



## Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

<b>Permittee:</b>		<b>Inventory No.:</b>	
<b>Reviewer:</b>		<b>LTF:</b>	
<b>Today's Date</b>		<b>Checked By</b>	

### Checklist Instructions

This checklist is provided as a guideline for ADEQ staff in performing technical substantive reviews and to the applicant on what information ADEQ will need to review Aquifer Protection Permit applications. This checklist is designed to be easy to read and follow. It is intended to address the majority of applications submitted to ADEQ, but not every possible variation or situation. Please visit the [www.azdeq.gov](http://www.azdeq.gov) to find program specific information including applications, rules, statutes, BADCT manuals, and other guidance information. This checklist does not supplant or supersede statutory or rule requirements and is not intended to be binding on the applicant or ADEQ staff.

If you have any questions or need assistance, please call ADEQ Groundwater Protection staff at 602 771-4999.

### List of Documents Reviewed

List of documents reviewed:

### Amendment Description

Amendment Description (e.g. new/modified discharging facilities, new/modified permit conditions):



## Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

Technical Requirements for all (Mining and Industrial New and Significant amendments)	
Yes/No/NA	Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply
	<p>A202(A)(1) - Topographic map or other appropriate map of the facility location and contiguous land area, showing the following:</p> <ul style="list-style-type: none"> <li>• Known use of adjacent properties;</li> <li>• All known water well locations found within one-half mile of the facility; and</li> <li>• A description of well construction details and well uses, if available</li> </ul>
comment	
	<p>A202(A)(2) - A facility site plan showing all property lines, structures, water wells, injection wells, dry wells and their uses, topography and the location of points of discharge (lat./long), all known borings (for numerous borings, a narrative description of the number and location of the borings is acceptable)</p>
comment	
	<p>A202(A)(3) - The facility design plans including proposed or as-built design details and proposed or as-built configuration of basins, ponds, waste storage areas, drainage diversion features, or other engineered elements of the facility affecting discharge. When formal as-built plan submittals are not available, the applicant shall provide documentation sufficient to allow evaluation of those elements of the facility affecting discharge, following the demonstration requirements of A.R.S. § 49-243(B).</p>
comment	
	<p>A202(A)(4)(a) - A summary of the known past discharge activities and the proposed facility discharge activities indicating the chemical, biological, and physical characteristics of the discharge;</p>
comment	
	<p>A202(A)(4)(b) - A summary of the known past discharge activities and the proposed facility discharge activities indicating the rate, volume, and frequency of the discharge for each facility;</p>
comment	
	<p>A202(A)(4)(c) - A summary of the known past discharge activities and the proposed facility discharge activities indicating the location of the discharge and a map outlining the pollutant management area described in A.R.S. §49-244(1)</p>
comment	
	<p>A202(A)(7) - Contingency Plan meeting requirements of R18-9-A204(A)(1) thru (5) and -A204(D)(1) thru (5). A contingency plan required by the Federal Water Pollution Control Act or the Resource Conservation and Recovery Act may be amended to meet the requirements of this section (-A204(E)).            Note: Some of this information may have been covered in the BADCT section.            An individual permit shall specify a contingency plan that defines the actions to be taken if a discharge results in any of the following:</p> <ol style="list-style-type: none"> <li>1. A violation of an Aquifer Water Quality Standard or an AQL,</li> <li>2. A violation of a discharge limitation,</li> <li>3. A violation of any other permit condition,</li> <li>4. An alert level is exceeded, or</li> <li>5. An imminent and substantial endangerment to the public health or the environment.</li> </ol> <p>A contingency plan shall contain emergency response provisions to address an imminent and substantial endangerment to public health or the environment including:</p> <ol style="list-style-type: none"> <li>1. Twenty-four hour emergency response measures;</li> <li>2. The name of an emergency response coordinator responsible for implementing the contingency plan;</li> <li>3. Immediate notification to the Department regarding any emergency response measure taken;</li> <li>4. A list of people to contact, including names, addresses, and telephone numbers if an imminent and substantial endangerment to public health or the environment arises; and</li> <li>5. A general description of the procedures, personnel, and equipment proposed to mitigate unauthorized discharges.</li> </ol>
comment	



