UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
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May 8, 2015

Ref: 8P-W-TF

FINAL FINDING OF NO SIGNIFICANT IMPACT (FONSI)

PROJECT: Southwest Jordan Valley Groundwater Extraction and Treatment Remedial Project, West Jordan, Utah

TO: All Interested Government Agencies and the Public

TOTAL COST: $ 1,847,818
EPA GRANT: $ 1,016,300
LOCAL SHARE: $ 831,518

As required by the National Environmental Policy Act (NEPA), an environmental review has been performed on the proposed Environmental Protection Agency grant for the above project. The project is proposed to be partially funded by the EPA through a Special Appropriations Grant. Additional funding has been provided for the overall project through local sources and settlement agreements.

The EPA's grant will fund a portion of the Jordan Valley Water Conservancy District (JVWCD) project to remediate a groundwater plume contaminated with sulfate from historic mining (the Southwest Groundwater Treatment Project). The treated groundwater will be used for JVWCD municipal water supply. Most of the project has been constructed using other funding including: (1) deep wells to intercept and extract contaminated water from the plume in the deep confined aquifer, (2) pipelines to collect the well water, (3) a reverse osmosis treatment plant to treat the water, (4) a finished water pipeline to distribute the potable water to the cities in the affected area, and (5) a 21 mile by-product pipeline to pump the concentrate to Great Salt Lake (GSL) and Kennecott's tailings pond. The EPA funding will be used for several shallow ground water wells and/or extension of the by-product pipeline into GSL. These two remaining components of the project have not been constructed.

Environmental Review

The proposed project will have some environmental impacts as described in the November 2014 Environmental Assessment (EA). The primary impact of concern is the discharge of by-product water from the reverse osmosis water treatment plant to GSL. The impacts from that discharge will be mitigated and controlled through a surface water discharge permit (UPDES) administered by the State of Utah. The permit specifies the water quality limits and outfall location for discharges of by-product water and include monitoring and reporting requirements. Other impacts include construction dust and noise and increased use of groundwater for municipal water supply. This FONSI and EA supersedes an April 2011 FONSI and EA for this grant. Additional analysis has been added to this EA regarding water quality in GSL and the UPDES discharge permit was issued by the State in March 2014.

Public Review

EPA made the EA and a FONSI, which included a preliminary decision dated March 18, 2015, available for public review until April 21, 2015. These documents were made available at the JVWCD Office (8215 South 1300 West, West Jordan, Utah) and were published on the EPA website where they remain today (http://www2.epa.gov/region8/jordan-valley-wcd-groundwater-extraction-and-treatment-project).

EPA received two comment letters, both via email, from the public. EPA carefully reviewed and has responded to the comments. A summary of the comments and EPA responses to the comments are attached to this FONSI.

Final Decision - No Environmental Impact Statement is needed

Since the review process did not indicate that significant environmental impacts would result from the proposed action, a final decision has been made that it is not necessary to prepare an Environmental Impact Statement for this project. This action is taken on the basis of careful review of the engineering analysis, environmental review record, the EA, comments received from the public, and other supporting documentation.

Sincerely,

Philip S. Strobel
Acting Director, NEP A Compliance and Review Program
Office of Ecosystems Protection and Remediation

EPA Region 8 - Responses to Comments (RTC) on **May 7, 2015**
Southwest Jordan Valley Groundwater Extraction and Treatment Remedial Project SAAP Grant
Finding of No Significant Impact (FONSI) and Environmental Assessment.

