

**DENISON MINES (USA) CORP**  
**CLASS II AIR QUALITY PERMIT NUMBERS 51803, 52790, and 52522 FOR THE**  
**PINENUT, EZ, AND CANYON MINES, RESPECTIVELY**  
**AND**  
**GENERAL AQUIFER PROTECTION PERMIT NUMBER P-106193 FOR THE EZ MINE**  
**RESPONSIVENESS SUMMARY TO PUBLIC COMMENTS**

**INTRODUCTION**

Class II Air Quality Permit Numbers 51803, 52790, and 52522, issued to Denison Mines (USA) Corp, by the Arizona Department of Environmental Quality (ADEQ) are for the underground mining of uranium ore at the Pinenut, EZ, and Canyon mines respectively. The Pinenut and EZ mines are located north of Grand Canyon National Park approximately 35 miles southwest of Fredonia, and the Canyon Mine is located south of the Park approximately 6.5 miles southeast of Tusayan. No ore processing will be conducted on-site. The ore will be shipped to an off-site processing mill in Blanding, Utah. If the ore cannot be shipped immediately to the mill, it will be placed in nearby stockpiles. Emission sources at the facilities include: mine vent shafts, emergency generators, and fugitive dust emissions from storage piles and haul trucks. The mine vents are subject to federal limits for radiation exposure from radon and the emergency generators are subject to a 120 hours per year limit. Fugitive emissions from the storage piles will be controlled by covering or stabilization. Dust emissions from haul trucks will be controlled by completely covering and securing the loads and limiting the speed of the trucks on unpaved roads

The Type 3.04 General Aquifer Protection Permit (APP) for the EZ Mine, Permit No. P-106193, issued to Denison Mines (USA) Corp, is for a non-storm water impoundment.

**PUBLIC PARTICIPATION PROCESS**

A public notice for the Air Quality and Aquifer Protection Permits was published in the Kingman Daily Miner, the Arizona Daily Sun in Flagstaff, and the statewide edition of The Arizona Republic on November 12, 2010, and November 19, 2010, and also on ADEQ's website. A public meeting was held on December 1, 2010, at the Sinagua Middle School, 3950 E. Butler Ave. in Flagstaff, Arizona, and December 14, 2010, at the Fredonia High School Gymnasium, 221 East Hortt St. in Fredonia, Arizona. A public hearing was held on January 4, 2011, at the Fredonia High School and on January 6, 2011, at the Sinagua Middle School in Flagstaff, Arizona. Written comments were received during the public comment period and at the public hearing. This summary presents the Department's responses to the comments received during the public comment period.

***General Comments:***

**1. One commenter asked the Department to extend the public comment period.**

The Department held a 60-day public comment period to allow the public additional time to review the proposed permits and submit comments. State law requires the Department to hold a 30-day comment period, however, since there is significant interest in these mines, the Department determined that it was appropriate to hold an extended comment period. An extension beyond the 60-day period was not feasible because state law requires Air Quality Permits and APP to be issued within set licensing time frames. In order to allow the APP to be included as part of the public comment process, the Department exceeded the APP licensing time frame. The Department cannot extend the

public comment period any further without exceeding the Air Quality Permits licensing time frames, resulting in the refund of the permit processing fee to the company, which is over \$100,000.

**2. A number of commenters requested that ADEQ deny the APP and the Air Quality Permits.**

Arizona State Statutes and laws require the Department to issue permits if the applicant is able to demonstrate that they will comply with all applicable environmental regulations.

**3. Many of the comments indicated the need for religious, cultural, and historic significance, including traditional cultural properties, evaluation as part of the permitting process.**

The Department's responsibility is to protect human health and the environment. The Air Quality Permit and APP will ensure that the air is safe to breathe and the water is safe to drink. State law does not allow the Department to include non-air and water quality requirements in the processing of these permits; however, Denison Mines is required to meet any and all other applicable state and federal requirements for protecting these resources and properties.

**4. One commenter suggested the permits include production goals and information pertaining to financials.**

State law does not allow the consideration of market conditions in the granting or denial of Air Quality and Aquifer Protection Permits.

**5. Several comments take issue with a foreign company owning and operating the mines.**

State law does not allow the Department to deny a permit application based on the nationality of the applicant. The Department issues permits only to companies that are legally registered to do business in Arizona. Denison Mines is registered with the Arizona Corporation Commission to do business in Arizona.

**6. Several commenters were concerned about how the uranium will be used once concentrated.**

State law does not allow the consideration of product end-use when evaluating permit applications. Denison representatives have indicated that the uranium ore recovered from these mines will be transported to Blanding, Utah, for processing and that the final product will be sold for use in electrical power generation.

**7. A number of commenters expressed concern regarding the impact of haul truck travel through the Flagstaff area on tourism.**

State law does not allow the Department to consider economic impacts in the granting or denial of Air Quality or Aquifer Protection Permits.

8. **A number of commenters questioned the appropriateness of permitting uranium mines near the Grand Canyon which could result in the potential industrialization of the landscape.**

State law does not allow the Department to dictate the location of any facilities seeking permits, including uranium mines, as long as the company can demonstrate that all air and water quality regulations will be met.

9. **A comment was expressed that the Department did not consult with the Navajo Nation regarding these proposed mines.**

The Department made several efforts to ensure that the Navajo Nation was aware that ADEQ would be holding a public notice regarding these permits. On October 4, 2010, ADEQ sent an email to Stephen Etsitty, the Executive Director of the Navajo Nation EPA, informing him that the Department was preparing for public review for these permits. On October 14, 2010, the Department mailed and faxed letters to the Navajo Nation Council and the Navajo Nation President. These letters included general information on the proposed permit applications submitted by Denison Mines and stated that public notice was expected to begin soon. On November 17, 2010, additional letters were mailed and faxed to the same contacts as the previous letters providing information on the dates and locations of the upcoming public meetings and hearings. The October 14, 2010, and November 17, 2010, letters were also sent by email to the Navajo Nation EPA Executive Director. The November 17, 2010, letter was also emailed to President Elect Ben Shelley.

