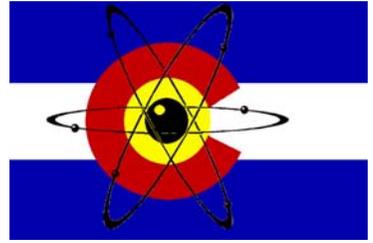


# **CO-RADS MEMORANDUM**



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## **Submittal Guidelines:**

- **Preliminary Engineering Report, or**
- **Request for Extension of an Enforcement Order Compliance Schedule**

**Developed for Systems Under an Enforcement Order for Radionuclide Violations**

**September 2009**

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## **Overview**

The Water Quality Control Division (WQCD) has developed this memorandum to provide guidance to water systems that have an enforcement order for a radionuclide violation and a pending deadline for submittal of a Preliminary Engineering Report (PER). The following information will outline WQCD's expectations regarding the content of the PER.

The compliance schedule that was applied to most CO-RADS systems establishes the PER deadline as October 31, 2009. WQCD understands that some water systems will not be in a position to submit a complete PER by this deadline. However, in order to begin providing more individualized assistance, it is important for WQCD to have a detailed, up-to-date understanding of the activities completed to date and plan forward for each system. Therefore, WQCD will maintain the October 31, 2009 deadline. For systems that justifiably cannot complete a PER in this timeframe, a Request for Extension of an Enforcement Order Compliance Schedule will need to be submitted prior to this deadline. Additional details on these requests are provided later in this document.

If a water system has already submitted a PER or request for extension, then that system should continue to follow through with any remaining requirements of the enforcement order and/or any resulting directives from WQCD provided in response to the submission. Water systems that are participating in CO-RADS that do not have an enforcement order are encouraged to continue participating in the project. If waste handling issues exist, WQCD will continue to work with the system and appropriate waste handling agencies to help facilitate resolution.

## **Expected Content of the Preliminary Engineering Report**

WQCD expects a PER for radionuclide compliance to be similar in structure and detail to a typical PER. However, since CO-RADS systems face unique issues, WQCD also expects these PERs to address any of these applicable issues to the greatest extent possible. The following section outlines both general expectations that would apply to most PERs for radionuclide compliance, as well as specific considerations for issues of concern.

As each system and its engineer/consultant evaluates various compliance options and begins to compile a PER, there are likely to be a number of questions or concerns that arise. WQCD staff is available to offer guidance or clarification to any system in need. However, there are some issues that may not be straightforward to address; therefore, it will be beneficial to systems, engineers/consultants, and the department to work in partnership to identify reasonable approaches. Throughout the development of a PER, as well as subsequent submittals, systems and their engineer/consultant are invited to contact WQCD to discuss any questions or concerns. These issues can be directed towards the CO-RADS project manager.

One of the major goals of a PER is to provide a quantitative analysis and comparison of the various options available to resolve a system's given issues. For systems that were involved in Phases 2 and 3 of this project, the CO-RADS Report for that system will satisfy the PER requirements. However, this will only be accepted if the system is truly committed to the option identified in the CO-RADS report. It is anticipated that a number of systems will seek alternative compliance options, or at least seek measures to reduce the cost of the option in the CO-RADS report. In this case, systems are welcome to use the CO-RADS report as a foundation and any additional information, such as revisions to the alternatives analysis and selected option, can be provided in the form of an addendum to the report. A checklist is provided as Attachment 1 so that systems and their engineer/consultant can ensure that the most critical components of the PER are addressed either in the CO-RADS report with supplemental

addendum, or through a separate PER. Please be aware that these components are considered critical only for the purposes of evaluating a system's status in regards to its enforcement order as well as for identifying training and assistance needs through CO-RADS. Systems considering application for funding through the Drinking Water Revolving Fund, USDA Rural Development, or other funding agency should also consider the criteria and PER content requirements of those programs as well.

Please note that all engineering documents, including a PER, that are prepared for a community water system are required to be developed by a professional engineer licensed in the State of Colorado.

