

ATTACHMENT D

AIR QUALITY RECOMMENDATIONS

Air Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Land Use Regulations (ULUR)	Comments
<p>Air Quality Recommendation No. 1:</p> <p>Prior to approval of the special use permit, we recommend the BOCC require Antero to: [d]emonstrate that the low emissions flow back technology Antero is developing is effective in reducing air emissions. Antero should pilot test the system and monitor air emissions using EPA methods with detection limits adequate for the assessment of human exposure and prevention of human health effects. An effective demonstration would show that levels of air pollutants, such as benzene, as measured in 24-hour ambient air samples at 350, 500, 1000, 2000, and 3000 feet and in each cardinal direction, from the</p>	<p>COGCC Rule 324A, Pollution</p>	<p>COGCC Rules 324A.a and c. require operators to protect air quality. COGCC Rule 324A.a. requires the operator to “take precautions to prevent significant adverse environmental impacts to air” to the extent necessary to protect public health, safety, and welfare.</p> <p>COGCC Rule 324A.c. prohibits any owner, in the conduct of any oil or gas operations, from performing any act which violates any applicable air quality laws, regulations and permits as administered by the AQCC or any other local or federal agency with authority for regulating air quality.</p>	<p>Section 7-208, Air Quality</p>	<p>Section 7-208 states that the land use change “shall not cause air quality to be reduced below acceptable levels established by the Colorado Air Pollution Control Division.”</p>

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<p>well pad perimeter, are not higher than those measured at the Battlement Mesa monitoring station. Antero should make all test results publically available on Garfield County’s website and/or on a publicly accessible website approved by the Battlement Mesa Community, three months prior to any drilling within the PUD.</p>	<p>COGCC Rule 805.b.3, Odors and Dust, Well Completions</p>	<p>COGCC Rule 805.b.3 <u>requires the use of green completion practices</u>, but it does not specifically require the use of an effective and validated low emissions flow back process. Additionally, operators may seek <u>variances exempting them from green completion practices</u> under 805.b.3.C. In instances where green completion practices are not technically feasible or are not required, COGCC Rule 805.b.3.D states that operators “shall employ Best Management Practices to reduce emissions.”</p>	<p>Section 7-810G, Additional Standards Applicable to Industrial Use, Interference, Nuisance or Hazard</p>	<p>Section 7-180.G states that “every use shall be so operated that it does not emit heat, glare, radiation or fumes which substantially interfere with the existing use of adjoining property or which constitutes a public nuisance or hazard. Flaring of gases, aircraft warning signal and reflective painting of storage tanks, or other legal requirements for safety or air pollution control measures shall be exempted from this provision.</p>
<p>Air Quality Recommendation No. 2: Prior to approval of the special use permit, we recommend the BOCC</p>	<p>COGCC Rule 205, Access to Records</p>	<p>COGCC Rule 205.a-d states that all operators, producers, etc shall make and keep appropriate records of their operations,</p>		

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<p>require Antero to: [d]isclose all chemicals that will be used on its well pads within the PUD. We recommend Garfield County to keep a list of these chemicals on its website and/or on a publicly accessible website approved by the Battlement Mesa Community.</p>		<p><u>including records of all chemicals used or stored in quantities of more than 500 lbs per reporting quarter. Any chemical that is considered a Trade Secret shall be exempt</u> from the Chemical Inventory, except that it shall be identified by its name and not its chemical composition. These records must be kept for <u>at least 5 years</u> and made available to the COGCC upon request. <u>They do not need to be made available on a public-available website.</u></p> <p>The COGCC regulations only require a chemical inventory when more than <u>500 lbs</u> of the chemical is stored or used downhole in any quarterly period, as opposed to the CSPH recommendation of all chemicals.</p> <p>Similarly, the COGCC regulations provide an exception for chemicals that are considered a <u>trade secret</u>.</p>		

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	Emergency Planning and Community Right-to-Know Act ("EPCRA") codified at 40 C.F.R. § 370, et. al., Hazardous Chemical Reporting: Community Right-To-Know	EPCRA 40 C.F.R. 370 requires "Hazardous Chemical Reporting" which applies to any facility at which a hazardous chemical, as defined by the Occupational Safety and Health Act, is present in an amount exceeding a specified threshold. These facilities must submit (to the SERC, LEPC, and local fire department) material safety data sheets ("MSDSs") or lists of MSDSs and hazardous chemical inventory forms (also known as Tier I and II forms).		
Air Quality Recommendation No. 3 Prior to approval of the special use permit, we recommend the BOCC require Antero to: [e]stablish a system for immediate response to odor complaints that includes	COGCC rule 805.b, Odors and Dust, Odors	COGCC Rule 805b.1.A requires that oil and gas operations be in compliance with the Department of Public health and Environment, Air Quality Control Commission, Regulation No. 2, Odor Emission	Section 7-301.B, Site Planning and Development Standards, Compatible Design	Section 7-301.B.1 states that dust, odors, gas, fumes and glare shall not be emitted at levels that are objectionable to adjacent property.

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<p>options for ceasing operations, notification of affected residents, and temporary relocation of residents until the source of the odor is identified and resolved. We encourage Antero to communicate the timing of well completion activities to Battlement Mesa residents, which could allow for voluntary shutting of windows and air intakes or temporary relocation.</p>	<p>Air Quality Control Commission ("AQCC"), Regulation No. 2, Odor Emission (5 CCR 1001-4), Part A, General Provisions</p>	<p>Regulation No. 2, Part A states that no person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits:</p> <p>I.A. For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air.</p> <p>I.B. In all other land use areas, it is a violation if odors are detected after the odorous air has been diluted with fifteen (15) or more volumes of odor free air.</p> <p>I.C. I.C.1. When the source is a manufacturing process, the source shall have an affirmative defense to a violation of Sections I.A. and I.B., Part A, of this Regulation Number 2, provided</p>		

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		<p>that the source demonstrates that it is utilizing the best practical treatment, maintenance, and control currently available in order to maintain the lowest possible emission of odorous gases. In determining whether the source has met its burden of utilizing the best practical control methods, the source need not consider any method which would result in an arbitrary and unreasonable taking of property or in the practical closing of any lawful business or activity, if such would be without corresponding public benefit.</p> <p>I.C.2. For all areas it is a violation when odors are detected after the odorous air has been diluted with one hundred twenty seven (127) or more volumes of odor free air in which case provisions of Section I.C.1., Part A, of this Regulation Number 2 shall not be applicable.</p>		
	COGCC Rule 522.a, Procedure To Be Followed Regarding	COGCC Rule 522.a.1 provides for citizen initiation of a complaint with COGCC for violation of		

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	Alleged Violations, Notice of Alleged Violation	COGCC rules.		
<p>Air Quality Recommendation No. 5</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [c]omplete the installation of a fully functional water storage facility and water pipeline network prior to any drilling within the PUD to realize the full air pollution prevention benefit.</p>	COGCC Rule 907.c.(3), Management of E&P Waste, Produced Water	<p>COGCC Rule 907.a.3 permits but does not require Operators to propose plans for managing E&P waste through recycling.</p> <p>“Produced water <u>may</u> be reused for enhanced recovery, drilling, and other approved uses in a manner consistent with existing water rights” and water quality standards.</p>		
	COGCC Rule 908, Centralized E&P Waste Management Facilities	<p>COGCC Rule 908.b provides siting, permitting, maintenance, and closure regulations for centralized E&P waste management facilities. COGCC Rule 908 <u>does not require use of a centralized water management facility</u> or require the completion of the centralized facility <u>prior</u> to any drilling.</p>		

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<p>Air Quality Recommendation No. 6</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [u]se permitted tanks rather than a pond at the centralized water storage facility. See recommendations for Water and Soil Assessment for further details of water storage facility recommendations.</p>	<p>COGCC Rule 908, Centralized E&P Waste Management Facilities</p>	<p>COGCC Rule 908 provides siting, permitting, maintenance, and closure regulations for centralized E&P waste management facilities. COGCC Rule 908 does not require <u>the use of permitted tanks</u>.</p>		
<p>Air Quality Recommendation No. 7</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [u]se an effective and validated low emissions flow back process for all well completions within the PUD.</p>	<p>COGCC Rule 805.b.3, Odors and Dust, Well Completions</p>	<p>COGCC Rule 805.b.3 <u>requires the use of green completion practices</u>, but it does not specifically require the use of an effective and validated low emissions flow back process. Additionally, operators may seek <u>variances exempting</u> them from green completion practices. In instances where green completion practices are not technically feasible or are not required, COGCC Rule 805.b.3.D states that operators “shall employ Best Management Practices to reduce emissions.”</p>	<p>Section 7-208, Air Quality</p>	<p>Section 7 -208 states that the “land use change shall not cause air quality to be reduced below acceptable levels established by the Colorado Air Pollution Control Division.”</p>