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Technical Requirements for all (Mining and Industrial New and Significant amendments)	
Yes/No/NA	Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply
	A202(A)(8)(b) - Identify any potential foundation soil properties which could cause unstable conditions. For example: fissures, subsidence, collapsible soils, and excessive slopes. Is the location in a seismic impact zone where ground acceleration could cause damage to structures?
comment	
	A202(A)(9) - Detailed proposal indicating alert levels, discharge limitations, monitoring requirements (discharge, groundwater and operational monitoring), compliance schedules, and temporary cessation or plans the applicant will use to satisfy the requirements of the APP rules and statutes . Examples: leak collection removal system (LCRS), freeboard, effluent quality, inspection of liners/structures, etc.
comment	
	A202(A)(11) - Any other relevant information required to evaluate the design of each discharging facility.
comment	

Technical Capability for all (Mining and Industrial New and Significant amendments)	
Yes/No/NA	Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply
	A202(B) - Demonstrate the ability to maintain technical capability to carry out the terms of the APP. The following information shall be submitted for each person principally responsible for designing, constructing or operating the facility:
	A202(B)(1) - Relevant licenses or certifications <sup>1</sup> <ul style="list-style-type: none"> <li>• Engineer (BTR for status <a href="http://www.btr.state.az.us">http://www.btr.state.az.us</a>)</li> <li>• Construction Contractor (Refer to the Registrar of Contractors website)</li> </ul>
Comment	
	Professional training relevant to design, construct, or operate facility
comment	
	Work experience relevant to the design construction, or operation of the facility
comment	

Closure and Post-closure Plan/Strategy and Cost Estimates (Mining and Industrial)	
Yes/No/NA	Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply
	A202(A)(10) Closure & Post-Closure Plan or Strategy and A201(B)(5) Closure and Post-Closure Cost Estimates should be evaluated using the checklist: Closure and Post-Closure Plan/Strategy and Cost Estimate Checklist, which is available on the ADEQ website at: <a href="http://www.azdeq.gov/node/542">http://www.azdeq.gov/node/542</a>
comment	

<sup>1</sup> Engineering practice (A.R.S. 32-101.A.17) means any professional service or creative work requiring engineering education... A person employed on a full-time basis as an engineer by an employer engaged in the business of developing, mining and treating ores and other minerals shall not be deemed to be practicing engineering for the purposes of this chapter if the person engages in the practice of engineering exclusively for and as an employee of such employer and does not represent that the person is available and is not represented as being available to perform any engineering services for persons other than the person's employer.



## Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

### BADCT Review and Facility List (Mining and Industrial)

Y: yes, meets the requirement;    color: red;">N: no, does not meet the requirement (see comment below);    NA: does not apply

List each facility in the table below and indicate whether it is "new" or "existing" (A.R.S. 49-201).  
**If this is an amendment, only list the facilities for which the permit is being amended.**

For mining facilities, indicate whether the applicant wishes to demonstrate prescriptive or individual BADCT (see Arizona Mining BADCT Guidance Manual at <http://static.azdeq.gov/wqd/badctmanual.pdf>, Section 1.1 for an explanation of "prescriptive" and "individual").

For industrial facilities, indicate that the applicant must demonstrate individual BADCT (there is no guidance document with prescriptive BADCT and there is no presumptive BADCT rule).

Use the BADCT review attachments to this checklist to review the BADCT description for each of the facilities listed below.

- Mining facilities: use either Attachment A: Mining Facility **Prescriptive** BADCT Review or Attachment B: Mining or Industrial **Individual** BADCT Review
- Industrial facilities: use Attachment B: Mining or Industrial Individual BADCT Review

Facility Name	New or Existing	Prescriptive or Individual BADCT Proposed

Y: yes, meets the requirement;    color: red;">N: no, does not meet the requirement (see comment below);    NA: does not apply

