



## MEMORANDUM

TO: Ted Zukoski  
FROM: Emily Ferrell  
DATE: May 18, 2016  
RE: Enefit's proposed water consumption and resulting impacts on fish

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### I. Diversion Location Proposed Alternative

- Under the Proposed Alternative, Enefit would withdraw water from the Green River slightly downstream of Jensen, Utah DEIS 4-61, 4-111; *and see map on 2-7.*
- The DEIS notes that the use of Enefit's existing water right is not "anticipated to significantly reduce flows in the Green River or impact other water right holders in the basin." DEIS at 4-69; *and see 4-111* ("The use of Applicant's existing water right is not anticipated to significantly reduce flows in the Green River or have effects on Colorado River Fish or habitat."); *but see id.* (noting that Colorado River endangered fish may be impacted due to flow depletions resulting from consumptive water use in the Green River).
- Downstream from the proposed diversion site, is the Ouray National Wildlife Refuge (management of which, as FWS notes, is focused on maintaining a variety of native habitats and wildlife with an emphasis on threatened and endangered species). U.S. Fish & Wildlife Service, (May 18, 2:13 PM) [https://www.fws.gov/refuge/wildlife\\_and\\_habitat/wildlife\\_and\\_habitat.html](https://www.fws.gov/refuge/wildlife_and_habitat/wildlife_and_habitat.html)

### No Action Alternative

- Under the No Action Alternative, Enefit may decide to withdraw water from the White River near where the Utility Project proposes to cross the White River (east of Hwy. 45).
- Enefit may also try to acquire additional surface water or groundwater rights; however "[a]dequate information for this scenario is not available to estimate specific impacts." *Id.* at 4-115, 2-40.

### II. Water Basin amount and consumptive use:

- Enefit currently has access to a water right (#49-258 with a priority date of 1965) to withdraw 15 cfs (10,866.72 acre feet per year) from either the Green or White River. DEIS at 4-111; *see also* UDWaR, [Searching Water Rights](http://www.waterrights.utah.gov/cblapps/wrprint.exe?wrnum=49-258), (May 18, 2016, 3:43 PM), <http://www.waterrights.utah.gov/cblapps/wrprint.exe?wrnum=49-258>
- The permit, which can be used for irrigation, domestic, mining and industrial uses, has 26 permissible points of diversion. 2-46; *see also* UDWaR, [Searching Water Rights](http://www.waterrights.utah.gov/cblapps/chprint.exe?chnum=a38730), (May 18, 3:46 PM), <http://www.waterrights.utah.gov/cblapps/chprint.exe?chnum=a38730> (illustrating a 2013 change application to the water right which increased diversion points and added the Green River as a possible diversion site).

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- The average flow rate of the Green River near Ouray, UT is 3,897 cfs. *Id.* at 4-61 *citing* USGS (2015).
- If Enefit uses more than their allotted 15 cfs, they will pay a water depletion fee and will “work with the Colorado River Recovery Program to determine other measures necessary to offset the negative effects to the river system.” *Id.* at 4-111.
- Currently, 3,940,000 acre-feet flow out of the Uintah Basin annually and the available in-basin supply (Basin Yield) is 1,187,600 acre-feet. *Id.*
- Current use in the basin is as follows:
  - Irrigation: 411,000 acre-feet/year;
  - Municipal and Industrial: 16,000 acre-feet/year; (it is unclear if this amount includes the amount that will be withdrawn for the Utility Project and South Project, as it is unclear if the amount permitted under the Enefit water permit is currently being diverted).
  - Surface evaporation from reservoirs: 101,700 acre-feet/year;
  - Water exported out of the basin: 481,000 acre-feet/year. *Id.*
- Under their current water permit, Enefit would be allowed to use up to 10,739.75 acre-feet/year for industrial purposes (which amounts to .9% of the total Basin Yield). *Id.* at 4-112.
- Municipal and industrial uses in the basin account for 16,000 acre-feet depletion. *Id.* at 4-111.

#### **Proposed Alternative**

- Water would be required for two main projects during the construction of the Utility Corridor; fugitive dust watering and hydrostatic testing. *Id.* at 4-62. Fugitive dust watering would require 764,468 gallons of water during the first phase of construction and 548,688 gallons of water during the second phase of construction. In performing hydrostatic testing, Enefit would use 1.23 million gallons of water during the first phase of construction and 246,697 gallons of water during the second phase. *Id.* at 4-62.

#### **No Action Alternative**

- The White River has an estimated flow rate of 685.4 cfs near where Hwy. 45 crosses the river. *Id.* at 3-20.
- If Enefit diverts water from the White River, Enefit would need to make seasonal withdrawals of water to meet their water supply due to the low flow rate of the river, and would then need to store the water in a reservoir or storage facility on their private land. *Id.* at 2-46.