10. **A commenter stated that consultation with the Tribes is required prior to making any decisions on the permits.**

The Department did conduct consultation with several Tribes prior to and during the public notice period for these permits. These meetings were held to hear the concerns that the Tribes had regarding these mines.

The Department met with the Hualapai Tribal Council on September 7, 2010. A meeting was held with the Hualapai Community on December 9, 2010. Both meetings were held in Peach Springs.

The Department met with the Kaibab-Paiute Tribal Council on August 12, 2010. A public meeting and public hearing were held at the Tribes request on December 13, 2010 and January 4, 2011, respectively, in Kaibab.

The Department attempted to consult with the Havasupai Tribal Council by mailing and faxing the Tribal Council a letter on September 3, 2010. After no response from the Havasupai Tribal Council was received, the Department mailed and faxed an additional letter to the Tribal Council, informing them of a special public meeting in Flagstaff reserved specifically for Havasupai Tribal members prior to the start of the Flagstaff Public Meeting on December 1, 2010. No members of the Tribe attended that meeting. Subsequent to the public notice period the Tribe contacted the Department and requested that they be allowed to submit comments on the record, even though the public comment period was closed. The Department agreed to this request and comments were received on February 7, 2011. The Department has also arranged with the Tribe to hold a community meeting in Supai Village on March 12, 2011. Due to the licensing time-

frames that the Department is subject to for permit issuance, the March 12, 2011 meeting will be after a decision is made on the permits. The Department will, however, consider any comments received at the meeting and determine if the final decisions on the permits require modification.

**11. A commenter stated that tribal communities potentially affected by these mines are environmental justice populations.**

The Department acknowledges the environmental justice concerns that have been raised. The Department investigated and analyzed these concerns in 2009 during the issuance of the AZ I Mine Air Quality Permit and the Aquifer Protection Permits for the Canyon and Pinenut mines, in order to ensure that no communities are disproportionately affected by these Mines. ADEQ's Environmental Justice Assessments for all three mines can be found online at <http://www.azdeq.gov/environ/air/permits/denison.html> and are incorporated into this responsiveness summary.

While the environmental justice analysis did not include the EZ Mine, due to the similar activity and location of the EZ Mine to the other mines, the Department has concluded that the combined impacts from the mines proposed by Denison Mines will not have a disparate adverse impact on any community and therefore there are no environmental justice concerns.

**12. Several commenters expressed concerns that the General Mining Act of 1872 is antiquated.**

The General Mining Act of 1872 is a federal law that authorizes and governs mining for minerals, such as gold, platinum, silver, and uranium on federal public lands. State law does not authorize the consideration of the federal mining act in granting or denial of the Air Quality and Aquifer Protection Permits.

**13. Commenters expressed concern regarding the risk to genetic diversity of animal and plant species near the mines due to the exposure to radioactive dust and the potential uptake of uranium into animals and plants.**

The Air Quality and Aquifer Protection Permits are in place to minimize the potential risks from these mines.

From the perspective of air quality, it should be noted that a vast majority of the dust produced by the mines will be ordinary road dust from the unpaved haul roads, and this dust contains only low levels of natural radiation. The Air Quality Permit requires Denison Mines to submit dust control plans for each mine that will specify how dust from the sites will be controlled, including dust from the ore piles and the retention ponds. The permits state that ore piles must be covered or stabilized. Dust from the impoundments (if dry) must be controlled by removing any soil that collects in the bottom of the ponds, keeping water in the ponds, or stabilizing any solids that collect in the ponds. The company must monitor fugitive dust on the site and report those results to ADEQ. The Department conducts inspections of the sites to ensure that all regulations are being met.

The purpose of the APP program is to prevent groundwater contamination. The general Aquifer Protection Permit for the EZ Mine is for a lined non-storm water impoundment

which will evaporate water collected from the site, and prevent groundwater contamination. The pond is designed to hold all the water produced in the mine shaft, rainfall from a 100-year, 24-hour storm event, plus 2 feet of extra capacity to prevent any surface water impact.

These precautions will minimize the possibility that plants and animals come into contact with radioactive dust and therefore minimize the potential uptake of uranium.

Based on the concerns expressed by the commenters, the Department has added new conditions to the Air Quality Permits that will require Denison Mines to submit a plan to conduct annual radiological surveys of land around the mines. The plan will include what action the company will take if elevated levels of radiation are discovered.

- 14. A commenter expressed concern that mine inspections conducted by the Department are announced and should be un-announced. Additionally, a commenter asked how long the Arizona I Mine has been operating and how many unannounced inspection were made to that facility.**

The Department conducts and will continue to conduct both announced and un-announced inspections of permitted facilities to ensure compliance with permit requirements. The Department conducted an inspection of the AZ I Mine on September 16, 2010 and an inspections of the AZ I, Pinenut, EZ, and Kanab North mines on January 12, 2011. The AZ I Mine has been operating since the fourth quarter of 2009 and has been subject to one unannounced inspection in that time.

- 15. A concern was raised that the Department relied upon outdated information and documentation, including outdated environmental impact statements, in considering the permit applications.**

The Department recognizes that several documents from the 1980s and 1990s are available as background information for the mines; however, the Department did not rely upon any of these documents in drafting the Air Quality and Aquifer Protection Permits. State law governing the Air Quality and Aquifer Protection Permits required Denison Mines to submit complete applications for these permits, containing all of the information ADEQ needed to evaluate whether the mines could be operated in compliance with all applicable environmental laws.

