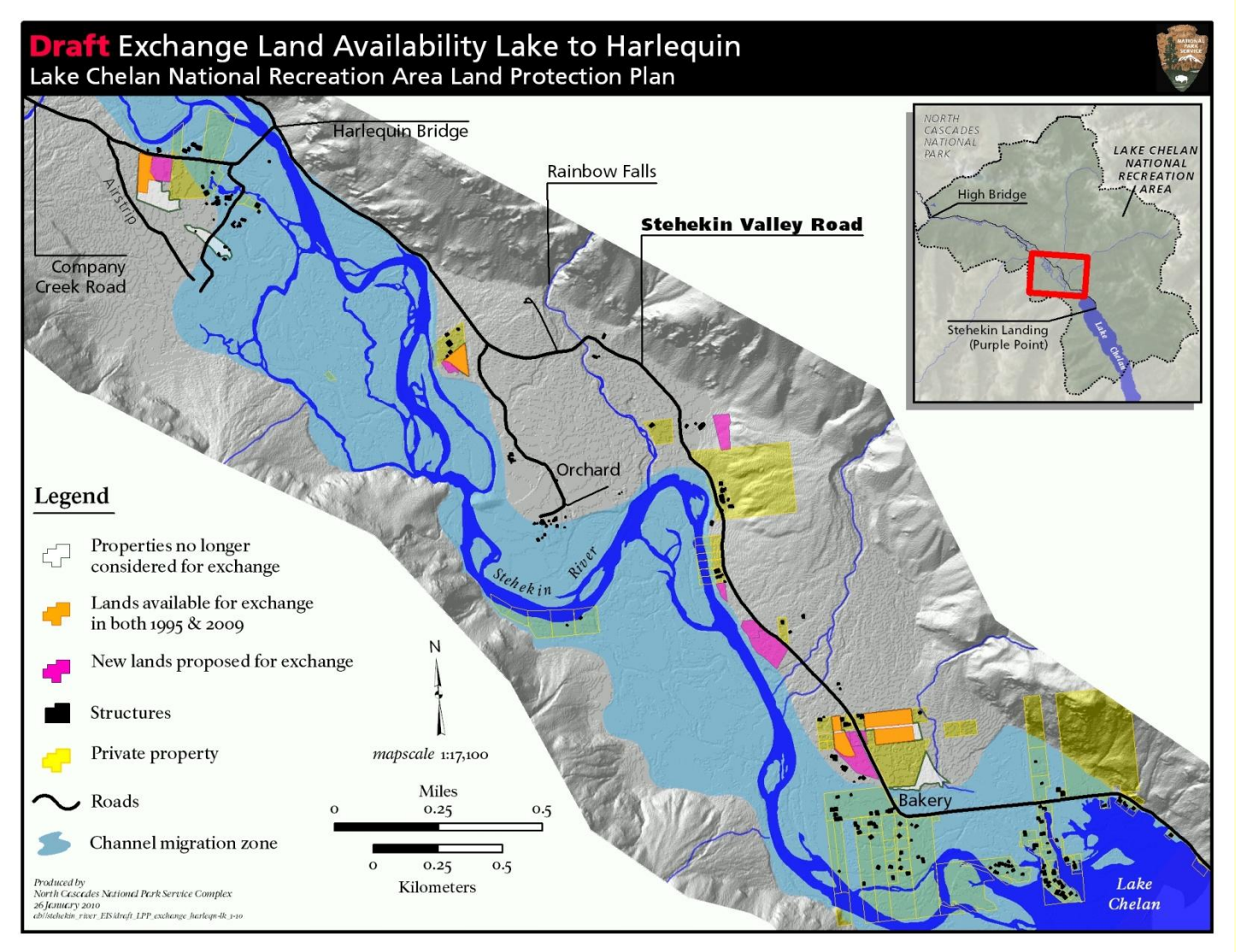
Major Plan Elements:

* Relocate NPS Maintenance Facility and Housing


Rainbow Creek
Blackberry Creek
Orchard

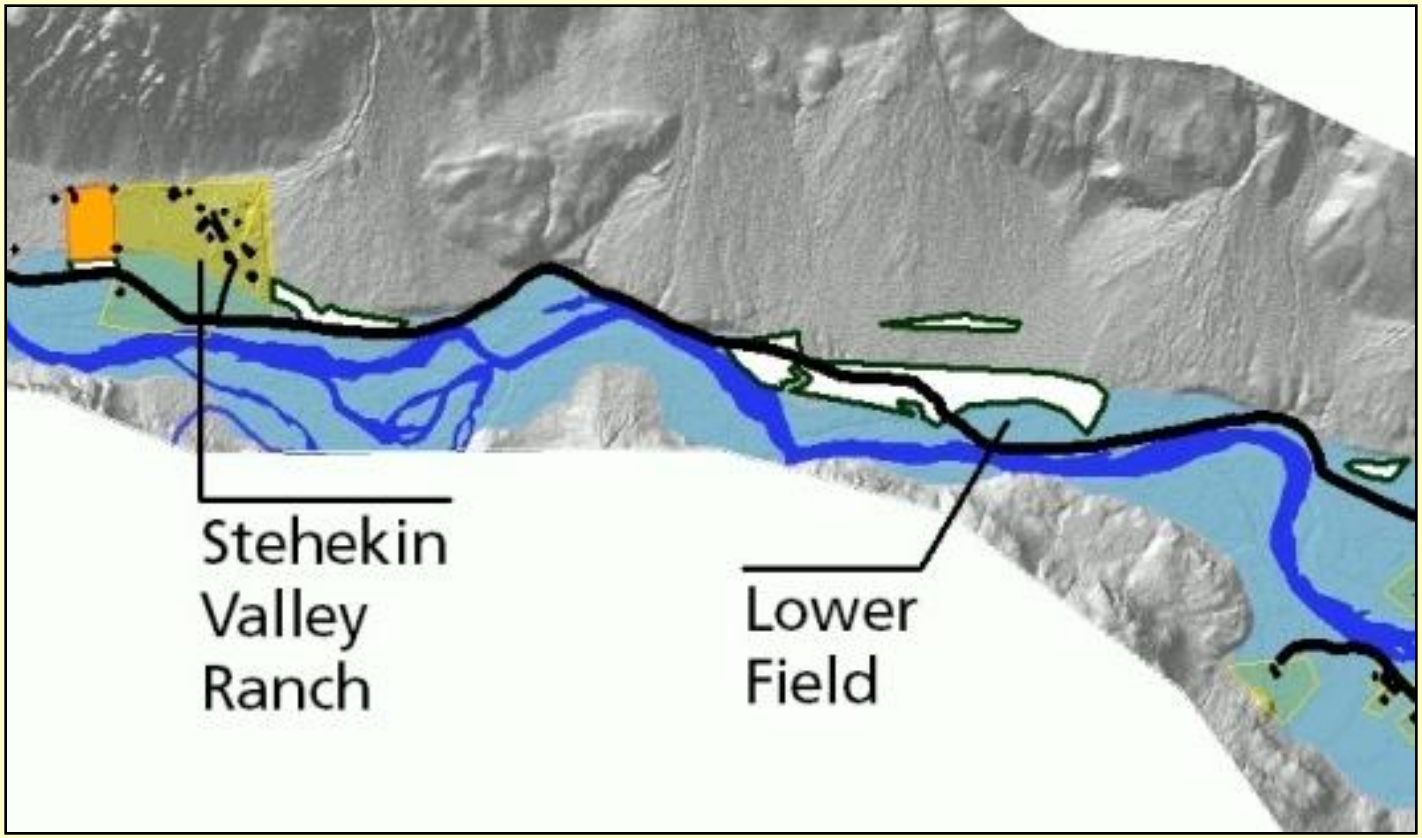
Major Plan Elements

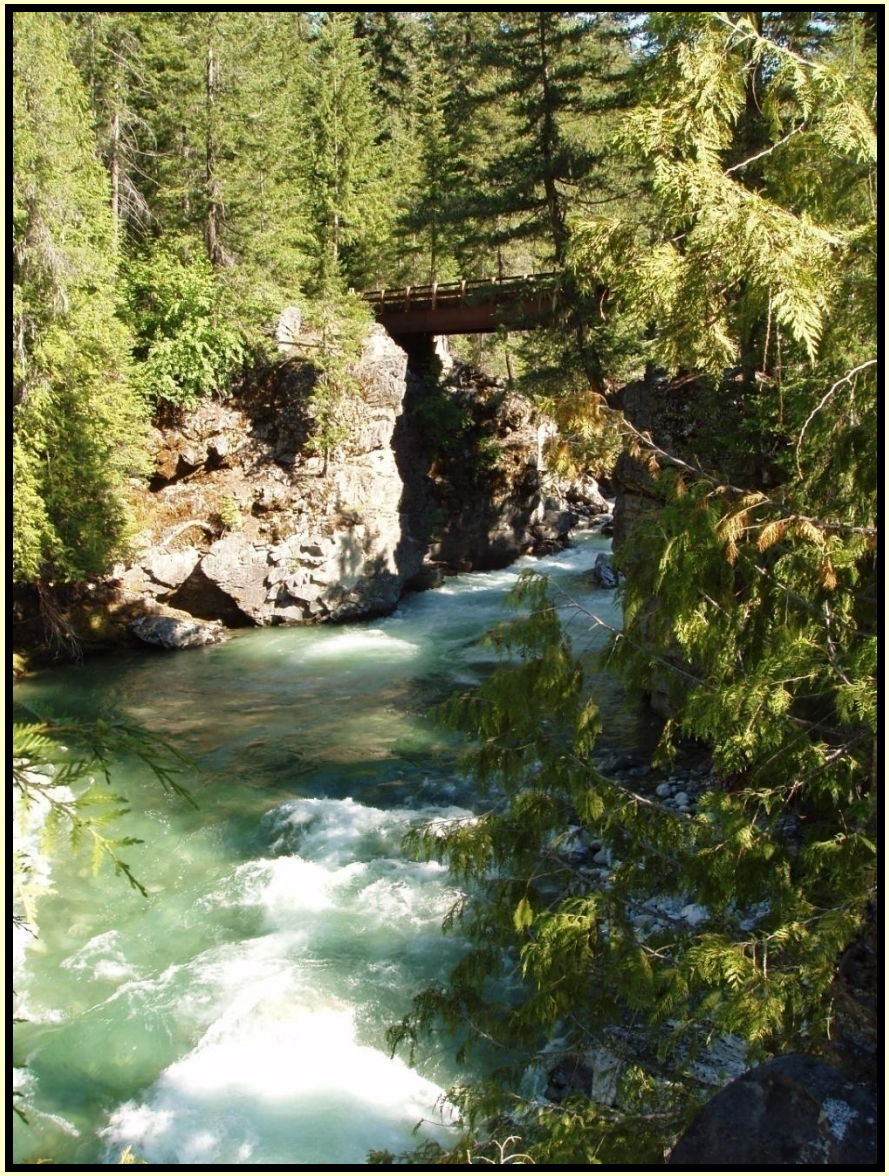