Comment	Response
Commenter 1.	Comments received via email dated April 21, 2015.
Please allow us to disagree emphatically with the EPA assertion, stated in the FONSI of March 18, 2015, that 'no environmental impact statement is needed,' and that the Jordan Valley Conservancy District's proposal to discharge 'by-product' RO concentrate to the Great Salt Lake via Kennecott's Outfall #1 is reprehensible. The fact that extensive areas of ecological and socio-economic impacts are being neglected and irresponsibly abused testifies to the dramatic need for EIS-level review.	RTC 1 – The proposed project is to move the Jordan Valley WCD RO byproduct (wastewater) discharge from the Kennecott tailings pond into a separate outfall to be constructed by Jordan Valley WRF. Kennecott's discharge outfall to Great Salt Lake will be unchanged by this project.
Several objections to the collective approach represented by the Utah Division of Water Quality (UDWQ) and sister administration at the Utah Division of Environmental Response and Remediation (UDERR) present at least some of the bases for the needed review:	
• The **point of view of water resource capture** is disproportionately represented in all proceedings, as opposed to overt consciousness of, and embrace of, ecological impacts and sustainability. This is so despite extensive lip-service given in the past 15 years to assessment and methodologies of biogeochemical effects on biota in Great Salt Lake 'open waters' and wetlands, particularly regarding selenium and mercury. While there are clearly a lot of things going on here, it is crystalline: 1) that selenium has originated from the Bingham Canyon Mine, and is not 'naturally occurring,' as is espoused fraudulently by UDERR, JVWCD and Kennecott in presentations at water conferences; and 2) that mercury has originated not just in Kennecott's enormous water and air discharges, from historical mercury mining in the nearby Tooele valley, but also from MagCorp/US Magnesium 40 miles to the west, from regional coal-burning for energy, from area incinerators, pretty certainly from Nevada gold mining/processing in recent decades, possibly on an epic scale. In other words, we know where the selenium has come from and is still originating at an escalating scale, but there is much too much we do not know about the historical and ongoing sources of mercury and its	RTC 2 – Thank you for your comments. EPA has taken note of these comments. Please see RTC 5 regarding selenium and mercury discharge limits. RTC 3 – The development of water quality standards for Great Salt Lake, air deposition of mercury, discharges from other facilities, SLC area growth and the use of potable water for outside irrigation are beyond the scope of the Jordan Valley project.

organic forms (particularly methyl-mercury). To base all of our analysis on the creation of additional culinary water to put on our lawns, and for an out-of-control population to bathe in and drink, is anthropocentric to the extreme. There are other ways to meet our water needs, including shifting the quantities and nature of those needs from illusory and inappropriate to environmentally literate and responsible. Water conservation!	
• Historical origins aside, a **comprehensive environmental impacts analysis is needed to review and research the probable ecological impacts of selenium forms, mercury compounds, aluminum, cadmium, copper, arsenic and many other elements and compounds from acid mine drainage** (see attached table of typical acid well analysis) that may be among the Kennecott RO concentrate discharges and 'byproduct' discharges; in coordination with JVWCD RO concentrate discharges, whether allegedly neutralized and filtered by eventual passage through Kennecott's gigantic tailings system, or 'fugitive' in nature (e.g., Garfield Wetlands and Kestler Springs). EPA, UDERR, UDWQ and UDEQ were persuaded, in an episode that began in the late 1980s or early 1990s, to accept the idea that tailings line neutralization would 'bind' harmful contaminants from acid mine drainage, despite biogeochemical doubt for lack of conclusive research.	RTC 4 – Activities associated with the Kennecott/Bingham Pit mine including ongoing Superfund cleanup activities and current mine operations are also beyond the scope of this project. For example, the water quality data attached to the comment appears to be from the Kennecott Superfund site cleanups associated with Zone A. Please see EPA's Superfund for information on "Operable Units" under Superfund cleanup at: http://www2.epa.gov/region8/kennecott-south-zone-bingham#9. To clarify the divide between this project and the ongoing Superfund cleanup, there are 2 separate groundwater cleanups in this area: Zone A – the Superfund cleanup action and Zone B – the plume associated with this project. The Zone A plume has been under Superfund cleanup for a number of years and is overseen by the Utah DEQ. The Zone B area of the plume associated with this project was not sufficiently contaminated to warrant cleanup under Superfund and was therefore handled as a separate project. The pollutant of concern for the cleanup of Zone B is sulfate.
Lack of evidence that long-term impacts <u>will not</u> conspire with other consequences of rapid urban and industrial growth to decimate hemispherically-important migratory bird populations on the Great Salt Lake is a critical deficiency. Synergistic impacts must be fully understood before adding to the potential problem	Please see RTC 3
• **This is a turning point**, buried in a grant application for hardware to execute a dubious, energy-hungry separation process, with the poisonous component left from separation being diverted to the Great Salt Lake. *All of it came from Kennecott and Kennecott indifference over nearly a century.* We seriously doubt that Kennecott will have paid adequately for this damage posed by	Please see RTCs 2-4