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<p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [r]oute production tank venting emissions through a VOC combustor operated with auto-igniters on all well pads within the PUD.</p>	<p>COGCC Rule 805.b.2, Odors and Dust, Production Equipment and Operations</p>	<p>COGCC Rule 805.b.2 <u>does not require venting through a VOC combustor</u>, but simply mandates <u>condensate, crude oil, or produced water tanks</u> with the potential to emit 5 tons per year of VOC within 1/4 mile of a building unit or other occupied area use a control device capable of achieving <u>95% control efficiency of VOC</u>.</p>	<p>Section 7-208, Air Quality</p>	<p>Section 7-208 states that the “land use change shall not cause air quality to be reduced below acceptable levels established by the Colorado Air Pollution Control Division.”</p>
	<p>AQCC Regulation No. 7, XII, et. seq., Volatile Organic Compound Emissions from Oil and Gas Operations</p> <p>AQCC Regulation No. 3, Part A, Section II, Air Pollutant Emission Notice Requirements</p>	<p>Regulation No. 7, XII contains provisions applicable to oil and gas exploration and production operations that collect, store or handle condensate, that are located upstream of a natural gas plant, for which the owner or operator filed, or was required to file, an APEN and that emit any amount of uncontrolled actual volatile organic emissions.</p> <p>Generally, but with numerous exceptions, Regulation No. 3, Part A, Section II.D.1, requires submission of an APEN for sources in attainment areas for sources with uncontrolled actual emissions of greater than two</p>		

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		<p>tons per year. Regulation No. 7 does not require control devices on all oil and gas production equipment regardless of emissions levels.</p> <p>Regulation No. 7, XII.C.1.b requires that “all condensate collection, storage, processing and handling operations, regardless of size, shall be designed, operated and maintained so as to minimize leakage of VOCs to the atmosphere to the maximum extent practicable.”</p> <p>Regulation No. 7, XII.C.1.c requires that all “air pollution control equipment used to demonstrate compliance with Section XII must meet a control efficiency of at least 95% unless otherwise provided.” Failure to properly install, operate, and maintain air pollution control equipment at the location indicated in the Division-approved spreadsheet will be a violation of the regulation.</p>		

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		<p>Under Regulation No. 7, XII.C.1.e, addresses when combustion devices are required under Regulation No. 7, XII to be equipped with and operate an auto-igniter.</p> <p>In addition, under XII,C.1.f, combustion devices installed pursuant to Regulation No. 7 must have employed and operational surveillance systems.</p> <p>Regulation No. 7, XII.D states that <u>“emission reductions shall not be required for each and every unit.”</u> Instead, emissions reductions are based on overall reduction from all atmospheric storage tanks for which an owner or operator filed or was required to file an APEN. In this manner, Regulation No. 7 does not mandate control devices on every source, but has developed a system-wide methodology for reducing emissions from oil and gas operations from a particular operator.</p>		

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<p>Air Quality Recommendation No. 8</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [u]se vapor recovery technology when available, rather than combustion, to further reduce air pollution.</p>	<p>COGCC Rule 805.b.2, Odors and Dust, Production and Equipment Operations</p>	<p>COGCC Rule 805.b.2 <u>does not require vapor recovery technology</u>, but simply mandates <u>condensate, crude oil, or produced water tanks</u> with the potential to emit 5 tons per year of VOC within 1/4 mile of a building unit or other occupied area use a control device capable of achieving <u>95% control efficiency of VOC</u>.</p>	<p>Section 7-208, Air Quality</p>	<p>Section 7-208 states that the “land use change shall not cause air quality to be reduced below acceptable levels established by the Colorado Air Pollution Control Division.”</p>

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	AQCC Regulation No. 7, Section XII, Volatile Organic Compound Emissions from Oil and Gas Operations	<p>Regulation No. 7, Section XII <u>authorizes use of vapor recovery technology as an appropriate air pollution control equipment, but does not mandate its use.</u></p> <p>Regulation No. 7, XII.C.1.a requires that all air pollution control equipment used to demonstrate compliance with Section XII be operated and maintained consistent with manufacturer specifications and good engineering and maintenance practices. Under Regulation No. 7, any air pollution control equipment must be adequately designed and sized to achieve the control efficiency rates required by Regulation No. 7 (either 90 or 95% depending on the equipment) and must be able to handle reasonable fluctuations in emissions of VOCs.</p>		

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<p>Air Quality Recommendation No. 10</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [o]btain an emissions permit from CDPHE for each well pad production tank within the PUD, per COGCC rules. The COGCC rules require permitting for production tanks within ¼ mile of an occupied structure with the capacity for 5 tons per year of VOC emissions, which is the case for most of Antero's proposed well pads. Our recommendation may be beyond the COGCC rule at one or two well pads. This recommendation is necessary, however, for the protection of public health because odors have been noticed up to ½ mile from the Watson Ranch pad. The ¼ mile distance in the rule is not based on a health-based air pollution standard, and the permit provides a mechanism for the establishment of inspection and monitoring requirements.</p>	<p>COGCC Rule 805.b.2, Odors and Dust, Production Equipment and Operations</p>	<p>As the CSPH recommendation notes, the COGCC regulation requires permitting only for production tanks <u>within 1/4 mile an occupied structure</u>, not all production tanks.</p> <p>The CDPHE rules do not contain any provision for the BOCC or other local authority to enforce or modify CDPHE rules regarding emissions permits.</p>	<p>Section 7-208, Air Quality</p>	<p>Section 7-208 states that the "land use change shall not cause air quality to be reduced below acceptable levels established by the Colorado Air Pollution Control Division."</p>
<p>AQCC Regulation No. 3, Part B, Construction Permits, General Requirements for Construction Permits</p>	<p>See Air Quality Recommendation No. 7 and 8 above.</p> <p>In addition, Regulation No. 3, Part B, Section I.D.3, only requires a permit for production tanks that emit above 5 tons per year in an attainment area.</p>			
<p>Air Quality Recommendation No. 11</p>	<p>COGCC Rule 306.d.3,</p>	<p>Rule 306.d.3 permits CDPHE to recommend monitoring</p>		

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<p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [w]ork with GCPH to implement an air monitoring program for all well completion activities within the PUD and at the centralized water storage facility. At a minimum, this program should include collection of 24-ambient air samples and grab samples, real-time VOC monitoring, odor monitoring, and collection of grab samples when odors are noticed.</p>	<p>Consultation, Consultation with the Colorado Department of Public Health and Environment</p>	<p>requirements as conditions of approval to a Form 2A (surface disturbance) where necessary to protect public health.</p>		
<p>Air Quality Recommendation No. 12</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [a]nnually disclose all chemicals and volumes used on its well pads within the PUD and include any chemicals that are VOCs in the air monitoring program. We recommend Garfield County to keep a list of these chemicals on its website and/or a publicly accessible website approved by the Battlement Mesa Community.</p>		<p>See Air Quality Recommendation No. 2 above.</p>		

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<p>Air Quality Recommendation No. 13</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [i]mplement the system for immediate response to odor complaints that includes options for ceasing operations. Implement a system for notification of affected residents, and temporary relocation of residents until the source of the odor is identified and resolved. We encourage Antero to communicate the timing of well completion activities to Battlement Mesa residents, which could allow for voluntary shutting of windows and air intakes or temporary relocation.</p>	<p>COGCC Rule 208, Corrective Action</p>	<p>See Air Quality Recommendation No. 3 above.</p> <p>COGCC 208 is not specific to odor complaints, but does allow the COGCC to require correction for any action that is causing waste or pollution. It <u>does not specify establishing a notification system</u>, but presumably the COGCC could act upon complaint from the community.</p>		
<p>Air Quality Recommendation No. 15</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [c]omply with COGCC green completion practices and EPA's natural gas STAR program to reduce VOC</p>	<p>COGCC Rule 805.b.3, Odors and Dust, Well Completions</p>	<p>The CSPH recommendation seeks for Antero to comply with COGCC regulations. Under COGCC Rule 805.b.3.C, however, operators may seek <u>variances</u> exempting them from green completion practices. There is no provision in the COGCC for county enforcement</p>	<p>Section 7-208, Air Quality</p>	<p>Section 7-208 states that the "land use change shall not cause air quality to be reduced below acceptable levels established by the Colorado Air Pollution Control Division."</p>

