

F10 Stream Reach Summary

Study Reach: F10, Fraser River – Town of Granby at U.S. Highway 40 downstream to Colorado River confluence at Windy Gap.

Reach Description: Approximate channel length: 3 ½ miles, approximate channel slope 0.6%.

This portion of Fraser remains relatively sinuous and, in areas, appears braided. Fraser River confluences with Ten Mile Creek in the upstream portion of this reach and the Colorado River (CR3) at the downstream terminus of F10 just before entering Windy Gap. The overbanks are typically covered with wetland-type vegetation. Some development is evident, especially near Granby on the upstream end of this reach. A restoration project was completed for a portion of this reach within or near the Town of Granby. Details and site specific improvements were not available for inclusion in this Reach Summary. Downstream, the adjacent development is set further away from the river leaving the floodplain and wetland vegetation relatively undisturbed. Just upstream of Windy Gap the river is re-confined to a constructed channel, passing under the railroad and through a concrete lined gaging station immediately upstream of the Colorado River confluence.



Fraser River at County Road 57 near Town of Granby



Fraser River at Upstream of Windy Gap



Gaging Station upstream of the Colorado River confluence

Flow Recommendations:

Environmental Flow Methodology: CWCB instream flow recommendations are available for this reach. A study site was not established within F10.

Water Users:

- Irrigators, municipalities and industry flow-related issues: The primary water supplier in this reach is the Town of Granby with a surface water diversion on the Fraser immediately downstream of the Highway 40 Bridge. Low flow-conditions and algae can impede diversions.
- Diverters and irrigators: some reports of low-flow conditions and algae related problems.
- Recreational Flows: Angling is the predominant recreational use.

Summary of Flows:

Environmental, recommended target flow ranges (based on analysis for Reach F9)

- 80 to 120 cfs, April through September
- 40 to 100 cfs, October through March
- Flushing flow, at least 400 cfs for a 3-day duration with a frequency of 1 in 2 years during the late May to late June period.

CWCB flows

- 30 cfs summer (05/15 – 09/30)
- 19 cfs for winter (09/16 – 05/14)

Water Users

- Irrigators, municipalities and industry: The local diversions in this reach could potentially divert up to approximately 21 cfs. Most of the diversions are made in the summer for irrigation and will likely have some return flows.
- Recreation: Results from private and commercial users are presented below along with minimum, or tolerable flow ranges from American Whitewater for floatboating.
 - Kayaking: 350-900 cfs
 - Rafting: 500-1000 cfs
 - American Whitewater:
 - Fraser Canyon: minimum 700-1300 cfs, optimum 1300 cfs
 - Angling: 60 -200 cfs

Stream Assessments: In August 2008 Tetra Tech conducted two stream assessments in F10. The assessments included Stream Reach Inventory /Channel Stability Evaluation (SRI/CSE), and the EPA Habitat Quality Assessment (HQA). The SRI/CSE evaluation scored in the ‘good’ category and the EPA HQA evaluation scored in the ‘suboptimal’ category. Overall, the stream assessments indicated that barriers to fish passage were a major problem for aquatic habitat quality in this reach. Also, there was evidence of minor channel alternations and anthropogenic impacts in the overbanks. Results of both assessments are summarized in the following table. Details and methodology are presented in Appendix A.

Reach F10 Stream Assessments					
Stream Reach Inventory/Channel Stability Evaluation			EPA Habitat Quality Assessment		
Attribute			Attribute	Score	
Upper Banks			Channel		
1	Landform Slope	2	1	Aquatic Habitat Barriers/ Diversion	5
2	Mass wasting hazard	3	2	Aquatic Structure as Cover	11
3	Debris Jam Potential	4	3	Velocity/ Depth Regimes	16
4	Vegetation Cover	3	4	Channel Flow Status	16
		Upper Bank Score:	5	Channel Alteration	14
Lower Banks			6	Frequency of Riffles	18
5	Channel Capacity	2	7	Channel Sinuosity	10
6	Bank Rock Content	7	Channel Score		90
7	Flow obstructors & Deflectors	4	Banks		
8	Cutting	8	8	Bank Stability	18
9	Deposition	6	9	Riparian Vegetation Cover and Disturbance	18
		Lower Bank Score:	10	Riparian Vegetation zone width	16
Channel Bottom			Bank Score		52
10	Rock Angularity	3	Total Score		142
11	Brightness	3	Notes		
12	Consolidation/Particle Packing	4	Braided		
13	Bottom size distribution	6			
14	Bed Scour and Deposition	12			
15	Clinging Aquatic Veg	3			
		Channel Bottom Score:			31
		Total Score:			70

Spawning Observations: A spawning survey was not conducted in Reach F10.