	<p>A202(A)(5)(a) - A description of the BADCT employed by the facility including a statement of the technology, processes operating methods, or other alternatives proposed to meet the requirements of A.R.S. § 49-243(B), (G), or (P)<sup>2</sup>, as applicable. The statement shall describe:</p> <ul style="list-style-type: none"> <li>(i) The alternative discharge control measures considered,</li> <li>(ii) The technical and economic advantages and disadvantages of each alternative, and</li> <li>(iii) The justification for selection or rejection of each alternative.</li> </ul> <p>NOTE: If the facility meets prescriptive BADCT (Mining), there is no need to evaluate alternative designs and no need to complete AAC R18-9-A202.A.5.a(i)-(iii), b, c, and d, however, the description of BADCT still needs to be provided.</p>
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comment	
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<sup>2</sup> Area-wide BADCT evaluations pursuant to A.R.S. §49-243(P) aren't thoroughly covered in this checklist because they may be complex and are best addressed in discussions between ADEQ and the applicant prior to submittal of an application. Please contact ADEQ staff for assistance.



# Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

**Attachment A: Mining Facility *Prescriptive* BADCT Review (Complete for each facility demonstrating Prescriptive BADCT)**

Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply

Review application BADCT description to evaluate whether prescriptive BADCT is achieved based on meeting prescriptive criteria for the facility as specified in Part 2 of the Arizona Mining BADCT Guidance Manual (BADCT Manual). Prescriptive BADCT is given in the BADCT Manual for the following:

- Non-Stormwater Ponds (Section/Table 2-2),
- Process Solution Ponds (Section/Table 2-3),
- Heap Leach Pads (Section/Table 2-4),
- Tailings Impoundment (Section/Table 2-5).

Complete the following table for each facility to determine the adequacy of each aspect of prescriptive BADCT. Duplicate this table as needed for each facility under review and use the specific section of the BADCT Manual dealing with the particular type of facility.

Facility Name	
New or Existing	

<b>BADCT Manual Section</b>	Yes/No
<b>Siting Criteria (2.[2,3,4.or 5].1)</b>	
Site Characterization	
Surface Water Control	
Geologic Hazards	
<b>Design Construction and Operation Criteria (2.[2, 3, 4, or 5].2)</b>	
Solution Characterization (Appendix B)	
Capacity and Storage Design	
Site Preparation	
Liner Specifications	
LCRS Design (Process Ponds)	
Perimeter Containment (Heap Leach)	
Stability Design (Static and Seismic)	
<b>Facility Inspection Criteria (2.[2, 3, 4, or 5].3)</b>	

Yes/No/NA Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply

	A202(A)(3) or (5) - Review application to determine whether applicable sections are addressed from the Arizona Mining BADCT Guidance Manual Appendices including: <ul style="list-style-type: none"> <li>B (Solution, Ore and Waste Characterization)</li> <li>C (Liner Design Principles and Practices)</li> <li>D (Construction Quality Assurance and Quality Control), and</li> <li>E (Engineering Design Guidance)</li> </ul>
comment	



# Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

**Attachment B: Mining or Industrial Facility *Individual* BADCT Review (Complete for each facility demonstrating Individual BADCT)**

Y: yes, meets the requirement; N: no, does not meet the requirement (see comment below); NA: does not apply

For each New Facility for which individual BADCT is proposed, the applicant shall address the requirements of A.A.C. R18-9-A202(A)(5)(a) through (c). The BADCT Manual provides an acceptable approach which includes development of a Reference Design with Discharge Control Technologies (DCTs), and an evaluation of the aquifer loading potential for the Reference Design and alternative designs (see BADCT Manual Section 1.1.3) ).

For each Existing Facility for which individual BADCT is proposed, the application shall address the requirements of A.A.C. R18-9-A202(A)(5)(a), (b) and (d). The BADCT Manual provides an acceptable approach which includes an evaluation of the DCTs currently in use at the existing facility (Reference Design) and evaluation of whether additional DCTs (alternative designs) should be implemented to reduce aquifer loading potential compared to existing conditions (see BADCT Manual Section 1.1.4).

