

Swauk Creek



Water Storage Opportunities and Constraints

Assessment of Small Storage Opportunities and Constraints - Potential Aquatic and Riparian Ecosystem Enhancements in the Swauk Creek Watershed

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Maintenance of flows in Swauk Creek at 2.5 cfs at Lauderdale Junction during annual low flow periods (July – October) would maintain surficial flow in the stream and prevent the formation of fish passage barriers to the confluence with the Yakima River.

Storage of 300-500 acre feet of water during peak early season flows would enable late season augmentation to agricultural consumptive uses, thus reducing the need to divert creek water during late season low flow periods.

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SWAUK CREEK HYDROGRAPH – Water Year 2006

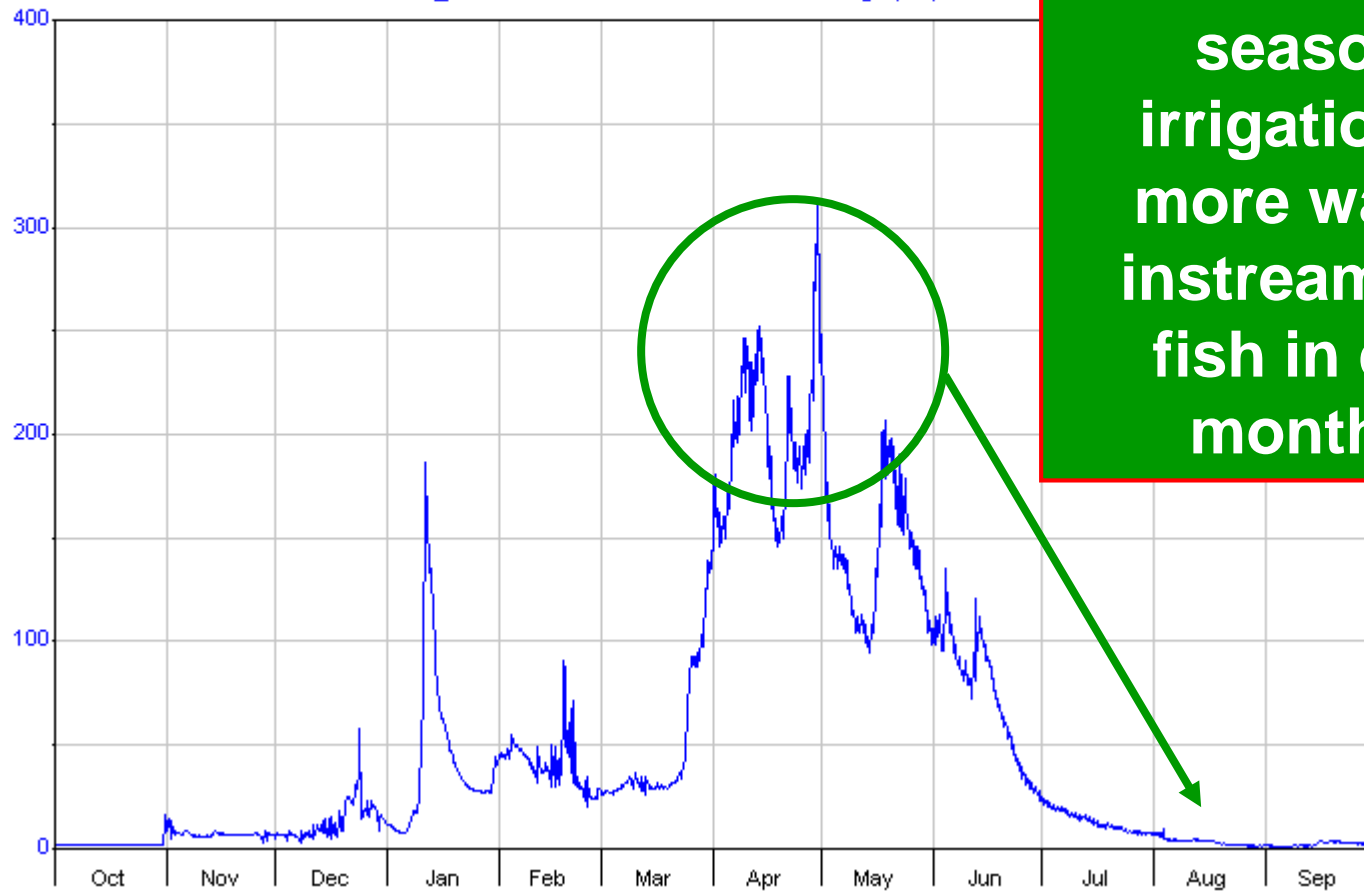
Washington State Dept. of Ecology

Period 1 Year Plot Start 00:00_10/01/2005

Interval 12 Hour Plot End 00:00_10/01/2006

— 39M100

Swauk Cr.@ Lauderdale 262.00 Max & Min Discharge (cfs)



**Store early
season peak
flows for late
season
irrigation =
more water
instream for
fish in dry
months**



Swauk Creek
@ Lauderdale

Swauk Creek Flows Seasonal Variations



1.60 cfs 9/6/07

137 cfs 4/13/07



Swauk Creek Flows Seasonal Variations

Principal
Investigator



1.60 cfs 9/6/07

137 cfs 4/13/07



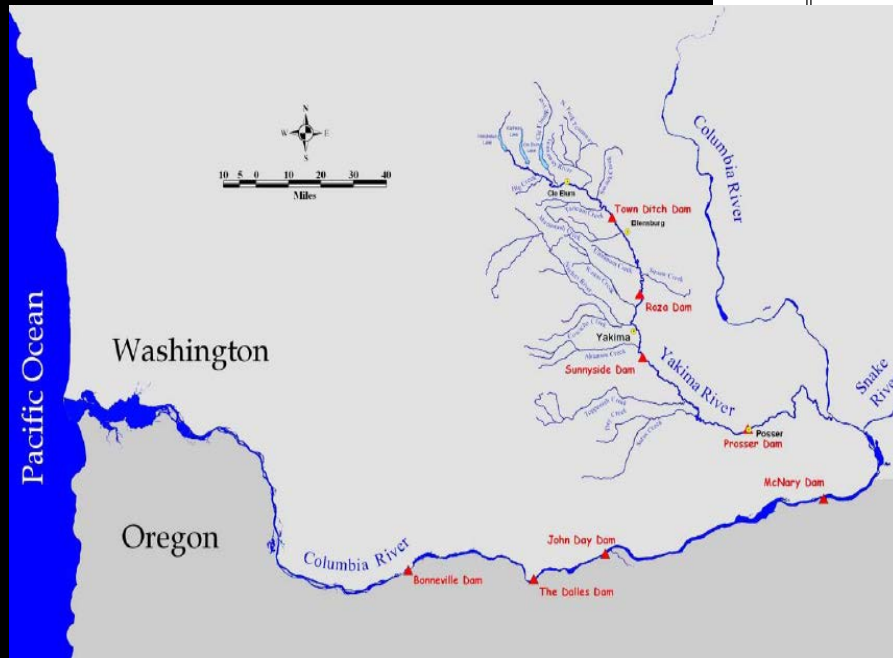
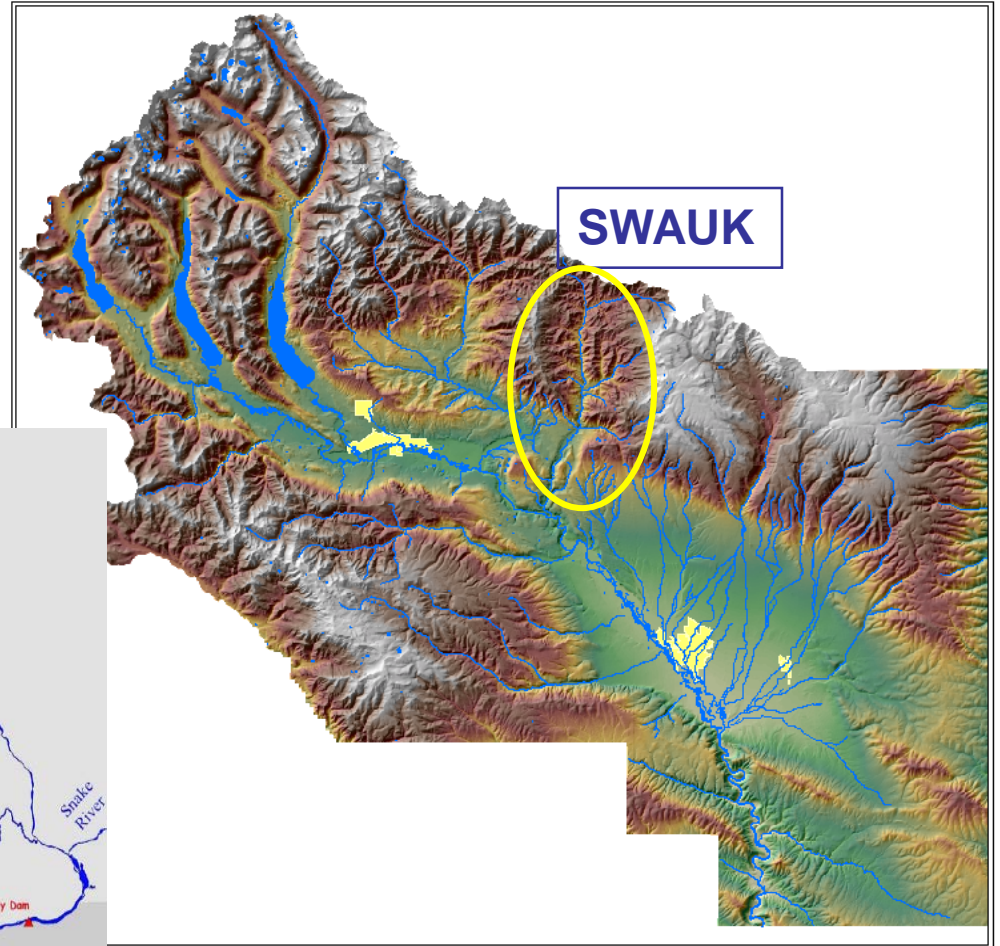
Small Scale Water Storage

Traditional large scale water storage paradigm is unsustainable

- Financial and ecological costs
- Water demand vs. supply (TWSA)
- Climate change and seasonal timing