* Revision of 1995 Land Protection Plan



Major Plan Elements

Revision of 1995 Land Protection Plan



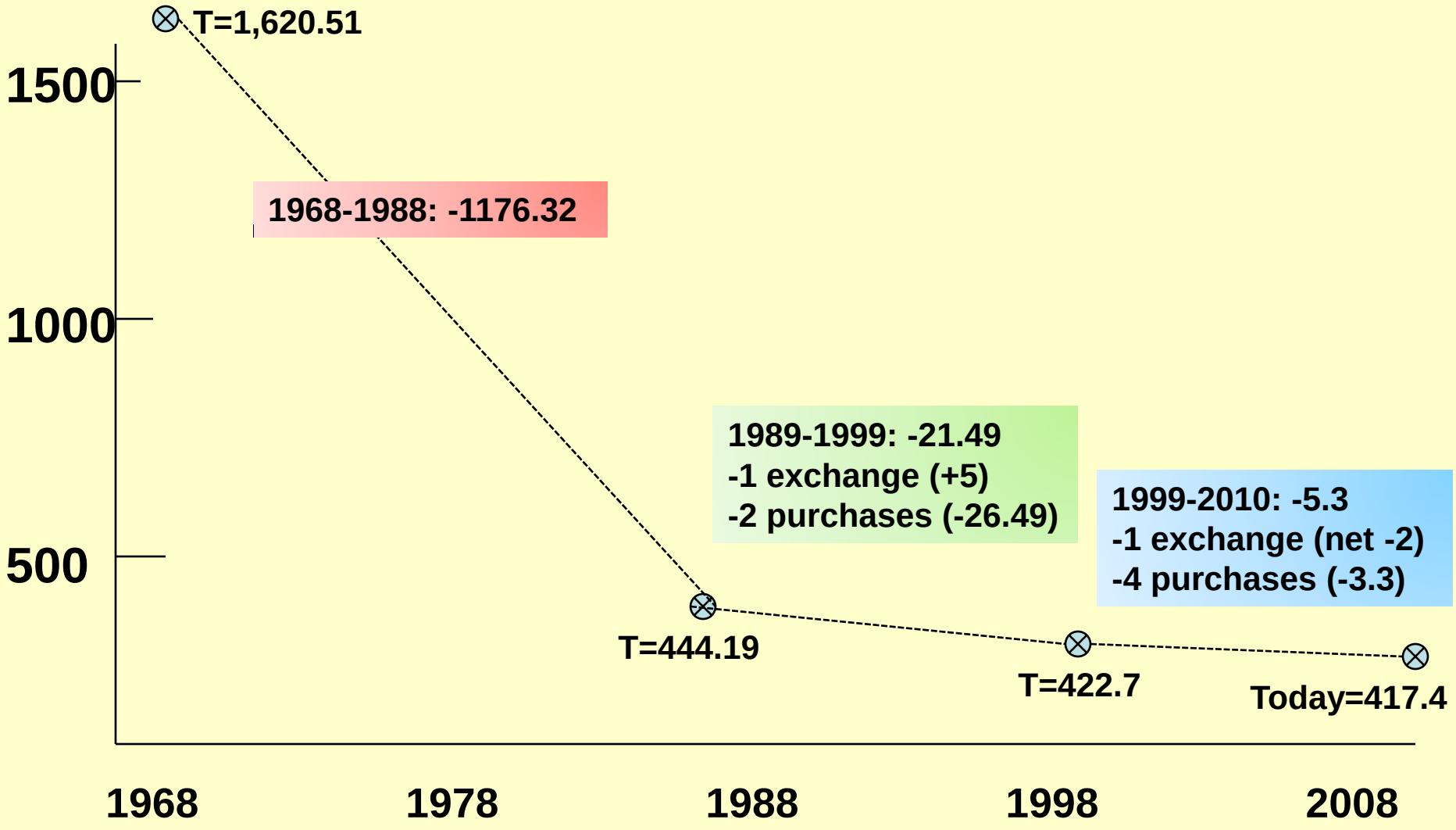


Preferred Alternative Acquisition Rankings