- 16. Several commenters stated that ADEQ should deny these permits because the Department is unable to issue permits for air quality at the EZ, Pinenut and Canyon Mines, and an aquifer protection permit for the EZ Mine in a way that guarantees against further pollution and contamination of soil, air and water in the Grand Canyon's watershed. Additionally, once pollution from uranium has occurred there is no way to remediate it.**

The Air Quality and Aquifer Protection Permits are in place to minimize the potential risks from these mines. The permits require Denison Mines to take preventative measures to minimize the potential for contamination. The Department will conduct inspections of these sites to ensure that Denison Mines remains in compliance with their permits.

- 17. A commenter asked how long the Arizona 1 Mine has been in operation and if there have been any violations enforced by ADEQ in that time.**

Denison Mines began mining uranium ore at the AZ I Mine in December of 2009. The Department has conducted two inspections as well as a review of monitoring and recordkeeping logs. The inspections did not find any air quality violations, but did result in two potential aquifer protection permit (APP) violations for water quality. One issue related to the use of a standpipe in the liner of a non-storm water impoundment, the other to the use of a small septic system located on the property. A Notice of Opportunity to Correct Deficiencies (NOC) was issued by ADEQ on November 17, 2010.

The first violation listed in the NOC stated that AZ I Mine is in violation of the Arizona Administrative Code (A.A.C.) R18-9-B301(l)(2)(f) which states “Discharge without an aquifer protection permit by failing to meet the 1.09 General Permit requirement that a sewage treatment plant with flows less than 20,000 gallons per day and operating under a general permit before January 1, 2001, not alter the treatment or disposal characteristics of the original facility.” Denison Mines installed the septic tank and later covered the leach field with a nearly impermeable ore pad, which altered the design of the septic system, which is not in accordance with regulations.

The second violation cited the individual aquifer protection permit #102008, section 2.2.1. A standpipe drainage was installed in the liner of the impoundment located at the facility and there was no provision for this in the permit.

Since the issuance of the November 17, 2010 NOC, ADEQ has been in communication with Denison Mines and is confident the issues can be clarified or resolved without further enforcement.

- 18. A commenter stated that in the past two years Denison Mines has violated environmental regulations at the AZ I Mine, including a failure to secure the necessary permits from ADEQ.**

The Department has conducted two inspections of the AZ I Mine in the last 6 months. No air quality issues were identified during these inspections. During the inspection that was conducted in September of 2010, potential violations with the existing aquifer protection permit (see answer to Question 17 for description of potential violations) were discovered. ADEQ is in communication with Denison Mines regarding these issues and believes the issues can be clarified or resolved. Neither of these potential violations relates to operating without a permit.

- 19. A commenter asked how the BLM can determine that there are no significant impacts requiring an EIS at the Pinenut Mine site, yet at another site (EZ Mine) BLM is conducting an EIS.**

The Environmental Impact Statement (EIS) process, including the determination whether an EIS is required, for the Pinenut and EZ mines are conducted under the federal requirements of the National Environmental Policy Act (NEPA). Questions about the EIS process should be directed to the U.S. BLM.

- 20. A commenter stated that the Department’s authority applies to all proposed facilities in Arizona regardless of where they’re built, except on Indian Land. On**

Arizona's air and water quality programs to do not apply to sources on Tribal lands. Any air or water quality permits or other action for these areas would be handled by US EPA. It should be noted that none of the proposed mines are on Tribal land.

- 21. A commenter asked what rights the Tribes have available for relief if there is a lack of regulatory oversight by the states regarding monitoring permit requirements and compliance.**

If a member of the public, including Tribes, believes that there has been insufficient oversight by ADEQ, they have the option of filing a complaint with EPA or initiating a lawsuit against the State.

- 22. A commenter asked what permits are in place in the State of Utah in regards to the transport of the uranium and associated particles and dust.**

ADEQ does not have any authority over the transport of uranium ore on State and Federal highways or in the State of Utah.

- 23. A commenter stated that it is absurd for the Department to issue permits to new mines when the US Secretary of the Interior has considered the entire area for a 20 year ban. A commenter also clarified that the 20 year ban would not apply to "valid claims", but would apply to existing claims that have not been demonstrated as "valid".**

At the present time, the area under consideration for the 20 year ban is under a two-year segregation, while BLM studies and considers whether a 20-year withdrawal is appropriate. During the segregation period BLM has the discretion to decide whether a validity determination is needed. In the case of the AZ I Mine, since it was an existing, previously approved mine the BLM decided that a validity determination was not necessary. The same determination was made for the Pinenut Mine. In the case of the proposed EZ Mine, BLM has decided to proceed with a determination of validity for those claims which will be completed prior to approving the mining plan of operations submitted by Denison Mines.

If the 20-year withdrawal were to be put in place, then all claims within the withdrawal area would be subject to a validity determination before any activity other than casual use could take place on a claim. The validity determination is done by the BLM using a certified mineral examiner.

The BLM, in cooperation with a number of other federal and tribal agencies, is currently preparing the EIS that addresses the proposed mining withdrawal and identifies the lands to be withdrawn. State law does not allow the Department to consider the proposed action by the Secretary of the Interior in the granting or denial of Air Quality and Aquifer Protection Permits.

- 24. A commenter stated that they want to see a comprehensive analysis of the potential collective impacts (quantitative and qualitative) beyond visibility issues, of fugitive**

As part of the permitting process for the Pinenut Mine, ADEQ required Denison Mines to conduct an ambient air dispersion model that considered the emissions from the AZ I Mine (including unpaved road emissions), since these two mines may be actively mined concurrently. This modeling analysis demonstrated that both facilities combined are not expected to cause or contribute to a violation of any ambient air quality standard.

ADEQ required Denison Mines to model the Canyon Mine's emissions, however, the modeling was not conducted in combination with any other mine's emissions as the impacts from this mine, which is south of the Grand Canyon, do not overlap with the impacts from the other mines.