Upper Yakima River Basin Three Large Reservoirs

*Keechelus, Kachess,
Cle Elum*

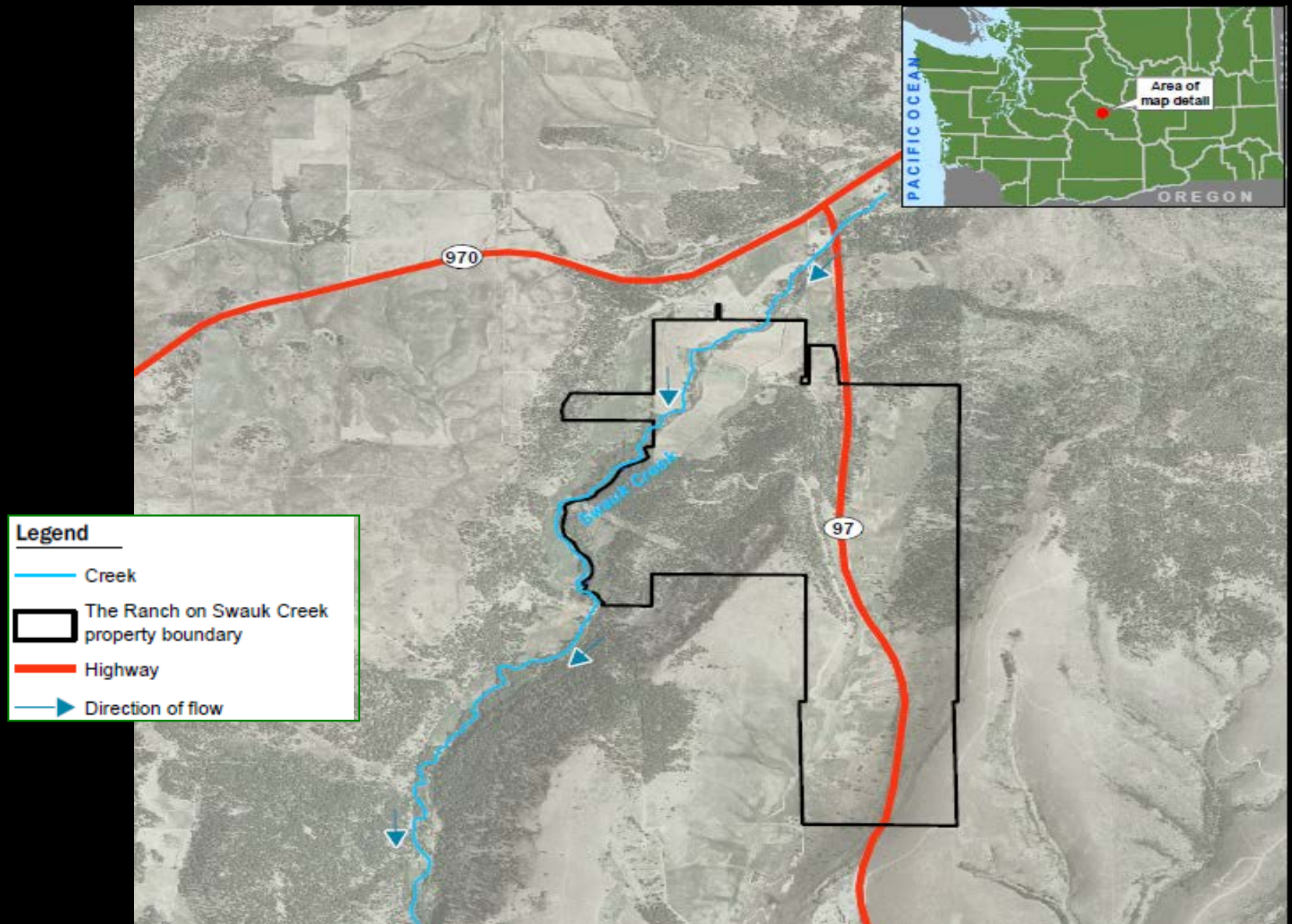


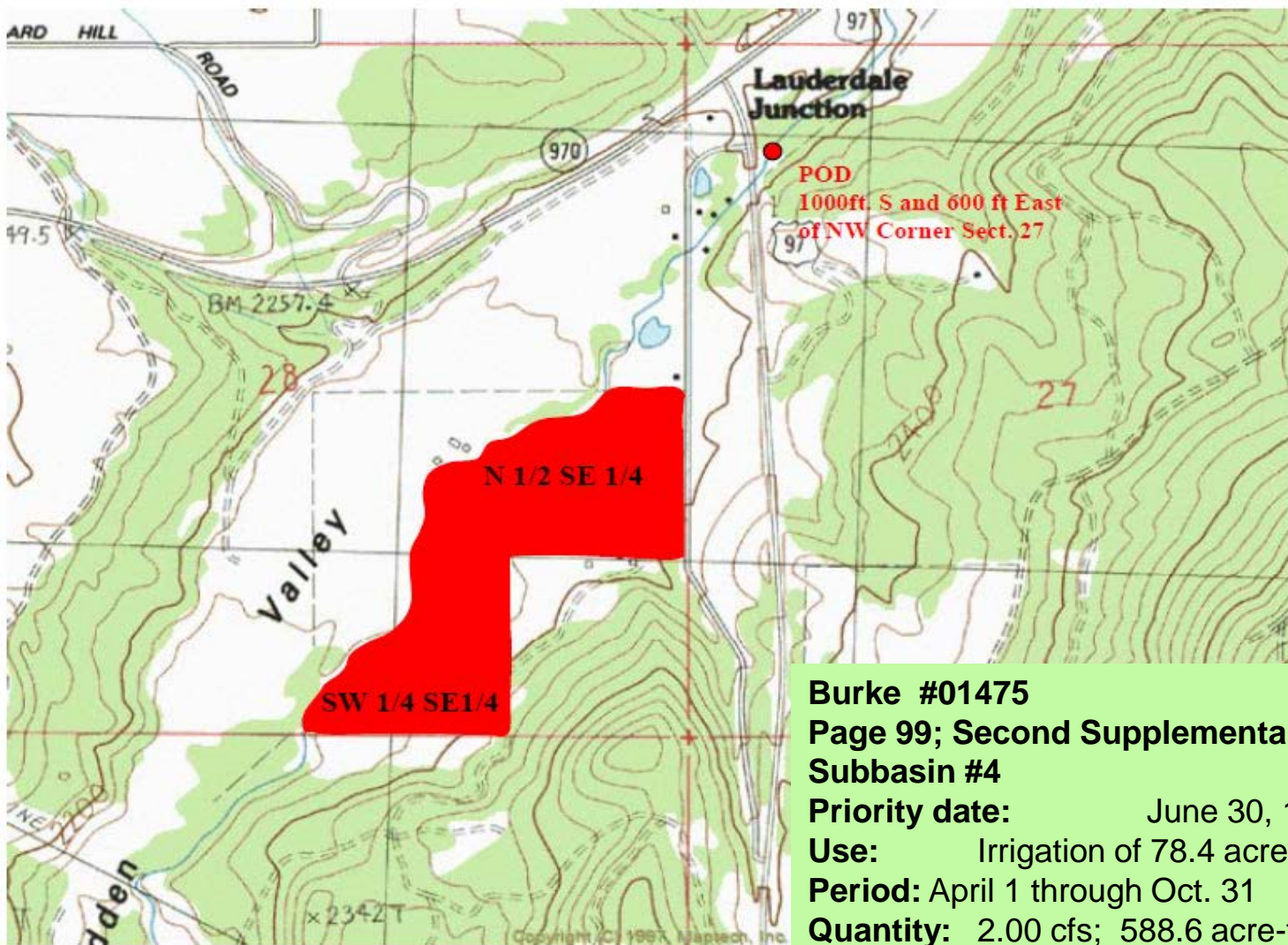
Small Scale Water Storage

Small tributary watershed scale storage
is significantly more manageable

- Affordable feasibility studies
 - Reach scale infrastructure
- Measurable instream flow benefits

The Ranch on Swauk Creek





Water Rights

1878 Priority

April 1 thru
October 31

Ranch on Swauk Creek

Burke #01475

**Page 99; Second Supplemental Report; Volume 29B;
Subbasin #4**

Priority date: June 30, 1878

Use: Irrigation of 78.4 acres and stock water

Period: April 1 through Oct. 31

Quantity: 2.00 cfs; 588.6 acre-feet (0.25 cfs is conveyance)

POD: 1000 - ft. south and 600 - ft. east of the NW corner of Section 27, T 20 N., R17

Place of use: N ½ of SE ¼ and the SW ¼ of the SE ¼ of Section 28 lying SE of Swauk Creek

