

Deciphering Assessment Units in the St. Joe River Subbasin

Some of the assessment units (AUs) in the St. Joe River Subbasin need to be better arranged so they make better sense as well as to simplify AUs for future assessments and TMDL load allocations. The following are the basis for the need to modify St. Joe River Subbasin AUs.

- Several of the AUs represent too many miles. The two largest AUs represent 146 and 160 miles of stream. These AUs both include more miles than 99% of all the AUs in the state of Idaho (99th percentile = 134.9 miles).
- Current AUs are difficult to assess because there are too many BURP sites to correctly reconcile (40 BURP sites for ID17010304PN041_02)
- Current AUs are difficult to apply meaningful TMDL load allocations
- Current AUs are at too large of a scale to differentiate the land uses and levels of management across the landscape.
- Initial AUs do not appear to follow the rules of 1st order and 2nd order streams as AUs typically do.

The following paragraphs better explain the outcomes of cleaning up St. Joe River Subbasin AUs.

Two AUs in the St. Joe River subbasin (17010304) characterize most first and second order streams flowing into the St. Joe River above the St. Maries River confluence. The two AUs consist of 306 stream miles (1:100,000 scale stream hydrography) representing a 1,849 square mile watershed, span multiple land use types, and are included in Idaho's 2002, 2008, 2010, and 2012 Integrated Report as temperature impaired.

The upper most AU (ID17010304PN041_02) includes most first and second orders streams above the North Fork of the St. Joe River extending to St. Joe Lake (headwaters). This AU includes 146 stream miles. The second AU (ID17010304PN027_02) contains most first and second orders streams to the St. Joe River between the North Fork St. Joe River to the confluence with the St. Maries River. This AU includes 160 miles of stream (Figure 1).

St. Joe Subbasin (17010304)

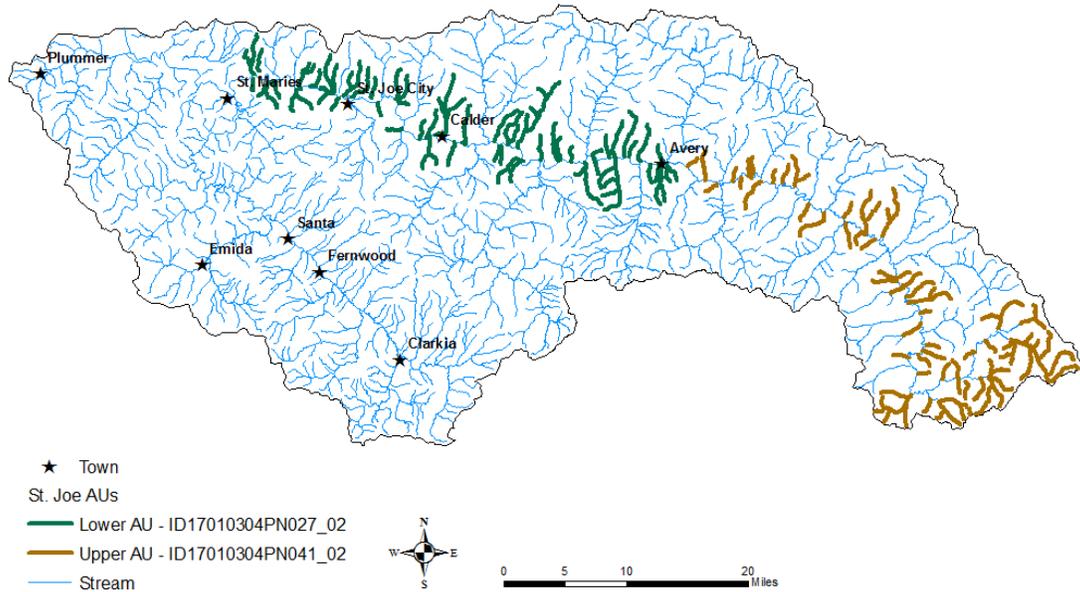


Figure 1. St. Joe River subbasin (17010304) first and second order tributaries to the St. Joe River

Both AUs have been identified as exceeding Idaho water quality temperature criteria. Water temperature data have been collected at seven locations with the two AUs. To better represent these two large AUs and future water quality assessment efforts an AU split is proposed.