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emissions to the lowest level technically possible at all well pads within the PUD.		of COGCC requirements.		
<p>Air Quality Recommendation No. 17</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [a]dhere to dust control measures and traffic measures specified in the Special Use Agreement.</p>	COGCC Rule 805.c, Odors and Dust, Fugitive Dust	COGCC Rule 805.c requires Antero to employ measures to <u>control fugitive dust</u> , including the use of speed restrictions, regular road maintenance, and restriction of construction activity during high-wind days, as well as road surfacing, wind breaks and barriers, or automation of wells to reduce truck traffic, if <u>technologically feasible and economically reasonable</u> to minimize fugitive dust emissions.	Section 7-301.B, Site Planning and Development Standards, Compatible Design	Section 7-301.B.1 states that dust, odors, gas, fumes and glare shall not be emitted at levels that are objectionable to adjacent property. The operations causing such activities shall be managed to avoid nuisances to adjacent properties.
	COGCC Rule 1002.e.1, Site Preparation and Stabilization, Surface Disturbance Minimization	COGCC Rule 1002.e.1 requires entities to locate, construct, and maintain access roads “so as to <u>reasonably control dust and minimize erosion, alteration of natural features, removal of surface materials, and degradation due to contamination.</u> ”		
	COGCC Rule 1002.e.4, Site Preparation and Stabilization, Surface Disturbance	COGCC Rule 1002.e.4 requires entities to construct access roads as to <u>limit erosion</u> and control dust.		

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	<p>Minimization</p> <p>COGCC Rule 1002.f.2.F, Site Preparation and Stabilization, Stormwater Management</p>	<p>COGCC Rule 1002.f.2.F seeks to control potential sediment discharges. Recommended practices include designing and maintaining roads and well pads to minimize rutting and tracking, controlling site access, street sweeping or scraping, tracking pads, <u>wash racks</u>, education, or other <u>sediment controls</u>. While this COGCC regulation is focused on stormwater management, it has dust control applications as well.</p>		
<p>Air Quality Recommendation No. 21</p> <p>We recommend that the BOCC: [a]ssign a county inspector to monitor Antero’s compliance with the special use permit and that the special use permit contain provisions for regulatory action if</p>	<p>COGCC Rule 204, General Functions of Director</p>	<p>COGCC Rule 204 is a general provision that allows the Director or any authorized deputy to go upon and inspect any oil and gas property to ascertain compliance with the COGCC rules and the Colorado Oil and Gas Conservation Act.</p>	<p>Section 12-103.A, Enforcement Procedures, Authority</p>	<p>“The Garfield County Zoning Official, the Garfield County Building Inspector, and the Garfield County Code Enforcement Officer (all three positions are hereinafter referred to as “Enforcement Officials”), and the Garfield County Attorney</p>

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Antero is found to be in non-compliance.	COGCC Rule 208, Corrective Action	COGCC Rule 208 allows the COGCC to investigate any oil and gas property and require corrective action if there is waste or pollution. There is no provision in the COGCC rules for county enforcement of COGCC requirements.		are hereby delegated the power to enforce all provisions of this Land Use Code . . . and may utilize any remedies authorized under Colorado law or the provisions of this Article XII.”
<p>Air Quality Recommendation No. 22.</p> <p>We recommend that the BOCC: [a]ssign an independent observer acting on their behalf, to participate in the demonstration of the low emission flow back tank described in recommendation 1. The independent observer would be responsible for confirming sample locations and timing as well as monitoring for odors. The independent observer would collect grab samples if odors are noticed during the demonstration for evaluation of possible short-term peak exposures.</p>	COGCC Rule 204, General Functions of Director	<p>COGCC Rule 204 is a general provision that allows the Director or any authorized deputy to go upon and inspect any oil and gas property to ascertain if the COGCC provisions are being observed. To the extent COGCC were to require demonstration of the low emission flow back technology, COGCC could inspect during any such demonstration.</p> <p>There is no provision in the COGCC rules for county enforcement of COGCC requirements.</p>		

WATER QUALITY RECOMMENDATIONS

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>Water and Soil Quality Recommendation No. 1.</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [d]isclose all chemicals that will be used on its well pads within the PUD.</p>		<p>See Air Quality Recommendation No. 2 above.</p>		
<p>Water and Soil Quality Recommendation No. 2.</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [c]haracterize the geology and hydrogeology within the Battlement Mesa PUD and the primary and secondary domestic water supplies, according to the specifications in COGCC rule 908.</p>	<p>COGCC Rule 908.a and b.7, Centralized E&P Waste Management Facilities, Applicability and Permit Requirements</p>	<p>COGCC Rule 908.a and b.7 requires an operator to analyze the geologic and hydrologic data for the area of the proposed centralized E&P waste management facility, <u>not the entire PUD and the primary and secondary domestic water supplies.</u></p>	<p>Section 4-502, Description of Submittal Requirements</p>	<p>Section 4-502.A.3 requires that geology reports be prepared by either a member of the American Institute of Professional Geologists or a member of the Association of Engineering Geologists or a qualified geotechnical engineer licensed in the State of Colorado. Submittal requirements also include maps and plans (4-502.C.4), which must provide an erosion and sedimentation plan describing topography and hydrology. This information is also required by the "Land Suitability Analysis" under Section 4-502.D.</p>
<p>COGCC Rule 303.d, Requirements for Form 2, Application for Permit-To-Drill, Deepen, Re-enter, or Recomplete and Operate; Form 2A, Oil and Gas Location Assessment</p>	<p>COGCC Rules 303.c and d. requires a description of water wells and other visible improvements in the application for Form 2A, not geology and hydrogeology in the area to be covered by the location or any broader area.</p>			

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	<p>Water Quality Control Commission ("WQCC"), Regulation No. 61.3, Applicability, Stormwater Discharges for Which a Permit is Required</p> <p>Water Quality Control Division ("WQCD") Stormwater Construction Permit ("SWCP") Part I.C.2, Stormwater Management Plan Contents: Site Map</p>	<p>Regulation 61.3(2)(f)(ii) requires a stormwater permit for small construction activities, including construction activities associated with many oil and gas operations. The WQCD has promulgated a General Construction Permit (the Stormwater Construction Permit) that governs and regulates these small construction activities.</p> <p>The SWCP requires the Stormwater Management Plan to include a legible site map, showing the entire site, and identifying <i>inter alia</i> construction site boundaries and locations of springs, streams, wetlands and other surface waters.</p>		

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<p>Water and Soil Quality Recommendation No. 4.</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [c]omplete the installation of a fully functional water management facility and water pipeline network prior to any drilling within the PUD to decrease potential of contamination of soil and surface water on individual well pads and decrease potential for truck accidents to contaminate surface waters and soils in case of an accident.</p>		<p>See Air Quality Recommendation No. 5 above.</p>		
<p>Water and Soil Quality Recommendation No. 5.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [c]omply with COGCC rule 908, which pertains to non-commercial centralized E&P waste management facilities, for</p>	<p>COGCC Rule 908, Centralized E&P Waste Management Facilities</p>	<p>COGCC Rule 908 provides siting, permitting, maintenance, and closure regulations for centralized E&P waste management facilities. COGCC Rule 908 <u>does not require use of a centralized water management facility</u> or require the completion of the centralized facility <u>prior</u> to any drilling.</p>		