tens of billions of gallons of extremely acidic, contaminant-loaded water. Acid mine drainage escaped Kennecott for decades, and was dumped on the ground and into unlined reservoirs, a process engineered into moderate control only in the early 1990s, identifying the tens of billions of gallons of hideously acidified and toxified waters in the aquifer east of the Oquirrh Mountains, and in partially lime-neutralized form farther east under what is now the cities of South Jordan and Midvale, and under Daybreak development on top of the former South Jordan Evaporation Ponds site. Both Se+4 and Se+6 (selenite and selenate) join a breathtaking catalog of contaminants, including very high levels of aluminum, copper, cadmium, arsenic, mercury and other known toxins --- with astronomical levels of sulfates --- particularly in the acid plume waters southeast of Copperton. Thanks to official acceptance of the Kennecott-sponsored methods of disposal through the Concentrator and Tailings Line, and the questionable logic that followed the advent of Reverse Osmosis concentrate disposal into the Great Salt Lake (whether through the Tailings Impoundment or directly), Kennecott was given the strategic "out" tjeu needed.

RO is, after all, just separation. **It is not 'treatment.'** If you don't have a place to dump the concentrate, then you haven't accomplished a single thing on behalf of the environment. It is possibly worse, to dispose of concentrated toxins at a single discharge outfall into a precarious ecosystem --- which is precisely what you are doing here --- worse than leaving the contamination in the ground until you've thought out the consequences of prospective choices. Other separation technologies were not given opportunity to be explored and proven, particularly selective precipitation through anaerobic digestion. These alternatives should be fully explored before accepting the 'dumb' approach presented by reverse osmosis. Yes, RO 'works,' but does it do what you intend? We suggest that it does not. Instead, it focuses danger and accelerates natural timetables

RTC 5 – Please see the wastewater discharge permit, issued by the State of Utah, for discharges of the reject or byproduct water from the RO plant in Appendix B of the EA. The permit has discharge limits and monitoring requirements for selenium, mercury and whole effluent toxicity biomonitoring. The permit Statement of Basis (also in Appendix B) describes in detail how the permit limits were developed to be protective of Great Salt Lake. The permit limits were developed to meet water quality standards for protection the protection of birds and brine shrimp.

Please see RTC 2, 4

- **Water shortages and values are emerging as paramount**. In the 'green building' and sustainable urban development worlds, we are attempting to extend our awareness of future water shortages, foreclosing as much as we are able on selfish behavior, persuading clients to limit water consumption through incentive and disincentive programs, as well as pricing. The fact remains that, so far, we are generally failing, despite our claims of success, with profligate misuse of culinary water spraying night and day onto lawns and plantings inappropriate to our climate and place. The 'treatment' of former acid mine drainage contamination in order to create water to spray onto our lawns demands research, disclosure and public discussion, followed by public education. To sweep this need under the rug will not excuse administering agencies from obligation to think it out thoroughly and responsibly. EPA (your predecessors, whom I knew over the years) and UDEQ (whom I also knew personally) and UDWQ and UDERR are most clearly responsible for this delusion. This is a *real and palpable obligation*, whether Kennecott/Rio Tinto officers are cognizant of their part in this sad play, or not. If they are, as we suspect, then it's possible to see that it is part of a global strategy, to be applied at Resolution, Flambeau, Eagle, Oyu Tolgoi and possibly at mines that Kennecott/Rio Tinto does not yet own (PolyMet, and others in distant places).

