

# Utah Antidegradation Review Implementation Guidance

Version 2.1

1/29/2019

## DOCUMENT VERSIONS

<u>Version</u>	<u>Date</u>	<u>Summary of Changes</u>
1.0	May 2010	Original document issued.
1.1	May 2012	<ul style="list-style-type: none"> <li>• Minor revisions to original document including some formatting and reorganization.</li> <li>• Added procedures for ranking and weighting POCs.</li> </ul>
2.0	Dec 2015	<ul style="list-style-type: none"> <li>• Added procedures for identifying POCs for discharges to fresh and salt water terminal lakes, and the Great Salt Lake.</li> <li>• Revised flow chart to clarify the submittal and review process (Figure 2).</li> <li>• Revised procedures for ranking and weighting POCs; added assimilative capacity as a factor to consider. Added an example of detailed quantitative procedures for ranking and weighting POCs (Appendix A).</li> <li>• Added requirement that Alternatives Analysis be stamped by a Professional Engineer.</li> <li>• Added procedures for establishing the Baseline Treatment Alternative.</li> <li>• Revised procedures for selecting the least degrading feasible alternative (“preferred alternative”), including consideration of degradation, total cost, cost effectiveness, affordability and other factors. Added an example of detailed quantitative procedures for ranking alternatives (Appendix A).</li> <li>• Developed supplemental spreadsheet tools for ranking and weighting POCs and alternatives.</li> <li>• Added procedures for General Permits.</li> <li>• Added procedures for 401 Water Quality Certifications.</li> <li>• Added Glossary.</li> <li>• Added List of Acronyms.</li> <li>• Added References.</li> </ul>
2.1	Jan 2019	<ul style="list-style-type: none"> <li>• Per rules change, removed requirement that a Level II ADR be completed for all discharges to Class 1C drinking waters.</li> <li>• Minor corrections.</li> </ul>

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## GLOSSARY

**ambient condition:** water quality of the receiving water immediately upstream of the point of discharge

**assimilative capacity:** the difference between the numeric criteria and the concentration in the waterbody of interest where the concentration is less than the criterion. Assimilative capacity is the capacity of a water body to dilute and absorb pollutants and prevent harmful effects (e.g., damage to public health or physical, chemical, biological integrity of the water).

**baseline alternative:** the treatment alternative that meets water quality standards and water quality based permit effluent limits established by the wasteload analysis

**beneficial use:** use of waterbody, including protection and propagation of aquatic wildlife, recreation, public water supply, and agricultural supply

**Blue Ribbon Fishery:** status administered by the Utah Division of Wildlife Resources and the Blue Ribbon Advisory Council that indicates the waterbody has high quality in the following attributes: fishing, outdoor experience, fish habitat, and economic benefits

**designated use:** beneficial use of waterbody as specified in UAC R317-2-13

**existing use:** those uses actually attained in a water body on or after November 28, 1975, whether or not they are included in the water quality standards (UAC R317-1-1)

**parameter of concern:** a pollutant in the discharge that exceeds or is anticipated to exceed the ambient concentration in the receiving water

**reasonable potential analysis:** analysis to determine whether effluent will cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard

**sustainability:** the degree that the management method minimizes the depletion or damage to natural resources

**toxic weighting factor:** method to normalize pollutants for differences in toxicity in order to provide the means to compare mass loadings of different pollutants. EPA derives toxic weighting factors from chronic aquatic life criteria (or toxic effect levels) and human health criteria (or toxic effect levels) established for the consumption of fish.

**waters of the State of Utah:** all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state" under this definition (Section 19-5-102)

**Waters of the United States:** waterbodies subject to the provisions of the Clean Water Act. Specific waters included under this definition are based on federal agencies' interpretation of the statute, implementing regulations and relevant case law. Refer to EPA for latest guidance on determination of waters of the US.

## ACRONYMS

ADR	antidegradation review
AFO	animal feeding operation
BMP	best management practice
BPT	best practicable technology
BU	Beneficial use
CAFO	concentrated animal feeding operation
DEQ	Utah Department of Environmental Quality
DMR	discharge monitoring report
DWQ	Utah Division of Water Quality
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NPV	net present value
POC	parameter of concern
POTW	publically owned treatment works such as water reclamation facilities
SEEI	social, economic and environmental importance
SOP	standard operating procedures
TWF	toxic weighting factor
TWPE	toxic weighting pound equivalents
UAC	Utah Administrative Code
UPDES	Utah Pollution Discharge Elimination System
USACE	United States Army Corp of Engineers
WET	whole effluent toxicity
WLA	wasteload analysis
WQBEL	water quality based effluent limit

## 1.0 INTRODUCTION

The central goals of the Clean Water Act and the Utah Water Quality Act are to protect, maintain, and restore the quality of Utah's waters. One way in which this is accomplished is through Utah's water quality standards, which consist of: 1) designated uses (e.g., aquatic life, drinking water, recreation), 2) water quality criteria (both numeric and narrative), and 3) antidegradation policy and procedures. The intent of the antidegradation component of our standards is to protect existing in-stream uses and to maintain high quality waters; those waters that are in better condition than the water quality standards require. Utah's antidegradation policy (UAC R317-2-3) provides a decision making process to ensure that when degradation of water quality is necessary to accommodate important social and economic development, every feasible option to minimize degradation is explored. Also, the policy requires that alternative management options and the environmental and socioeconomic benefits of proposed projects are made available to concerned stakeholders.

This document provides the implementation procedures for Utah's antidegradation rules. Utah's Division of Water Quality (hereafter DWQ) is required by Federal Code (40 CFR §131.12(a)) to develop an antidegradation policy and implementation procedures. These procedures and associated rules (UAC R317-2-3) meet these requirements. The implementation procedures discussed in this document were developed in a collaborative process among stakeholders to identify procedures that would meet the intent of antidegradation rules, while avoiding unnecessary regulatory burdens.

This is the fourth version of the guidance document. A history of versions and modifications made to the guidance document can be found in the table on page i. Section 8.0 summarizes the portions of the guidance that still need to be completed. The absence of guidance for these topics does not negate or delay the requirements for antidegradation reviews required under UAC R317-2-3.