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<p>the centralized water storage facility, which will be handling E&P waste (i.e., recycling water used in well completions). One of the best management practices Antero has proposed for its Battlement Mesa project is a centralized water storage pond, which will allow for pit-less drilling on the pads, the recycling of water used in well completions, and reduced potential for water and soil contamination at the well sites. We have recommended that this facility be installed prior to any drilling. COGCC rule 908 requires permitting, a hydrogeological characterization, groundwater, soil, and surface water testing for centralized E&P waste management facilities.</p>		<p>COGCC rules do not give BOCC or other local authorities the power to enforce COGCC rules.</p>		
<p>Water and Soil Quality Recommendation No. 6.</p> <p>Before approval of the special use permit, we recommend that</p>		<p>See Air Quality Recommendation No. 6 above.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>the BOCC require Antero to [u]se permitted tanks, rather than a storage pond for water storage at the centralized water storage facility. While tanks are not required by COGCC, the use of tanks reduces the potential for water and pollution that could occur if a pond/pit liner was compromised or if a pond/pit overflowed. Tanks also have the added advantage of reducing air pollution and reducing inadvertent wildlife and pet exposures.</p>	<p>COGCC Rule 902, Pits – General and Special Rules</p>	<p>As the CSPH recommendation recognizes, there is <u>no requirement in the COGCC rules for tanks</u> at a centralized water storage facility. An operator can install fencing or netting to reduce inadvertent wildlife and pet exposure.</p>		
	<p>COGCC Rule 317B.d, Public Water System Protection, Requirements for DCPS Operations at New Oil and Gas Locations in the Intermediate Buffer Zone</p>	<p>COGCC Rule 317B.d.1 provides for pitless drilling in areas adjacent to Surface Water Supply Areas but nowhere else in the COGCC rules.</p>		
	<p>COGCC Rule 907, Management of E&P Waste</p>	<p>COGCC Rule 907.a requires proper handling of E&P waste and 907.c specifies alternatives for handling produced water and does not require use of tanks.</p>		
	<p>COGCC Rule 1002.a, Site Preparation and Stabilization</p>	<p>COGCC 1002.a mandates <u>fencing</u> of drill sites, access roads, reserve pits, and well sites when it is likely that there will be animals present that could be exposed to pollution.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	COGCC Rule 603.e.7, Drilling And Well Servicing Operations And High Density Area Rules, Fencing Requirements	COGCC Rule 603.e.7 mandates <u>fencing</u> of well sites in high density areas, which could reduce the chances of exposure to pollutants, including pet and wildlife exposure.		
<p>Water and Soil Quality Recommendation No. 7.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [l]ocate the centralized water storage facility be located [sic] at least a mile from any residential structure or school as a condition of approval of the special use permit. This is because the water storage facility will be handling E&P waste (i.e., recycled water from well completions).</p>	COGCC Rule 603.e.3, Drilling And Well Servicing Operations And High Density Area Rules, Setbacks for Production Equipment	COGCC Rule 603.e.3 requires that associated on-site production equipment, such as a centralized water storage facility, be <u>500 feet</u> from an educational facility, not a mile. Moreover, the 500 foot setback can be <u>reduced</u> if it would extend beyond the area on which the operator has a legal right to place its facility.	Section 7-203.A, Protection of Wetlands and Waterbodies	The only set back listed in the ULUR protects natural habitats, not residential structures. Per Section 7-203.A.1 "A setback of 35 feet measured horizontally from the typical and ordinary high water on each side of a water body is required." Section 7-203.A. 3 restricts structures and activities unless otherwise permitted within the buffer zone, including construction, removal, excavation, placement of materials, etc.