Upper Diversion – Swauk Creek

**200-ft. S and 1200-ft. E of the NW corner of Section 27 – T20, R17
EWM**

3 CFS; 297 acre-feet per year

April 1 through Oct. 31

Priority Date: June 30, 1878

47 Degrees 12' 12.28" N

120 Degrees 42' 11.42" W



YTAHP fish screens installed by Kittitas Conservation Trust and Yakama Nation



Swauk screen (Lauderdale Junction) following high water of January 09





Good fish passage
June 20

1.5 cfs

08.20.2007

18.5 cfs



Poor fish passage
August 26

08.28.2007 11:34



0.5 cfs
September
11

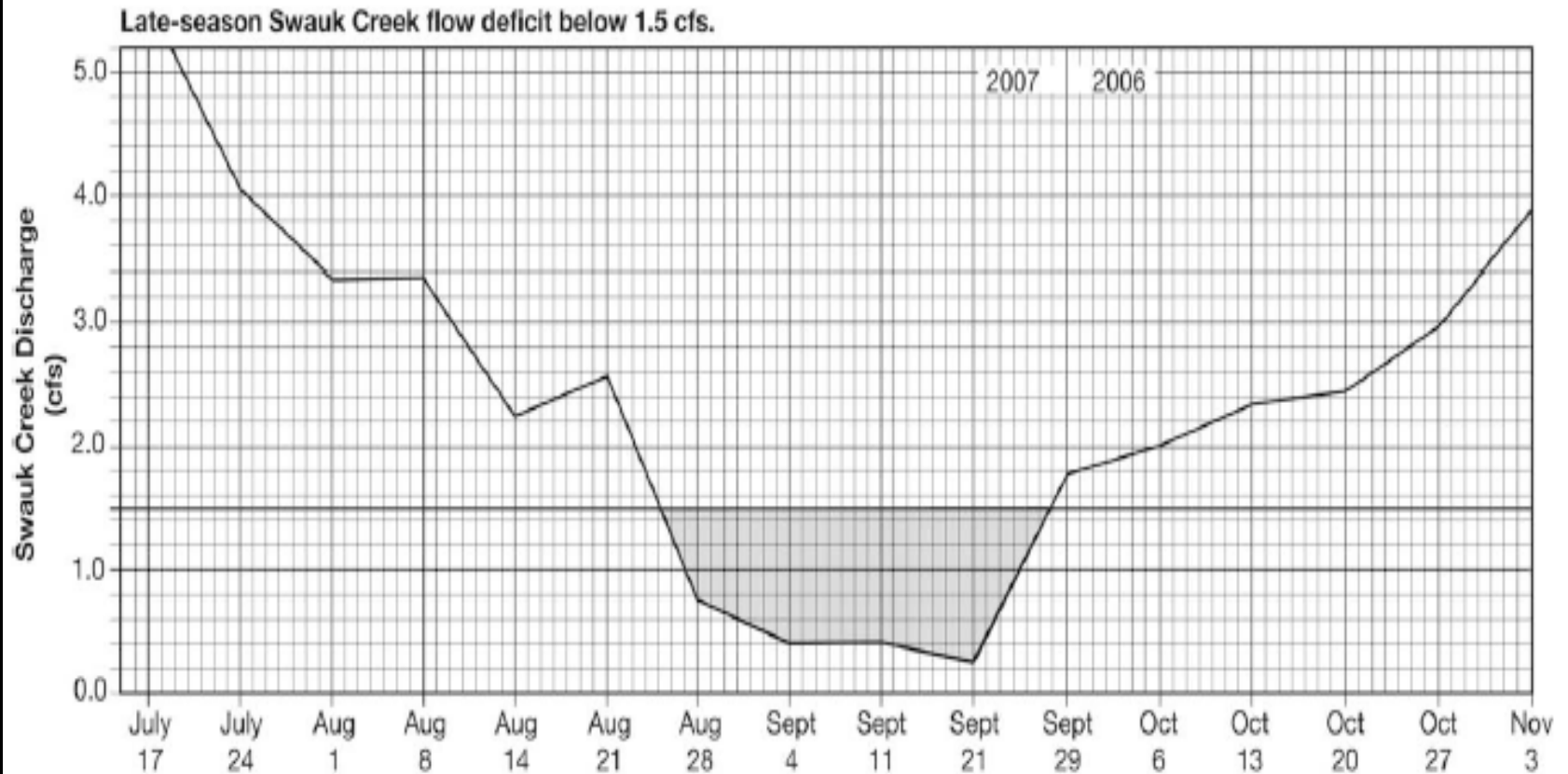
09.11.2007 12:35



18.5 cfs
June 20

06.20.2007