Stream temperature data were collected at 5 locations within the upper AU, all 5 sampling sites were located above Heller Creek. Heller Creek is located in the upper most portion of the watershed and may not be representative of stream temperatures downstream. Similar to the upper AU the data within the lower AU was collected at 2 locations which may not be representative of stream temperatures outside of these watersheds (Figure 2).

St. Joe Subbasin (17010304)

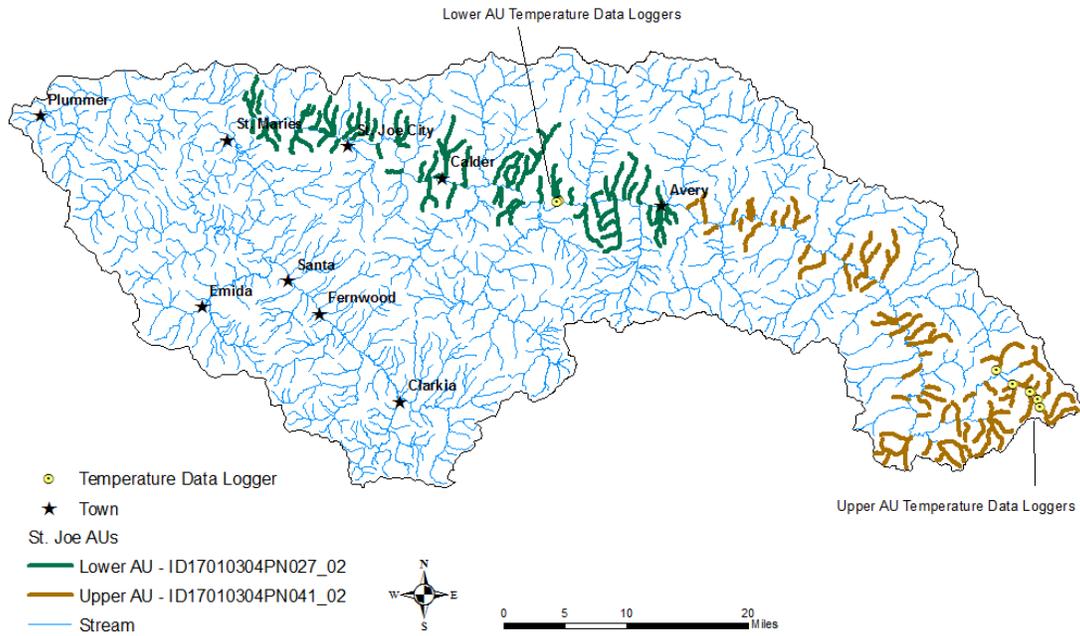


Figure 2. Temperature data loggers associated with AUs ID17010304PN027_02 and ID17010304PN041_02.

ID17010304PN041_02

The upper AU is proposed to be subdivided based on stream size, land use, and geographic location. The following defines the AU breaks and justification for streams above Gold Creek (Table 1). The yellow highlighted rows represent new AUs. The blue highlighted rows represent joins to existing AUs.

Table 1. Recommended AU splits for AU ID17010304PN041_02

Assessment Unit	Stream Name and Description	ADB Naming	Split Justification
ID17010304PN041_02	1 st order tributaries to the St. Joe River from North Fork St. Joe River to Gold Creek including Coddington, Packsaddle, Bootleg, Tourist, Coyote, Tarnier, Allen, Tin Can, Bottle, Bennett, Fuzzy, Bear, Niagara, Acanite, and Haggerty Creeks.	1 st order tributaries to St Joe River from NF to Gold Creek	AU split will better represent applicable data and help to better define watersheds for application of WQS, TMDL, and implementation efforts.
ID17010304PN041_02a		Sherlock Creek	AU already exists
ID17010304PN041_02b	2 nd order north-side tributaries to the St. Joe River upstream of Prospector Creek to Mosquito Creek. AU includes Malin, Tumbledown, and Bruin Creek.	2 nd order tributaries to St Joe River from NF to Gold Creek	AU split will better represent applicable data and help to better define watersheds for application of WQS, TMDL, and implementation efforts.
ID17010304PN041_02c	First order streams to the St. Joe River upstream of Gold Creek to Copper Creek. Including Wahoo, Indian, and Midget, Creeks.	1 st order tributaries to St Joe River from Gold Creek to Copper Creek	With the exception of Indian Creek, all creeks are 1 st order streams to the St. Joe River. The split from other 1 st order streams to the St. Joe was made at Gold Creek because of a significant land use change. A major road is located adjacent to the river below Gold Creek. The portion of the watershed above Gold Creek is not easily accessible.
ID17010304PN041_02d	First order streams to the St Joe River above Copper Creek. Including Ascent Creek, Line Creek, Game Creek, Color Creek, and Broken Leg Creek	1 st order tributaries to St Joe River above Copper Creek	All creeks are 1 st order streams to the St. Joe River. The split from other first order streams below Copper Creek was made because the watershed becomes roadless and is distinct from the 1 st order streams downstream.