### General Expectations of a PER for Radionuclide Compliance

#### 1. Level of Detail

WQCD does not have an established standard for the level of detail required in a PER. The level of detail described in the CO-RADS Reports is approximately 15 % complete and includes a Class 4 cost estimate ranging from -20 % to +30 % using the Association for Advancement of Cost Engineering benchmarks. Since a PER may be used to support a loan request, systems may wish to have a PER developed to a greater level of definition. In general, PERs are expected to be at a sufficient level of detail so that there is a clear description of a selected compliance option and suitable demonstration of feasibility. Based upon the complexity of the issues, this needed level of detail will vary between systems. In all cases, the PER should attempt to identify the level of detail provided in the evaluation.

#### 2. Planning Conditions

As with any PER, there is certain background information that is needed to understand the context of the project and certain parameters that will affect the overall design or layout. For systems with a CO-RADS report, much of this information was already developed and can be modified or referenced after the information has been verified by the system and their engineer/consultant. The items that should be addressed in this section include, but are not limited to, the following:

- a. Identification of the planning period, typically 20 years
- b. Site location
- c. Current infrastructure
- d. Water rights and availability
- e. Water quality data\*
- f. Growth projections
- g. Current and future user demands
- h. Other considerations, e.g. fire flow, distribution storage, reliability, etc.

\*Water quality data requirements may vary based on selected option, however, sufficient data should be available so that treatment technologies can be accurately evaluated in an alternatives analysis, and therefore, at a minimum, the water quality data should generally include radionuclides, metals and other inorganic constituents, pH, alkalinity, and total organic carbon.

#### 3. Other Compliance Issues or Infrastructure Needs

The PER should include an evaluation of the system's current status in regards to other drinking water requirements, waste handling practices, and condition of current infrastructure to identify any other project needs. Systems will not be expected to implement improvements for infrastructure needs beyond those required for radionuclide compliance; however, by documenting all needs, systems may be

able to generate support for meeting more of the overall infrastructure needs instead of those merely for radionuclide compliance.

Systems with an iron removal process will likely be impacted by the waste handling issues associated with radium accumulation in the process residuals; this issue is addressed in greater detail further in this document.

#### 4. Alternatives Analysis

The alternatives analysis, which quantitatively compares all of the options available to a system, is one of the most important aspects of a PER since this will be the basis for selecting a compliance option to proceed with. The alternatives analysis should contain a listing of all possible compliance options for a system, including, but not limited to:

- new sources
- blending of sources to meet MCL's
- consolidation with a compliant system
- various treatment and waste handling combinations
  - ion exchange
  - reverse osmosis
  - hydrous manganese oxide
  - other
- waste handling options
  - discharges to wastewater treatment facility
  - lined evaporation basin
  - discharge to surface water
  - disposal of solid materials

Due to site-specific limitations with land availability, existing infrastructure, or other aspects, certain options will be deemed infeasible early in the analysis for a given system, and can be eliminated from further consideration. The rationale for elimination of any such options should be provided in the PER. Preliminary unit sizing and cost estimates should be developed for each of the remaining options. Then each option should be ranked against cost, operability, and other criteria important to the system. This ranking approach is generally the process used to identify the selected option.

For systems with a CO-RADS report, there was an alternatives analysis already performed, however, at a minimum, the systems and their engineer/consultant should review this analysis to determine if there are other considerations available to the system such as:

- Alternative disposal methods such as discharge to wastewater treatment facility or surface water
- Alternative evaporation basin liner material
- Reduced evaporation basin volume if wastewater is settleable/recyclable, such as with HMO
- Side stream blending with ion exchange effluent
- Modular design to accommodate growth but allow for deferral of capital expenditure
- Alternative treatment such as hydrous manganese oxide for co-removal of iron and radium, or reverse osmosis, especially if alternative discharge is available
- Availability of non-treatment options such as new sources or consolidation
- Regional solutions

It is important that the alternatives analysis is complete and thorough for all systems, including systems that will require an extended long-term compliance schedule.