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>Water and Soil Quality Recommendation No. 8.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [a]nnually disclose all chemicals and volumes used on its well pads within the PUD and include any chemicals that are VOCs in the water monitoring program as a condition of the special use permit. We recommend Garfield County to keep a list of these chemicals on its website.</p>		<p>See Air Quality Recommendation No. 2 above.</p>		
<p>Water and Soil Quality Recommendation No. 9.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [i]nstall at least one up-gradient and two down-gradient groundwater monitoring wells at each well pad as well as at the centralized water storage facility, in addition to the voluntary water well testing program specified in Antero's best management practices. Antero should also</p>	<p>COGCC Rule 910.b.4, Concentrations and Sampling for Soil and Ground Water, Sampling and Analysis</p>	<p>COGCC Rule 910.b.4 <u>does not require groundwater monitoring wells</u>, but simply groundwater <u>sampling</u>. Moreover, it only requires groundwater testing when <u>contamination is suspected or known</u>, or contaminated soil contacts water per 910.b.4.A. It <u>does not require routine testing</u> at every well pad or centralized testing facility. No baseline monitoring is required and the rule does not specify the number of samples. COGCC groundwater standards and classifications are</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>conduct baseline sampling for, at a minimum, the following: all major cations and anions, total dissolved solids, iron, manganese, nitrates, nitrites, selenium, benzene, toluene, ethylbenzene, xylenes, methane, pH, specific conductance, and any chemical identified in the full disclosure of chemicals of potential concern. This monitoring will ensure that drilling, hydraulic fracturing and other operations do not compromise ground water.</p>		<p>derived from the WQCC.</p>		
	<p>COGCC Rule 306.d.3, Consultation, Consultation with the Colorado Department of Public Health and Environment</p>	<p>COGCC Rule 306.d.3 permits CDPHE to recommend monitoring requirements as conditions of approval to a Form 2A (surface disturbance) where necessary to protect public health.</p>		
	<p>COGCC Rule 317B, Public Water System Protection</p>	<p>COGCC Rule 317B provides for water well sampling and monitoring in areas adjacent to Surface Water Supply Areas.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	COGCC Rule 318A.e.4 and g, Greater Wattenberg Area Special Location, Spacing and Unit Designation Rule, GWA Infill	Rule 318A.e.4 and g provide for water sampling in the Greater Wattenberg Area, and field orders for other areas provide similar sampling where warranted after presentation of evidence in a public hearing.		
	COGCC Rule 908.b.9, Centralized E&P Waste Management Facilities, Permit Requirements, Ground water monitoring	COGCC 908.b.9.B.1 allows the Director to <u>waive</u> the groundwater monitoring requirement for a centralized E&P management facility if the operator employs an alternative method that provides <u>equal protection and employs a dual liner with a leak detection system</u> . Under 908.b.9.A, baseline sampling is not mandated through the use of monitoring wells, but by collecting samples from known water wells within 1 mile of the proposed centralized E&P waste management facility.		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	COGCC Rule 608.a-f, Coalbed Methane Wells	<p>COGCC 608 requires assessment of any plugged and abandoned wells with 1/4 mile of any proposed coalbed methane wells, as well as water well sampling when a coalbed methane well is proposed near a conventional or plugged and abandoned well. Additionally, gas seeps and water or spring seeps shall be monitored if a coalbed methane well is within 2 miles of the stratigraphic contact between the coal-bearing formation and the underlying formation or within 2 miles of a coal mine. These regulations are only pertinent to coalbed methane wells, only require the monitoring of <u>two wells, not three</u>, and only when there is a conventional or plugged well within a 1/4 mile of the proposed well. The CSPH requires the testing of additional chemicals, including benzene, toluene, ethylbenzene, xylenes, while the COGCC regulations require testing for the presence of bacteria and sodium adsorption ration (SAR).</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>Water and Soil Quality Recommendation No. 10.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [c]onduct monthly monitoring of the well site groundwater wells for the parameters specified in the proceeding recommendation during well drilling and completion activities, followed by annual monitoring for the duration of Antero's project. All results of this monitoring should be made available to the public within 60 days of sample collection and posted on Garfield County's website. If (1) benzene, ethylbenzene, toluene, or xylenes are detected at levels greater than the concentration levels specified in Table 910-1 of the COGCC rules; (2) any cations, anions, metals, or total dissolved solids exceed 1.25 times background</p>		<p>See discussion under Water and Soil Quality Recommendation No. 9 for applicable COGCC rules on monitoring.</p> <p>COGCC rules do not grant BOCC or other local authorities the power to enforce COGCC rules.</p>		
	<p>COGCC Rule 324A, Pollution</p>	<p>COGCC Rule 324A.a. requires the operator to take precautions to prevent significant adverse environmental impacts to water to the extent necessary to protect public health, safety, and welfare.</p> <p>COGCC Rule 324A.b. prohibits any operator, in the conduct of any oil or gas operations, from performing any act which violates any applicable water quality standards or classifications established by the WQCC for waters of the state, or any point of compliance established by the Director pursuant to Rule 324D.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>concentrations; (3) methane or any chemical identified as a concern from the full disclosure of chemicals exceeds 1.25 background concentrations; or (4) if pH or specific conductance exceeds the limits specified in COGCC table 910-1, the BOCC should require Antero to remediate as a condition of the special use permit. This type of monitoring is the best way to ensure pollution control measures are effective in protecting the groundwater resource.</p>	<p>COGCC Rule 901.c, E&P Waste Management Introduction, Additional Requirements</p>	<p>Rule 901.c gives the Director authority to impose additional requirements when he has reasonable cause to believe that an operator is performing any act threatening to cause a violation of Table 910-1 and to protect water quality standards established by the WQCC.</p>		
	<p>COGCC Rule 208, Corrective Action</p>	<p>Rule 208 is not specific to groundwater monitoring complaints, but does require the COGCC to require correction for any action that is causing pollution.</p>		
<p>Water and Soil Quality</p>	<p>COGCC Rule</p>	<p>COGCC Rule 910.b.3 requires</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>Recommendation No. 11.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [c]onduct baseline soil and surface water testing at all well pad locations and at the location of the centralized water facility for the parameters specified in COGCC Table 910-1, in addition to the wetland/drainage survey and mapping specified in Antero's best management practices</p>	<p>910.b.3, Concentrations and Sampling for Soil and Ground Water, Sampling and Analysis</p>	<p>operators to collect and analyze representative soil samples <u>if soil contamination is suspected or known to exist as a result of spills/release or E&P waste management</u>. Baseline soil testing is not required.</p>		
	<p>COGCC Rule 908.b.10, Centralized E&P Waste Facilities, Permit Requirements, Surface Water Monitoring</p>	<p>COGCC Rule 908.b.10 requires a <u>good faith effort</u> to perform <u>baseline</u> and periodic monitoring of surface water near a centralized E&P waste management facility. This rule does not apply to well pads.</p>		
<p>Water and Soil Quality Recommendation No. 12.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [p]erform monthly monitoring of any surface water bodies that are located within ½ mile of a well pad or the centralized water storage facility using the same parameters specified for the groundwater monitoring during well drilling and completion activities, followed by annual</p>	<p>COGCC Rule 908.b.10, Centralized E&P Waste Facilities, Permit Requirements, Surface Water Monitoring.</p>	<p>COGCC Rule 908.b.10 requires a good faith effort to perform baseline and <u>periodic</u>, not monthly, monitoring of surface water near a centralized E&P waste management facility. This rule does not apply to well pads.</p> <p>See discussion under Water and Soil Quality Recommendation No. 9 with regard to monitoring requirements.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>monitoring for the duration of the project. This type of monitoring is the best way to ensure pollution control measures are preventing exposures through contamination of surface water.</p>				
<p>Water and Soil Quality Recommendation No. 13.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to [c]onduct soil testing at all well pad locations and at the centralized water facility during reclamation activities. All results of this monitoring should be made available to the public within 60 days of sample collection and posted a publicly accessible website approved by the Battlement Mesa Community website. If (1) benzene, ethylbenzene, toluene, or xylenes are detected at levels greater than the concentration levels specified in Table 910-1 of</p>		<p>See discussion under Water and Soil Quality Recommendation Nos. 9, 10, 11 and 12 for COGCC rules applicable to monitoring, testing and remediation.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>the COGCC rules; (2) any cations, anions, metals, or total dissolved solids exceed 1.25 times background concentrations; (3) methane or any chemical identified as a concern from the full disclosure of chemicals exceeds 1.25 background concentrations; or (4) if pH or specific conductance exceeds the limits specified in COGCC table 910-1, the BOCC should require Antero to remediate as a condition of the special use permit. This type of monitoring is the best way to ensure pollution control measures are preventing exposures through contamination of soil.</p>	<p>COGCC Rule 1003 and 1004, Interim Reclamation and Final Reclamation of Well Sites and Associated Production Facilities, respectively</p>	<p>COGCC Rules 1003 and 1004 provide detailed rules for interim and final reclamation of sites used for oil and gas operations.</p>		
	<p>COGCC Rule 908, Centralized E&P Waste Management Facilities</p>	<p>COGCC Rule 908 provides detailed rules for sampling and monitoring of sites used for centralized E&P waste management facilities and for closure of the facilities.</p>		
<p>Water and Soil Quality Recommendation No. 15.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to:</p>	<p>COGCC Rule 1002.f.2.F, Site Preparation and Stabilization, Stormwater Management</p>	<p>COGCC Rule 1002.f.2.F seeks to control potential sediment discharges. Recommended practices include designing and maintaining roads and well pads to minimize rutting and tracking,</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>[d]evelop and implement plans to ensure removal of mud from vehicles leaving the well pads and access roads to prevent tracking of mud onto Battlement Mesa and Garfield County roads.</p>		<p>controlling site access, street sweeping or scraping, tracking pads, <u>wash racks</u>, education, or other <u>sediment controls</u>. While this COGCC regulation is focused on stormwater management, it has dust control applications as well.</p>		
	<p>WPCD SWCP Part I.C.3.c..6, Stormwater Management Plan, Best Management Practices for Stormwater Pollution Prevention, Vehicle Tracking Control</p>	<p>“The SWMP shall clearly describe and locate all practices implemented at the site to control potential sediment discharges from vehicle tracking. Practices must be implemented for all areas of potential vehicle tracking, and can include: minimizing site access; street sweeping or scraping; tracking pads; graveled parking areas; requiring that vehicles stay on paved areas on-site; wash racks; contractor education; and/or sediment control BMPs, etc.”</p>		
<p>Water and Soil Quality Recommendation No. 17.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to:</p> <p>[c]reate a berm for all down</p>	<p>COGCC 906.e, Spills and Releases, Spill/Release Prevention</p>	<p>COGCC 906.e.1 requires secondary containment around <u>certain tanks, but not for all down gradient well pad perimeters and surface water diversion ditches.</u></p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
gradient well pad perimeters and surface water diversion ditches to prevent pollution of water and soil.	COGCC Rule 603.e.12, Drilling and Well Servicing Operations and High Density Area Rules, Berm Construction	COGCC Rule 603.e.12 requires berms in high density areas around crude oil, condensate, and produced water storage tanks. There is <u>no mention, however, of berms located down gradient of well pads.</u>		
	COGCC Rule 604.a.4, Oil and Gas Facilities, Crude Oil and Condensate Tanks	COGCC Rule 604.a.4 requires berms to be constructed around crude oil, condensate, and produced water storage tanks. There is <u>no mention, however, of berms down gradient of well pads.</u>		
	WQCD SWCP Part I.C.3.c.4, Stormwater Management Plan, Best Management Practices for Stormwater Pollution Prevention, Materials Handling and Spill Prevention	As a part of the Materials Handling and Spill Prevention requirements, the Water Quality and Control Division suggests that chemicals be stored within berms or other secondary containment devices (as BMP) to prevent leaks and spills from contacting stormwater runoff. "Areas where potential spills can occur <u>must</u> have spill prevention and response procedures."		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	COGCC Rule 317B.d, Public Water System Protection, Requirements for DCPS Operations and New Oil and Gas Locations in the Intermediate Buffer Zone	COGCC Rule 317B.d.3 requires use of berms or other containment devices around crude oil, condensate and produced water storage tanks adjacent to public drinking water supply areas. Additionally, 317B.d.2 requires “flowback and stimulation fluids contained within tanks that are placed on a well pad or in an area with <u>downgradient perimeter berming.</u> ”		
<p>Water and Soil Quality Recommendation No. 18.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to: [c]onduct monthly inspection of water and gas pipeline for leaks to prevent water and soil pollution and that the results of the inspections be posted on the Garfield County Website.</p>	COGCC Rule 1101.e, Installation and Reclamation, Pressure Testing of Flowlines	COGCC Rule 1101.e.1 mandates testing of a flowline to its maximum anticipated operating pressure prior to operation. The regulations only require <u>initial testing and annual testing</u> for the first three years for pipeline. Plus pipelines below a pressure threshold are exempt under 1101.e.2.		
	COGCC Rule 1102.a, Operations, Maintenance, and Repairs, Maintenance	COGCC Rule 1102.a simply requires an operator to take <u>reasonable precautions</u> and correct any conditions that could affect the safe and proper operation of the pipeline.		
Water and Soil Quality	COGCC Rule 906.b,	COGCC 906.b establishes		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
<p>Recommendation No. 19.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to: [i]mmediately Report to GCOG (in addition to COGCC) any spill of one or more barrels. Notification should take place within 24 hours and keep records of spill quantities, clean-up activities and preventive measures taken to avoid future spills. Notification should be immediate if water sources are impacted.</p>	<p>Spills and Releases, Reportable Spills and Reporting Requirements for Spills/Releases</p>	<p>reporting requirements for spills/releases depending upon the amount released and/or resources that could be impacted. COGCC regulations require reporting only when a spill is more than <u>5 barrels</u>, as opposed to the CSPH recommendation of <u>1 barrel</u>. Furthermore, COGCC Rule 906.b does not require reporting within 24 hours if the spill is less than 20 barrels and does not threaten water, residence or occupied structure, livestock, or public byway.</p>		
	<p>COGCC Rule 602.b, Series Safety Regulations, General</p>	<p>COGCC 602.b requires any unsafe or potentially dangerous conditions be reported immediately to a supervisor, but not to the COGCC. Any accident involving injury to personnel or public or <u>significant</u> damage to equipment or the well site must be reported to the COGCC.</p>		
	<p>COGCC Rule 1002.f.2.B, Site Preparation and Stabilization, Stormwater Management,</p>	<p>COGCC Rule 1002.f.2.B requires entities to have Best Management Practices that include spill prevention procedures.</p>		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	Materials Handling and Spill Prevention Procedures and Practices			
	COGCC Rule 1002.f.2.E, Stormwater Management Plan, Best Management Practices for Stormwater Pollution Prevention, Spill Response Procedures	COGCC Rule 1002.f.2.E requires entities to have Best Management Practices that include spill response procedures that may or may not include the provisions that CSPH recommend.		
	COGCC Rule 1002.f.3, Stormwater Management Plan, Best Management Practices for Stormwater Pollution Prevention, Post-Construction Stormwater Program	COGCC Rule 1002.f.3 requires entities to have Post-Construction Stormwater Program that includes spill response procedures that reflect <u>good faith efforts by operators to select and implement BMPs intended to serve the purposes of this rule.</u> The Post-Construction Stormwater Program may or may not include the provisions that CSPH recommend.		
	WQCD SWCP Part I.C.3.c.2, Best Management	Non-Structural BMPs include spill response procedures and kits. The SWMP must clearly identify		