ID17010304PN047_02	Fly Creek watershed headwaters to St. Joe River.	Fly Creek 2 nd order	2 nd order portion of stream was included in AU 41_02 and needs to be joined with 1 st order AU PN047_02.
ID17010304PN049_02	Copper Creek watershed headwaters to St. Joe River.	Copper Creek 2 nd order	2 nd order portion of stream was included in AU 41_02 and needs to be joined with 1 st order AU PN049_02.
ID17010304PN041_02e	Ruby Creek watershed including Pole and My Creeks.	Ruby Creek and tributaries	Distinct watershed
ID17010304PN041_02f	1 st and 2 nd order portion of Bacon Creek above and including Basin Creek also including Pass Creek.	Bacon Creek 1 st and 2 nd order	Distinct watershed
ID17010304PN041_02g	1 st and 2 nd order streams to Bean Creek above North Fork Bean Creek including Mill, Tinear, and Dump Creek.	Bean Creek 1 st and 2 nd order	Distinct watershed
ID17010304PN041_02h	Heller Creek above St. Joe River and Sherlock Creek above meadow section (PN041_02a)	Heller and Sherlock Creek 1 st and 2 nd order	Distinct watershed
ID17010304PN041_02i	2 nd order portion of the St. Joe River above Yankee Bar Creek	St Joe River 2 nd order above Yankee Bar Creek	Distinct watershed
ID17010304PN041_02j	1 st order streams for the 2 nd order portion of the St. Joe River, including Yankee Bar, California, Medicine, and all other tributaries.	1 st order streams for the 2 nd order portion of St Joe River	Distinct watershed

The newly created AUs will better represent watersheds within the St. Joe subbasin. The recommended changes will group like waterbodies (Figure 3).