ADEQ also required the company to model the EZ Mine's emissions, however, the modeling was not conducted in combination with any other mine's emissions as the company has accepted a voluntary condition in the air quality permit that prohibits active mining at the EZ Mine while there is active mining at the AZ I or Pinenut mines.

- 25. A commenter stated that since Denison Mines plans to mine for many years, they should pave the entire portion of the haul route that is currently unpaved and employ dust control methods such as load sealing.**

The Air Quality Permit regulates the mine site, not the county road through which the ore is hauled. However, the permit limits the speed of the haul trucks to 25 miles per hour in order to minimize dust created by haul truck travel. The company is required to install electronic speed tracking devices on their trucks and record odometer mileage and travel time to demonstrate compliance with the speed limit. The Department does not have the authority to require that the road be paved as the road is not owned by Denison Mines.

The air permit also requires that each haul truck be covered by a tarpaulin that is secured around the entire perimeter of the truck to ensure that no dust is released during the transport of ore.

- 26. A commenter stated that Denison Mines has a history of worker safety violations in several mines in the United States.**

Worker safety at these mines is under the jurisdiction of the U.S. Department of Labor through the Mine Safety and Health Administration (MSHA), the Arizona Mine Inspector, and the Arizona Industrial Commission through the Arizona Division of Occupational Safety and Health (ADOSH). ADEQ does not have authority over worker safety and as such was not considered as part of the Air Quality and Aquifer Protection permits.

- 27. A commenter stated that when pure uranium is removed from the ore, 85% of the radioactivity is left in the tailings.**

The Air Quality Permits do not authorize Denison Mines to process ore at the mine sites, so there will be no tailings at any of the mines. The ore will be shipped to Blanding, Utah for processing.

**28. A commenter asked that if the company decides to quit mining, due to uranium prices going down, who will cleanup the remaining mess?**

Denison Mines is required to provide bonds to the BLM for the closure and reclamation of the mine sites including costs associated with backfilling and sealing the mine shafts, removal and disposal of pond liners, as well as post closure monitoring. Currently, the BLM holds bonds for the AZ I Mine in the amount of \$377,800, and the Pinenut Mine in the amount of \$371,800. The BLM bond costs for the Canyon and EZ mines will be determined through the approval process of the mining Plan of Operations.

In addition, Denison Mines has voluntarily agreed to provide a surety bond to ADEQ in the amount of \$52,467 to cover the cost of closure of the non-stormwater impoundment at the EZ Mine.

**29. Several comments were received regarding the danger of uranium tailings specifically at the White Mesa Mill.**

The White Mesa Mill is located near Blanding, Utah, and is, therefore, under the jurisdiction of the Utah Department of Environmental Quality. The Air Quality Permits do not authorize Denison Mines to process ore at the mine sites, so there will be no tailings at any of the mines.

**30. A commenter stated that tourism will be impacted when tourists see big trucks and lots of dust.**

State law does not allow the Department to consider impacts to tourism in the granting or denial of Air Quality or Aquifer Protection Permits. It should be noted that the air quality permit requires the company to submit a detailed plan of how dust from the mining operations will be kept to a minimum.

**31. A commenter stated that ADEQ should cleanup historical uranium mine sites before approving permits for the operation of new ones.**

The Department is required to act upon applications as they are submitted. State law does not allow the Department to consider facilities not owned by the applicant in the granting or denial of Air Quality or Aquifer Protection Permits.

**32. A number of commenters expressed concern regarding the self-monitoring requirements in the permit and felt an independent third party should monitor the facility. Additionally, a commenter stated that the air quality permits offer little assurance that Denison Mines will successfully implement control measures designed to limit emissions.**

State law does not allow the Department to require the use of third parties to conduct monitoring and recordkeeping. The Air Quality and Aquifer Protection Permits require Denison Mines to conduct various monitoring actions and keep detailed records of the actions. In addition, the Department will conduct inspections of the mine site and verify

that all Air Quality and APP permit requirements, including monitoring and recordkeeping, are being met.

The company is required to report the results of monitoring to ADEQ semi-annually which includes a certification regarding the compliance status of the facility.

It should be noted that any water samples required under the APP, while collected by Denison Mines staff, must be analyzed by a laboratory that is independent and licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification.

If there are concerns that the company is not complying with permit requirements, the Department can be notified through its complaint web site at <http://www.azdeq.gov/function/compliance/complaint.html> or through the air quality compliant line, (602) 771-2286.

- 33. A commenter expresses that ADEQ has a responsibility pursuant to Title 49, to ensure that it develops policy, plans and programs to protect the environment, and also promote the protection and enhancement of the quality of water.**

The Department agrees with this comment. ADEQ has, pursuant to Title 49, developed policies, plans, and procedures to protect the environment including Air Quality and Water Quality Permitting Programs.

- 34. A commenter expressed concern that if Denison Mines decides to temporarily shut down or suspend operations at a mine there is no requirement to close the site in order to prevent current ore piles from eroding.**

The air quality permit requires Denison Mines to cover or stabilize all storage piles at the mines. Denison Mines is required to comply with all State laws governing fugitive dust, whether or not the mine is in operation.

- 35. A commenter asked if a new EIS has been prepared for the Canyon Mine since the original was done in 1986. If a new EIS has not been prepared how will the permit thoroughly incorporate statutory and regulatory changes in the clean air act and clean water act relating to radiation, radon, PM, and dust emissions which were not taken into account in the 1986 EIS.**

The Environmental Impact Statement for the Canyon Mine was performed under the federal requirements of the National Environmental Policy Act (NEPA). Questions about the validity of the EIS should be directed to the U.S. Forest Service.