## 5. Identify Selected Option

The PER should clearly identify the best path forward for the system. These pathways may vary from consolidation with a compliant system to complex regional treatment and waste handling strategies. Regardless of the pathway, it is important that there is confidence in the project feasibility, understanding of the financial and operational impacts, and awareness of potential obstacles. In order to convey this information, the PER will need to document the following:

- a. Description of selected option
- b. Capital and O & M costs
- c. Estimated user rate impacts
- d. Design and construction schedule
- e. Demonstration of regulatory and technical feasibility
  - Process design criteria and unit sizing
  - Support material: pilot studies, water quality modeling, research articles, etc.
  - Preliminary Residuals Management Plan, if applicable

In order to demonstrate regulatory and technical feasibility, systems and their engineer/consultant will need to evaluate the feasibility of the selected option with regard to:

- Complying with drinking water regulations
- Conforming with applicable worker safety and waste handling requirements

The demonstration of feasibility in regards to drinking water regulations can be achieved by establishing the ability of an option to reliably and consistently produce water that meets or exceeds all drinking water standards. This can be done through actual pilot studies, previous research results, or water quality modeling.

Systems that have existing waste handling issues and/or anticipate generating wastes as part of a compliance strategy should include a preliminary Residuals Management Plan in the PER to demonstrate the feasibility of the waste handling processes. This demonstration will be similar to that for drinking water compliance – identification of regulatory requirements and establishing the technical feasibility to meet such requirements – but will likely be more challenging because of the potential for multiple regulatory programs to have jurisdiction. Expectations for a preliminary Residuals Management Plan are provided further in this document in under 11.(b). In many cases, it will not be easy to identify all of the waste handling requirements; therefore, systems and their engineer/consultant will need to work closely with CO-RADS project staff and representatives from the waste handling agencies to define applicable requirements.

Projects that do not entail treatment, waste disposal, or clean-up of existing residuals will have other considerations that must be addressed to demonstrate technical or regulatory feasibility; many of these considerations are discussed in greater detail under their respective item in the Specific Options and Special Considerations subsection.

## 6. Risks, Obstacles, and Major Challenges

The PER should include an evaluation of potential risks, obstacles, and major challenges associated with implementation of the selection option. These issues may be associated with discharge permitting,

wastewater treatment plant impacts, requirements to pass a ballot measure to incur debt, land acquisition, agreements with other entities, increased operator certification requirements, etc.

Systems often encounter risks, obstacles, and/or challenges associated with obtaining project funding; therefore, each PER should include an evaluation of potential funding options and the risks, obstacles, and/or challenges associated with each option.

## 7. Address Applicable Special Considerations

Based upon the specific option being selected, there are unique issues or considerations that should be addressed in the PER. The expectations associated with each respective option are outlined in greater detail in the following subsection.

### Specific Options and Associated Special Considerations

In addition to the items noted above under general expectations, the PER should also address the special considerations noted below for the selected option. Please be aware that more than one option below may apply. A summary checklist of these considerations is provided as Attachment 2.

## 8. Consolidating or Purchasing Water

- a. Reliability of supply system should be evaluated in the PER. If the supply system has an iron filtration process, or is close to or periodically exceeds an MCL, then consolidating with such a system may provide temporary relief, but eventually the supply system may need to undergo significant upgrades. This could have significant financial impacts on the receiving system, and could be a very risky investment if it is a project requiring significant capital expenditure. In order to document this evaluation, raw/treated water quality data from the supply system should be provided as well as a description of existing treatment processes, potential waste handling issues (this may include issues at the wastewater treatment facility if a supply system sends water treatment residuals to the wastewater facility), and drinking water and waste handling compliance status.
- b. Agreement with supply system or verification of commitment should also be included in the PER to provide confidence in the feasibility of the project. If an agreement has not yet been made, then, at a minimum, the PER should describe the current status of negotiations and any associated risks, obstacles, and/or challenges.

