



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT  
1325 J STREET  
SACRAMENTO CA 95814-2922

REPLY TO  
ATTENTION OF

May 17, 2016

Regulatory Division (SPK-2006-75266)

Mr. Michael Motiff  
Ruby Canyon Estates Homeowners Association  
835 Slickrock Drive  
Mack, Colorado 81525

Dear Mr. Motiff:

We are writing in regard to your Department of the Army permit number SPK-2006-75266 and Ruby Canyon Reservoir. As representative for the Ruby Canyon Estates Homeowners Association (HOA), you are familiar with the permit history and concerns regarding the Ruby Canyon Reservoir. The purpose of this letter is to educate all homeowners and other agencies familiar with this site about the permit history, identify the concern and monitoring requirements for selenium (Se) in the reservoir, reveal findings from data sampling, and propose a path forward for the homeowners.

The Ruby Canyon Reservoir is located immediately adjacent to (and diverts water from) Salt Creek near the Ruby Canyon Estates South Subdivision within the SW  $\frac{1}{4}$  of Section 33, Township 9 South, Range 103 West, Latitude 39.2342°, Longitude -108.8980°, Town of Mack, Mesa County, Colorado. Our office issued an after-the-fact permit to allow for a diversion structure off Salt Creek to the reservoir by letter dated February 22, 2013, with inclusion of special permit conditions. Special permit conditions 1 and 2 concerning data collection protocol were modified by our letter dated August 20, 2014. See Enclosure 1 for copies of these letters and additional information on history of the Ruby Canyon Reservoir.

Se sampling within the reservoir was required to better understand the effects of this reservoir due to the shallow impoundment, maintenance requirements to Salt Creek and ditch diversions, and the more serious issue of the 16-acre reservoir acting as a Se "sink" – accumulating and storing Se. Not all required samplings were collected, but several were and this data has been useful.

On March 21, 2016, we met with you, your consultant, and the U.S. Fish and Wildlife Service to discuss results of the Se samples we have received. The results of the water, fish, and macro invertebrate samples (2013-2015) confirm that Ruby Canyon Reservoir is very high in Se; Se is accumulating in species present at the reservoir; and, the reservoir is acting as a Se "sink". The results of the water samplings have revealed Se concentrations over 6 times higher than state water quality guidelines. Fish samples also exceed (3-5 times) Lemly's (1996) guideline for Se concentrations and the U.S. Environmental Protection Agency's (EPA) draft toxicity guideline concentrations. Additionally, the macro invertebrate samples reveal Se concentrations 8 times higher than the dietary guideline concentration. Data collection has confirmed and identified the seriousness of Se concentrations in Ruby Canyon Reservoir.

Se is a trace element that becomes toxic in high concentrations, can accumulate in the food chain, and can cause reduced reproductive success, deformities, and death in macro invertebrates, fish, and migratory birds that utilize and feed from the reservoir. Over time, Se can accumulate in wetland habitat associated with ponded water and pose continual contamination risks. Of special concern is Se exposure to migratory birds and Federally-endangered fish species in the downstream portion of Salt Creek and the Colorado River. Essentially the reservoir has become an attractive nuisance to bird species that are drawn to the ponded water habitat and feed on dietary items that have accumulated high or toxic amounts of Se. Likewise, the movement of fish and macro invertebrates in and out of the reservoir poses a Se exposure risk to native and Federally-endangered fish species. Specifically in fish, Se is deposited into the egg and as yolk is absorbed by embryo/larvae, oxidative stress occurs to cells and causes deformities. Photographs of fish and bird deformities resulting from Se are shown on Enclosure 2.