Hydrograph – Swauk Creek – Low Flow Period July thru October



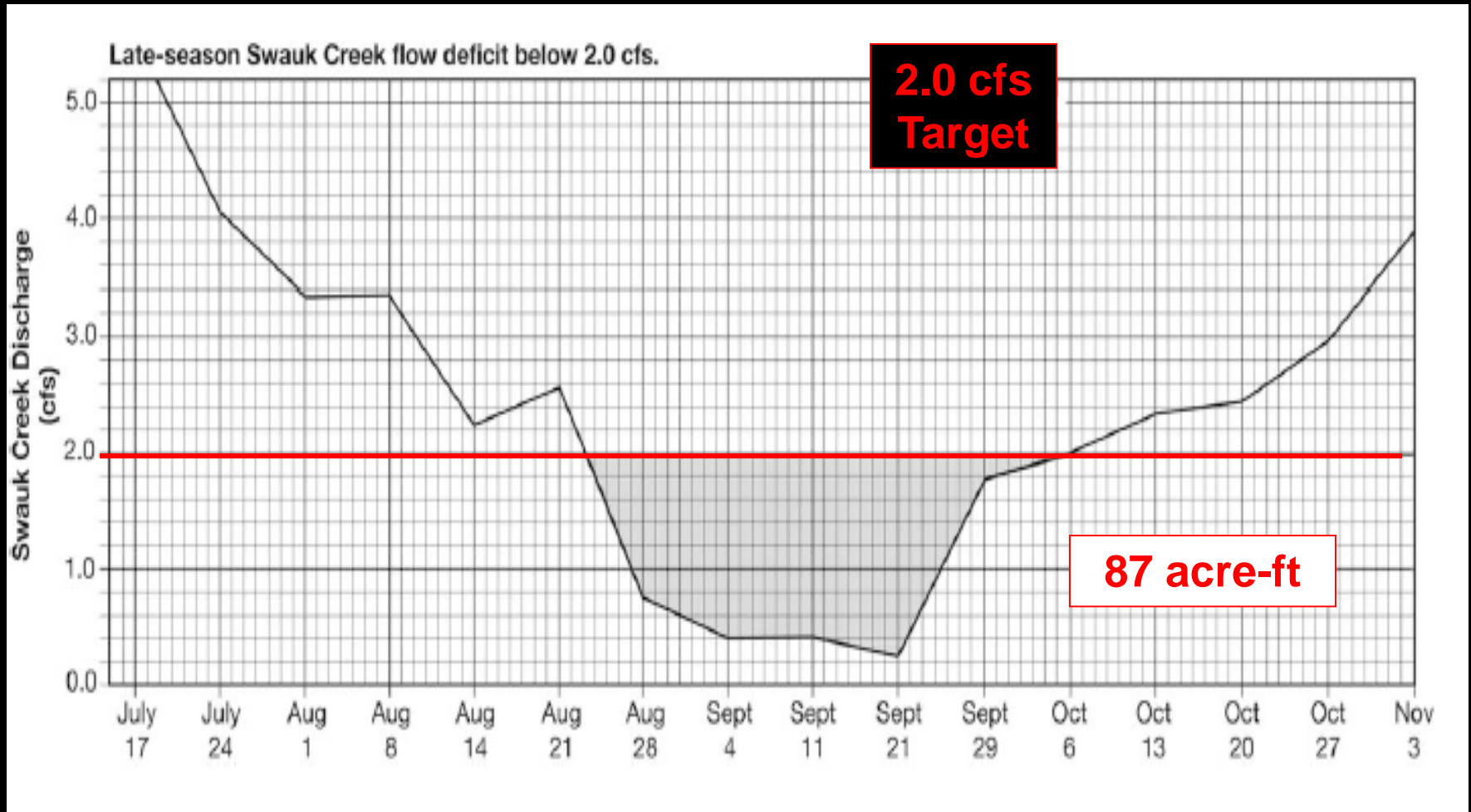


2.0 cfs

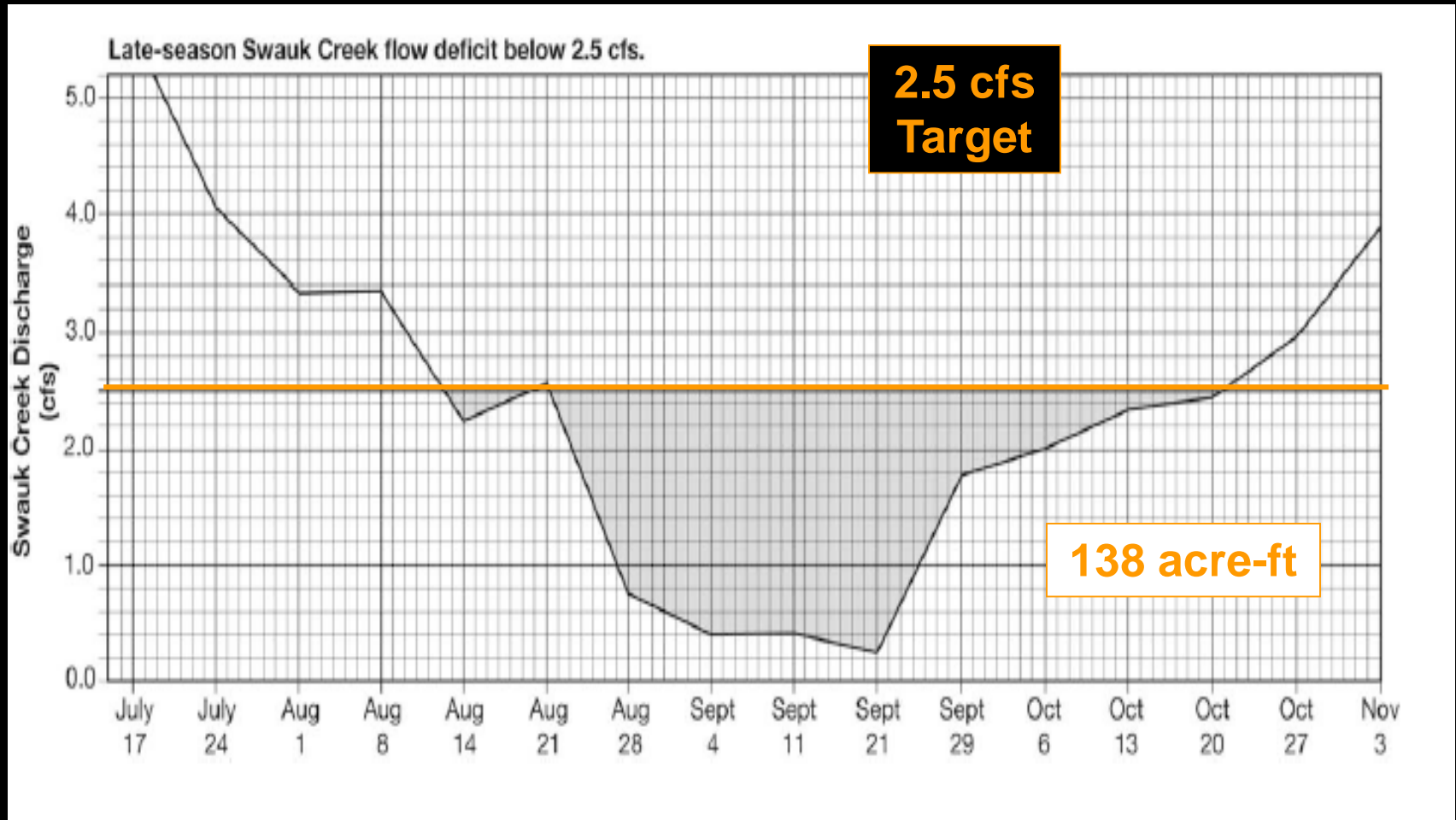


1.5 cfs

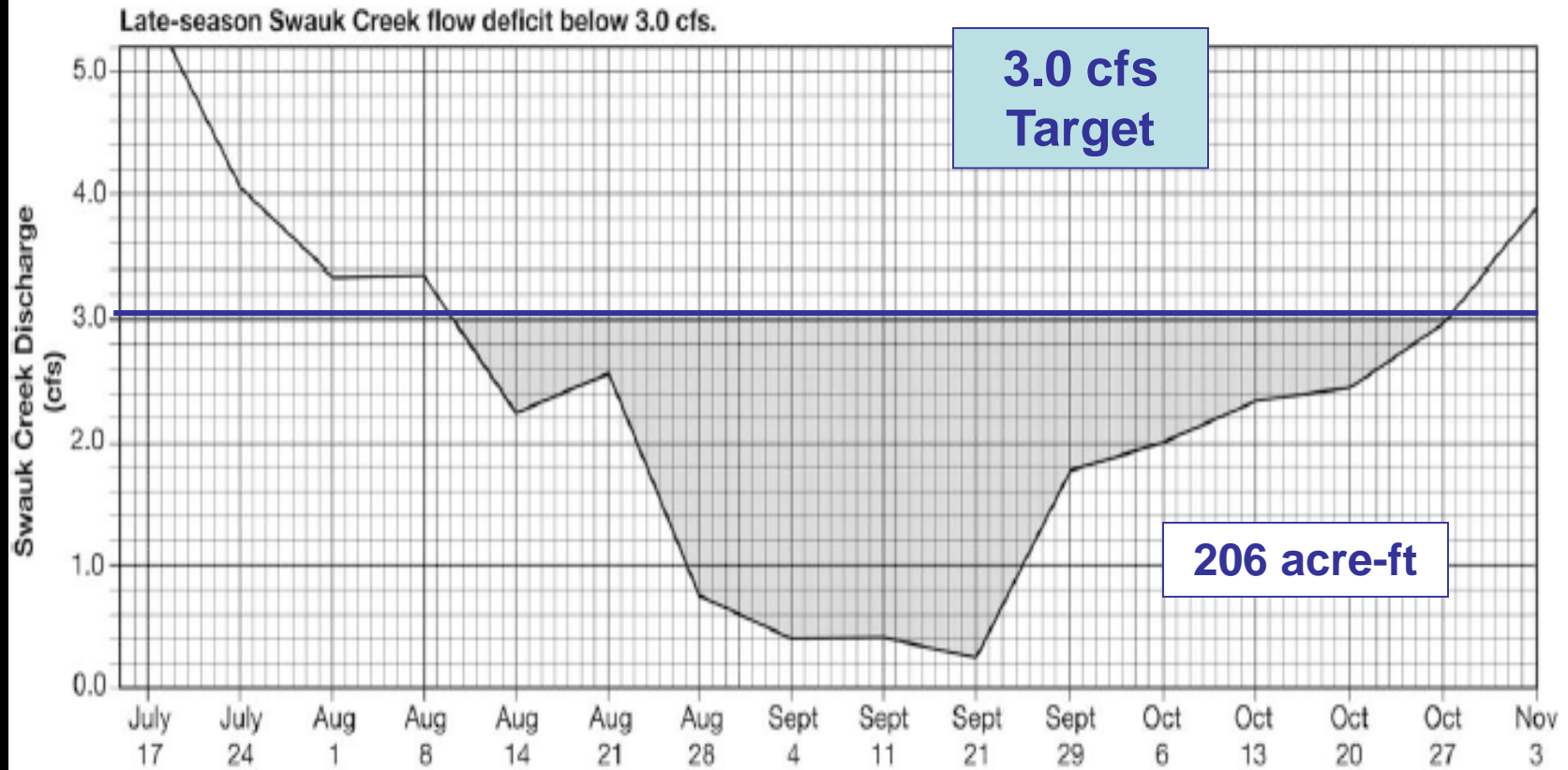
Swauk Creek Late Season Flow Augmentation from Proposed Storage



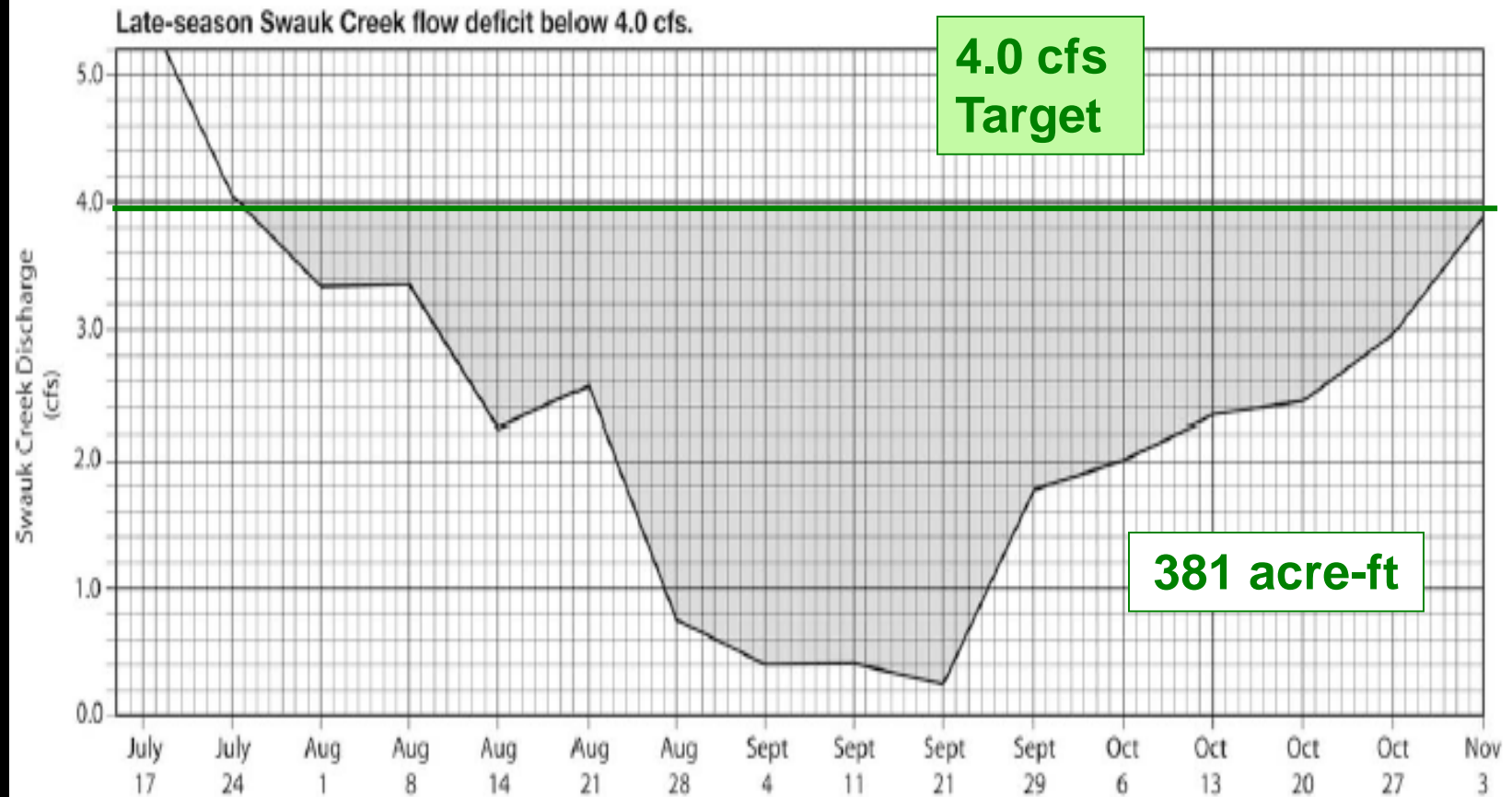
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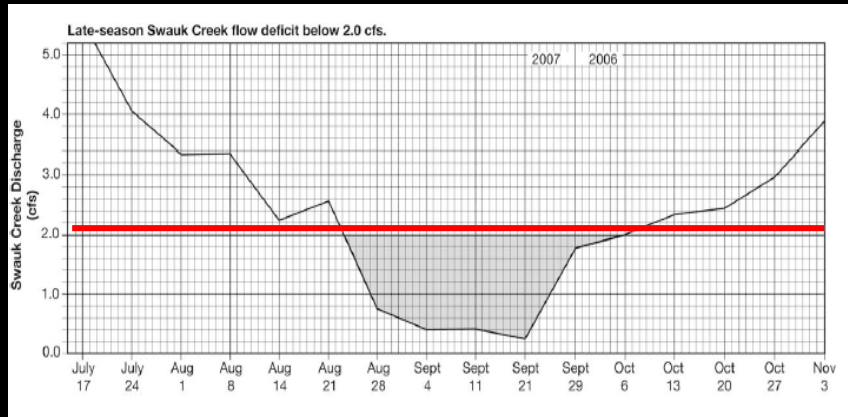
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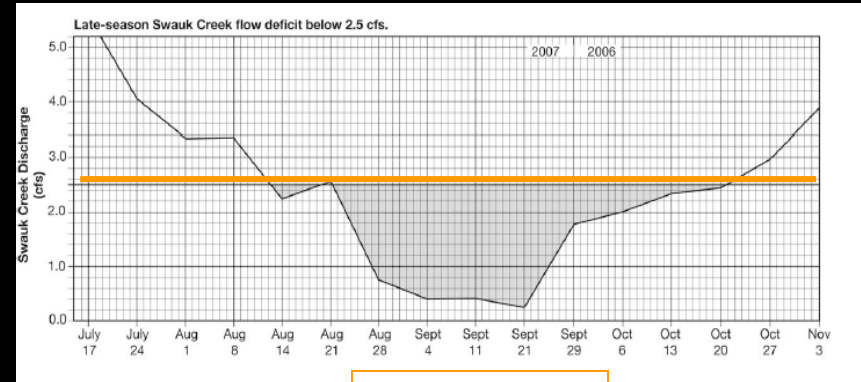
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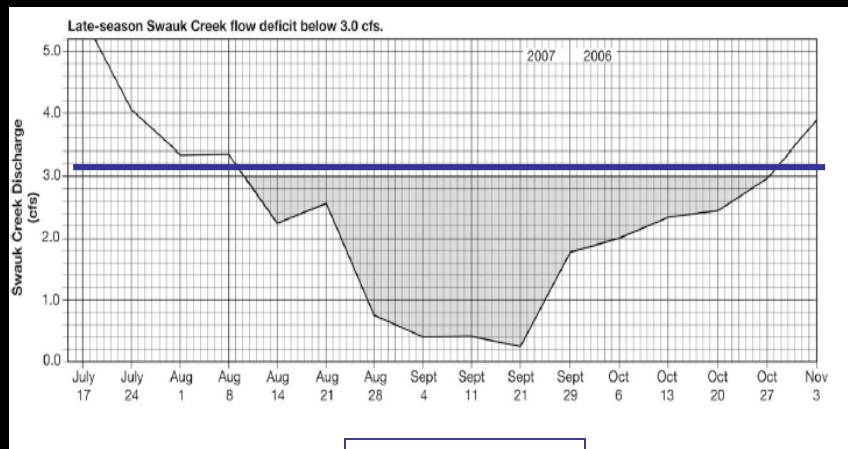
Comparison of Late Season Flow Augmentation Targets