ADEQ did not rely upon the EIS information in reviewing the Air Quality Permit application, but instead relied on the current application submitted for the Canyon Mine. Part of the air quality permitting process included a review of all federal and state applicable regulations as well as an ambient air dispersion analysis to ensure that the facility will meet all federal and state standards.

- 36. A commenter questioned how the environmental impacts associated with the Pinenut Mine have been examined as part of this permitting process, since no EIS was prepared for this mine.**

ADEQ's air quality permitting process is not dependant on the Bureau of Land Management's EIS process. The Department does not rely upon EIS information during the review of air quality permits, but instead relies on the application submitted by the company. The air permitting process for the Pinenut Mine included a thorough review of the ambient air quality impacts from the mine.

- 37. A commenter stated that issuing a permit to the EZ Mine before the EIS is prepared by the BLM is inappropriate. The commenter further questioned how ADEQ could determine whether it is appropriate to issue a permit for the EZ Mine prior to BLM's completion of a thorough analysis of the adverse environmental impacts contained within an EIS.**

ADEQ's Air Quality and Aquifer Protection permitting processes are not dependant on the EIS process. The Department does not rely upon the EIS information in reviewing the permit applications, but instead relies upon the applications submitted by the company. The air permitting process includes a thorough review of the air quality impacts from a facility.

- 38. A commenter asked why the "No Action Alternative" was not examined more closely as part of the Canyon Mine EIS as the area is the Havasupai Tribe's watershed, and there are several threatened and endangered species with critical habitat in Coconino and Mohave Counties and in close proximity to the Southern and Northern Rims of the Grand Canyon.**

The Environmental Impact Statement for the Canyon Mine was performed under the federal requirements of the National Environmental Policy Act (NEPA). Questions about the validity of the EIS, including the "No Action Alternative" should be directed to the U.S. Forest Service.

*Air Quality Comments:*

- 1. A commenter suggested that the Department more carefully evaluate the impacts of the mines on the Grand Canyon due to the Canyon's status as a Class I area.**

The Department did require Denison Mines to conduct extensive analyses to ensure that the mines would not cause a reduction in visibility at the Grand Canyon. The Department also required Denison Mines to include the unpaved road travel by the haul trucks in these analyses even though these roads are also available for general public use. These two requirements are more protective than required by law.

- 2. A number of commenters expressed concern regarding the release of dust and ore material from haul trucks that would potentially contaminate roadsides by the haul route. In addition, several commenters suggested that ADEQ require Denison Mines to use haul trucks that are equipped with a solid lid and seals rather than allowing the use of a tarp to cover the load.**

The Air Quality Permits for these mines require Denison Mines to ensure that all haul trucks be securely covered from all sides to prevent dust from escaping from the truck. The Department has inspected these trucks and has determined that the coverings and seals will ensure that ore and dust remain in the truck.

- 3. A number of commenters expressed concerns about haul trucks traveling on major highways with the increased potential of an accident and asked how the Department would handle cleanup of a hazardous spill.**

State law does not allow the Department to consider haul truck travel on State and Federal highways in the granting or denial of Air Quality or Aquifer Protection Permits. Haul truck travel on State and Federal highways is governed by the Arizona Department of Transportation (ADOT).

In the event of a spill, Department of Public Safety Hazmat and Arizona Department of Transportation (ADOT) Emergency Response are contacted and responsible for implementing plans to assess and respond to the emergency situation. When the emergency situation is over, ADOT ensures cleanup, and notifies the Arizona Radiation Regulatory Agency (ARRA), ADEQ, and the Nuclear Regulatory Commission (NRC) as appropriate.

Denison Mines has a Transportation Emergency Response Plan (TERP) that is implemented in the case of an accident that includes a spill of uranium ore. The TERP contains instructions for the driver and responders to use so that they are best prepared to secure the site. Additionally, Denison Mines Radiation Staff respond within 24 hours to assist in the cleanup effort.

- 4. A commenter stated that the air permit contains no language on containing a uranium spill from a truck if an accident occurs.**

State law does not allow the Department to consider haul truck travel on State and Federal highways as part of the air quality permitting process and thus cannot be included as a permit condition. Haul truck travel on State and Federal highways is governed by the Arizona Department of Transportation (ADOT). Please see the above response for more details.

- 5. A commenter suggested that the Department should monitor for fine particulate matter (PM<sub>2.5</sub>) near the mining sites and along the haul road. The commenter expressed concern that PM<sub>2.5</sub> presents a health concern considering the hazardous and radioactive properties of the dust.**

Fine particulate matter (PM<sub>2.5</sub>) refers to particulate matter that is 2.5 microns and smaller. The Department agrees that fine particulate matter presents a health concern, however, PM<sub>2.5</sub> is not a pollutant of significant concern at these facilities. The majority of particulate emissions from the mines and haul roads will be in the form of fugitive dust from material handling and haul truck travel. These types of emissions are generally larger than 2.5 microns. Also, the Air Quality Permits for these mines require Denison Mines to ensure that all haul trucks be securely covered from all sides. This will prevent dust from escaping from the truck and will prevent contamination from occurring.

- 6. A commenter expressed concern regarding the frequency of the monitoring for fugitive dust sources at the mines.**

The permits require Denison Mines to submit for approval a dust control plan for each mine that will require them to monitor and track ongoing implementation of dust control

measures, such as covering and stabilizing all storage piles. The dust control plans require Denison Mines to proactively control dust at the facility. Monitoring, recordkeeping, and reporting requirements, along with periodic inspections by the Department will ensure that the company is properly controlling dust.

Based on this comment, the Department has reviewed the requirements for fugitive dust in the Air Quality Permits and has increased the frequency of fugitive dust monitoring from once per month to once every 2 weeks.