#### **Non-Federal Connected Action (the South Project)**

- The South Project is broken up into two phases (the First Phase consisting of the first four years of operation, and the Second Phase or “Full Build Out” consisting of 30 years of operation). *Id.* at 4-69
- The total amount of water required for construction and operation of the South Project is only a preliminary estimate because Enefit is still in the preliminary engineering design process. *Id.* at 4-68.
- Enefit estimates that the first phase will require 4.19 cfs (or 2,970.23 acre feet) and the full build out phase will require 7.83 cfs (or 5,6007.23 acre feet). *Id.* (although a portion of that water may be treated water reuse).
- The amount of water needed for oil shale projects varies depending on the process used, and ranges from 1 to 4 barrels of water required for each barrel of shale oil produced. *Id.* at 4-69.
- Below is a table showing the estimated consumptive water use for the South Project. *Id.*

The total amount of estimated water needed for the South Project is described in Table 4-14.

Table 4-14 Estimated South Project Water Use Conversion to Acre/Feet		
Activity Type	Annual Water Use (cfs or gal.)	Annual Water Use (in acre/feet)
<b>South Project - First Phase</b>		
Mining	2.48 cfs	1,796.63
Retorting and Upgrading	0.74 cfs	536.09
Utility and Power Generation	0.88 cfs	637.51
Other Uses	0.09 cfs	65.20
<b>Total</b>	<b>4.19 cfs</b>	<b>2,970.23</b>
<b>South Project - Full Build-Out</b>		
Mining	4.33 cfs	3,136.86
Retorting and Upgrading	1.78 cfs	1,289.52
Utility and Power Generation	1.63 cfs	1,180.85
Other Uses	0.09 cfs	65.20
<b>Total</b>	<b>7.83</b>	<b>5,607.23</b>

### III. Impacts on Fish

- In order to ensure compliance with Utah Water Quality Standards, Enefit will need to comply with Utah and EPA stormwater permitting processes, UPDES, NPDES and ensure consistence with approved TMDLs for Evacuation Creek. *Id.* at 4-69; *but see id.* at 4-70 (noting that there is no TMDL currently developed for Evacuation Creek so “it cannot yet be determined if the South Project would cause exceedance of loading capacity”).
- **Federally Listed:** Federally-listed endangered fish in the Colorado River may be impacted by the Utility Project and the South Project. These species include the bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). *Id.* at 3-56, 4-111.
- Critical habitat in the Green River has been designated for all four species. *Id.* at 3-69, ES-27; *see also id.* at F-1 (specifying that critical habitat for the bonytail chub is located nine miles south of the project area, on the Green River).
- Critical habitat for the Humpback chub, Colorado pikeminnow and razorback sucker is also designated in the White River. *Id.* at H-6. F-2, F-3.
- **BLM Sensitive:** BLM sensitive fish that may be affected are the roundtail chub, bluehead sucker, and flannelmouth sucker. All four are known to occur in the White River study area, “and could be affected by the Utility Project or South Project.” *Id.* at 3-72.
- Known distribution of the roundtail chub occurs in portions of the White River. Suitable habitat for the Bluehead sucker is located in the White River, and the Flannelmouth sucker is found in the main stem Colorado River and its tributaries. *Id.* at Appendix F, F-8.
- Adverse impacts to fish would be mitigated through the use of Applicant-Committed Environmental Protection Measures, best management practices and Conservation Measures outlined in the 2008 Vernal RMP. *Id.* at 4-113

#### Proposed Alternative (Utility Project)

- The main impacts to special status fish may result from degradation of water quality in the Green River (due to a reduced flow), accidental chemical spills or

- leaks, and non-point source sediment and dissolved salt entering surface waters. *Id.* at 4-110, 4-111.
- The Utility Project would cross the White River four miles southeast of Bonanza, Utah. The power line ROW and pipeline ROW would be separated by 900 feet. *Id.* at 4-112.
  - The Utility Project will cross several drainages and streams, all of which are tributaries to the White River, including: Evacuation Creek, Hells Hole Canyon, Weaver Canyon, Coyote Wash, and Park Canyon. All listed tributaries (except for Evacuation Creek, which is perennial) are ephemeral. *Id.* at 4-111
  - **Increased risk of spills:** The Utility Project attributes to an increased risk of spills, “which is likely to adversely affect fish,” as they could possibly contaminate surface and/or groundwater. *Id.* at 4-112.
  - **Sedimentation:** Sedimentation and erosion may occur in areas affected by construction; although the exact amount of sedimentation and erosion depends on proximity to surface waters, slope aspect and gradient. Construction may increase “sediment loading during runoff-producing storm events.” *Id.* at 4-112.
    - Structural controls, including straw bales, berms or other barriers, may be implemented to minimize erosion and sedimentation. *Id.* at 4-113.
    - The long-term loss of potential habitat is an unavoidable adverse impact resulting from the Utility Project that could not be fully mitigated. *Id.* 4-110; *and see id.* at 4-102 (noting that the Utility Project may have effects on the degradation of stream habitat and associated fisheries).
    - The construction of the Utility Projects, along with other reasonably foreseeable future actions (RFFAs), including the South Project, would “cumulatively reduce the quality and quantity of aquatic habitat for Colorado River endangered species and fish.” *Id.* at 4-173; *see also id.* (noting that adverse modifications of critical habitat would be caused by an increase in erosion and sediment loads in the White River).