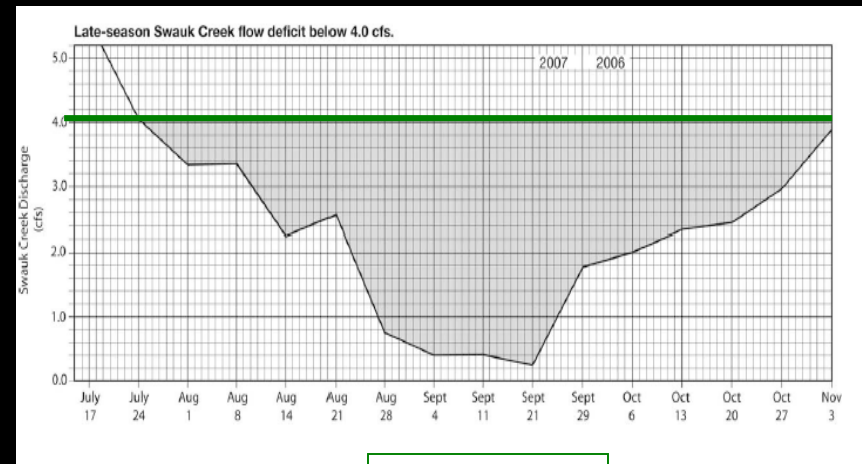
2.0 cfs



2.5 cfs



3.0 cfs



4.0 cfs

Swauk Creek Small Storage Location Options Base Map

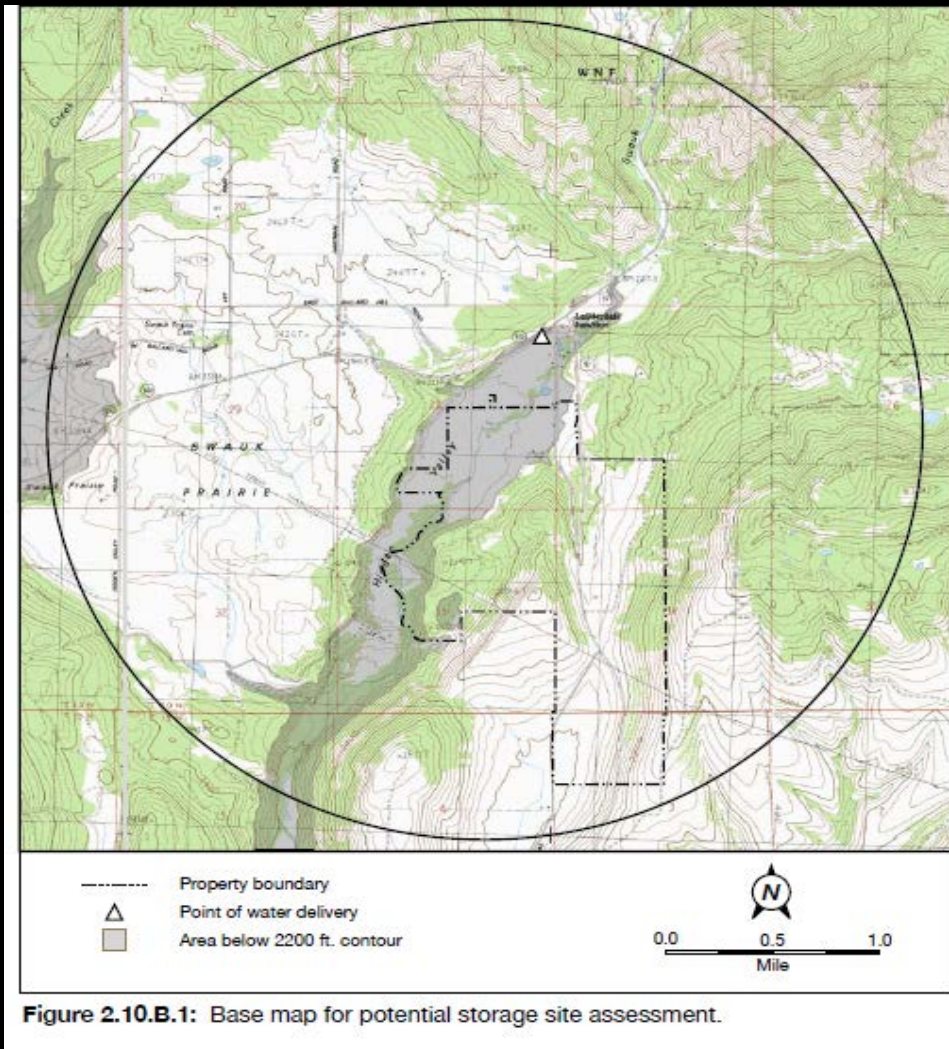


Figure 2.10.B.1: Base map for potential storage site assessment.

CRITERIA

- 2 Mile Radius
- Above 2200' elevation
- Water delivered to existing point of diversion
- Gravity delivery system
- 15 acre storage site with 10 foot excavation plan
- Pressurized pipes OK

Swauk Creek Small Storage – OPTION A

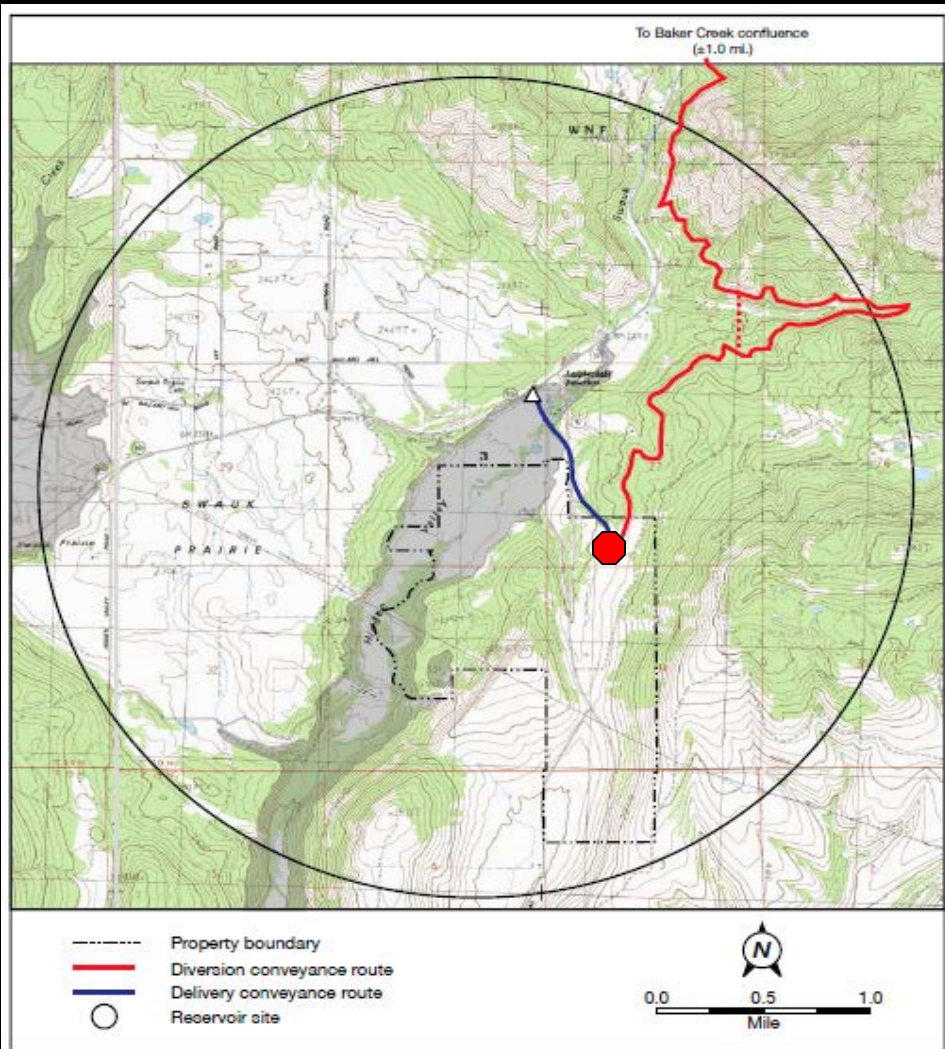


Figure 2.10.C.1: Map of on-property reservoir site and conveyance system - Option A.

Storage site- Ranch on Swauk Creek 2460' elevation

- **Diversion – Swauk Creek at approx. 8.0 mile upstream**
- **Approximately 105 psi pressure at delivery point**
- **Water right modification for point of diversion and purpose of use (storage)**
- **Complicated pathway for conveyance infrastructure**

Swauk Creek Small Storage – OPTION B

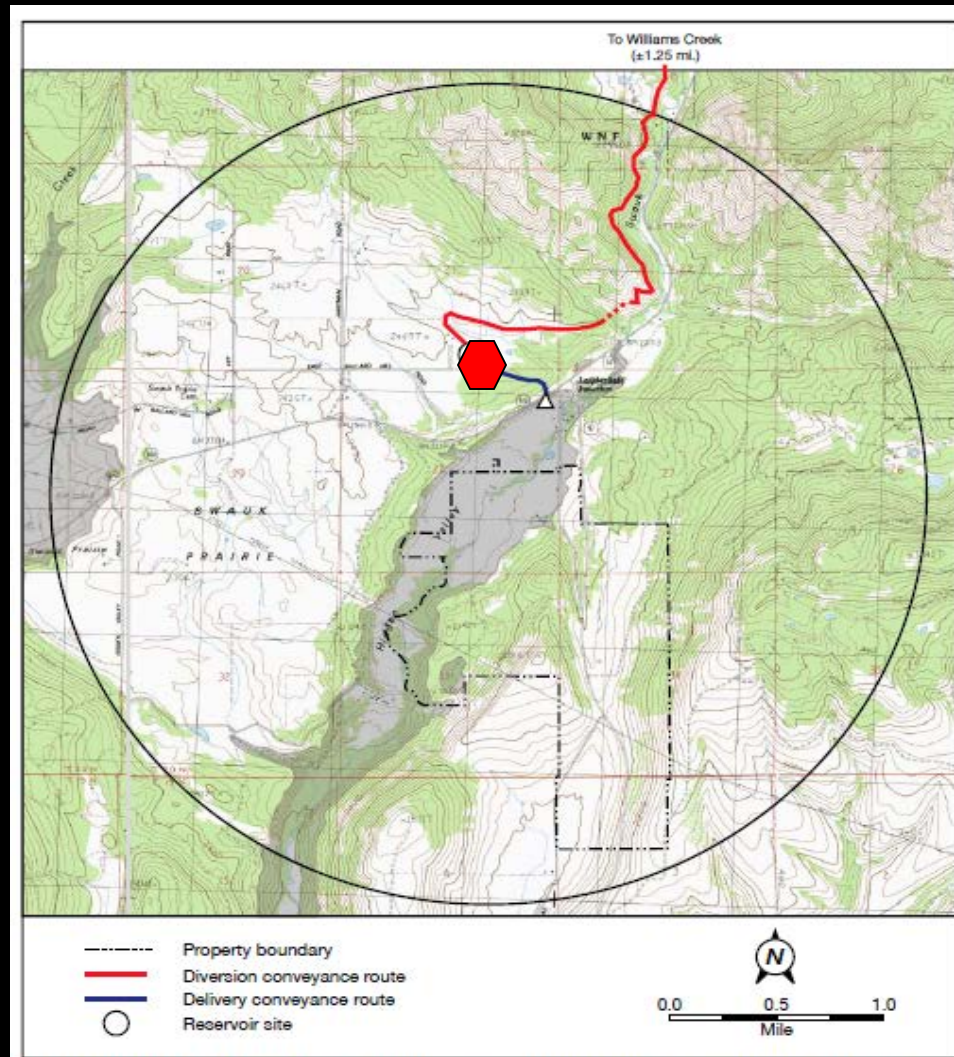


Figure 2.10.C.4: Map of private off-property reservoir site and conveyance system - Option B.