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
	Practices for Stormwater Pollution Prevention, Non-Structural Practices for Erosion and Sediment Control	spill response procedures to ensure proper implementation, operation, and maintenance. At the very least the SWMP should be notified and the 24-spill reporting line (CDPHE) contacted, immediately.		
<p>Water and Soil Quality Recommendation No. 20.</p> <p>Before approval of the special use permit, we recommend that the BOCC require Antero to: [c]over all drill cuttings when stored on well pads to prevent wind transport and soil pollution.</p>	COGCC Rule 907.a, Management of E&P Waste, General Requirements	COGCC Rule 907.a requires operators to ensure that E&P waste is properly stored to prevent threatened or actual significant adverse environmental impacts.	Section 7-301.B, Site Planning and Development Standards, Compatible Design	Section 7-301.B.1 states that dust, odors, gas, fumes and glare shall not be emitted at levels that are objectionable to adjacent property. The operations of activities on the site shall be managed to avoid nuisances to adjacent properties.
COGCC Rule 805.c, Odors and Dust, Fugitive Dust	COGCC Rule 805.c requires Antero to employ measures to <u>control fugitive dust</u> .			
COGCC Rule 1002.e.(1) and 1002.f.2.C, Site Preparation and Stabilization, Surface Disturbance Minimization and Stormwater Management, respectively	<p>COGCC Rule 1002.e.(1) requires that well sites shall be maintained to reasonably control dust and minimize erosion and degradation due to contamination.</p> <p>COGCC Rule 1002.f.2.C states that operators should employ <u>Best Management Practices to control sediment discharge</u>. While this COGCC regulation is focused on stormwater management, it can be applied to dirt and sediment</p>			

Water and Soil Quality Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Local Land Use Regulations (ULUR)	Comments
		control as well.		
	WQCD SWCP Part I.C.3c.1, Best Management Practices for Stormwater Pollution Prevention, Structural Practices for Erosion and Sediment Control	Under Part I.C.3.c.1, the SWMP must describe and locate all structural practices implemented at the site to minimize erosion and sediment transport, including straw bales, wattles/sediment control logs, silt fences, earth dikes, drainage traps, pipe slope drains, etc.		
<p>Water and Soil Quality Recommendation No. 21.</p> <p>We recommend that the BOCC [a]ssign a Garfield County inspector to monitor Antero's compliance with the special use permit and that the special use permit contain provisions for regulatory action if Antero is found to be in non-compliance of the special use permit.</p>		See Air Quality Recommendation No. 21 above.		See Air Quality Recommendation No. 21.

TRAFFIC AND TRANSPORTATION RECOMMENDATIONS

Traffic and Transportation Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
<p>Traffic and Transportation Recommendation No. 1.</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to [i]ninstall a fully functional water storage facility and pipeline network before any development of well pads in the Battlement Mesa.</p>		<p>See discussion at Air Quality Recommendation No. 5 above.</p>		
<p>Traffic and Transportation Recommendation No. 2.</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to [d]evelop industrial haul routes outside the PUD to remove natural gas development and production-associated traffic from residential roads prior to any well pad construction within the PUD. Industrial traffic should be diverted from Stone Quarry Road to industrial haul routes at locations where homes are</p>			<p>Section 7-814.B, Additional Standards Applicable to Mining and Extraction Uses, Routing</p>	<p>Section 7-814.B states as follows:</p> <p>Designation of construction and haul routes for a specific mining operation application shall comply with the following standards:</p> <p>1. <i>Avoidance of Developed Areas.</i> Truck haulage and traffic routes shall be designed to the maximum extent feasible to avoid residential areas, commercial areas, environmentally and visually sensitive areas, schools and other civic buildings, municipalities and already congested locations. Alternative routes shall be identified.</p>

Traffic and Transportation Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
backed along the road.				<p>2. <i>Timing of Hauling.</i> Timing of truck traffic may be controlled to prevent congestion or adverse noise impacts or safety risks.</p> <p>3. <i>Load Control.</i> Applicant shall prevent loss of loads and fugitive dust emissions during transit, and shall be responsible to ensure that haul routes are maintained in accordance with dust-suppressant methods required by applicable state or federal agency.</p>
			Section 7-307.A.11, Roadway Standards, General Road Design and Arrangement	Section 7- 307.A.11 requires that roads and access in commercial and industrial developments shall be designed to minimize conflict between vehicular and pedestrian traffic.
Traffic and Transportation Recommendation No. 4. If industrial haul routes outside the PUD are not			Section 7-307.A.2, Roadway Standards, General Road Design and Arrangement	Section 7-307.A.2 establishes 35 miles per hour as the minimum requirements for any roadways.

Traffic and Transportation Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
<p>constructed then we recommend the following conditions be met: [e]nforce truck speed limits to 20 mph within the PUD for all areas for all truck traffic associated with the project to reduce the severity of injury should an accident occur.</p>			<p>Section 7-108.C, Access and Roadways, Adequate Capacity</p>	<p>Section 7-108.C states that access serving the proposed use shall have the capacity to accept the additional traffic generated by the use safely and efficiently. The use shall not cause traffic congestion or unsafe traffic conditions.</p>
<p>Traffic and Transportation Recommendation No. 5.</p> <p>If industrial haul routes outside the PUD are not constructed then we recommend the following conditions be met: [m]ark pedestrian/bike high use routes and establish safe crossing zones where they intersect Battlement Mesa Parkway or other haul routes to alert drivers of potential pedestrians and bicyclers.</p>			<p>Section 7-307.A.6, Roadway Standards, General Road Design and Arrangement</p>	<p>Section 7-307.A.6 requires that the road system shall be designed to minimize road congestion and unsafe conditions.</p>
			<p>Section 7-307.A.11, Roadway Standards, General Road Design and Arrangement</p>	<p>Section 7-307.A.11 requires that roads and access in commercial and industrial developments shall be designed to minimize conflict between vehicular and pedestrian traffic.</p>
<p>Traffic and Transportation Recommendation No. 6.</p> <p>If industrial haul routes outside the PUD are not constructed then we</p>			<p>Section 7-307.A.14, Roadway Standards, General Road Design and Arrangement</p>	<p>Section 7-307.A.14 requires that traffic control devices, street signs, street lighting, striping and pedestrian crosswalks are to be provided in conformance with these Regulations, and criteria contained in the Manual Uniform Traffic</p>

Traffic and Transportation Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
<p>recommend the following conditions be met: [i] install safety measures (i.e., signaled cross walks, elevated sidewalks, green space buffers) for pedestrians/bikes where established walking/biking routes overlap/run along haul routes to prevent accidents.</p>				Control.
			Section 7-108B, Access and Roadways, Safe Access	Section 7-108.B states that access to and from the use shall be safe and in conformance with applicable county, state and federal access regulations.
			Section 7-307.A.11, Roadway Standards, General Road Design and Arrangement	Section 7- 307.A.11 requires that roads and access in commercial and industrial developments shall be designed to minimize conflict between vehicular and pedestrian traffic.