### 1.1 Antidegradation Goals and Objectives

The overarching goal of ADRs is summarized in rule R317.2.3.1 as follows:

*"Waters whose existing quality is better than the established standards for the designated uses will be maintained at high quality unless it is determined by the Board, after appropriate intergovernmental coordination and public participation in concert with the Utah continuing planning process, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. However, existing instream water uses shall be maintained and protected. No water quality degradation is allowable which would interfere with or become injurious to existing instream water uses."*

Antidegradation reviews (ADRs) are required, as part of the permitting process, for any action that has the demonstrated potential to degrade water quality. Activities subject to ADRs include any activities that require a permit or water quality certification pursuant to federal law. The ADR process involves: 1) classification of surface waters

into protection categories, and 2) documenting that activities likely to degrade water quality are necessary and that all State and Federal procedures have been followed to ensure that reasonable steps are taken to minimize degradation.

## **2.0 ANTIDegradation Protection Categories**

### **2.1 Assigning Protection Categories**

Utah's surface waters are assigned to one of three protection categories that are determined by their existing biological, chemical and physical integrity, and by the interest of stakeholders in protecting current conditions. Antidegradation procedures are differentially applied to each of these protection categories on a parameter-by-parameter basis.

#### **2.1.1 Category 1 Waters**

Category 1 waters (as listed in R317-2-12.1) are afforded the highest level of protection from activities that are likely to degrade water quality. This category is reserved for waters of exceptional recreational or ecological significance, or that have other qualities that warrant exceptional protection. Once a waterbody is assigned Category 1 protection, future discharges of wastewater into these waters are not permitted. However, permits may be granted for other activities (e.g., road construction, dam maintenance, pesticide/herbicide application) if it can be shown that water quality effects will be temporary and that all appropriate Best Management Practices (BMPs) have been implemented to minimize degradation of these waters. Discharges that were permitted prior to February 1994, when the rule establishing Category 1 waters was promulgated, are considered grandfathered.

#### **2.1.2 Category 2 Waters**

Category 2 waters (as listed in R317-2-12.2) are also afforded a high level of protection, but discharges to these waters are permissible, provided no degradation of water quality will occur or where pollution will result only during the actual construction activity and where BMPs will be employed to minimize pollution effects. In practice, this means that all wastewater parameters should be at or below background concentrations of the receiving water for activities that are not temporary and limited. As a result of this stipulation, the Level I and Level II ADR provisions discussed in these implementation procedures are not required for Category 2 waters.

#### **2.1.3 Category 3 Waters**

All surface waters of the State are Category 3 waters unless otherwise designated as Category 1 or 2 in UAC R317-2-12. Discharges that degrade water quality are permitted for Category 3 waters provided that 1) existing uses are protected, 2) the degradation is necessary, 3) the activity supports important social or economic development in the area where the waters are located, and 4) all statutory and regulatory requirements are met in the area of the discharge. Antidegradation rules also apply for any proposed new or expanded discharge that is likely to degrade water quality. ADRs require that these proposed actions demonstrate that such proposed projects are documented as necessary to accommodate important social and economic development, and that all reasonable alternatives to minimize degradation of water quality have been explored.

These implementation procedures provide details about how ADRs are implemented to meet these requirements.

## **2.2 Procedures for Reassigning Protection Categories**

The intent of Category 1 and Category 2 protection classes is to protect high quality waters. Any person, entity, or DWQ may nominate a surface water to be afforded Category 1 or 2 protections by submitting a request to the Water Quality Board. Although any third party may directly petition the Water Quality Board, it is recommended that nominations follow DWQ's recategorization procedures described below.

DWQ generally considers nominations during the triennial review of surface water quality standards. The nominating party has the burden of establishing the basis for reclassification of surface waters, although DWQ may assist, where feasible, with data collection and compilation activities.

### ***2.2.1 Material to Include with a Recategorization Nomination***

The nomination may include a map and description of the surface water; a statement in support of the nomination, including specific reference to the applicable criteria for unique water classification, and available, relevant and recent water quality or biological data. All data should meet the minimum quality assurance requirements used by DWQ for assessing waters of the State, per the requirements in *Utah Division of Water Quality: Quality Assurance Program Plan for Environmental Data Operations* (DWQ, 2014) and associated Standard Operating Procedures (SOP).

It is strongly recommended that a petition for recategorization have the support of the local water quality planning authority and watershed advisory group.

### ***2.2.2 Factors Considered to Increase Protection of Surface Waters***

The Water Quality Board may recategorize a waterbody to a more protected category, following appropriate public comment. Evidence provided to substantiate any of the following justifications that a waterbody warrants greater protection may be used to evaluate the request:

- The location of the surface water with respect to protections already afforded to waters (e.g. on federal lands such as national parks or national wildlife refuges).
- The ecological value of the surface water (e.g., biological diversity, or the presence of threatened, endangered, or endemic species).
- Water quality superior to other similar waters in surrounding locales.
- The surface water is of exceptional recreational or ecological significance because of its unique attributes (e.g., Blue Ribbon Fishery).
- The surface water is highly aesthetic or important for recreation and tourism.
- The surface water has significant archeological, cultural, or scientific importance.

- The surface water provides a special educational opportunity.
- Any other factors the Board considers relevant as demonstrating the surface water's value as a resource.

The final recategorization decision will be based on all relevant information submitted to or developed by DWQ.

### *2.2.3 Factors Considered to Decrease Protection of Surface Waters*

The intent of Category 1 and Category 2 protections is to prevent future degradation of water quality. As a result, downgrades to surface water protection categories are rare. However, exceptional circumstances may exist where downgrades may be permitted to accommodate a particular project. For instance, in Utah most surface waters in the upper portions of National Forests are afforded Category 1 protection, which may not be appropriate in specific circumstances. Project proponents may request a categorization with lower protection; however, it is their responsibility to provide sufficient justification. Examples of situations where a recategorization with less stringent protections might be appropriate are:

- Failure to complete the project will result in significant and widespread economic harm.
- Situations where the surface water was improperly categorized as a Category 1 or Category 2 water because the surface water is not a high quality water (as defined by the criteria outlined in 2.2.2).
- Water quality is more threatened by not permitting a discharge (e.g., septic systems vs. centralized wastewater treatment).