#### **No Action Alternative**

- Under the No Action Alternative, Enefit may decide to withdraw water from the White River near where the Utility Project proposes to cross the White River (east of Hwy. 45). *Id.* at 2-46.
- The DEIS mentions that the No Action Alternative would have no impacts on special status fish. *Id.* at 4-115, (failing to discuss possible implications to the White River if Enefit uses the White River as an alternative point of diversion).

#### **Non-Federal Connected Action**

- A pipeline spill or leak during operations could drain into ephemeral and perennial streams. *Id.* at 4-112. The toxicity would depend on the amount spilled, but “[s]pills occurring in proximity to streams would potentially result in lethal levels of toxic substances affecting Colorado River Fish and other aquatic organisms.” *Id.* at 4-114 (also noting that large spills may reach groundwater and may eventually reach surface water).
- Construction of the South Project may result in erosion and sedimentation. *Id.* at 4-114.
- Evacuation Creek, a perennial tributary, runs through Enefit’s property. *Id.* at 4-113.
- “It is anticipated that water depletions within the Colorado River system, including the Green and White Rivers, would affect Colorado fish and their habitat.” *Id.* at 4-173; *see also id.* (noting that a reduction in water quantity can have impacts on spawning, nursery, rearing, feeding, and food supply).

#### **IV. Groundwater Contamination**

- The Birds Nest Aquifer is located beneath the South Project area, and varies in depth across the South Project mine site area. *Id.* at 4-71.
- Ineffective site management could result in an impact to groundwater resources, although groundwater contamination can be avoided through a thorough site selection process, but the “proposed locations for surface disturbance and specific oil shale processing activities at the South Project are unknown at this time.” *Id.*
- Additional potential sources of groundwater contamination include retention ponds for process water, leachate from spent shale, and fly ash. *Id.* at 4-72 (also noting that the porosity and permeability of spent shale backfill is high, and thus precipitation can produce leachate causing long-term contamination for groundwater).
- The Birds Nest Aquifer outcrops near the White River and Evacuation Creek, and thus discharges from the aquifer into the White River. See Groundwater in the Southeastern Uinta Basin, Utah and Colorado, USGS Water-Supply Paper 2248 at 22 (1987), <http://pubs.usgs.gov/wsp/2248/report.pdf>

#### V. Recreation

- The DEIS briefly discusses possible adverse impacts to OHV recreationists. The DEIS does not mention, however, any potential impacts to downstream recreational water users.

#### VI. Uncertainties

- It is unclear if the water permit is already being used, or it’s just a permit that Enefit may use at some point, when they decided to start diverting. The water permit (#49-258 with a priority date of 1965) is currently listed as held by the Deseret Generation & Transmission Co-Operative and withdrawing water from the White River. UDWaR, Mail Log (May 17, 2016, 3:30 PM), <http://www.waterrights.utah.gov/mailLog/mlwrn.asp?wrn=49-2>; see also [http://maps.waterrights.utah.gov/EsriMap/map.asp?layersToAdd=adjudication\\_books,esri\\_labels,duty,parcels,pls,pod,wr\\_areas,&layersToTurnOn=esri\\_labels&q=49-258#49-258](http://maps.waterrights.utah.gov/EsriMap/map.asp?layersToAdd=adjudication_books,esri_labels,duty,parcels,pls,pod,wr_areas,&layersToTurnOn=esri_labels&q=49-258#49-258)
- The water permit is listed as having a White River point of diversion, although the DEIS mentions that the permit allows for a White River or Green River point of diversion. DEIS 2-6.
- The DEIS notes that the use of Enefit’s existing water rights is not “anticipated to significantly reduce flows in the Green River or impact other water right holders in the basin.” *Id.* at 4-69. It also notes though that a reduction in flow may degrade the quality of water in the Green River. *Id.* at 4-111.