## 9. New Groundwater or Surface Water Source

- a. Actual water quality data from the new source (or monitoring well) should be provided; if these data are not available for a groundwater source, then, at a minimum, the PER should include an evaluation of data from other wells in the same aquifer.
- b. Availability of water rights should be demonstrated.
- c. Sustained production rate should be identified.
- d. Preliminary design for additional treatment processes such as disinfection, filtration, etc. should be included.

## 10. Blending (likely in conjunction with a new well or purchased water)

- a. Water quality data should be provided for the streams that contribute to the blend and should include: radionuclides, iron, manganese, calcium, total dissolved solids, pH, alkalinity, and any other known parameters of concern such as nitrate, arsenic, or selenium.
- b. Calculations or modeling results of blended water quality should be provided.
- c. Existing wastes handling issues, such as those associated with radium accumulation in iron filters, should also be addressed if applicable. If this is the case, it will likely necessitate the need for a request for an extension of your system's Enforcement Order compliance schedule.

## 11. Centralized Treatment

- a. Preliminary design of the treatment process should be provided. The information provided under the general expectations section summarizes the expectations for the preliminary design in a PER for a centralized treatment project and there are not additional special considerations that need to be addressed. However, particular focus should be directed to documenting the following:
  - Description of selected option
  - Capital and O & M costs
  - Estimated user rate impacts
  - Design and construction schedule
  - Demonstration of regulatory and technical feasibility
    - Process design criteria and unit sizing
    - Support material: pilot studies, water quality modeling, research articles, etc.
    - Preliminary Residuals Management Plan
- b. Residuals management is generally the greatest driving issue with centralized treatment approaches. If the selected option includes centralized treatment, and/or if there are existing waste handling issues, the PER should contain a preliminary Residuals Management Plan that includes the following:
  - Estimation of waste types, contaminant concentrations, and production rates
  - Detailed description of intermediate processing steps
  - Identification of waste disposal options and associated costs
  - Evaluation of regulatory requirements
  - Proposed design and operational aspects to meet handling and disposal requirements

## 12. Point-of-Use Treatment

Systems that are interested in pursuing point-of-use treatment (POU) as a compliance option will not be able to compile a complete PER prior to the deadline, and will therefore need to submit a request for extension of an Enforcement Order compliance schedule.

Since POU is generally considered by WQCD as an option of last resort, certain elements of a PER, such as the alternatives analysis, will be needed to support the POU application. Additional details on the expectations for systems pursuing POU are provided in the following section on Expected Content of a Request for Extension of an Enforcement Order Compliance Schedule.

## 13. Arkansas Valley Conduit

WQCD understands that there are a number of systems that have committed to the proposed Arkansas Valley Conduit and have great interest in using this source as part of a long-term water supply strategy. Unfortunately, at the time of this writing, there remains uncertainty about the Conduit project, which creates significant challenges in regards to project planning. However, it is clear that the Conduit project will not be complete in time for systems to meet the December 2011 deadline for compliance

with the Radionuclide Rule and therefore a long-term compliance schedule may be necessary. In order for WQCD to establish a position on the use of the Conduit as a target option under a long-term compliance schedule, the following items should be addressed in the PER:

- a. Demonstration of legal or financial commitment to the Conduit should be provided.
- b. Justification of substantial benefit over other options should be provided. As part of the alternatives analysis, a cost comparison, including estimated user rate impacts, should be made between the Conduit and other potential compliance options. If it can be demonstrated that there is substantial benefit from the Conduit option, and furthermore, that there would be an overly burdensome impact from pursuing both the Conduit and a short term compliance option, then WQCD will work with systems on a case-by-case basis to negotiate a path forward that allows for participation in the Conduit while building appropriate contingencies and mitigating the public health risk to a reasonable extent.
- c. A “Preliminary Contingency Plan” should be developed. As part of the compliance schedule negotiations, systems will be expected to implement measures to improve the technical, managerial, and financial capacity of the system. Since there is still uncertainty about the Conduit project, in order to build appropriate capacity, it is probable that systems may need to establish a contingency plan including a capital reserve fund to implement an alternative option if at any point it becomes necessary due to delays in the Conduit project. The extent of these measures, if any, will be determined at the time of negotiation based upon the status of the Conduit project at that time. For the purposes of supporting any such negotiations, the PER should include a preliminary evaluation of the feasibility of establishing such a contingency plan.
- d. A “Preliminary Evaluation of Interim Measures” should be developed. As part of the compliance schedule negotiations, systems will be expected to implement risk mitigation measures while the system remains out of compliance with the drinking water standards. These measures may vary depending upon the risk levels (radionuclide concentrations) and potential timeframe before compliance is expected to be achieved. For the purposes of supporting any such negotiations, the PER should include a preliminary evaluation of the costs and the system’s capabilities, or lack thereof, to implement any of the following measures:
  - Public outreach and awareness campaign
  - Central fill station with water that complies with all drinking water standards that includes provisions for delivery to elderly and disabled
  - Central bottled water pick-up station that includes provisions for delivery to elderly and disabled
  - Bottled water delivery to each consumer
- e. Existing wastes handling issues, such as those associated with radium accumulation in iron filters, should also be addressed if applicable. If this is the case, it will likely necessitate the need for a request for extension of an Enforcement Order compliance schedule.

#### 14. Long-term Compliance Schedule

After performing a thorough alternatives analysis, if the lowest cost option is too expensive to implement realistically in the near future, then the final pathway toward compliance is to establish a long-term Enforcement Order compliance schedule that allows a system additional time to build financial reserves, pursue grant monies, and position itself to undertake a capital improvement project at a set date in the future.

Long-term compliance schedules will likely require significant negotiation between WQCD and the system to establish a reasonable framework. In order for WQCD to establish a position on the

acceptability of a long-term compliance schedule for a given system, the following items should be addressed in the PER:

- a. A long-term compliance option must be identified. This target option will likely be the most cost effective compliance option identified in the alternatives analysis. It is important that there is sufficient definition of this option so that an appropriate project budget can be established. This budget will be a critical factor in any negotiations.
- b. Prove option of last resort. Through the alternatives analysis, if it is indeed apparent that there are no immediately feasible options from an economic perspective, then WQCD will work with systems on a case-by-case basis to negotiate a path forward. For systems with a CO-RADS Report, WQCD does expect the alternatives analysis to evaluate any considerations that could allow for alternate options or cost reductions, as noted in item 4 of this section.
- c. Evaluate grant and loan opportunities. Prior to requesting a long-term compliance schedule, it is expected that the system would have exhausted all potential grant and loan opportunities, and if applicable, evaluate options for forming special districts to become eligible for certain grants and loans. Systems should collaborate with all available funding agencies and try to develop a grant and loan package to cover the project costs. If a system has performed due diligence and was unable to develop a reasonable funding package, then WQCD will work with the system on a case-by-case basis to negotiate a path forward.
- d. A preliminary evaluation of ability to build reserve funds should be provided. As part of the compliance schedule negotiations, systems will be expected to implement measures to improve the technical, managerial, and financial capacity of the system. Since systems will need to pursue a target option, in order to build appropriate financial capacity, systems may need to establish some type of capital reserve account. For the purposes of supporting any such negotiations, the PER should include a preliminary evaluation of the feasibility of establishing a reserve fund and the potential revenues that can be generated. This can be demonstrated with a 10-year cash flow or similar projection.
- e. A proposed project implementation timeline should be provided. Based upon the cost estimate of the target option, the rate at which reserve funds will be accumulated, and available grant and loan packages, a target date for initiating the project can be established and milestones for design and construction activities can be identified.
- f. A preliminary evaluation of interim measures should be provided. As part of the compliance schedule negotiations, systems will be expected to implement risk mitigation measures while the system remains out of compliance with the drinking water standards. These may vary from implementing a public outreach and awareness campaign, to fill stations, to bottled water delivery and will be based upon the risk level (radionuclide concentrations) and potential timeframe before compliance is expected to be achieved. For the purposes of supporting any such negotiations, the PER should include a preliminary evaluation of the costs and the system's capabilities, or lack thereof, to implement any of the following measures:
  - Public outreach and awareness campaign
  - Central fill station with water that complies with all drinking water standards that includes provisions for delivery to elderly and disabled
  - Central bottled water pick-up station that includes provisions for delivery to elderly and disabled
  - Bottled water delivery to each consumer
- g. Existing wastes handling issues, such as those associated with radium accumulation in iron filters, should also be addressed if applicable. If this is the case, it will likely necessitate the need for a request for extension of an Enforcement Order compliance schedule.