NOISE, VIBRATION AND LIGHT RECOMMENDATIONS

Noise, Vibration, and Light Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
<p>Noise, Vibration, and Light Recommendation No. 1</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [i]mprove sound mitigation to achieve noise levels below 55 db(A) in the day and 50 db(A) at night during all well development and production activities at the distance of 350 feet from the noise source on the well pad. Require Antero to monitor noise and to use best mitigation technology available to maintain these levels throughout the development period.</p>	<p>COGCC Rule 802.c, Noise Abatement</p>	<p>COGCC Rule 802.c establishes noise levels permitted in residential/agricultural/rural, commercial, light industrial, and industrial zones. The CSPH recommendation is identical to the COGCC requirement for residential/ agricultural/ rural zones, but <u>lower than allowable levels for commercial, light industrial, and industrial zones.</u> Additionally, the recommendation does not account for the 10db(A) increase allowed by the COGCC rule for 15 minutes every hour. Furthermore, COGCC 802 does not require Antero to monitor noise levels. Rather, pursuant to COGCC inspection or upon receiving a public complaint, the COGCC shall conduct an onsite investigation.</p>	<p>Section 7-301, Site Planning and Development Standards, Compatible Design</p>	<p>Section 7-301.B.2 states that noise as measured at the property boundary shall not exceed state noise standards and shall be buffered by landscaping or other screening devices.</p>
			<p>Section 7-810.E, Additional Standards Applicable to Industrial Use, Sound</p>	<p>Section 7 -810.E states that for industrial uses, the volume of sound generated shall comply with the standards set forth in the Colorado Revised Statutes.</p>

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	COGCC Rule 802.b, Noise Abatement	COGCC Rule 802.b. allows operations involving pipeline or gas facility installation or maintenance, the use of a drilling rig, completion rig, workover rig, or stimulation to <u>produce noise at the highest level</u> , i.e. 80db(A) during the day and 75db(A) at night, in <u>contradiction</u> of the HIA recommendations.	Section 7-815.B, Additional Standards Applicable to Pipelines, Noise Abatement	Any equipment used in construction or operation of a pipeline must comply with the Colorado Oil and Gas Conservation Commission Rules and Regulations, Section 802, Noise Abatement. 1. For any pipeline construction or operational facility that will have a substantial impact in adjacent areas, additional noise mitigation may be required. One or more of the following additional noise mitigation measures may be required: a. Acoustically insulated housing

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	Colo. Rev. Stat. 25-12-101, et. seq.	Colo. Rev. Stat. establishes statewide standards for noise level limits for various time periods and areas.		<p>or covers enclosing any motor or engine;</p> <p>b. Screening of the site or noise emitting equipment by fence or landscaping;</p> <p>c. A noise management plan specifying the hours of maximum noise and the type, frequency, and level of noise to be emitted; and</p> <p>d. Any other noise mitigation measures required by the COGCC.</p> <p>2. All power sources used in pipeline operations shall have electric motors or muffled internal combustion engines.</p>
<p>Noise, Vibration, and Light Recommendation No. 2</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to : [r]equire best available noise reduction technology for heavy equipment, including trucks and truck brakes, to reduce noise levels.</p>	<p>COGCC Rule 802.f, Noise Abatement, Quiet Design Mufflers</p> <p>COGCC Rule 802.a, Noise Abatement</p>	<p>COGCC Rule 802.f requires properly installed and maintained <u>quiet design mufflers</u> on any engines or motors at facilities within 400 ft of buildings. HIA recommendations are <u>more stringent</u> in that they require best available technology on all heavy equipment, not just engines at facilities within 400 feet of buildings.</p> <p>COGCC Rule 802.a states that the goal of the rule is to identify oil and gas related noise sources and implement “cost-effective and technically-feasible mitigation</p>	<p>Section 7-814.B, Additional Standards Applicable to Mining and Extraction Uses, Routing</p>	<p>Section 7-814.B states that timing of truck traffic may be controlled to prevent congestion or adverse noise impacts or safety risks.</p>

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		measures” to bring oil and gas facilities into compliance with allowable noise levels. Antero only needs to implement <u>“cost-effective and technically-feasible mitigation measures,”</u> not the best available noise reduction technology.		
<p>Noise, Vibration, and Light Recommendation No. 5</p> <p>As a condition of the special use permit, we recommend that the BOCC require Antero to: [d]evelop industrial haul routes to remove truck traffic from the PUD and away from the homes on Stone Quarry road.</p>			<p>Section 7-814.B, Additional Standards Applicable to Mining and Extraction Uses, Routing</p>	<p>Section 7-814.B states that timing of truck traffic may be controlled to prevent congestion or adverse noise impacts or safety risks.</p> <p>See also comments on Traffic and Transportation Recommendation No. 2 above.</p>
<p>Noise, Vibration, and Light Recommendation No. 6</p> <p>If industrial haul routes are not developed then: [r]educe speed limits for trucks within the PUD to 20 miles per hour to reduce noise and vibration levels.</p>			<p>Section 7-814.B, Additional Standards Applicable to Mining and Extraction Uses, Routing</p>	<p>Section 7-814.B states that timing of truck traffic may be controlled to prevent congestion or adverse noise impacts or safety risks.</p>
<p>Noise, Vibration, and Light Recommendation No. 7</p> <p>If industrial haul routes are not</p>			<p>Section 7-301.B.2, Site Planning and Development</p>	<p>Section 7-301.B.2 states that noise as measured at the property boundary shall not exceed state noise standards</p>

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<p>developed then: [c]onsider installation of traffic noise barriers near the St. John Elementary School and/or Grand Valley Middle School to reduce noise levels at schools if school staff indicates that there are noise impacts at the school.</p>			Standards, Compatible Design	and shall be buffered by landscaping or other screening devices.
<p>Noise, Vibration, and Light Recommendation No. 8</p> <p>If industrial haul routes are not developed then: [i]nstall permanent/semi-permanent noise mitigation structures (sound walls) along haul routes CR300 and other routes where trucks are anticipated to be passing throughout the development period to reduce noise levels.</p>			Section 7-301.B.2, Site Planning and Development Standards, Compatible Design	Section 7-301.B.2 states that noise as measured at the property boundary shall not exceed state noise standards and shall be buffered by landscaping or other screening devices.
			Section 7-814.B, Additional Standards Applicable to Mining and Extraction Uses, Routing	Section 7-814.B states that timing of truck traffic may be controlled to prevent congestion or adverse noise impacts or safety risks.