7. **A commenter stated that ADEQ cannot rely upon AERMOD (an air quality modeling tool) to model dust dispersion because AERMOD is designed to model plume dispersion, not dust dispersion.**

AERMOD is the EPA approved and preferred model for a wide range of regulatory applications in all types of terrain. While the Department agrees that the model has its limitations, the model is designed to be conservative, and typically over predicts impacts. Since there are currently no additional EPA approved models for estimating local impacts, ADEQ has determined that the use of AERMOD to model dust dispersion was appropriate.

8. **A commenter suggested that ADEQ develop its own fine particulate monitoring and modeling system to specific to mining sites.**

The ambient air dispersion modeling analysis conducted by the facility and approved by ADEQ was done using an approved EPA model that is used extensively to predict the impact of air pollution from various types of facilities including mining sites.

The Department reviewed the emissions from this facility and the predicted impacts from the ambient air dispersion model and has determined that no monitoring of particulate matter is necessary.

9. **A commenter stated that ADEQ should conduct its own air quality dispersion modeling analysis and not rely on Denison's modeling. Furthermore the commenter stated that the analysis should undergo scientific peer reviewed prior to issuance of the permits.**

The modeling analysis conducted by the facility was reviewed and approved by ADEQ. The analysis used an approved EPA model that is used extensively to measure the impact of air pollution from various types of facilities including mining sites. Since the dispersion modeling was conducted using a conservative EPA approved model no peer review is required.

10. **A commenter stated that ore piles should be treated like contaminated soil at a superfund site and covered with a solid lid with protection along the seams.**

The Air Quality Permit requires Denison Mines to cover or stabilize any uranium ore piles at each mine. When the ore is shipped, it is loaded into haul trucks that are covered with a tarp that the company must secure completely around all sides of the truck. The Department has determined that these requirements reasonably control fugitive dust from the ore.

- 11. A commenter has stated that the Arizona Revised Statutes in §49-401 specifically state that no further degradation of the air in the State of Arizona by any industrial polluters shall be tolerated.**

Arizona Revised Statutes 49-401.B declares the policy of the Arizona Legislature to be that no further degradation of the air shall be tolerated. This subsection goes on to say “A new industry hereinafter established shall not begin normal operation until it has secured a permit attesting that its operation will not cause pollution in excess of the standards set by the director of environmental quality.” This language clarifies the intent of the Legislature to be that new industries are not precluded from operating in Arizona, but that they must first demonstrate to the Department that they will meet all applicable air quality environmental regulations. Through Arizona's Air Quality Permitting Program, Denison Mines was required to conduct an ambient air dispersion model and a visibility analysis to ensure that emissions from the mines would not cause or contribute to an exceedance of any ambient air quality standards or cause visibility degradation.

- 12. A commenter expressed concern regarding uranium dust becoming airborne and causing cancer.**

It should be noted that a vast majority of the dust produced by the mines will be ordinary road dust from the unpaved haul roads, and this dust contains only low levels of naturally occurring radiation. The permits require Denison Mines to submit a dust control plan for each mine that will specify how dust from the sites will be controlled, including dust from the ore piles and the retention pond. The permits state that ore piles must be covered or stabilized. Dust from the impoundments (if dry) must be controlled by removing any soil that collects in the bottom of the ponds, keeping water in the ponds, or stabilizing any solids that collect in the ponds. The company must monitor fugitive dust on each site and report those results to ADEQ. The Department conducts inspections of the sites to ensure that all regulations are being met.

- 13. A commenter asked if the Department does wind sampling near the mine sites.**

The Department does not have a metrological station near the mine sites. Wind data used in the air permitting process was taken from National Weather Service (NWS) stations in Page and Flagstaff, which are reasonably representative of conditions at the mine site.

- 14. A commenter stated that the Department should have equipment on-site and near the mines which will monitor radiation other than radon gas.**

State and federal laws do not establish any radiation thresholds at the mine site, other than for radon gas exiting the mine ventilation shaft.

Based on the concerns expressed by the commenter, the Department has added new conditions to the Air Quality Permits that will require Denison Mines to submit a plan to conduct annual radiological surveys of land around the mines. The plan will include what action the company will take if elevated levels of radiation are discovered. The company also monitors the gamma radiation exposure of its workers and monitors gamma radiation along the routes traveled by the haul trucks. In urban areas these monitors are placed in locations that are representative of the exposure a person on the roadside might receive and in rural areas the monitors are as close to the road as possible.

- 15. A commenter expressed concern that air pollution from the mine will result in decreased visibility near the GCNP.**

The Department along the National Park Service required Denison Mines to conduct a visibility analysis for each mine which took into account both mining activities and travel on unpaved haul roads. The results of this analysis demonstrated that there will be no adverse visibility impact to the Grand Canyon National Park.

- 16. A commenter expressed concern about the Kanab North Mine and the potential contamination that may have occurred from waste rock storage piles and blowing dust.**

The Kanab North Mine is a mine owned by Denison Mines that has not been actively mined since the early 1990s. Although the Kanab North Mine does not hold an air quality permit because it is not an active mine, State laws governing fugitive dust still apply to this facility. ADEQ conducted an inspection of the Kanab North Mine on January 12, 2011. ADEQ inspectors did not observe any air quality violations.

- 17. A commenter stated that the air permit requires operators to report violations within 24 hrs of learning of a release, but provides no emergency procedures for containing releases, or alerting the public.**

The air permit requirement to notify ADEQ within 24 hours requires the company to identify the steps taken to remedy the violation and the steps taken or planned to prevent the recurrence of such violation. In addition, for any permit deviation that cannot be corrected within 72 hours, the company is required to submit a compliance schedule to the Department within 21 days that includes a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with the permit terms or conditions that have been violated. Once notified, the Department has the option of sending an inspector to ensure that all necessary corrective actions are being taken.

All notifications regarding violations or permit deviations are public record and therefore available for public review.