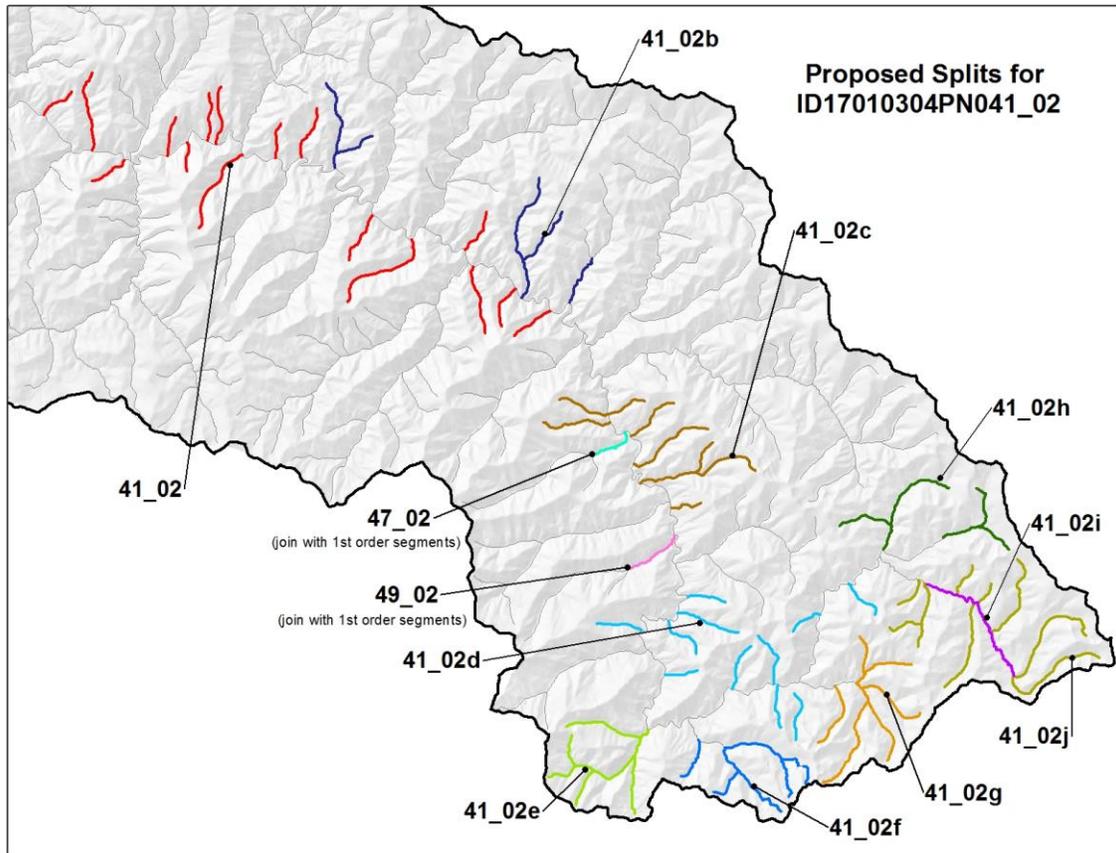


Figure 3. AU splits and joins for ID17010304PN041_02

ID17010304PN041_03

Along with the request for the AU (ID17010304PN041_02) splits, it would also be appropriate to split the 3rd order, AU (ID17010304PN041_03). This would accommodate those distinct watersheds.