Requests for downgrades to protection should provide the most complete and comprehensive rationale that is feasible. The request for a reduction in protection may also be considered in concert with the alternatives evaluated through an accompanying Level II ADR. Proposed projects affecting high quality waters may require more comprehensive analysis than projects affecting lower quality waters.

### *2.2.4 Public Comment for Proposed Recategorizations*

All data and information submitted in support of recategorization will be made part of the public record. In addition to public comment, the DWQ will hold at least one public meeting in the area near the nominated water. If the issues related to recategorization are regional or statewide or of broader public interest, the Division will consider requests for public meetings in other locations. Comments received during this meeting will be compiled and considered along with the information submitted with the nomination.

### *2.2.5 Recategorization Decision Making Process*

The final recategorization decision will be based on all relevant information submitted to or developed by the DWQ. All data will be presented and discussed with the Water Quality Standards Workgroup. DWQ will then submit its recommendation regarding recategorization to the Water Quality Board, who will make a formal decision about whether to proceed with rulemaking to recategorize the waterbody. The proposed recategorization is a rule change, and as such will trigger public notice and comment procedures.

## **3.0 ANTIDegradation Review General Procedures**

### **3.1 Overview of Antidegradation Review Procedures**

ADR reviews for Category 3 waters are conducted at two levels, which are referenced in R317-2-3 as Level I and Level II reviews. Level I reviews are intended to ensure that proposed actions will not impair “existing uses”. Level II ADRs assure that degradation is necessary and that the proposed activity is documented to be economically and socially important. Level II ADRs are required for any activity that is not temporary and limited in nature and is likely to result in degradation of water quality. The central tenet of these reviews is to ensure that the discharge is necessary, water quality standards will not be violated, and that alternatives to minimize degradation are considered. Antidegradation review procedures for discharges to Category 1 and Category 2 waters are presented in Section 3.4.

#### ***3.1.1 Actions Subject to Antidegradation Provisions***

Activities subject to ADR requirement include all activities that require a permit or certification under the Clean Water Act. Special considerations for General Permits, §401 Certifications, and Stormwater Permits are provided in Section 7.0.

### **3.2 Level I Antidegradation Reviews**

Level I reviews are intended to ensure that “existing uses” will be maintained and protected. Existing uses are defined as any beneficial uses actually attained in a water body on or after November 28, 1975 (UAC R317-1), or uses that would be supported by the water quality, whether or not they are included in the water quality standards. For instance, if a stream is currently designated a warm water fishery (beneficial use (BU) Class 3B or 3C), yet it supported the propagation and survival of a non-aberrant, stable trout fishery (BU Class 3A) at some point after November 28, 1975, the “existing use” criteria would be those for BU Class 3A (protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain). A use attainability analysis (UAA) or other scientific assessment should be used to determine whether the aquatic life population is in fact an artifact or is a stable population requiring water quality protection.

Neither State nor Federal regulations allow water quality permits to be issued if the proposed project will impair an existing instream use. In order to ensure the protection of existing uses, the Level I review evaluates whether there are existing uses with protection requirements that are more stringent than the currently designated uses (R317-2-13).

DWQ staff conduct Level I reviews by comparing the concentration in the receiving water after mixing predicted by the wasteload analysis (WLA) to the water criterion for the designated uses and more restrictive existing uses, if applicable. The permit applicant is responsible for submitting sufficient effluent data for DWQ to adequately conduct the Level I ADR.