- 18. A commenter asked if the draft air permit for the Canyon Mine relied on any of the studies, analysis or conclusions contained within the EIS.**

ADEQ did not rely upon the EIS information in reviewing the air quality permit, and instead relied on the current application submitted for the Canyon Mine.

- 19. A commenter asked how the Department plans to monitor air quality around the Canyon, EZ and Pinenut mines.**

As part of the air quality permitting process, the Department required the company to conduct an ambient air dispersion model to demonstrate that each facility would meet all federal ambient air quality standards. Upon review of the emissions from the mines and the results of the ambient air dispersion model, the Department has determined that no ambient monitoring of emissions is required. The company is required by the air permit to minimize emissions from fugitive and non-fugitive emissions sources.

- 20. A commenter asked how high wind gusts of more than 35 mph impact the Department's ability to monitor the regulatory requirements.**

As part of the air quality permitting process, the Department required the company to conduct an ambient air dispersion model to demonstrate that each facility would meet all applicable ambient air quality standards. One of the inputs for this model is actual wind data. Wind data used in the air permitting process was taken from National Weather Service (NWS) stations in Page and Flagstaff.

The Department and National Park Service also required the company to conduct a visibility analysis to determine if these mines would impact visibility in the Grand Canyon. Such an analysis is typically only required for very large sources, but was required in this case to ensure that there would be no impacts to the Grand Canyon. The analysis demonstrated that these mines will not impact visibility in the Canyon.

- 21. A commenter asked what studies, reports, and research have been relied upon to illustrate that uranium mining at the Canyon, EZ, and Pinenut mines would not negatively impact the air and water quality so as to pose a danger to critical habitat of threatened and endangered species.**

As part of the air quality permitting process, the Department required the company to conduct an ambient air dispersion model to demonstrate that each facility would meet all federal ambient air quality standards, including those which protect against decreased visibility, damage to animals, crops, vegetation, and buildings. State law does not allow the Department to consider non-air and water quality issues in these Air Quality and Aquifer Protection Permits; however, Denison Mines is required to meet any and all other applicable state and federal requirements for protecting these resources and properties.

- 22. A commenter asked how the Department can make a statement in the TSD that radiation exposure from dust associated with the mining operations do not present a significant health risk if the TSD also states that that radioactive exposure from dust is dependent on the concentration of dust in air and the activity of the compounds in the dust, and as such is not feasible to estimate the radiation impact.**

A vast majority of the dust produced by the mines will be ordinary road dust from the unpaved haul roads, and this dust contains only low levels of natural radiation. The source of radiation at the mine is the uranium ore. The potential sources of uranium ore dust are the mine shafts and the ore stockpiles. As required by the air quality permit, the mine shafts are monitored for radiation from radon and the ore stockpiles are covered or stabilized. The Department has determined that due to the low levels of uranium (typically 1-2% uranium) and the requirements to minimize dust from the facility that the mining operations do not present a health risk.

- 23. A commenter asked how Title 40 of the Code of Federal Regulations, Part 61, Subpart B (40 CFR 61 Subpart B) could be incorporated into the air quality permit when ADEQ is not delegated by EPA to implement this subpart. In addition, the commenter asked if the Department considers the air permit to be "Approval of Construction" under 40 CFR 61.08.**

State law requires the Department to include all applicable air quality requirements into an air quality permit issued for a facility. This includes any federal air requirements,

whether or not the Department has been delegated authority to implement them. The Department can enforce the terms of the Air Quality Permit, which includes all of the requirements of Subpart B.

The Department has been delegated authority to issue Approvals of Construction under 40 CFR 61.08. A question has been raised as to whether or not the Department has the authority to issue an Approval for Construction for a facility subject to a subpart for which the Department is not delegated. ADEQ is currently working to obtain delegation from EPA for Subpart B which will resolve any such questions. Denison Mines is working with EPA and ADEQ to address these concerns in the interim. The Department considers these Air Quality Permits to be Approvals of Construction.

**24. A commenter expressed concern that Denison Mines has not properly monitored radon at two mines in Utah and at the AZ I Mine.**

The Department is aware that EPA has issued a Finding of Violation to Denison Mines for the AZ I Mine. Part of this alleged violation was regarding the methodology for measuring radon from the ventilation shaft. Denison Mines has, since operation commenced, monitored for radon from the ventilation shaft. The issue identified by EPA is that Denison Mines did not get prior approval to use EPA Method A-7 rather than A-6. Denison Mines is currently working with EPA to resolve this issue.

Denison Mines holdings in Utah are regulated by the Utah Department of Environmental Quality (UDEQ) and any concerns regarding those mines should be directed to UDEQ.

***Water Quality Comments:***

**1. Many comments were received stating that an Individual Aquifer Protection Permit (APP) should be required rather than a General APP.**

ADEQ does not have the legal authority to compel an individual permit at this time. Denison Mines submitted an application for general permit coverage for a non-storm water impoundment. The proposed design is consistent with the general permit requirements in rule. An individual permit would be required if the general permit application failed to meet the general permit rule requirements. In addition to meeting the requirements set forth in rule for obtaining a general permit, Denison Mines has agreed to voluntary, yet enforceable conditions which require groundwater protections at the bottom of the shaft, monitoring of water pumped from the shaft, and posting of financial assurance for proper testing and closing of the impoundment in the event that Denison Mines is unable to do so.

ADEQ has determined that the general APP will protect against discharges to groundwater from this mine and therefore ADEQ has concluded that mine operations will not result in a violation of an Aquifer Water Quality Standard. Arizona regulations do not require that groundwater monitoring be conducted for the facility, as compliance with the permit will ensure that there will not be a discharge to groundwater from the facility.