High Se concentrations in the created Ruby Canyon Reservoir are detrimental to wildlife and the environment. As discussed at our March 21, 2016, meeting, additional data collection is not expected to provide any new information. Therefore, additional data collection will not be required. Mitigation measures to address concerns associated with the accumulation and storage of Se in the reservoir were also discussed and may include: 1) backfilling the reservoir with existing fill located onsite or from imported materials, 2) converting the open water reservoir to a vegetated wetland, or 3) using a low Se source of water to fill the reservoir. You informed us at the meeting that backfilling the reservoir is cost prohibitive. We encourage the HOA to seek other possible solutions or funding to help reduce Se within Ruby Canyon Reservoir. As for the future, we remind the HOA that permit special conditions 3 and 4 of our February 22, 2013, permit verification letter require active maintenance of reservoir fish screens and the Salt Creek diversion structure. These conditions are reiterated below:

- 3. You shall maintain the fish screens (installed at the reservoir inlet and outlet) as described in the enclosed August 23, 2006, USFWS Biological Opinion. The screen size shall be ¼ inch. The purpose of this requirement is to prevent non-native adult and juvenile fish from escaping the reservoir, and impacting native and endangered fish species within the Colorado River system.**
- 4. You must maintain the authorized Salt Creek diversion structure. Please provide notice (via email or by telephone) to our office prior to any maintenance or dredging activities. The purpose of this requirement is to ensure structure effectiveness in diverting water into the reservoir and make us aware of these efforts and the frequency they are required.**

In addition to these maintenance permit conditions, we strongly discourage the creation of any new ponds or the enlargement of Ruby Canyon Reservoir which would increase the Se risk further.

In summary, our meeting on March 21, 2016, allowed for confirmation that data samples document high Se levels in the reservoir and resident species sampled. We have determined that additional data collection will not be required and identified options to mitigate for the harmful effects of the Ruby Canyon Reservoir. Please share this letter and Enclosures with all Ruby Canyon HOA members to help inform of the Se problem in the reservoir, reiterate the maintenance requirements, and consider additional measures to mitigate this problem.

Please refer to identification number SPK-2006-75266 in any further correspondence regarding this site. If you have any questions, please contact me at the Colorado West Regulatory Branch, 400 Rood Avenue, Room 224, Grand Junction, Colorado 81501, by email [Susan.Nall@usace.army.mil](mailto:Susan.Nall@usace.army.mil) or telephone at 970-243-1199. Your efforts to help eliminate Ruby Canyon Reservoir as an attractive nuisance and/or minimize the effects of Se to bugs, fish, birds, and wildlife is strongly encouraged.

Sincerely,



Susan Bachini Nall  
Chief, Colorado West Branch  
Regulatory Division

Enclosures

1. Corps' letters dated February 22, 2013, and August 20, 2014
2. Photographs of Se induced deformities in fish and birds

cc: (w/Enclosures)

Ms. Barb Osmundson, US Fish and Wildlife Service, Ecological Services, 445 West Gunnison Avenue, Suite 240, Grand Junction, CO 81501-5711 - [barb\\_osmundson@fws.gov](mailto:barb_osmundson@fws.gov)

Ms. Katie Stevens, Field Manager, Bureau of Land Management, 2815 H Road, Grand Junction, CO 81506 - [kastevens@blm.gov](mailto:kastevens@blm.gov)

Ms. Sarah Fowler, U.S. Environmental Protection Agency, Region 8, 8EPR-N, Aquatic Resource Protection Unit, 1595 Wynkoop Street, Denver, CO 80202 - [fowler.sarah@epa.gov](mailto:fowler.sarah@epa.gov)

Ms. Lori Martin, Colorado Parks and Wildlife, 711 Independent Avenue, Grand Junction, CO 81505 - [Lori.martin@state.co.us](mailto:Lori.martin@state.co.us)

Mr. John Hranac, Water Quality Assessor, Water Quality Control Division, 4300 Cherry Creek Drive South, Denver, CO 80206 - [john.hranac@state.co.us](mailto:john.hranac@state.co.us)

Ms. Linda Dannenberger, Director, Mesa County Planning Division, Post Office Box 20,000, Grand Junction, CO 81502-5022 - [Linda.Dannenberger@mesacounty.us](mailto:Linda.Dannenberger@mesacounty.us)

Mr. Michael Claffey, Claffey Ecological Consulting, Incorporated, 1371 17 Road, Fruita, CO 81521 - [mclaffey@acsol.net](mailto:mclaffey@acsol.net)