Please see RTCs 2 & 3

- **'Translators' and ecological limits of acid mine drainage discharges** are of great concern. Again, global mining concerns may be testing 'progress' toward application of the concept of ecological translators to inform RO plant operators of the contaminant discharge limits at a given location by biochemical analysis of the steps taken through trophic levels, reaching a critical receptor at an acceptable level. In this case, SWCA (Environmental Assessment Review, attachments) concluded that the District does not have an applicable translator for selenium and mercury, to progress from contaminant levels at the point of discharge to contaminant levels in eggs of selected migratory shorebird and open-water dwelling waterfowl, through brine flies, brine shrimp and the birds themselves. This is perilous territory, fraught with possibility of loss of transparency to public scrutiny, as well as to alienation of the scientific community, which has already been under attack by KUC/RT experts for previous selenium research, in support of translator application. EPA will need to arbitrate vigorously, in this case, and to be very wary of application to other cases where this procedure is proposed. When the individuals in charge are governed by even a reasonable ecological ethic, this may be an acceptable reference methodology, but when the individuals at all levels are in denial (Bacon at UDERR, Atencio at JVWCD, and Payne of Rio Tinto presented at a 2008 SL County Watershed Symposium) preaching the gospel that selenium is not produced by mining, then please reject 'translator' schemes outright.

Please see RTCs 2 & 3

Please see RTC 4 & 5

Please see RTCs 2 & 3

• **Energy is not mentioned, nor are climate stability and greenhouse gas production** from RO separation, despite the unparalleled scale of these two RO plants. Aside from desalinization plants, these are among the largest RO operations in the world, consuming huge quantities of electricity (coal-fired generation, for the most part, though natural gas would not be pristine --- and due respects granted to KUC/RT for the large PV farm at the Bingham RO plant), contributing profoundly to greenhouse gas production. This should be transparent and easily quantifiable, but so far, it has defied our attempts to obtain definitive operational information. Please disclose the energy costs of the RO plants, both the District's and that of KUC/RT. All told, there are far too many points of concern and of substantive doubt for us to accept the assertion that this is a valid approach to water resource management, and certainly not to ecosystem and wildlife management. Please do not allow this grossly inappropriate discharge program to move forward.	RTC 6 – Climate change and energy use are important considerations for any project. RO water treatment facilities are generally considered to be energy intensive and have high operations and maintenance costs than traditional water treatment plants. However, RO is one of the few water treatment technologies which can remove salts, mineralization from source waters which are not of pristine quality. Other water treatment technologies to remove salts are typically even more expensive and energy intensive than RO. Less than pristine sources of drinking water such as this project are also becoming more important during periods of drought and as climate change affects the storage of water as snow in the Intermountain West. The use of groundwater cleanup water as a drinking water supply also has the additional benefit of not diverting additional pristine waters from Utah rivers or agricultural uses. The energy use associated with Kennecott/Rio Tinto and Superfund cleanup activities are beyond the scope of this project.
Commenter 2	Comment received via email on April 21, 2015.
I am requesting a full environmental impact statement be done. To do any less is unethical, immoral, and scientifically indefensible. The Great Salt Lake is a national treasure and a natural treasure. The EPA has a responsibility to protect the environment for the wildlife, and the people, who rely upon it for their health and who call it home. The EPA does not owe a responsibility to corporations; Environmental Protection Agency means exactly what it says, environmental protection. To use the Great Salt Lake for mining waste concentrate, as a hazardous waste dump, is criminal.	Please see RTC 2, 3, 4, & 5