Hydrologic Records: Two streamflow gaging stations described for Reach F9 are applicable to F10 also. USGS Gage Station 09034000 operated continually from 1904 to 1909 and from 1938 to 1955, while the NCWCD has operated a seasonal gage (April to September) near the mouth of the Fraser River from 1988 to the present. Inspection of the daily streamflow exceedence plots and IHA analyses indicates the recommended environmental flow ranges are commonly available throughout much of the water year. The recommended flushing flow is commonly present during the spring runoff period and is supported by the flood frequency analysis provided for the USGS station at Granby.

Water Temperature: F10 is a Tier II stream reach as designated by CDPHE with a chronic temperature standard of 18.2°C MWAT and an acute temperature standard of 23.8°C DM. Temperature data reviewed in reach F10 indicate stream temperatures for the Fraser River in this area are generally below the MWAT and DM standards. However, some exceedences have occurred and resulted in placement of F10 on the 303 (d) list of impaired waters for temperature, with a low priority.

Water Quality: Available data shows elevated levels of phosphorus over the past fifteen years at the gage on the Fraser River at Hwy 40 in Granby. As of April 2010 this reach of the Fraser River has been placed by the State of Colorado on the 303(D) list for monitoring and evaluation for copper.

Water Supply Issues (UPCO): UPCO reports that flows in this reach are generally adequate under current conditions, with occasional shortages under future conditions.

Summary of Results and Additional Remarks:

1. Recommended target flow ranges are commonly available throughout much of the water year.
2. The recommended flushing flow is commonly present during the spring runoff.
3. The stream assessments indicate barriers to fish passage are an issue within this reach, while minor channel alternations and anthropogenic impacts in the overbanks were also observed.
4. Temperatures and water quality appear supportive of a cold-water fishery, although some exceedences of temperature and phosphorus standards have been observed. Flows for water uses including recreation are generally adequate.
5. The fish passage barriers in this reach include the Granby Diversion and the NCWCD gage site. These structures present impediments to upstream fish migration.
6. Colorado Division of Wildlife electrofishing records from 1993 indicate about equal numbers of brown and rainbow trout occurred within Reach 9, just upstream. 2009 CDOW fish collections in Granby found brown trout to be about 5 times more abundant than rainbow trout, although the large number of naturally spawned young-of-year rainbows collected was encouraging. In recent years, CDOW has been stocking numerous rainbow trout into the Fraser to supplement the populations depleted by whirling disease.
7. The Fraser River at Granby has been identified in the CNHP as a Potential Conservation Area due to a globally vulnerable plant community. However, the CNHP notes that this area is not a high priority for protection since the private landowner already protects land use surrounding this area and is performing river restoration work.
8. Review of future flow conditions as depicted by Denver Water's PACSM model indicate that the late summer flows, flushing flows and winter base flows, without flow enhancements or restoration, may occasionally be lower than target ranges in this reach.

