ERO Resources Corp.

August 24, 2012

To: U.S. Bureau of Reclamation

From: ERO Resources Corporation

Re: Arkansas Valley Conduit Air Quality Assessment

Introduction

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) under the Clean Air Act for six air pollutants—carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, particulate matter (particulates smaller than 10 microns in diameter (PM_{10}) but larger than 2.5 microns and those smaller than 2.5 microns ($PM_{2.5}$)), and lead—to protect the public from health hazards associated with air pollution. The EPA has delegated enforcement to the Air Pollution Control Division of the Colorado Department of Public Health and Environment (CDPHE). All state programs subject to the provisions and enforcement of the Clean Air Act are subject to oversight and approval by the EPA.

The Council on Environmental Quality (CEQ) has also issued draft guidance on when and how federal agencies should consider greenhouse gas (GHG) emissions and climate change in National Environmental Policy Act (NEPA). The draft guidance includes a presumptive effects threshold of 25,000 metric tons of CO_2 equivalent emissions annually from an action (CEQ 2010). The CEQ indicates this is not necessarily a threshold of significant effects, but rather an indicator or a minimum level of GHG emissions that should be considered.

This memo is based on an appraisal-level engineering study conducted by the Bureau of Reclamation (Reclamation) and discusses the potential effects on air quality from construction of the Arkansas Valley Conduit (AVC) project.

Methods and Analysis

The study area for the air quality analysis encompasses the location of the AVC project components, which is roughly between Pueblo Reservoir and the Town of Lamar, Colorado. A qualitative analysis was conducted to determine whether AVC construction and operation would have significant adverse effects on air quality parameters regulated by the EPA and CDPHE within the study area. In addition, a quantitative estimate of GHG emissions was made for the energy requirements needed to operate the proposed project.

Table 1 lists the significance criteria used to describe the intensity of effects on air quality.

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Table 1. Air Quality Impact and Intensity Description

Impact Intensity	Intensity Description
Negligible	The effects on air quality would be below or at a low level of detection, with only a small amount of GHG released into the environment.
Minor	The alternative's effects on air quality would be detectable with a minor increase in GHG in a localized area. The measurable or anticipated degree of change would have a slight effect, causing a slightly noticeable change of an air quality constituent by less than about 20% compared to existing conditions. If mitigations were needed to offset adverse effects, it would be fairly simple to implement and would likely be successful.
Moderate	The alternative would result in a change or alteration of the air quality. The measurable or anticipated degree of change would be readily apparent and appreciable, and would be noticed by most people, with a change likely to an air quality constituent of between 21% and 50% compared to existing conditions. The effects would be localized or widespread. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful. The alternative would create greater than minor amounts of GHG.
Major	The alternative would result in a change in air quality over a fairly large area. The measurable or anticipated degree of change would be substantial, causing a highly noticeable change to an air quality constituent of greater than 50% compared to existing conditions. Mitigation measures to offset adverse effects would be necessary, extensive, and may not be successful. The alternative would create more than moderate amounts of GHG that could affect the local atmosphere.

Affected Environment

The existing air quality within the study area is good (CDPHE 2011a). The study area is primarily located in rural areas with emissions occurring mostly from on-road and off-road vehicles and fugitive dust. Concentrations of particulates are higher near unpaved roads, surface disturbances, and fallow agricultural fields compared to vegetated rangeland. Pueblo, an urban area at the west end of the study area, has slightly lower air quality than rural areas to the east due to vehicle emissions and stationary sources (CDPHE 2011b).

The existing air quality in the study area does not exceed NAAQS. All Colorado communities, including those in the study area, are currently in attainment of all NAAQS (CDPHE 2011a).

Results

For all alternatives, including the no action alternative, air quality impacts during construction would be primarily from exhaust emissions of construction equipment, employee vehicles, delivery vehicles, and fugitive dust. During construction activities, five of the six pollutants (carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, and particulate matter) covered under the NAAQS would be emitted from construction equipment and other vehicles. Fugitive dust would be generated from activities associated with earthwork that removes vegetation and exposes bare soil, equipment and vehicle traffic moving over the disturbed site, and increased traffic on existing unpaved roads. Emissions would be greatest during the initial site preparation activities and would vary from day to day depending on prevailing weather conditions

and construction phase, type, and level of activity. The amount of emissions of both fugitive dust and vehicle exhaust would vary with the number of vehicles used and the size of the disturbed area.

A Fugitive Particulate Emission Control Plan would be required as part of land development permits from the Air Pollution Control Division of the CDPHE. The plan would outline the specific steps that would be taken to minimize fugitive dust generation. With the implementation of Best Management Practices (BMPs) for fugitive dust, construction of the project would have a negligible impact on air quality. Other BMPs associated with proper maintenance of vehicles and minimizing vehicle idle time would be used to reduce vehicle emissions. All construction-related emissions would be short-term and would cease when construction of project features is completed.