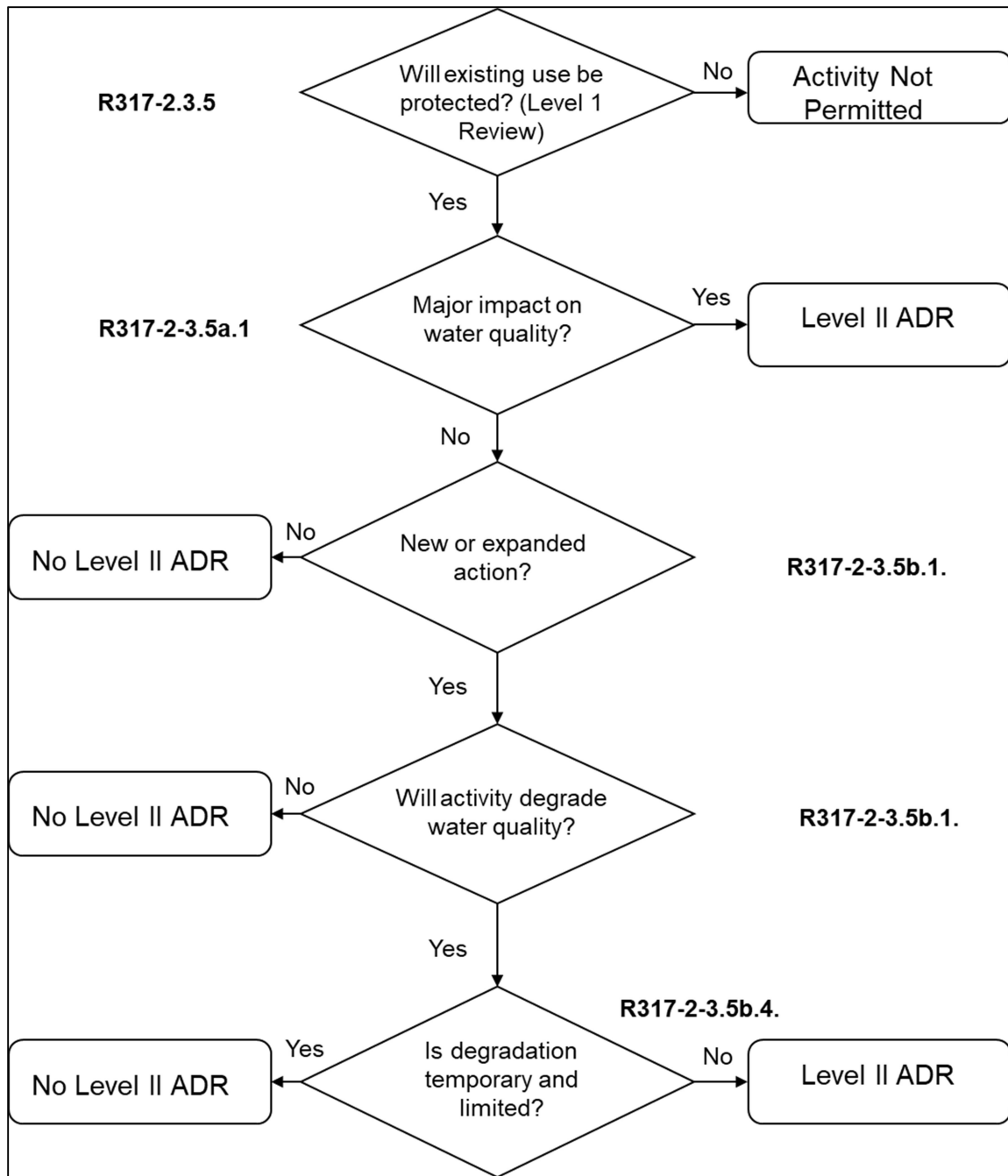


Figure 1. General process for determining whether a Level II ADR is required for a permit. Expanded actions are increases in loads or concentrations as defined in Section 3.3.1. Special considerations for other permits are discussed in Section 7.0.

### 3.3 Level II Antidegradation Reviews

Per UAC R317-2-3.5.a(1), the Director may require a Level II ADR for any project that has the potential to cause a major impact to water quality, unless the project is specifically exempted from the Level II ADR requirement per UAC R317-2-3.5.b. Otherwise, all of the following conditions must apply before a Level II ADR is required for a proposed activity: 1) it must be a new or expanded action, 2) it must be an action that is regulated by the DWQ, and 3) the action must have a reasonable likelihood of degrading water quality. Additional details for each of the preceding requirements are provided below. Figure 1 provides a flow chart to assist with determining whether a Level II ADR is required.

#### 3.3.1 *Activities Considered New or Expanded Actions*

New actions refer to facilities that are being proposed for construction, or actions that are initiated for the first time. Expanded refers to a change in permitted or design concentration or flow and corresponding pollutant loading. Examples of expanded actions include:

- An increase in permitted concentrations;
- An increase in permitted flow;

New or expanded actions could include increases in discharge concentration resulting from the construction of new or expanded industrial or commercial facilities. In general, Level II ADRs will be conducted for POTWs based on the design basis of the facility, so subsequent Level II reviews would typically only occur during facility planning and design for construction. Periods when treatment systems are being designed, redesigned, or expanded are often ideal opportunities for implementing new technologies or evaluating long-term strategies for pollution control. The intent of this provision is that any POTW capacity expansion would qualify as an action potentially subject to a Level II ADR.

A permit authorizes a facility to discharge pollutants without explicit permit limits as long as those pollutants are constituents of waste streams, operations, or processes that were clearly identified during the permit application process, regardless of whether or not they were specifically identified as present in the facility discharges (see memorandum from Robert Perciasepe, Assistant Administrator for Water, to Regional Administrators and Regional Counsels, July 1, 1994, at Pages 2-3). These pollutants are generally treated the same as pollutants with explicit permit limits with regards to ADRs, i.e., if a renewing permit maintains the *status quo*, no additional ADR is required.

#### 3.3.2 *Activities Not Considered to Result in Degradation or Additional Degradation*

Level II ADRs are not required for projects that are not likely to result in degradation of the receiving water. Nor are Level II ADRs required for projects when the permit is being renewed with no increase in permitted flow or concentrations. Permits that are

being renewed met the ADR requirements when the permit was originally issued and are not required to conduct additional ADRs in the absence of an increase in degradation. A regulated discharge activity may not be considered to result in degradation if one or more of the following apply:

- Water quality will not be further degraded by the proposed activity (R317-2-3.5.b(1)). Examples include:
  - a. The proposed concentration-based effluent limit is less than or equal to the ambient concentration in the receiving water during critical conditions.
  - b. A UPDES permit is being renewed and the proposed effluent concentration and loading limits are equal to or less than the concentration and loading limits in the previous permit.
  - c. A UPDES permit is being renewed and new effluent limits are to be added to the permit, but the new effluent limits are based on maintaining or improving upon effluent concentrations and loads that have been observed, including variability.
- The activity will result in only temporary and limited degradation of water quality (see Section 3.3.4).
- Additional treatment is added to an existing discharge and the facility retains their current permit limits and design capacity.
- The activity is a thermal discharge that has been approved through a Clean Water Act §316(a) demonstration.

For some parameters, assimilative capacity is used when concentrations in the discharge are less than ambient concentrations. For instance, if the pH in a discharge is 6 and ambient pH is 7, assimilative capacity for pH will be used and pH may be a parameter of concern for a Level II ADR.

### *3.3.3 Activities Considered Temporary and Limited*

A Level II ADR may not be required if the Director determines degradation from a discharge qualifies as temporary and limited following a review of information provided by the applicant (R317-2-3.5b(3) and (4)). The information provided by applicant should include:

- length of time during which water quality will be lowered;
- percent change in ambient conditions;
- pollutants affected;
- likelihood for long-term water quality benefits to the segment (e.g., as may result from dredging of contaminated sediments);
- whether fish spawning, or survival and development of aquatic fauna will be affected (excluding fish removal efforts);

- degree to which achieving the applicable Water Quality Standards during the proposed activity may be at risk; and
- potential for any residual long-term influences on uses.

U.S. Fish and Wildlife Service and the Utah Division of Wildlife Resources should be consulted to determine if the timing of the project potentially will affect fish spawning. Clean Water Act Section 402 General Permits, CWA Section 404 Nationwide and General Permits, or activities of short duration and limited impact may be deemed to have temporary and limited effects on water quality. See Section 7.0 for additional detail.

The determination of whether an activity is considered temporary and limited will be made where there is a reasonable factual basis to support such a conclusion. As a general rule of thumb, temporary means days or months, not years, and covers activities that lower water quality on a non-permanent basis such as during construction activities or optimization of a treatment process.