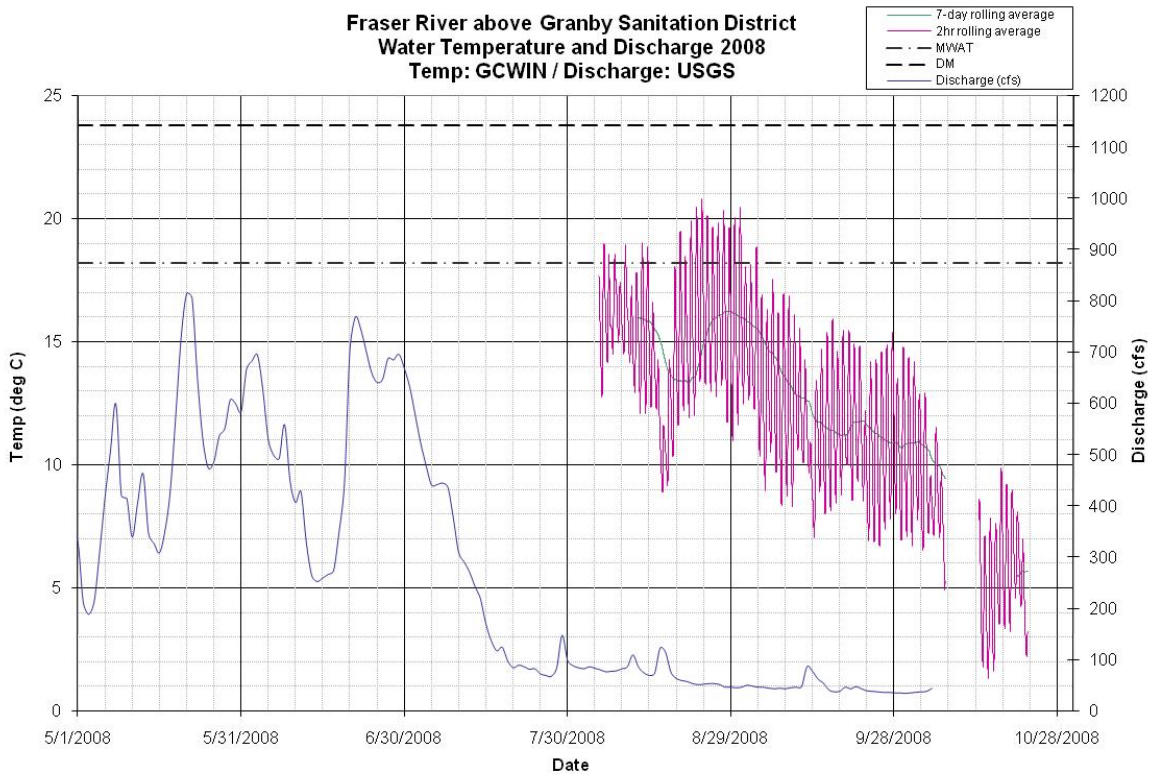
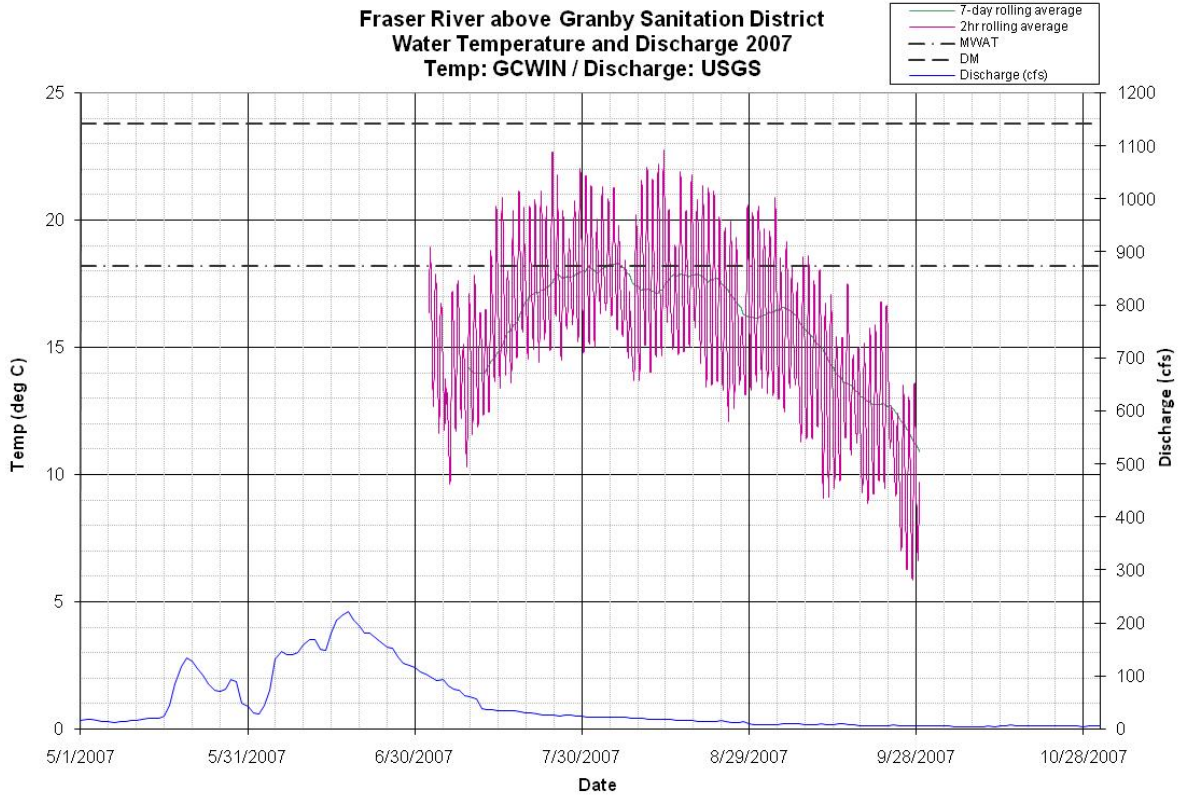
Restoration Opportunities:

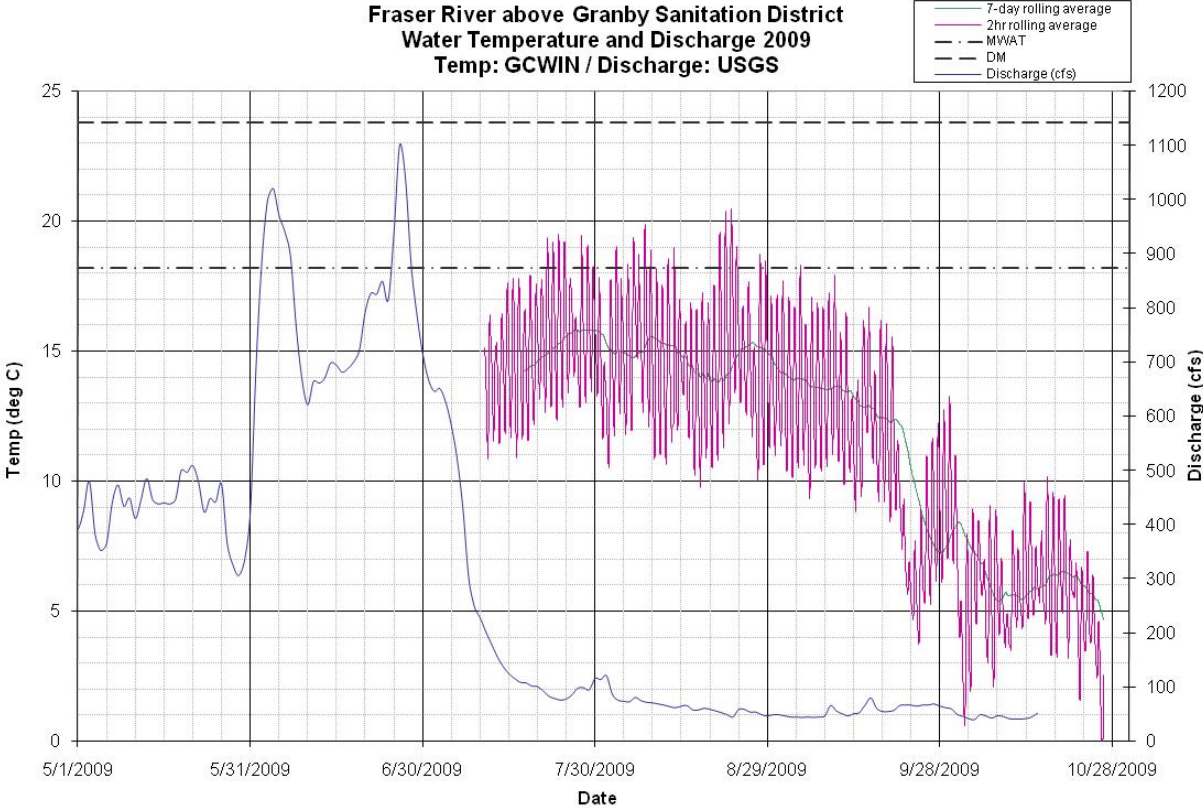
- ✓ Investigate opportunities for improving fish passage at the Granby Diversion and the NCWCD gage site