Operation of the AVC project would require several pumping stations and a new water treatment plant. Each of these facilities would be powered by electricity purchased from available energy supply companies that are subject to air quality permitting. Emissions from pump stations and the water treatment plant are related primarily to the energy requirements for operation of these facilities as discussed later.

Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide evidence that climate change is occurring as a result of rising GHG emissions and could accelerate in the coming decades. While climate change is a global phenomenon, it manifests differently depending on regional and local factors. General changes that may occur in the future as a result of climate change include hotter, drier summers; warmer winters; warmer water; more severe wildfires; degraded air quality; changes in precipitation distribution and flooding; and increased drought. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which the temperature would continue to rise and whether global emissions of GHGs can be reduced or mitigated. Climate change science is a rapidly advancing field and new information is being collected and released continually. A more detailed discussion of climate change and its effects on the alternatives is presented in Chapters 3 and 4 of the Draft Environmental Impact Statement (DEIS) and Appendices C1 and C2.

Construction activities associated with implementation of the proposed action would contribute to increased GHG emissions, but such emissions would be short-term, ending with the cessation of construction. Any effects of construction-related GHG emissions on climate change would not be discernible at a regional scale, as it is not possible to meaningfully link the GHG emissions of such individual project actions to quantitative effects on regional or global climatic patterns.

Long-term contributions to GHG emissions from project operations relate primarily to the energy needs for pumping plants and operation of a water treatment plant. Energy needs for pumping would vary by alternative, but a significant portion of the water delivery for all alternatives would be by gravity flow through the pipeline. Operation of the water treatment plant also would contribute to GHG emissions as a result of the power purchased from a regional energy supplier.

Annual CO_2 emissions were estimated for each alternative based on the energy requirements for operation of water treatment plants and pumping plants (Table 2) (EPA 2011). Estimated daily energy use at 2070 water demands was multiplied by the typical amount of CO_2 produced by generating 1 megawatt per hour in Colorado (1,986 lbs. of CO_2) in 2011 (EPA 2011). The daily emission values were then converted to metric tons of CO_2 per year. Existing water treatment and ground water pumping energy use may decrease for some of the AVC participants, which would partially offset some of the energy requirements of the AVC project.

Table 2. Estimated carbon dioxide emissions by alternative at 2070 water demands

Alternative	Estimated Carbon Dioxide Emissions (metric tons/year)
No Action	13,455
Comanche South	6,420
Pueblo Dam South	1,084
JUP – North	3,015
Pueblo Dam North	2,230
River South	4,976
Master Contract	13,455

Best Management Practices

BMPs would be used to minimize impacts on air quality during construction:

- A fugitive dust control plan would be developed and implemented to minimize particulate and dust emissions from the construction site.
- Construction equipment/vehicles would not be allowed to idle longer than 15 minutes when not in use.
- All construction equipment would be maintained in proper working order.

Conclusions

Based on these findings, the effects of the AVC project on air quality would be short-term and negligible to minor during construction and would be negligible with the implementation of BMPs (DEIS Appendix B.5). The temporary increase in emission of air pollutants from construction are not expected to exceed NAAQS for any of the six pollutants because of the fairly small and localized nature of construction activities. There would be no long-term construction-related emissions after the pipeline and facilities are completed.

The long-term energy needs for operating AVC pump stations and the water treatment plant would be met from regulated energy supply companies subject to federal and state air quality permitting requirements. GHG emissions from construction equipment would be short-term and negligible, while long-term GHG emissions from pumping and water treatment plant energy requirements would be well below the CEQ threshold of 25,000 metric tons of CO_2 and are expected to make a minor contribution to regional GHG emission sources. A reduction in ground water

pumping and local water treatment requirements for some participants would also reduce energy needs and GHG emissions. Based on the anticipated short-term negligible impacts on air quality during construction with the implementation of BMPs and the fairly low long-term GHG emissions from project operations, no further environmental consequences analyses were conducted for air quality as part of the AVC EIS.

It should be noted that these conclusions are based on the best available existing data for the project area found within the CDPHE references listed below. Reclamation will develop specific mitigation measures to address air quality in the final design stages and would comply with all air quality regulations when implementing the proposed action.

In addition, based on the past, present, and reasonably foreseeable future actions identified in the study area (DEIS), the AVC project would have a negligible contribution to air pollutants because of the temporary nature of construction activities along with the implementation of BMPs for all alternatives. GHG emissions from the long-term energy requirements needed to operate the project would likewise have a small contribution to cumulative GHG emissions from other actions in the region.

References

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