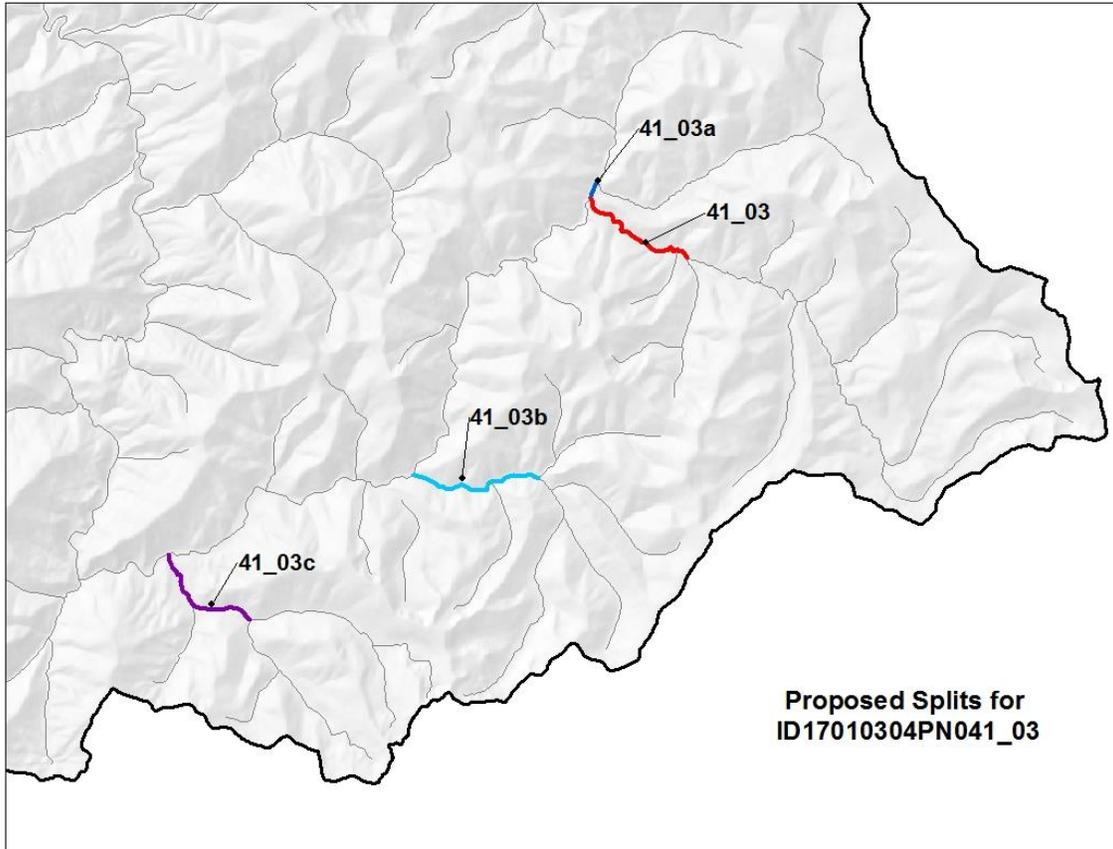


Figure 4. AU splits for ID17010304PN041_03

Assessment Unit	Stream Name and Description/ADB naming	Split Justification
ID17010304PN041_03	St Joe River from Heller Creek to Yankee Bar	Distinct watershed, supports the AU17010304PN041_02 split
ID17010304PN041_03a	Heller Creek 3 rd order	Distinct watershed, supports the AU17010304PN041_02 split
ID17010304PN041_03b	Bean Creek 3 rd order	Distinct watershed, supports the AU17010304PN041_02 split
ID17010304PN041_03c	Bacon Creek 3 rd order	Distinct watershed, supports the AU17010304PN041_02 split

The AU (ID17010304PN041_02) which once covered an immense area, 1st and 2nd order tributaries to the St. Joe River from Avery to headwaters, of the St. Joe River has been split into new AUs groupings resulting in 8 new AUs and 2 joins with existing AUs. Along with request is the split of AU (ID17010302PN041_03). These splits will better represent areas for data application and help to better define watersheds for application of WQS, TMDL, and implementation efforts.

Establishing new AUs will adjust the application of water quality data and ultimately the water quality impairment status. Under the draft 2010 IR the larger upper AU (ID17010304PN041_02) was identified as exceeding water quality criteria. This impairment was supported by data collected within the new AUs for Heller Creek and Upper St. Joe River (ID17010304PN070_02, PN041_02a, and PN071_02, PN041_03). Data collected within these AUs may not be applicable to streams outside of these watersheds which are now represented by the assignment of the new AUs. Under the proposed AU assignment temperature TMDLs will be needed for AUs ID17010304PN041_02a, ID17010304PN041_02g, ID17010304PN041_02h, and ID17010304PN041_03.

ID17010304PN027_02

The second large AU includes 1st and 2nd order streams from below the confluence with the North Fork St. Joe River to the St. Maries River. The following AU splits are recommended (Table 2).

Table 2. Recommended splits for AU ID17010304PN027_02

Assessment Unit	Stream Name and Description	ADB Naming	Split Justification
ID17010304PN027_02	1 st and 2 nd order streams to St. Joe River below Bond Creek to St. Maries River confluence including Thomas, Jacot, Ahrs, Allens, Mercury Creeks and Cedar and Phillips Draw.	1 st and 2 nd order streams to St Joe River below Bond Creek	Valley change. Slack water portion of St. Joe River terminates at western extent of the AU. This section of the valley is flat and broad. Many of the streams in this AU meander through the St. Joe River flood plain and are different from upstream tributaries in this regard.
ID17010304PN027_02a	1 st and 2 nd order tributaries to the St. Joe River between Bond and Big Creeks including Urquhart Gulch, Gilson Draw, Jack, Charley, Bear, Elk, and Moose Creeks.	1 st and 2 nd order to St Joe River between Bond and Big Creeks	Transition zone from free-flowing river into slack water and broad flood plains. Ownership mixed and land use dominated by forest harvest.
ID17010304PN027_02b	1 st and 2 nd order tributaries to the St. Joe River between Big and Slate Creeks including Mud, Francis, Black Prince, Tank, Harvey, Blackjack, Ally, and Spring Creeks	1 st and 2 nd order to St Joe River between Big and Slate Creeks	Decreasing mean watershed elevation. Upper extent of AU is near USFS National Forest border. Ownership is mixed and land use changes to higher density of harvest (visual observation).