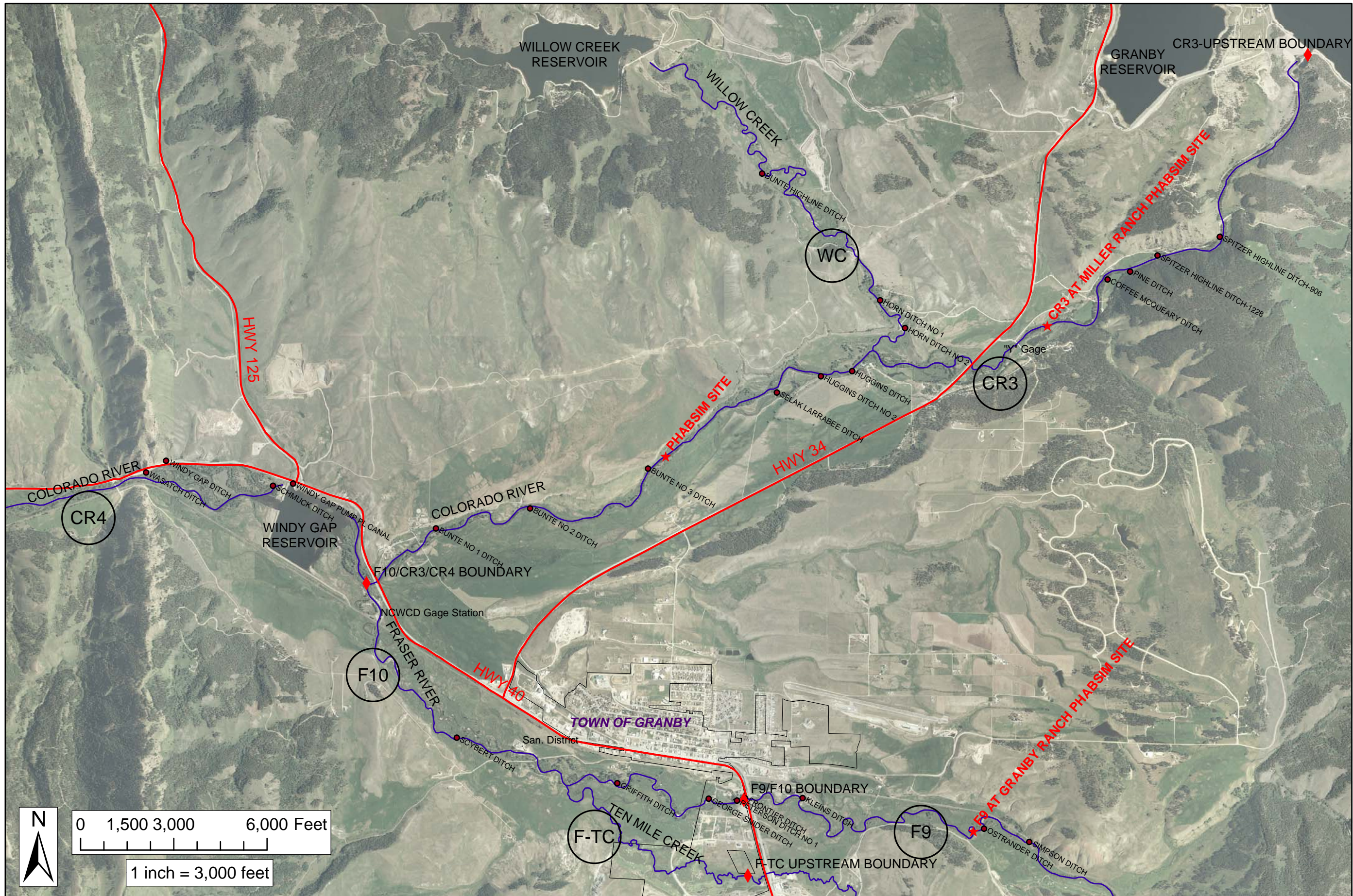
Monitoring: Establish and implement a monitoring program. Parameters should include pH and phosphorus. Continue to monitor surface water temperatures and flows. Consider the addition of air temperature monitoring. Should fish passage enhancements be implemented include monitoring of fish populations and diversity.

Support Data

Surface Water Temperature Plots







0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

GRAND COUNTY
STREAM MANAGEMENT PLAN
REACHES

Legend

- ◆ REACH BOUNDARY
- ★ PHABSIM SITES
- DIVERSIONS

REACH: F10
SHEET # :
1 OF 1