 # private parcels prioritized as:
low- 4 (86 old plan)
medium 98 (18)
high 66 (62)

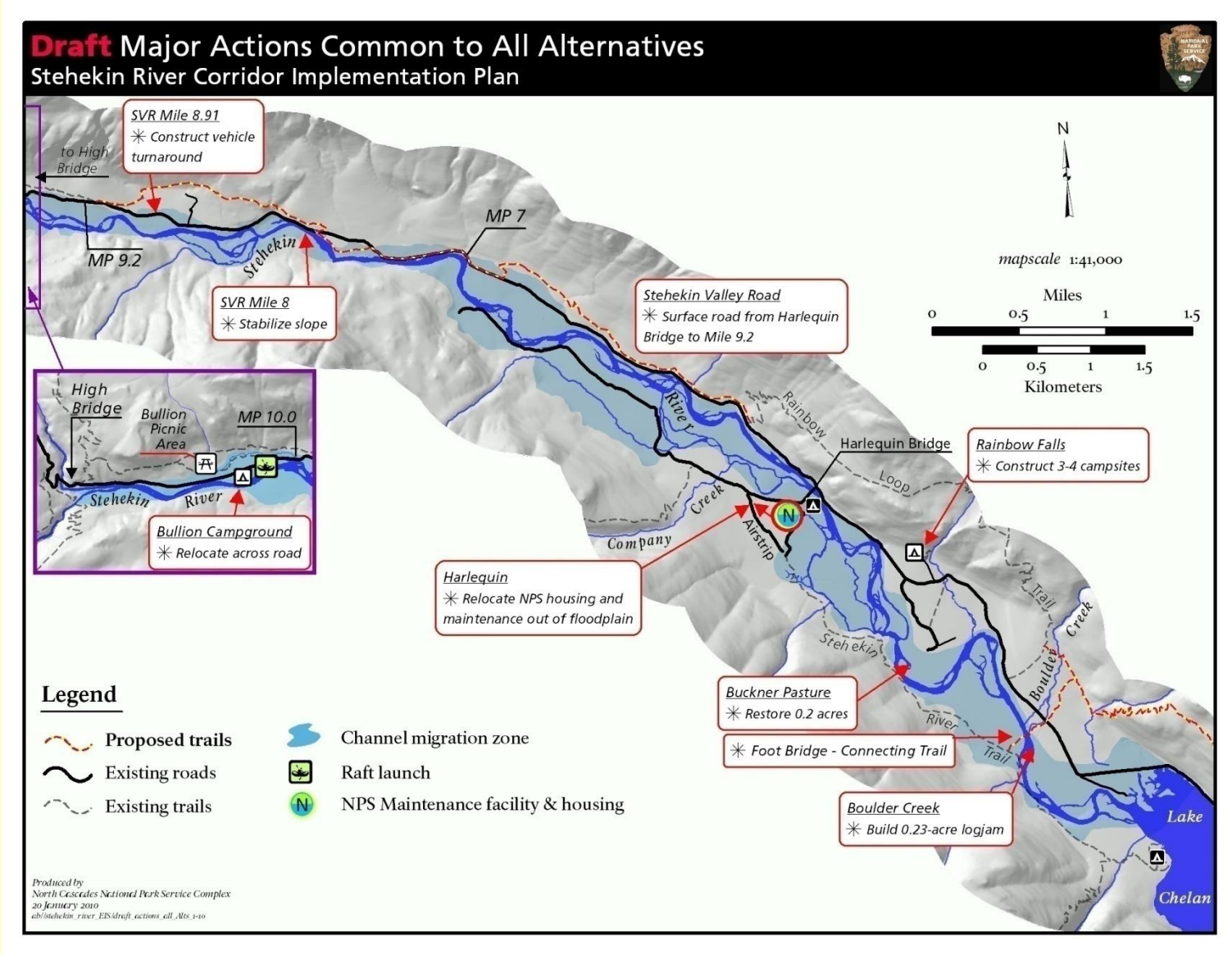
Change in Private Land Acreage

(Lower Stehekin Valley)