### *3.3.4 Responsibility for Completing Level II ADR Documentation*

Early and frequent communication should occur between applicants and DWQ staff. The applicant (owner), or owner's representative, is responsible for compiling the information required for the selection of Parameters of Concern (Section 4.0), Alternatives Analysis (Section 5.0), and the Statement of Social, Environmental, and Economic Importance (Section 6.0). The applicant is responsible for recommending the parameters of concern and the preferred alternative to DWQ. DWQ staff will assist where possible and provide timely comments to draft material to avoid delays in the permitting process. Much of this information is prepared for other purposes such as a Facility Plan. The suggested process for conducting Level II ADRs is shown in Figure 2.

For new and expanded discharges, the Alternatives Analysis must be prepared under the supervision of and stamped by a Professional Engineer registered with the State of Utah. DWQ may grant an exception from this requirement under certain circumstances, such as the alternatives considered potentially feasible do not include engineered treatment alternatives.

### *3.3.5 Timing of Level II ADRs and Interim Submittals*

ADR issues should be considered as early in the permitting or design process as possible. Properly timed Level II ADRs are the most efficient use of time and resources. For instance, many discharges already consider many of the requirements of Level II alternative analyses (Section 5.0) while planning for construction of new facilities or upgrades/expansion to existing facilities. Early planning also allows time to develop an optional work plan which clearly defines a scope of work for developing alternatives. The work plan minimizes miscommunication between DWQ staff and applicants and documents decision points critical to the ADR. The work plan may be put out for public comment, at the applicant's discretion, so that stakeholder concerns can be addressed early in the process, which is much easier and less time consuming than addressing concerns at the end of the permitting process. Finally, early notification provides sufficient time for the DWQ and applicants to work together to ensure that sufficient data are available to generate defensible permit limits. The DWQ suggests that whenever possible applicants initiate ADR processes one year or longer prior to the desired date of a permit. The actual time required to complete the ADR is dependent on the complexity of the ADR. Figure 2 shows the elements required for completing a Level II ADR, including interim submittals and agency review.

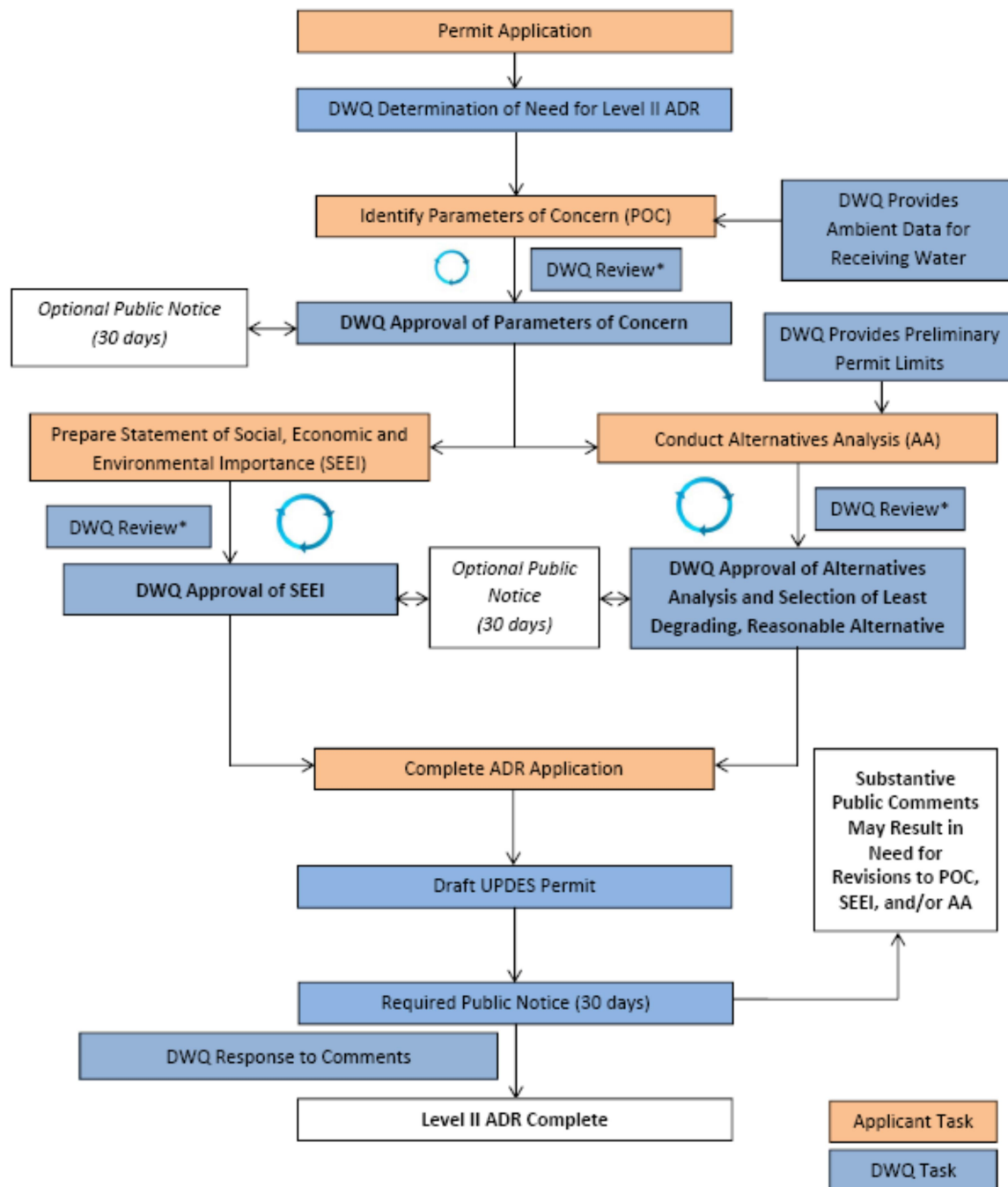


Figure 2. Process for completing a Level II Antidegradation Review (ADR).