- Storage site- Private land at elevation 2380'
- Diversion site- Williams Creek area approximately 3.0 miles upstream at elevation 2400'
- Approximately 72 psi water pressure at delivery
- Water right change necessary for point of diversion
- Straightforward route for conveyance infrastructure

Swauk Creek Small Storage OPTION - C

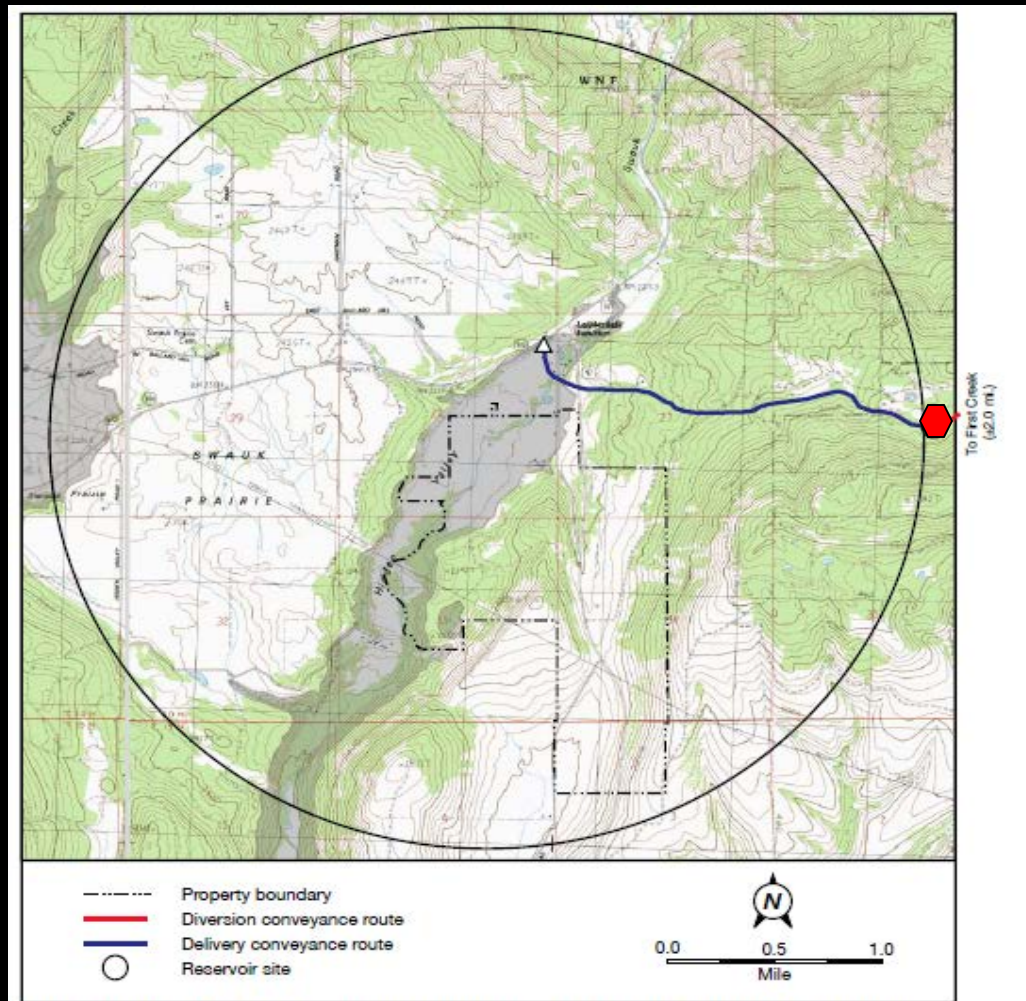
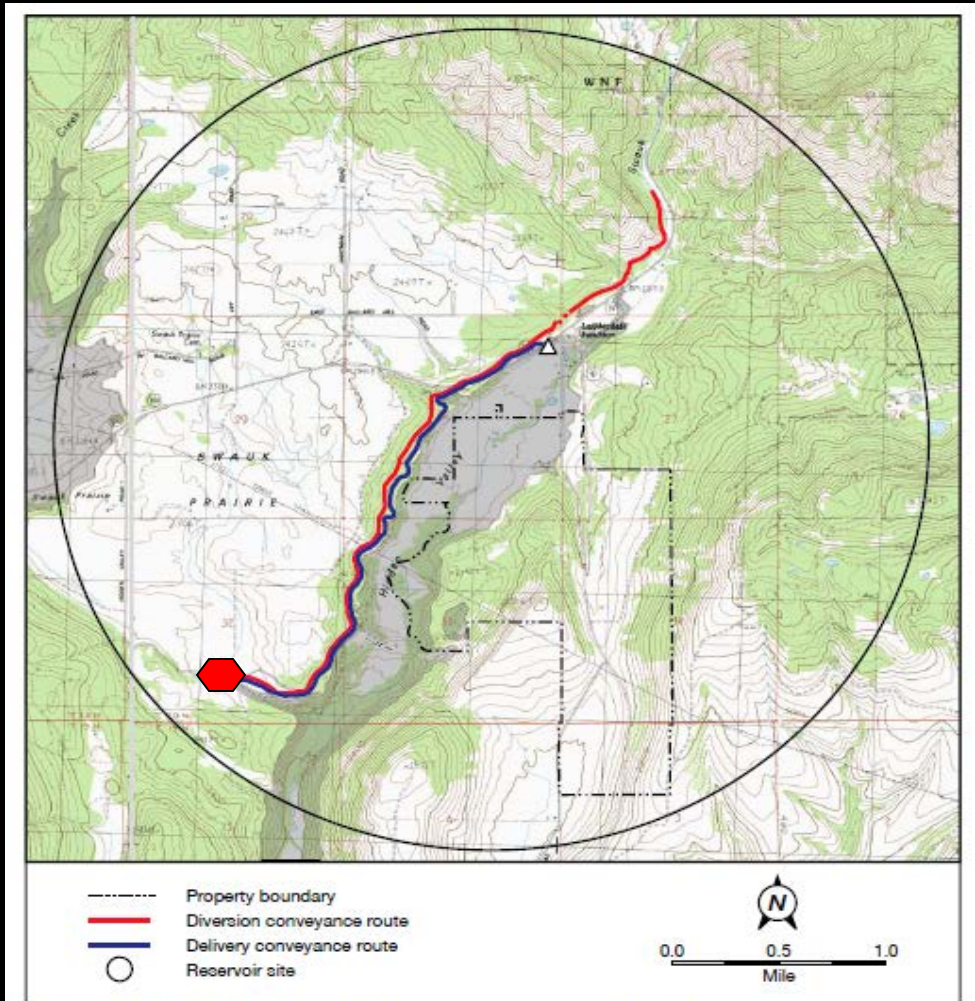


Figure 2.10.C.5: Map of private off-property reservoir site and conveyance system - Option C.

Storage site – Private land, ~15 acre site in the First Creek basin

- **Diversion site- First Creek at approximately 3100' elevation**
- **Pressure at delivery site near 440 psi – requiring pressure reduction devices**
- **Water right change needed for point of diversion**

Swauk Creek Small Storage – OPTION D



Storage site- Private land, 15 acre site currently with pond, elevation 2240'

• Diversion site- Swauk Creek 0.4 miles upstream of First Creek confluence, elevation 2245'

• Pressure at delivery site- 8 psi

• Water right change-point of diversion

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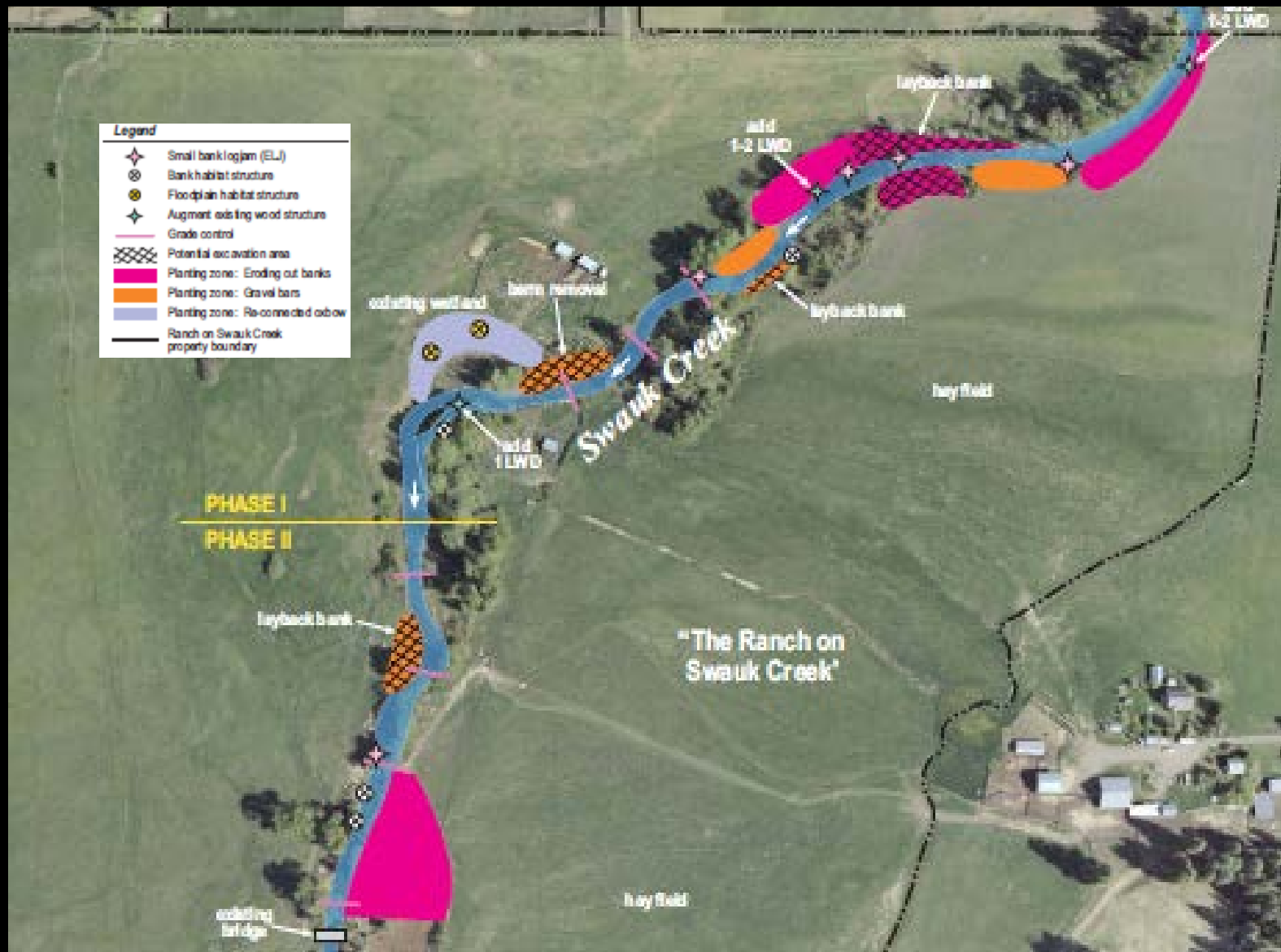
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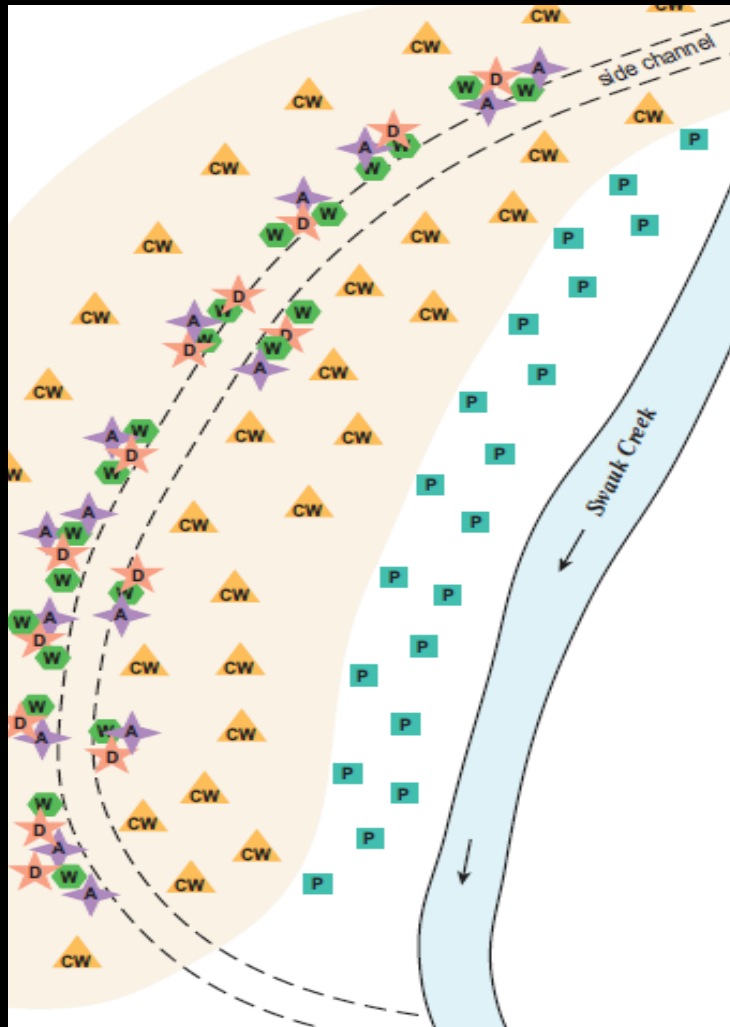
Develop Alternative Aquatic and Riparian Ecosystem Enhancements