ID17010304PN027_02c	1 st and 2 nd order streams to St. Joe River between Slate Creek and North Fork St. Joe River including Hamilton, Rock, Strom, Trego, Setzer, Avery, Williams, Kelley, Flemming, and Dago Creeks.	1 st and 2 nd order to St Joe River between Slate Creek and NF	Ownership/Management change below AU. USFS – St. Joe National Forest border.
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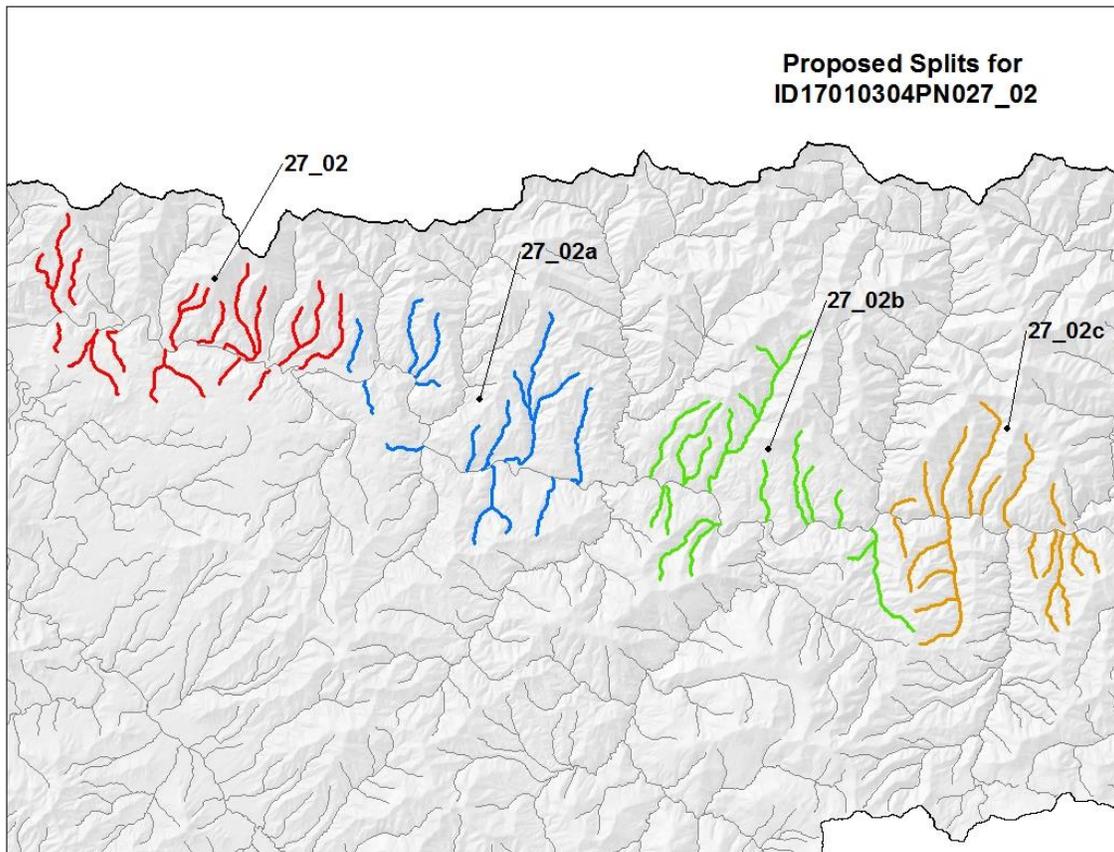


Figure 5. Recommended AU splits for ID17010304PN027_02

The lower AU (ID17010304PN027_02) 1st and 2nd order tributaries to the St. Joe River from the North Fork St. Joe River to the St. Maries River confluence of the St. Joe River has been split into 4 AUs. This split will better represent areas for data application and help to better define watersheds for application of WQS, TMDL, and implementation efforts. Three of the AUs now representing this area are new.

ID17010304PN027_05

Two AUs addressed in this proposed split have designated beneficial uses. The two AUs address portions of the mainstem St. Joe River. The upper section includes the St. Joe River from the source to the North Fork St. Joe River. This designation addresses uses in the mainstem and does not address tributaries. The recommended split will not impact this designation.

The lower designated assessment unit includes the mainstem St. Joe River from the North Fork St. Joe River to the confluence with the St. Maries River. This AU is designated for cold water communities, salmonid spawning, primary contact recreation, domestic water supply, and special resource water.

From the 2011 EPA approved St. Joe Temperature TMDL addendum page 16 and 17:

The St. Joe River below St. Joe City, Idaho, to the confluence with the St. Maries River is included as part of the AU (ID17010304PN027_05) that is identified as exceeding water quality criteria. This portion of the river is impacted by the hydroelectric dam operated in Post Falls, Idaho, along the Spokane River by Avista Utilities. The St. Joe River is elevated 8 feet above its normal (pre-dam construction) summer elevation. The artificial elevation of water has caused the river to become wider than natural and lose near-stream vegetation due to river bank erosion. These modifications have caused an increase in river surface area, allowing for more solar loading.