**2. Several comments suggest that there is lack of groundwater monitoring before, during, and after mining operations to establish and define what, if any, impacts occur in the aquifer.**

The ADEQ APP Program protects groundwater for drinking water use through permit requirements. The APP for the EZ Mine requires Denison Mines to:

- 1) Continually dewater the mine;
- 2) Ensure that the bottom of the mine is impermeable to at least  $1 \times 10^{-7}$  cm/sec. Denison Mines is required to conduct a permeability test on rocks from the bottom of the mine shaft and vent sumps and demonstrate that permeability is less than or equal to  $1 \times 10^{-7}$  cm/sec. If the Denison Mines cannot make this demonstration, then the company must line or seal the bottom of the vent shafts to ensure that no water leaves the mine;
- 3) Send all water at the mine to a lined non-storm water impoundment where the water will evaporate. Permit regulations require that Denison Mines design and operate the impoundment correctly, keep records of operations and maintenance activities for the impoundment, report and repair any breaches to the liner, and take appropriate steps to close the impoundment at the end of mine operations.

ADEQ has no reason to believe that the surface impoundments authorized by the general permit will cause or contribute to groundwater contamination because they must be constructed, operated, and maintained so that they do not leak. Compliance with the APP permits will ensure that there will be no discharge to the surface or to any joints, fractures, or faults associated with the breccia pipes.

Additionally, Denison Mines has voluntarily agreed to provide a surety bond in the amount of \$52,467 to cover the cost of closure of the non-storm water impoundment. At the time of closure, the company is required to drain and properly dispose of the liquids and sediments in the impoundment and inspect the liner for any damage. If liner damage is observed, the company is required to collect soil samples in the area of the damage and report the findings to ADEQ. ADEQ has the authority to require remediation at that time, if necessary.

**3. Several commenters suggested that ADEQ does not have the authority to allow uranium mines to be covered under general permits and these mines do not qualify for the Type 3.04 General Permit.**

Denison Mines submitted an application for general permit coverage for a non-storm water impoundment. The proposed design is consistent with the general permit requirements in rule. An individual permit would be required if the Permittee failed to meet the general permit rule requirements. In addition to meeting the requirements set forth in rule for obtaining a general permit, Denison Mines has agreed to voluntary, yet enforceable conditions which require groundwater protections at the bottom of the shaft, monitoring of water pumped from the shaft, and posting of financial assurance to properly close the impoundment in the event the company is unable to do so.

**4. One commenter suggests that ADEQ has done an “about-face” by earlier denying the general APP permit applications and now accepting them.**

The original applications submitted to the Department did not meet the requirements of rule and were therefore denied. As a result of the denials, Denison Mines submitted new applications that did meet the requirements of rule. In particular, for the EZ Mine,

Denison Mines submitted an application that included a new lined non-storm water impoundment.

**5. Several commenters asked that the onsite retention pond be built to contain a 500 or 1000 year flood event.**

The general Aquifer Protection Permit requires that all discharges from the mine are sent to a lined surface impoundment where the water will be evaporated. ADEQ regulations require that all impoundments are designed to hold all the water produced in the mine shaft, rainfall from a 100-year, 24-hour storm event, plus two feet of freeboard. ADEQ has determined that these standard requirements are adequate to protect groundwater quality.

**6. One commenter suggested that the bond amount is not enough.**

The proposed closure costs for the impoundment were submitted by Denison Mines and approved by ADEQ as a voluntary and enforceable condition not normally required by a general permit for surface impoundments. The costs are based on what a third party would charge to perform the closure activities specified in the general permit including removal of liquids and any solid residues, inspection of the liner for evidence of leaks, and investigation of potential soil impacts, if a leak is suspected.

**7. Denison Mines requested that the general APP for the EZ mine be modified to allow for permeability test methods equivalent to the Klinkenberg test.**

ADEQ agrees and has revised the permit conditions.

**8. Many comments were received stating that the APP is not protective of groundwater and there is a fear that pollution will occur as it has with past mining practices in the area. Commenters provided information on specific, historical, uranium mines to support their concerns.**

The purpose of the APP program is to protect Arizona's groundwater from contamination. The general APP requires that all discharges from the mine are sent to a lined surface impoundment where the water will be evaporated. The impoundment will protect groundwater quality. The impoundment is designed to hold all the water produced in the mine shaft, rainfall from a 100-year, 24-hour storm event, plus two feet of freeboard..

ADEQ is aware of the impacts of historic uranium mining operations such as the Orphan and Hack Canyon mines. Current environmental regulations, such as the APP program, have been put into place to prevent reoccurrence of these historical environmental contamination problems.

The APP for the EZ mine includes requirements to assure that the bottom of the shafts and sumps will not transmit fluids. The permit also requires Denison Mines to pump any groundwater found in the mine to the surface impoundment. The permit also requires monitoring of the quantity and quality of the water pumped from the working shafts and sumps of the mines. The permit contains voluntary, yet enforceable, conditions which require permeability testing of the bottom of the mine shaft to ensure that no water migrates out of the mine towards groundwater.

**9. Some comments refer to tailings piled at historical mine sites contaminating the surface water and groundwater.**

The Air Quality and APP Permits do not authorize Denison Mines to process ore at the mine sites, so there will be no tailings at any of the mines. The ore will be shipped to Blanding, Utah for processing.

**10. One commenter asked whether fractures have been sealed in the Arizona 1 Mine.**

Denison Mines reported the permeability test results to ADEQ for the bottom of the AZ I Mine in a letter dated December 28, 2010. The measured permeability was  $\leq 2.5 \times 10^{-8}$  cm/sec, which is essentially impermeable, and is less than the permeability limit of  $1.0 \times 10^{-7}$  cm/sec required in the aquifer protection permit. The company noted that installation of the sump had created some fractures in the rock. Based on this information, Denison Mines has installed a geosynthetic liner at the bottom of the sump.