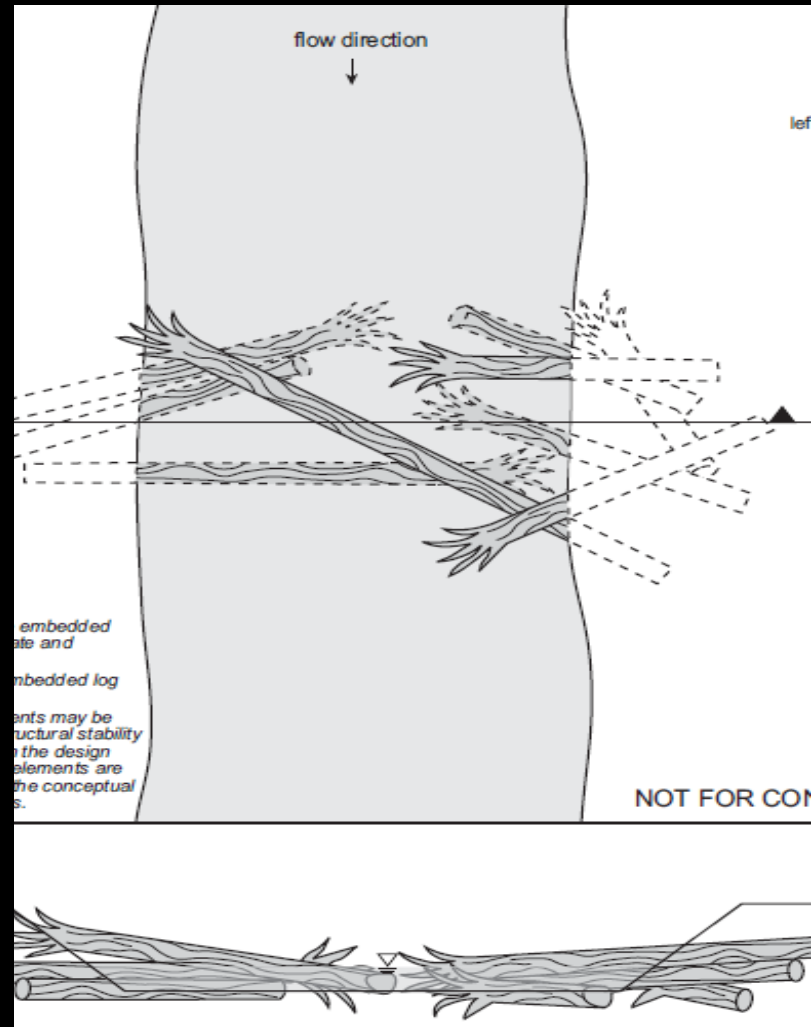
Storage Study Findings Translate to Restoration Concept Plans



Swauk Restoration Plan - Floodplain Reconnection and Instream Complexity

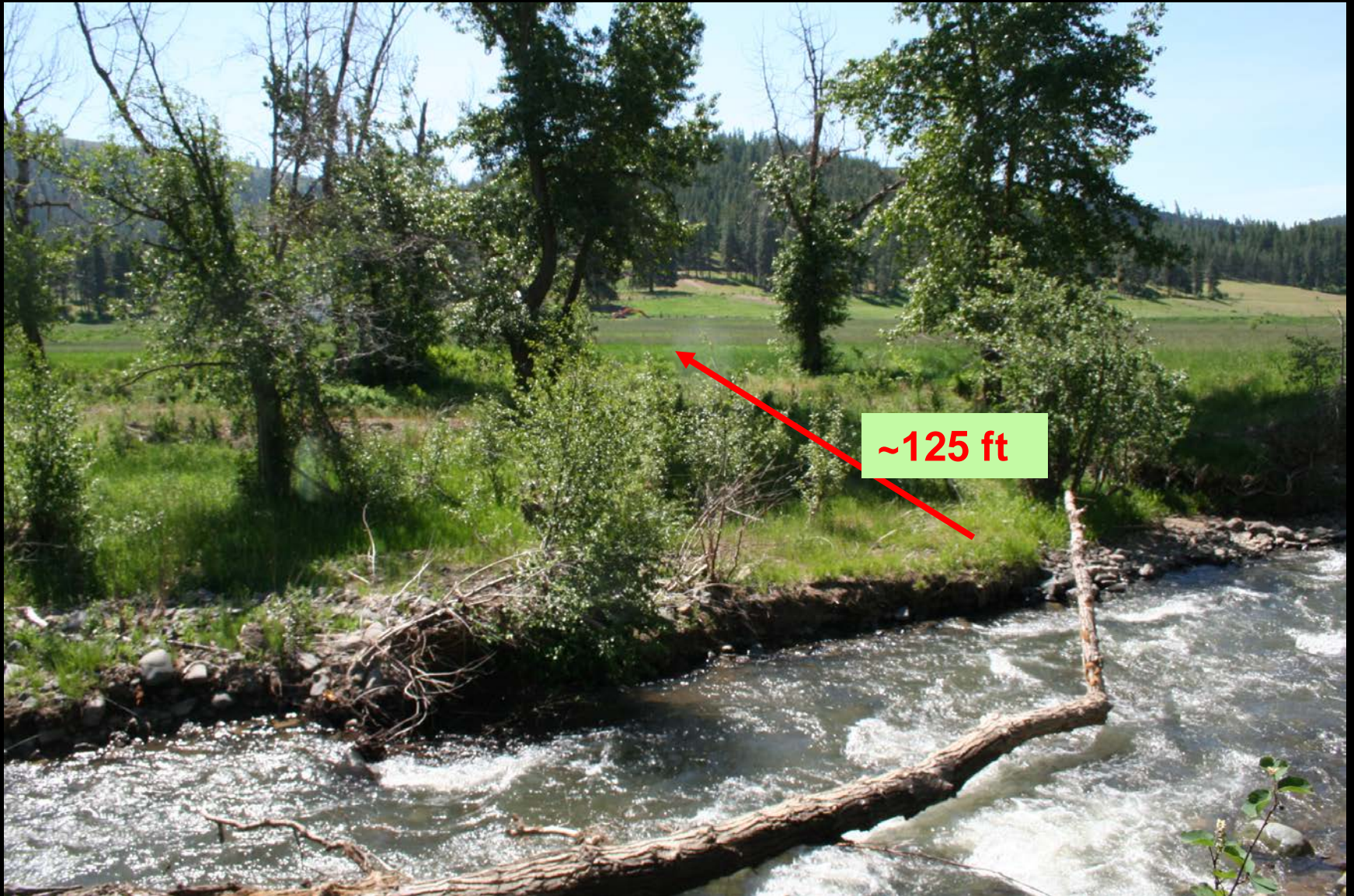


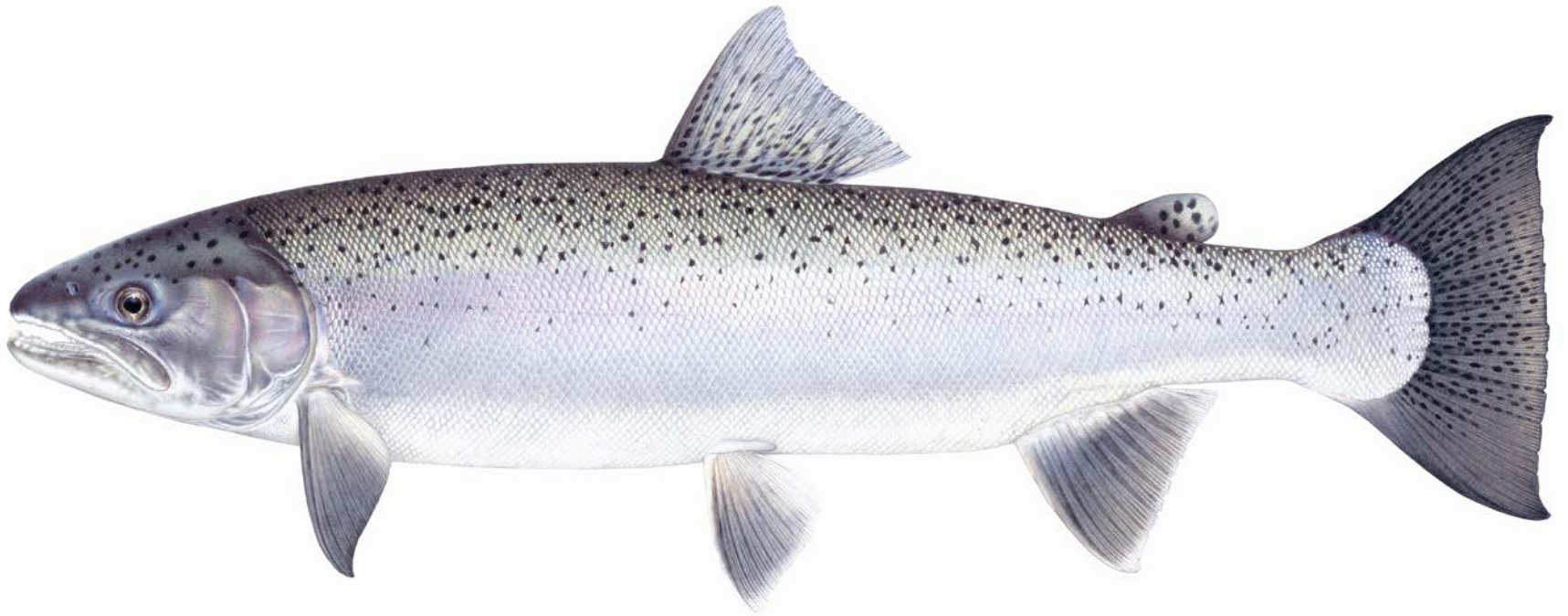
Riparian Vegetation Restoration



Large Wood Structure Installations

Proposed Swauk Creek Riparian Conservation Easement – Habitat Protection
Approximately 36 acres – 125 feet from OHWM