### **3.4 Antidegradation Review of Discharges to Category 1 and 2 Waters**

The antidegradation review procedures for discharges to Category 1 and Category 2 waters are as follows:

Discharges to Category 1 waters are not allowed, with the following exceptions:

1. It is demonstrated that the discharge will result in temporary and limited degradation of the receiving water.
2. The discharge was permitted prior to February 1994, when the rule establishing Category 1 waters was promulgated. For these grandfathered discharges, the Level I ADR procedures presented in Section 3.2 will be applied. Expansion of grandfathered discharges is not allowed without reassigning the receiving water to Category 2 or Category 3.

Discharges to Category 2 waters are allowed if either of the following is demonstrated:

1. The discharge will result in temporary and limited degradation of the receiving water.
2. The discharge will not result in degradation of the receiving water.

### **3.5 Public and Interagency Participation in ADRs**

Public participation is a required part of the ADR process. Public notice of antidegradation review findings, solicitations of public comment and maintenance of antidegradation review documents as part of the public record help ensure that interested parties can be engaged and involved throughout the review process. In addition, intergovernmental coordination and review is required prior to any action that allows degradation of water quality of a surface water.

#### ***3.5.1 Required Public Notification***

The completed and signed ADR and associated documentation will be made available for public comment through the processes required for permits (Figure 2). Typically, the required public notice will occur with the draft UPDES permit just prior to issuance. For POTWs that obtain funding from DWQ for construction, the ADR will be public noticed with the Environmental Assessment document and determination, required by NEPA.

DWQ is responsible for responding to comments from the mandatory public comment period. The applicant may be required to conduct additional evaluation if substantive comments are received.

#### ***3.5.2 Optional Public Notification***

The applicant may opt for earlier reviews upon completion of a work plan that defines the parameters of concern and the alternatives to be considered for the Level II ADR alternatives analysis. The primary purpose of these optional early reviews is to identify stakeholder project concerns early in the permitting process when the comments can be

addressed most efficiently. If an early review is conducted, concerned members of the public should use the work plan comment period to identify general concerns with the proposed activity, additional parameters of concern that warrant consideration, or additional treatment alternatives that should be considered. Figure 2 identifies decision points in the process when DWQ may recommend that the applicant solicit optional public comments.

DWQ will facilitate any optional public comment opportunities by making the documents available on DWQ's website and the State's Public Notice website. For the optional public comment periods, DWQ can be the recipient of the comments but the applicant has the responsibility of addressing the comments. A comment response document is not required, but DWQ recommends that the applicant respond to the comments in writing. If DWQ is not the recipient of the comments, the applicant should share the comments received with DWQ in a timely manner. DWQ responds to comments for the mandatory public comment period prior to issuing the permit.

### *3.5.3 Intergovernmental Coordination and Review*

Intergovernmental coordination is required prior to approving a regulated activity that would degrade a surface water. This coordination will be conducted at a level deemed appropriate by the Director and will include any governmental agency requesting involvement with the ADR.

## **4.0 LEVEL II ADR: PARAMETERS OF CONCERN**

Parameters of concern (POC) are evaluated in the Level II ADR. Parameters in the discharge that exceed, or potentially exceed, ambient concentrations in the receiving water should be considered in selecting the parameters of concern. POCs should be identified, ranked and weighted, and submitted to DWQ for review and approval prior to initiation of the alternatives analysis.

### **4.1 Selecting the Parameters of Concern**

The applicant, working with DWQ, should review all available data, from the discharge and the receiving water, and prepare a list of parameters that will be evaluated (potential parameters of concern). DWQ will provide any available data from the receiving water to the applicant. In cases where effluent or receiving water quality data does not exist or is limited, the applicant may voluntarily conduct supplementary sampling and analysis in order to reduce uncertainty associated with identifying POCs.

The initial starting point for identifying potential POCs should be the priority pollutants that are known to be or believed to be present in the effluent, as listed in the permit application forms (EPA Form 2). Other parameters may be added or removed depending on the nature of the proposed project and the characteristics of the receiving water (UAC R317-2-3.5.b).

#### ***4.1.1 Characterizing the Effluent***

The effluent concentrations are either the permitted effluent limits or discharge concentration of the baseline treatment alternative. For parameters that do not warrant permit effluent limits based on DWQ's reasonable potential analysis, the 80th percentile of the effluent concentrations should be used. If no discharge data are available for the baseline treatment alternative, the concentration should be estimated based on pilot studies, literature values, manufacturer's guidelines and/or best professional judgment.

#### ***4.1.2 Characterizing the Ambient Condition of the Receiving Water***

The ambient concentrations of the receiving water are determined by DWQ at critical conditions and provided to the applicant. Typically, ambient conditions are based on the most recent 10 years of data. Critical condition for bioaccumulative toxics is considered the 80th percentile concentration and for conventional pollutants and non-bioaccumulative toxics the average concentration. When there are one or more permitted point source(s) upstream in the receiving water, ambient condition may also account for the modeled water quality at the critical flow conditions if point sources are not discharging at the permitted design flow and effluent limits.

The applicant may elect to collect water quality data to reduce uncertainty and assist DWQ in determining existing ambient concentrations.

#### 4.1.3 Selection Considerations

The following are considerations for selecting parameters of concern:

1. Is the parameter already included in an existing permit? Parameters with limits in the discharge permit are generally considered POCs.
2. Are there any parameters in the effluent, or expected to be in the effluent, that exceed ambient concentrations in the receiving water?
3. In cases when the available data are limited, comparisons between effluent/permitted and ambient concentrations may be conducted using methods that minimize type II errors, *i.e.*, erroneously concluding that a pollutant will not degrade water quality. Are there any parameters that are considered to be important by DWQ or the general public? For instance, nutrients or bioaccumulative compounds may be of concern for some surface waters. For discharges to Class 1C drinking water sources, any substances potentially deleterious to human health may be considered.
4. Is the receiving water listed as impaired for any parameters? Parameters for which the receiving water is listed as impaired and have an ongoing or approved TMDL are not considered as part of the ADR and are addressed through the TMDL program.
5. Is the discharge of the parameter temporary and limited? Refer to Section 3.3.3 for guidance on what qualifies as temporary and limited. Parameters that are determined to be temporary and limited are not considered parameters of concern.
6. Is the discharge directly to a terminal lake or adjacent tributary water? Additional analysis is required to evaluate the degradation and accumulation of the parameter in the lake environment.
7. Is the discharge directly to the Great Salt Lake or adjacent tributary water? Parameters of concern will be determined on a case-by-case basis utilizing the best available information regarding ambient conditions and assimilative capacity.