Idaho water quality standards recognize the impacts dams have on water bodies and allow for variances from water quality standards in these situations (IDAPA 58.01.02.260). Because the dam is altering the natural width of the river and the naturally occurring near-stream vegetation, the dam operation is precluding the attainment of the applicable water quality standards and targets set in this TMDL (IDAPA 58.01.02.206.01.6.iv).

Due to this distinct change in river process caused by the Post Falls dam, AU ID17010304PN027_05 should be split at St. Joe City during Idaho's next Integrated Report cycle. This split would create two AUs and be more representative of beneficial uses. The new AUs would include the mid St. Joe River reach from the confluence with the North Fork St. Joe River to St. Joe City, and the lower reach from St. Joe City to the confluence with the St. Maries River (Figure 6). PNV TMDL methodology is applied to the mid reach in this temperature TMDL, and the lower reach is recommended to be moved to category 3 (unassessed waters) during Idaho's next Integrated Report cycle.

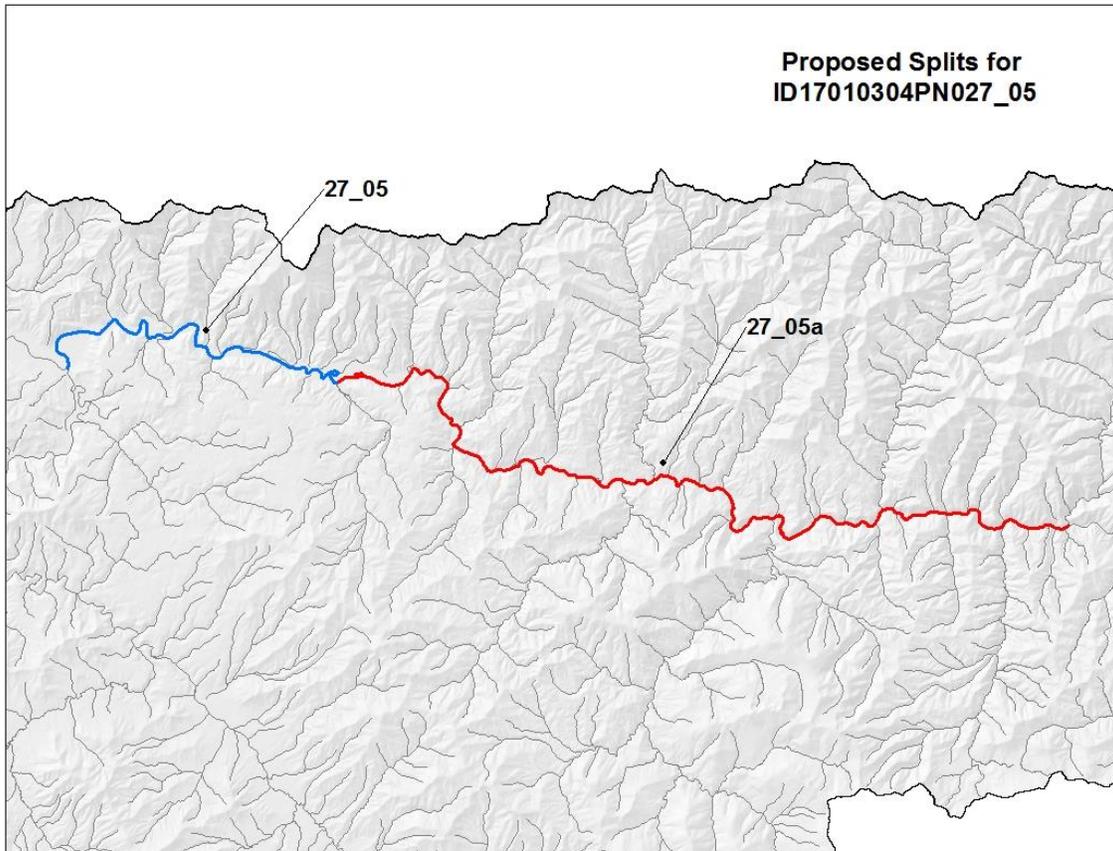


Figure 6. AU split for ID17010304PN027_05

AU Split Impacts to TMDLs

Establishing new AUs will not impact the application of water quality data, designated uses, or the water quality impairment status. Establishing new AUs will increase the number of unassessed waters in the St. Joe subbasin. Below are the proposed Integrated Report changes and TMDL recommendations for the AUs defined and redefined above (Table 3).