## **Expected Content of a Request for Extension of an Enforcement Order Compliance Schedule**

If a system will not be able to submit a PER or other required document by the deadlines established in its Enforcement Order, then a request for extension of an Enforcement Order compliance schedule can be submitted. Systems will need to provide a sound justification for such extension. The following section will provide guidelines for the expected content. This information is also summarized in a checklist in Attachment 3.

Please note that although a request for an extension of an Enforcement Order compliance schedule is not necessarily an engineering document, WQCD expects that the request will contain detailed technical information and therefore the services of a professional engineer will be useful in developing this request.

In order for WQCD to establish a position on such a request, the following information should be compiled and submitted for review:

1. Identify option(s) of interest and current status of evaluations
2. Include a detailed summary of work to date, including preliminary alternatives analysis and other pertinent information regarding options under evaluation.
3. Identify unresolved issues and expected activities and timeframes to resolve
4. Identify risks, obstacles, and major challenges
5. Identify expected PER submittal date
6. Discuss potential construction completion dates for the different options of interest
7. Include appropriate PER information such the planning conditions or other compliance issues

### Categorical Inclusions

If a system meets either of these criteria, then it is automatically eligible for an Enforcement Order compliance schedule extension.

- The system is considering point-of-use treatment as a compliance option and is committed to undertaking the activities outlined in the *Point-of-Use Guidance for Small Public Water Systems with Radionuclide MCL Violations*, September 2009
- The system has an iron removal process or other significant waste handling issue

These systems will still be required to submit an official request for extension of an Enforcement Order compliance schedule, however, there are unique considerations for each of these and guidelines are provided below for each situation.

### 8. Point-of-Use Compliance Option Submittal Requirements

- a. Alternatives analysis and justification of substantial benefit should be provided. As part of the alternatives analysis, a cost comparison, including estimated user rate impacts, should be made

between POU and other potential compliance options. If it can be demonstrated that there is substantial benefit from POU, then WQCD will work with systems on a case-by-case basis to work through the guidelines in the POU guidance document and to negotiate an appropriate compliance schedule.

- b. Discussion of risks, obstacles, and major challenges, especially in regards to the POU program and associated liabilities and anticipated consumer acceptance.
- c. Existing wastes handling issues, such as those associated with radium accumulation in iron filters, should also be addressed if applicable.

#### 9. Iron Sludge or Other Waste Handling Issue Submittal Requirement

- d. Identify option(s) of interest and current status of evaluations
- e. Provide detailed summary of work to date, including preliminary alternatives analysis and other pertinent information regarding options under evaluation.
- f. Identify unresolved issues (except for waste handling issues) and expected activities and timeframes to resolve
- g. Identify risks, obstacles, and major challenges
- h. Discuss potential construction completion dates for the different options of interest
- i. Include appropriate PER information such as the planning conditions or other compliance issues
- j. Describe the iron removal (or other waste generating) process, including:
  - Number and size of treatment units
  - Type and depth of media and support system
  - Years in service of the vessels and media
  - Average and peak production rates
  - Backwash frequency, flow rate(s), duration(s), and total wastewater volume per event
  - Description of backwash discharge location

### **Guidelines for Submitting Official Enforcement Related Correspondence**

All correspondence, including all documents, plans, records, reports, and replies required to be submitted under an enforcement order shall be submitted to the following address. Please note that electronic submittal (including any required signatures) of such correspondence is preferred.