The list of parameters of concern and parameters evaluated but not considered POCs, including supporting rationale, must be submitted to DWQ. DWQ will review the list and provide preliminary approval pending public comment.

Once the list of parameters of concern has been agreed to between DWQ and the applicant, the list may be made available to the public by DWQ for an optional comment period (see Section 3.6.2). After a 30-day comment period, the list may be refined or approved. This list and associated rankings will form the basis for further activities of the ADR and will ultimately be used to select the least degrading project alternative (Section 5).

## **4.2 Ranking and Weighting the Parameters of Concern**

If there is more than one parameter of concern, the parameters of concern may need to be ranked and/or weighted, in order to determine overall water quality degradation of a given alternative. Since no single objective method is possible, the ranking and weighting of POCs will inherently involve some subjectivity and professional judgment, and should be developed in close consultation with DWQ. Potential ranking and weighting factors are provided below. The basis of the ranking and weighting of POCs shall be justified and documented in the ADR application, and approved prior to initiating the alternatives analysis. Examples of detailed quantitative ranking and weighting procedures are provided in Appendix A.

1. The amount of assimilative capacity available in the receiving water should be a consideration in determining the relative importance of the parameter in the discharge. POCs with greater assimilative capacity in the receiving water are generally considered less important.
2. For toxic POCs, consideration of the EPA's toxic weighting factors (TWF) for ranking and weighting the POCs may be appropriate. EPA derives TWFs from chronic aquatic life criteria (or toxic effect levels) and human health criteria (or toxic effect levels) established for the consumption of fish in order to account for differences in toxicity across pollutants and to provide the means to compare mass loadings of different pollutants (EPA 2012). Other factors may be more appropriate for ranking toxic POCs than TWF on a case-by-case basis depending on site specific considerations such as the available assimilative capacity for each toxicant or downstream impacts associated with a particular toxicant. Additional guidance regarding ranking and weighting toxic pollutants using TWFs is provided in Appendix A.
3. For non-toxic POCs, ranking and weighting factors should reflect the relative potential impact of the POC on the beneficial uses of the receiving water. As this determination involves application of best professional judgment, the weighting factors will need to be developed in consultation with DWQ. An example of ranked and weighted non-toxic POCs is provided in Table 4-1.
4. Other factors to consider include the sensitivity of the receiving water or downstream waters to the POC and uncertainty associated with the estimated ambient and/or discharge concentration/load.

Table 4-1: Example Ranking and Weighting of Non-Toxic Parameters of Concern

Parameter	Rank	Weight
Total Phosphorus	1	40%
BOD	2	30%
TSS	3	20%
Total Nitrogen	4	10%
		100%

### 4.3 Optional Public Notice of the Parameters of Concern

Once the POCs are selected, an optional public comment period may be conducted (see Section 3.5.2). If no optional reviews are conducted, the public has an opportunity to comment during the mandatory UPDES public comment period.

## **5.0 LEVEL II ADR: ALTERNATIVES ANALYSIS**

The alternatives analysis requires, to the extent practicable, documentation of the costs and water quality benefits of alternative effluent management options. The purpose of the alternatives analysis is to evaluate whether there are any reasonable non-degrading or less degrading alternatives for the proposed activity.

### **5.1 Establishing the Baseline Alternative**

The Alternatives Analysis requires selecting the baseline alternative, which is defined as the alternative that meets designated uses and associated criteria through water quality based permit effluent limits established by the wasteload analysis or TMDL and any other categorical limits or secondary standards. The cost of the baseline alternative must be estimated for the purpose of assessing the cost reasonableness of less degrading alternatives.

### **5.2 Developing a Scope of Work for Alternatives Analysis**

The intent of this section is to outline a collaborative process to define the scope of work for a Level II review which allows for analysis and document preparation. This step is critical, as the level of effort for the alternatives analysis will depend on the size and complexity of the project and the relative importance and sensitivity of the receiving water.

#### *5.2.1 Collaborative Scoping*

The first suggested step in the scoping process will be to convene a meeting between the applicant, project consultants, and DWQ to identify less degrading alternatives to be considered and the level of detail appropriate for the alternatives analysis.

The requirements for the scope of the alternatives analysis are found in R317-2-3.5:

*For proposed UPDES permitted discharges, the following list of alternatives should be considered, evaluated and implemented to the extent feasible:*

- (a) innovative or alternative treatment options*
- (b) more effective treatment options or higher treatment levels*
- (c) connection to other wastewater treatment facilities*
- (d) process changes or product or raw material substitution*
- (e) seasonal or controlled discharge options to minimize discharging during critical water quality periods*
- (f) pollutant trading*
- (g) water conservation*
- (h) water recycle and reuse*
- (i) alternative discharge locations or alternative receiving waters*
- (j) land application*
- (k) total containment*
- (l) improved operation and maintenance of existing treatment systems*
- (m) other appropriate alternatives*

### *5.2.2 General Considerations for Selecting Alternatives for Evaluation*

The number of alternatives to be considered and the extent of planning details for alternative analyses may depend on the nature of the facility, size of the proposed discharge, the magnitude of degradation, and the characteristics of the receiving water. This section outlines screening procedures for determining reasonable alternatives that are appropriately scaled to the proposed project. The alternatives specified here are guidelines and may be modified from public comments or at the Director's discretion.