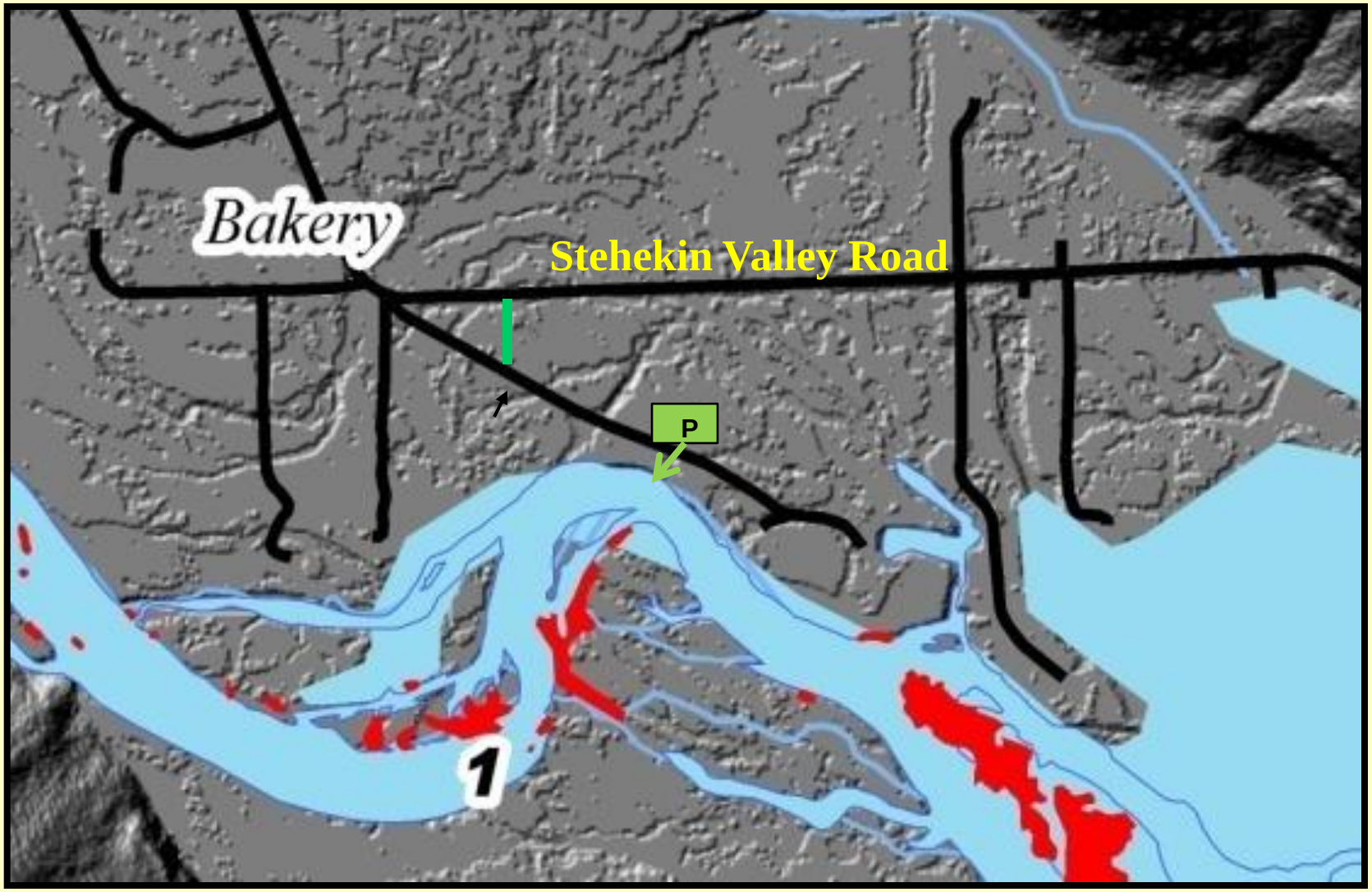
Major Plan Elements

* Improved visitor use and access facilities, including new raft take-out, new Rainbow Falls Camp, and two valley trails with bridge over river.



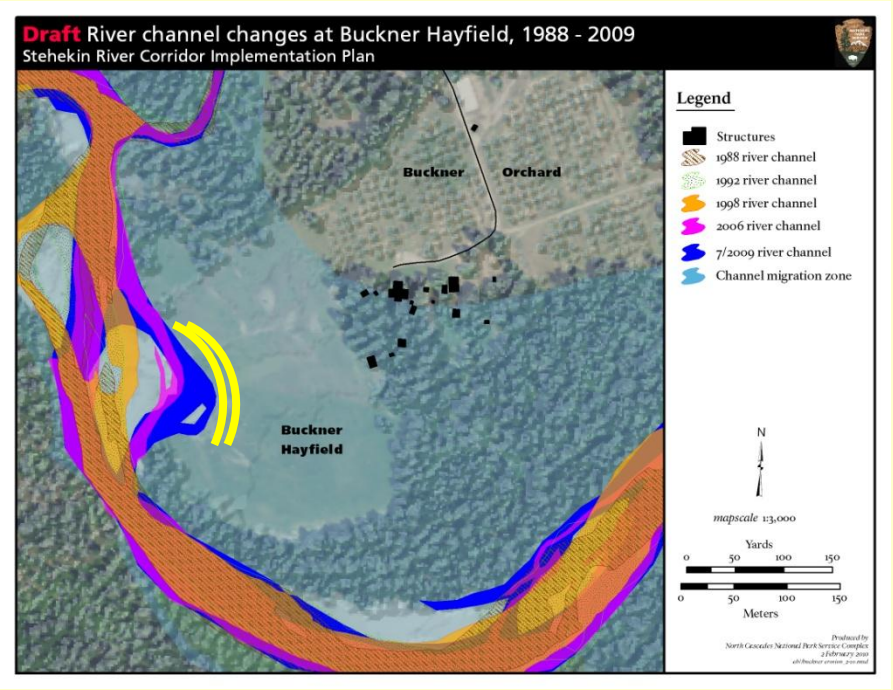
Major Plan Elements

* Raft Take-Out and Access



Major Plan Elements

* Riparian restoration at the Lower Field, McGregor Meadows, Buckner Pasture, and near the river mouth.



Alternative Actions Considered but Dismissed:

-extensive channel dredging ;

-construction of extensive levees or dikes;

-opening new sources for gravel and rock;

-reroute of Company Creek road;

-actions above High Bridge; and

-Stehekin Wild and Scenic River designation.

Stehekin River Corridor Implementation Plan

Summary of Draft Environmental Impact Statement

National Park Service

2010

Rough Cost for SRCIP Draft Preferred Alternative ~$26.4M

McGregor Lower Field Road Relocation: $8.2M
(plus $5,000/yr spur road*)

Relocate Stehekin Maintenance, Fire Cache, and Housing: $17.9M

River Restoration at Lower Field and Orchard: $80,000

Bank Protection at 4 sites $250,000

Campground and Sanitary: $500,000

Stehekin River and Valley trails with bridge: $1M

Land Protection Plan: $900,000 (currently available)

Roads, Structures and Wetlands

Stehekin River junction with Lake Chelan