ECONOMIC AND EMPLOYMENT RECOMMENDATIONS

Economic and Employment Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
<p>Economic and Employment Recommendation No. 1</p> <p>We recommend that before the project starts, the BOCC require Antero to: [r]equire that Antero develop a reasonable and specific timeline for all activities associated with development and maintenance of the wells. Require that Antero communicate changes to the plans at the earliest possible time before any changes in the plans occur. This would address some concerns in the real estate market. If sellers and buyers can confidently anticipate the steps and timing of the well development process, the real estate market may react less unfavorably to the project.</p>	<p>COGCC Rule 216, Comprehensive Drilling Plan</p>	<p>COGCC Rule 216 allows an operator to submit a <u>Comprehensive Drilling Plan</u> to identify foreseeable oil and gas activities. It is intended to cover multiple oil and gas locations within a geologic basin. These plans are intended to provide detailed information about the future activities in the area, including <u>plans for management of exploration and production waste and proposed best management practices or mitigation</u> to minimize adverse impacts to resources. They are, however, <u>voluntary</u> and do not necessarily have to include the requested information.</p>		

ACCIDENTS AND MALFUNCTIONS

Accidents and Malfunctions Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
<p>Accidents and Malfunctions Recommendation No. 1.</p> <p>We recommend that as a condition of the special use permit the BOCC require Antero to [w]ork with emergency responders in Battlement Mesa (e.g., the sheriff and fire departments) and Battlement Mesa residents to establish a comprehensive emergency response plan that includes notification and communication systems, evacuation routes, plans for evacuating schools, the assisted living facility, and capacity of local emergency responders hospitals, and sheltering in place, accurate maps of pipelines, shut-off valves, and well pads, as well as identifying air intakes at the schools, assisted living facility, and recreation center prior to any activity in the PUD. We recommend that the copies of the emergency response plan be kept at the sheriff department, fire department, all responding hospitals, and on a Garfield County website and/or a publicly accessible website approved by the Battlement Mesa Community.</p>	<p>COGCC Rule 210, Signs and Markers</p>	<p>These COGCC regulations assist emergency response teams by either clarifying the location of wells and surface facilities, providing easier access, or providing information regarding the wells and associated structures to emergency responders. Moreover, under reporting requirements and the comprehensive drilling plans, the COGCC can require Antero to provide detailed maps and schematics. These regulations, however, do not envision the development of a comprehensive emergency response plan.</p>	<p>Section 7-307.A, Roadway Standards, General Road Design and Arrangement</p>	<p>Section 7-307.A states that roads shall be designed so as to provide emergency access and egress for residents, occupants and emergency equipment. Emergency access shall comply with provisions of the International Fire Code and requirements of applicable emergency services such as fire protection, ambulance and law enforcement.</p>
	<p>COGCC Rule 603.e.14, Access Roads</p>		<p>Section 7-814.D, Additional Standards Applicable to Mining and Extraction Uses, Emergency Preparedness</p>	<p>Section 7-814.D requires the site operator to prepare an emergency preparedness plan and have it on site and provided to the appropriate emergency providers for the</p>
	<p>COGCC Rule 603.i.9,10, Statewide well control equipment and other safety requirements</p>			

Accidents and Malfunctions Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments
	COGCC Rule 604.c.4, Special Equipment COGCC Rule 205, Access to Records COGCC Rule 206, Reports COGCC Rule 216, Comprehensive Drilling Plans COGCC Rule 1102.c.,d, e, Operations, Maintenance, and Repair, Marking, One Call Participation, Emergency Response, respectively			site.
Accidents and Malfunctions Recommendation No. 3. We recommend that as a condition of the special use permit the BOCC require Antero to [a]nnually disclose all chemicals used on its well pads within the PUD and include a list of these chemicals in the emergency response plan.		See Air Quality Recommendation No. 2 above.		

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<p>Accidents and Malfunctions Recommendation No. 4.</p> <p>We recommend that as a condition of the special use permit the BOCC require Antero to [n]otify the sheriff and fire department one week prior to well drilling, hydraulic fracturing, flow back, and pipeline pigging activities.</p>	COGCC Rule 305, Notice, Comment, Approval	COGCC Rule 305 provides numerous forums and methods through which the public and certain interested stakeholders are informed of oil and gas operations. COGCC Rule 305.b.requires posting an application for Form 2A, surface disturbance, on the COGCC's website; Rule 305.c. provides for public comment; Rule 305.e. provides for landowner notice of the application; and Rule 305.e.(4) requires notice to the surface owner in advance of well operations with heavy equipment.		
	COGCC Rule 306, Consultation	COGCC Rule 306 provides avenues through which certain government agencies, including the local government designee may obtain information and weigh in on oil and gas operations. Specifically, COGCC Rule 306.a requires consultation with surface owner in locating well sites and related facilities; Rule 306.b. requires consultation with the local		

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		government designee in connection with a Form 2 (APD) or 2A (surface disturbance) in advance of commencing operations with heavy equipment; and Rule 306.d requires consultation with CDPHE upon request of local government designee or when operator seeks a variance from designated rules in connection with a Form 2A (surface disturbance) application.		
<p>Accidents and Malfunctions Recommendation No. 8.</p> <p>We recommend that as a condition of the special use permit the BOCC require Antero to [i]nstitute mechanism for reporting safety concerns, near-misses, and minor incidents to the appropriate designated county agency or department to reduce accidents and malfunctions. Reports of these concerns and incidents should also be made to the Community Advisory Board, along with plans for preventive and corrective actions.</p>	COGCC Rule 301, Records, Reports, Notices— General	COGCC Rule 301 requires the operator to give immediate notice to the Director when public health or safety is in jeopardy.		
	COGCC Rule 602, Series Safety Regulations— General	COGCC Rule 602.b requires that unsafe and potentially dangerous conditions, as defined by these rules, should be reported immediately by employees to the supervisor in charge and shall be remedied as soon as practical.		

Accidents and Malfunctions Recommendations	Addressed by Regulation or Statute (e.g. COGCC Rule 602)	Comments	Addressed by Standards in Land Use Regulations (ULUR)	Comments		
	COGCC Rule 337, COGCC Form 19. Spill/Release Report	COGCC rules require reporting of all spills and releases of E&P waste exceeding five (5) barrels shall be reported on a Spill/Release Report, Form 19. Form 19 shall be filed with the Director pursuant to more detailed reporting requirements in Rule 906. COGCC rules do not require reporting of near-misses and spills less than five barrels. COGCC does not require reporting of this information to entities other than COGCC.				
	COGCC Rule 906, Spills and Releases					
<p>Accidents and Malfunctions Recommendation No. 9.</p> <p>We recommend that as a condition of the special use permit the BOCC require Antero to [d]evelop an ongoing fire prevention program in coordination with the local fire department's community fire prevention program. This program should include routine inspection and implementation of wildfire mitigation plans (for example, all areas surrounding well pads are kept clear of vegetation that could contribute to spreading).</p>	COGCC Rule 603.e.8, Drilling and Well Servicing Operations and Highway Density Area Rules, Control of Fire Hazards	These COGCC regulations constitute a fire prevention program, although they do not require working in coordination with the local fire department.	Section 7-209.B, Areas Subject to Wildfire Hazards, Development Does Not Increase Potential Hazard	For land use changes within an Area Subject to Wildfire Hazards, Section 7-209.B requires that the proposed land use change shall be developed in a manner that does not increase the potential intensity or duration of a wildfire, or adversely affect wildfire behavior or fuel composition.		
	COGCC Rule 606A, Fire Prevention and Protection					
	COGCC Rule 606B.d and f, Air and Gas Drilling: Prohibition of					

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	Smoking or Combustible Materials Near Air and Gas Discharge Lines			
<p>Accidents and Malfunctions Recommendation No. 10.</p> <p>We recommend that Garfield County clearly mark primary and secondary evacuation routes from Battlement Mesa.</p>			Section 7-209.E, Areas Subject to Wildfire Hazards, Safety Areas in Residential Development	For land use changes within an Area Subject to Wildfire Hazards, Section 7-209.E, areas designated by the applicable fire protection district as temporary public evacuation areas during fires shall be indicated by permanent signs along roads in the development area. These areas shall also be designated on the final plat, or on the final development plan for land use change subject to Major Impact review.
Accidents and Malfunctions Recommendation No. 13.			Section 7-815.A, Additional Standards	Right-of-way and any associated facilities shall be

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<p>We recommend that Garfield County [r]equire all gas pipelines to follow established truck haul routes and allow no gas pipelines through the center of the PUD.</p>			<p>Applicable to Pipelines, Located Along Perimeters</p>	<p>located along the perimeters of surface property ownerships and not within areas of agricultural crop production as a general guide. Non-perimeter locations will be acceptable if the surface owner agrees and there is no adverse impact on adjacent properties.</p>
<p>Accidents and Malfunctions Recommendation No. 14.</p> <p>We recommend that Garfield County [a]ssign a county inspector to oversee and inspect all pipeline construction and maintenance in the PUD.</p>	<p>COGCC Rule 204, General Functions of Director</p> <p>COGCC Rules 1101 & 1102, Installation and Reclamation & Operations, Maintenance, and Repair, respectively</p>	<p>COGCC Rule 204 is a general provision that allows the Director or any authorized deputy to go upon and inspect any oil and gas property to ascertain if the COGCC provisions are being observed. This presumably would include all pipeline construction and maintenance, which is covered by COGCC Rules 1101 and 1102.</p>		