Discharge Control Technologies (DCTs) are described in the BADCT Manual for the following:

- Heap Leach Pads (Section 3.2)
- Dump Leach Facilities(Section 3.3)
- In-Situ Leaching Facilities (Section 3.4)
- Tailings Impoundment (Section 3.5)
- Surface Ponds (Section 3.6)

Facility Name	
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New or Existing	
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BADCT Manual Section	Yes/No
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<b>Solution/Waste/Ore Characterization (3.[2, 3, 5, or 6].2)</b>	
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<b>Types of In-Situ Leaching Operations (3.4.2) (Because this section is designated as 3.4.2, the numbering for all subsequent sections for In-Situ Leaching is different than for other types of facilities)</b>	
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<b>Siting Considerations (3.[2, 3, 5, or 6].3)</b>	
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Climate and Surface Hydrology	
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Subsurface Conditions	
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Geologic Hazards: landslides, subsidence and settlement, earthquake-induced ground failure, collapsing soils	
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<b>Design Construction and Operation Criteria (3.[_]4)</b>	
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Site Preparation	
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Surface Water Control	
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Discharge Control (natural containment and liners, leachate collection and removal system (LCRS)/hydrostatic head control, solution control and storage capacity, base/precious metals/uranium specific tailings DCTs (3.5.4.3), in-situ leach specific discharge controls (3.4.5.3))	
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Stability Design	
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Operational Measures	
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Operational Monitoring	
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<b>Yes/No/NA</b>	<span style="color: blue;">Y: yes, meets the requirement;</span> <span style="color: red;">N: no, does not meet the requirement (see comment below);</span> NA: does not apply
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	A202(A)(5)(a) (i) – (iii) - A description of the BADCT employed by the facility including a statement of the technology, processes operating methods, or other alternatives proposed to meet the requirements of A.R.S. 49-243(B), (G),or (P), as applicable . The statement shall describe: (i) The alternative discharge control measures considered, (ii) The technical and economic advantages and disadvantages of each alternative, and (iii) The justification for selection or rejection of each alternative.
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comment	
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## Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

**Attachment B: Mining or Industrial Facility *Individual* BADCT Review (Complete for each facility demonstrating Individual BADCT)**

Y: yes, meets the requirement;    color: red;">N: no, does not meet the requirement (see comment below);    NA: does not apply

	A202(A)(5)(b) - An evaluation of each alternative discharge control technology relative to the amount of discharge reduction achievable, site specific hydrology/geology, other environmental impacts and water conservation.
comment	
	A202(A)(5)(c) - For a new facility, an industry-wide evaluation of the economic impact of implementation of each alternative discharge control technology.
comment	
	<p>A202(A)(5)(d) - For an existing facility, a statement reflecting the consideration of factors listed in ARS 49-243(B)(1)(a) through (h).</p> <p>(a) Toxicity, concentrations and quantities of discharge likely to reach an aquifer from various types of control technologies.</p> <p>(b) The total costs of the application of the technology in relation to the discharge reduction to be achieved from such application.</p> <p>(c) The age of equipment and facilities involved.</p> <p>(d) The industrial and control process employed.</p> <p>(e) The engineering aspects of the application of various types of control techniques.</p> <p>(f) Process changes.</p> <p>(g) Non-water quality environmental impacts.</p> <p>(h) The extent to which water available for beneficial uses will be conserved by a particular type of control technology.</p>
comment	
	<p>A202(A)(3) or (5) - Review application to determine whether applicable sections are addressed from the BADCT Guidance Manual Appendices including:</p> <ul style="list-style-type: none"> <li>• B (Solution, Ore and Waste Characterization)</li> <li>• C (Liner Design Principles and Practices)</li> <li>• D (Construction Quality Assurance and Quality Control), and</li> <li>• E (Engineering Design Guidance)</li> </ul>
comment	





## Mining and Industrial Aquifer Protection Permit Engineering Substantive Checklist

### Useful References (with links if available)

List of documents review:

- Arizona Mining BADCT Guidance Manual at <http://static.azdeq.gov/wqd/badctmanual.pdf>
- Closure and Post-Closure Plan/Strategy and Cost Estimate Checklist

### Statutes and Rules

Statutes:

- [Point of Compliance and Pollutant Management Area](#)

Rules:

- Aquifer Water Quality Standards
- Aquifer Protection Permit rules (R18-9)
- Exemptions A.R.S. 49-250
- Class exemptions (A.A.C. R18-9-103) and facilities to which APP doesn't apply (A.A.C. R18-9-102)