Table 3. Recommended Integrated Report changes and TMDL recommendations

Stream Name	Assessment Unit	Integrated Report Action
1 st and 2 nd order streams to St Joe River below Bond Creek	ID17010304PN027_02	Not assessed. Category 3
1 st and 2 nd order to St Joe River between Bond and Big Creeks	ID17010304PN027_02a	Not assessed. Category 3

Stream Name	Assessment Unit	Integrated Report Action
1 st and 2 nd order to St Joe River between Big and Slate Creeks	ID17010304PN027_02b	Temperature TMDL completed and approved. No change to Integrated Report. Currently in Category 4a.
1 st and 2 nd order to St Joe River between Slate Creek and NF	ID17010304PN027_02c	Not assessed. Category 3
St Joe River from St Maries to St Joe City	ID17010304PN027_05	Not assessed. Category 3
St Joe River from St Joe City to North Fork St Joe River	ID17010304PN027_05a	Temperature TMDL completed and approved. Move AU to Category 4a.
1 st order tributaries to St Joe River from NF to Gold Creek	ID17010304PN041_02	Not assessed. Category 3
Sherlock Creek	ID17010304PN041_02a	Approved temperature TMDL
2 nd order tributaries to St Joe River from NF to Gold Creek	ID17010304PN041_02b	Not assessed. Category 3
1 st order tributaries to St Joe River Gold Creek to Copper Creek	ID17010304PN041_02c	Temperature TMDL completed. AU is meeting TMDL targets and beneficial uses are supported. Move AU to category 2. For the purposes of submitting the 2014 as soon as possible this AU will remain in 4a until the next reporting cycle (2016).
1 st order tributaries to St Joe River above Copper Creek	ID17010304PN041_02d	Not assessed. Category 3
Ruby Creek and tributaries	ID17010304PN041_02e	Not assessed. Category 3
Bacon Creek 1 st and 2 nd order	ID17010304PN041_02f	Not assessed. Category 3
Bean Creek 1 st and 2 nd order	ID17010304PN041_02g	Not assessed. Category 3
Heller and Sherlock Creek 1 st and 2 nd order	ID17010304PN041_02h	Temperature TMDL completed. AU is meeting TMDL targets and beneficial uses are supported. Move AU to category 2. For the purposes of submitting the 2014 as soon as possible this AU will remain in 4a until the next reporting cycle (2016).
St Joe River 2 nd order above Yankee Bar Creek	ID17010304PN041_02i	Temperature TMDL completed. AU is meeting TMDL targets and beneficial uses are supported. Move AU to category 2. For the purposes of submitting the 2014 as soon as possible this AU will remain in 4a until the next reporting cycle (2016).

Stream Name	Assessment Unit	Integrated Report Action
1 st order streams for the 2 nd order portion of St Joe River	ID17010304PN041_02j	Temperature TMDL completed. AU is meeting TMDL targets and beneficial uses are supported. Move AU to category 2. For the purposes of submitting the 2014 as soon as possible this AU will remain in 4a until the next reporting cycle (2016).
St Joe River from Heller Creek to Yankee Bar	ID17010304PN041_03 ¹	Not assessed. Category 3
Heller Creek 3 rd order	ID17010304PN041_03a	Not assessed. Category 3
Bean Creek 3 rd order	ID17010304PN041_03b	Not assessed. Category 3
Bacon Creek 3 rd order	ID17010304PN041_03c	Not assessed. Category 3
Fly Creek 2 nd order	ID17010304PN047_02	Temperature TMDL completed. AU is meeting TMDL targets and beneficial uses are supported. Move AU to category 2. For the purposes of submitting the 2014 as soon as possible this AU will remain in 4a until the next reporting cycle (2016).
Copper Creek 2 nd order	ID17010304PN049_02	Not assessed. Category 3

¹ Assessment unit is lacking stream temperature data to determine an exceedance of Idaho water quality criteria. The unassessed recommendation is made in the temperature TMDL addendum approved by EPA on December 5, 2011.

Temperature TMDLs completed and approved by EPA in 2011 for the St. Joe river watershed only addressed portions of the assessment units described in this document (i.e. a temperature TMDL was not completed for the entire original AU ID17010304PN041_02 or ID17010304PN027_02). Splitting the AUs will benefit future temperature TMDLs.