Swauk Creek Small Storage –

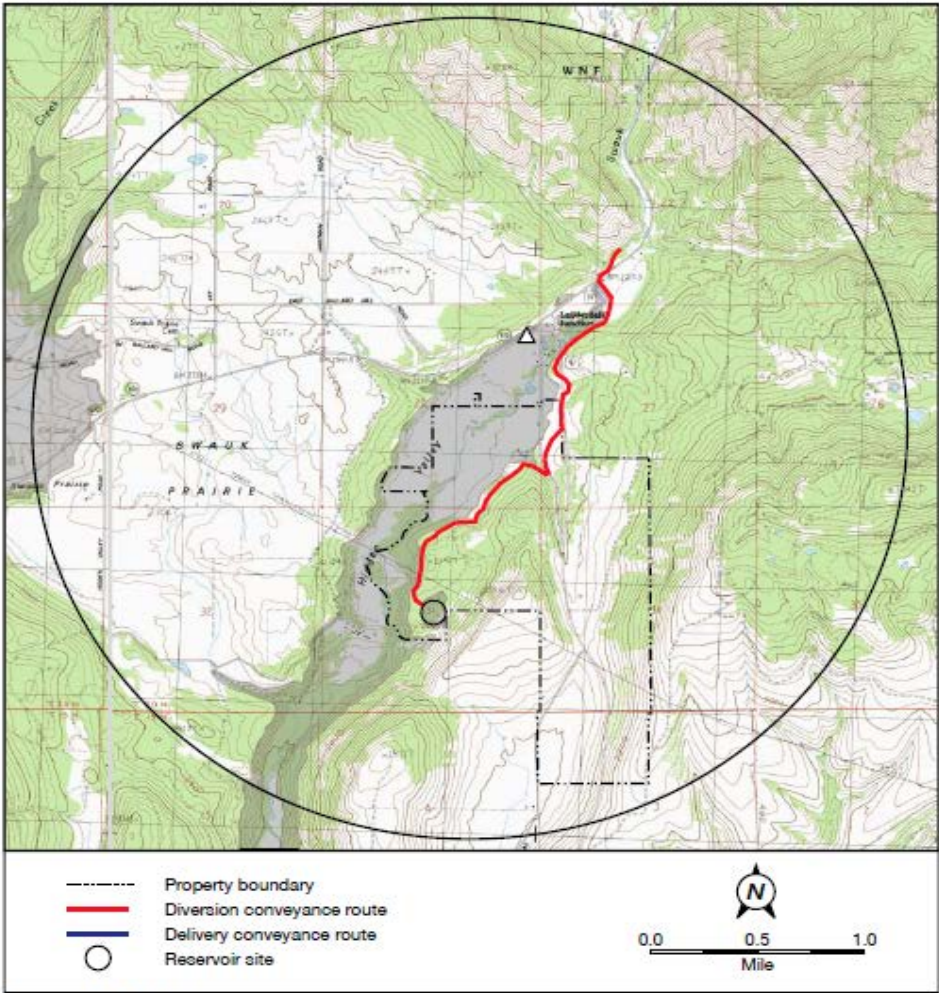


Figure 2.10.C.2: Map of on-property reservoir site and conveyance system - Option B.

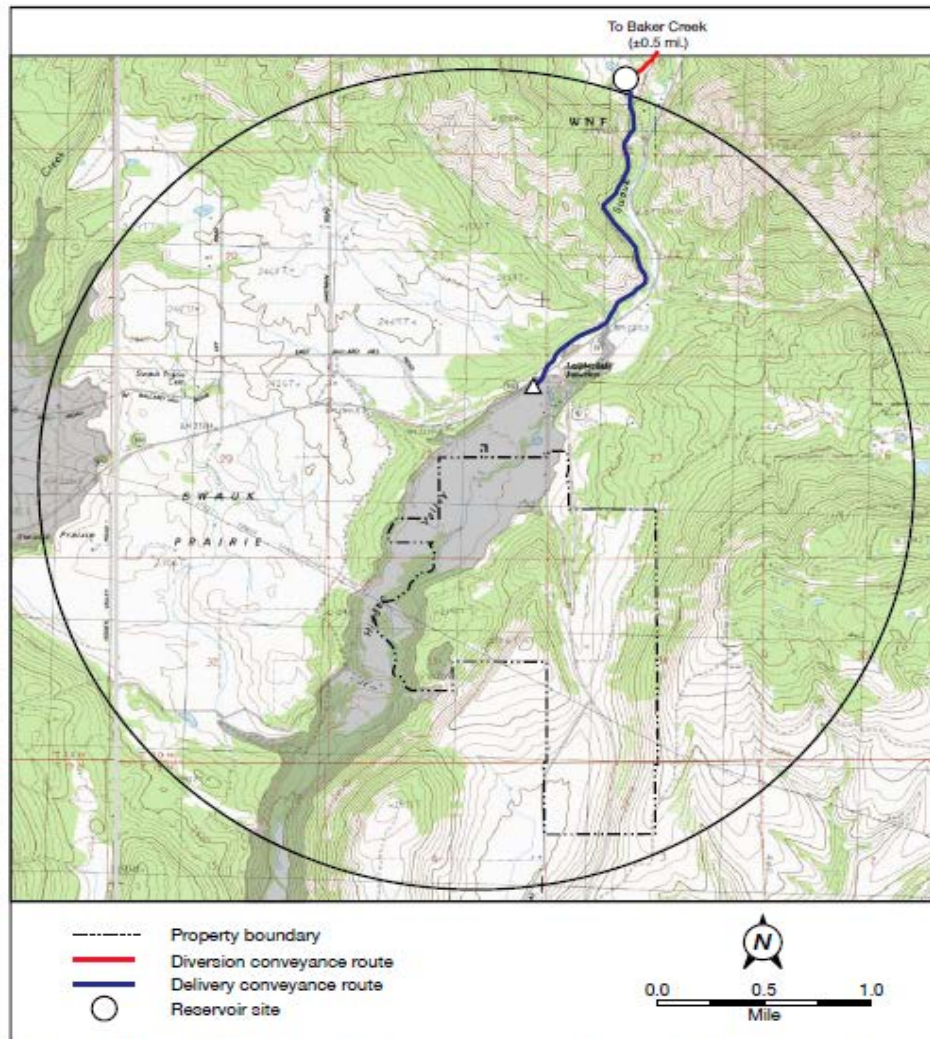


Figure 2.10.C.3: Map of private off-property reservoir site and conveyance system - Option A.

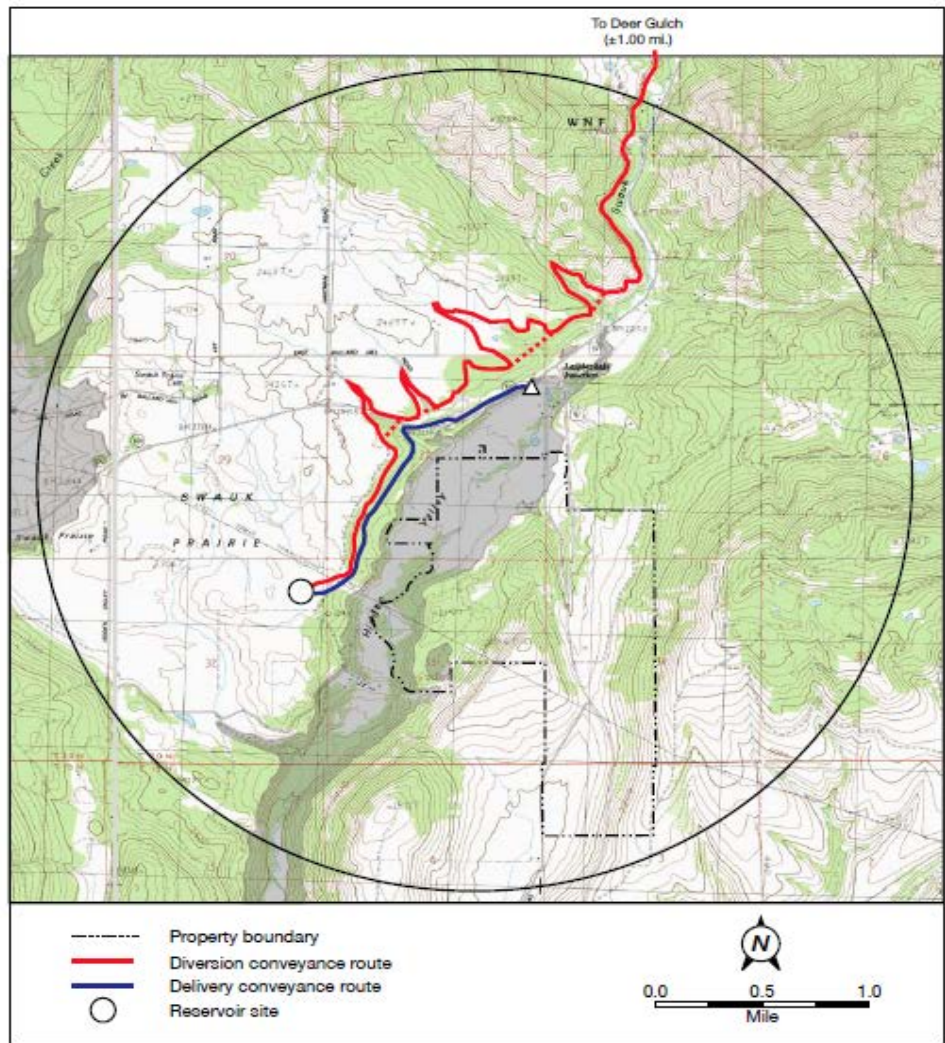


Figure 2.10.C.7: Map of private off-property reservoir site and conveyance system - Option E.