Colorado Department of Public Health and Environment  
Water Quality Control Division / WQCD-WQP-B2  
Compliance Assurance Section / Drinking Water Enforcement  
Attention: Jackie Whelan  
4300 Cherry Creek Drive South  
Denver, CO 80246-1530  
Tel: 303-692-3617  
Email: [jackie.whelan@state.co.us](mailto:jackie.whelan@state.co.us)

Any questions of a technical nature and that are not official enforcement related correspondence, such as questions regarding treatment, waste handling, or other compliance options, can be directed to the CO-RADS project manager:

Jon A. Erickson, P.E.  
CO-RADS Project Manager  
Tel: 303-692-3593  
Email: [jon.erickson@state.co.us](mailto:jon.erickson@state.co.us)

Attachment 1: Checklist of General Expectations of a PER for Radionuclide Compliance

Expected Items	Addressed In	Comments
1. Level of Detail in PER		
2. Planning Conditions		
a. Identification of planning period		
b. Site location		
c. Current infrastructure		
d. Water rights and availability		
e. Water quality data		
f. Growth projections		
g. Current and future user demands		
h. Other considerations such as fire flow, storage capacity, reliability, etc.		
3. Other Compliance Issues and Infrastructure Needs		
4. Alternative Analysis, including CO-RADS report and other considerations available to the system		
5. Identify Selected Option		
a. Description		
b. Capital and O & M Costs		
c. Estimated user rate impacts		
d. Design and construction schedule		
e. Demonstration of feasibility, including process design criteria, support material, preliminary residuals management plan		
6. Risks, Obstacles, and Major Challenges		
7. Address Applicable Special Considerations		

Attachment 2: Checklist of Special Considerations Associated with Specific Options

Expected Items	Addressed In	Comments
8. Consolidating or Purchasing Water a. Sustainability of supply system		
b. Agreement with supply system		
9. New Groundwater or Surface Water Source a. Water quality data		
b. Water rights		
c. Production rate		
d. Preliminary treatment design		
10. Blending a. Water quality data of contributing streams		
b. Predicted blended water quality		
c. Existing waste handling issues		
11. Centralized Treatment a. Preliminary design of treatment process		
b. Preliminary Residuals Management Plan		
12. Point-of-Use Treatment a. Must submit extension request, see Attachment 3		
13. Arkansas Valley Conduit a. Demonstration of commitment		
b. Justification of substantial benefit		
c. Preliminary contingency plan include reserve fund		
d. Preliminary evaluation of interim measures		
e. Existing waste handling issues		
14. Long-term Compliance Schedule a. Identify target option		
b. Prove option of last resort		
c. Evaluate grant and loan opportunities		
d. Preliminary evaluation of reserve fund capacities		
e. Project implementation timeline		
f. Preliminary evaluation of interim measures		
g. Existing waste handling issues		

Attachment 3: Checklist for Request for Extension of Enforcement Order Compliance Schedule

Expected Items	Addressed In	Comments
1. Identify option(s) or interest and current status of evaluations		
2. Summary of work to date and draft alternatives analysis		
3. Identify unresolved issues and activities and timeframe for resolution		
4. Identify risks, obstacle, and major challenges		
5. Propose new PER submittal date		
6. Potential construction completion dates		
7. Other appropriate PER information such as planning conditions		
Categorical Inclusions:		
8. Point-of-Use Treatment		
a. Alternatives analysis and justification of substantial benefit		
b. Risks, obstacles, and challenges		
c. Existing waste handling issues		
9. Iron Filtration or Other Significant Waste Handling Issue		
a. Identify option(s) or interest and current status of evaluations		
b. Summary of work to date and draft alternatives analysis		
c. Identify unresolved issues and activities and timeframe for resolution		
d. Identify risks, obstacle, and major challenges		
e. Potential construction completion dates		
f. Other appropriate PER information such as planning conditions		
g. Iron removal process description		