The following guidelines should be considered when defining the scope of work for the alternatives analysis:

1. The feasibility of all alternatives should be examined before inclusion in the options to be reviewed in more detail. If an option is initially determined not to be feasible, it does not need to be considered further.
2. Innovative or alternative treatment options should be limited to proven or successfully piloted processes.
3. The treatment options subject to review should focus on those which have the greatest potential for water quality improvement for the parameters of concern. Flexibility to modify the treatment process to address potential future changes in waste streams or treatment requirements should also be considered.
4. When an instream need for the discharge water is deemed by the Director to be of significant importance to the beneficial use (i.e., if removal of the discharge would result in a detrimental loss of stream flow), evaluation of reuse, land disposal or total containment may be unnecessary.
5. Alternatives may be ranked in order of potential for parameter reduction. Preference should be given to processes that have the greatest overall positive effect on water quality. Typically, these highest ranked processes will have the greatest reduction in pollutant load and affect the greatest number of parameters of concern.
6. Before improved operations and maintenance are considered as a way to prevent degradation, specific operation or maintenance activities should be identified. If the Director and the applicant agree, a third party may be used to assess potential for operations and maintenance improvements.

For many projects, the Facility Plan documents the selection of the preferred treatment option and may be sufficient to meet the alternatives analysis requirement of the ADR depending on the specific parameters of concern. All discharges requiring a permit must be provided with a level of treatment equal to or exceeding the requirements in R317-3 for technology based effluent limitations. As provided in R317-3, minimum technology based treatment requirements for POTWs consist of secondary treatment and applicable limitations and standards. The technology based review for POTWs in the Clean Water State Revolving Fund (SRF) process is accomplished through

the Facility Plan and Environmental Assessment. The requirements of the process include an investigation of project need, alternatives, effluent limitations, future conditions, and an Environmental Assessment. The technology based review for POTWs subject to the SRF process generally is satisfied on completion of the Facility Plan, Environmental Assessment, public participation, and DWQ approval. The technology based review for POTWs that are not in the SRF process is conducted through the UPDES permitting process.

The technology based review for non-POTW facilities likewise is conducted during the UPDES permitting and technology based requirements and are applied when the permit is drafted. DWQ has adopted categorical standards for discharges from various types of industries. Existing industrial discharges are required to achieve the best conventional pollutant control technology for conventional pollutants and the best available technology for nonconventional and toxic pollutants. Certain new industrial discharges are required to comply with new source performance standards based on the best available demonstrated control technology. Effluent limitations for parameters or industries not covered by the categorical standards and limitations are established on a case-by-case basis, based on best professional judgment. The technology review is complete when the Director approves the draft permit.

If a Level II review was conducted for the facility for a previous renewal that was based on the design basis of the facility and a Level II review is required for permit reissuance, the applicant should include a written statement certifying that: 1) all alternative treatment processes remain applicable and that the applicant is not aware of alternatives that were not previously considered, 2) that reasonable alternative operation and maintenance procedures are not available that would reduce degradation of the receiving water if implemented.

### *5.2.3 Finalizing the Alternatives Analysis Scope of Work*

Once a scope of work is agreed to between DWQ and the applicant, the applicant may proceed with completing the alternatives analysis.

The applicant may wish to public notice the scope of work for the alternatives analysis. In this case, the scope of work should be documented in a work plan. The work plan can be made available to the public and can be published on the State Public Notice website at the applicant's discretion. This public comment period may be held concurrent with the comment period for the parameters of concern, both of which are optional.

Additional alternatives may be identified during the public comment period or during evaluation of the alternatives. These possible changes to the scope of the alternatives analyses should be reviewed by the applicant and DWQ for inclusion in the work plan, as needed.

### 5.3 Procedures for Selecting the Preferred Alternative

The procedures presented in this section are intended to be applied to those alternatives that pass initial screening for feasibility. More detailed quantitative ranking of alternatives by degradation and cost effectiveness may be required depending on the size and complexity of the project and importance and sensitivity of the receiving water.

#### 5.3.1 Ranking of Alternatives by Degradation

The alternatives should be ranked from the least-degrading to the most-degrading alternative, as determined from the ranked and weighted pollutants of concern and the effectiveness of each alternative. Creating a ranked hierarchy of alternatives helps to simplify the applicant's selection of the least degrading, reasonable alternative.

A method for ranking the alternatives suitable for less complex reviews is to qualitatively rate the reduction in water quality degradation anticipated for each POC under each alternative. Below is an example scale for determining the benefit of each alternative for the given parameter of concern (Tables 5-1 and 5-2). The applicant may propose other qualitative ranking methods as an alternative to the example provided.

Table 5-1: Example Ratings for Reduction in Water Quality Degradation

Water Quality Degradation	Rating
No Reduction	0
Minor Reduction	1
Moderate Reduction	2
Major Reduction	3
No Degradation	4
Water Quality Improvement	5

Table 5-2: Example Qualitative Alternative Rankings by Degradation (from least to most)

Alternatives	POC A		POC B		POC C		Weighted Rating	Rank
	Rating	Weight <sup>1</sup>	Rating	Weight <sup>1</sup>	Rating	Weight <sup>1</sup>		
Alternative 4	5	50%	4	30%	4	20%	4.5	1
Alternative 5	3	50%	5	30%	5	20%	4	2
Alternative 2	4	50%	2	30%	3	20%	3.2	3
Alternative 1	2	50%	3	30%	4	20%	2.7	4
Alternative 3	2	50%	3	30%	2	20%	2.3	5
1: Weighting factor from the ranking and weighting of POCs.								

For more detailed reviews, the applicant will need to estimate the mass of each parameter removed by each treatment alternative based on the best available information. An example of a detailed quantitative ranking and weighting procedure that would be appropriate for more complex and detailed analyses is provided in Appendix A.

### 5.3.2 Evaluation of Feasibility of Alternatives

After ranking the alternatives by degradation, the applicant will need to evaluate whether it would be reasonable to select a less degrading alternative. The factors that determine if an alternative is reasonable are cost effectiveness and affordability. Cost effectiveness and affordability are addressed in the rule (R317-2-3.5.c), which states:

*“An option more costly than the cheapest alternative may have to be implemented if a substantial benefit to the stream can be realized. Alternatives would generally be considered feasible where costs are no more than 20% higher than the cost of the discharging alternative, and (for POTWs) where the projected per connection service fees are not greater than 1.4% of MAGI (median adjusted gross household income), the current affordability criterion now being used by the Water Quality Board in the wastewater revolving loan program. Alternatives within these cost ranges should be carefully considered by the discharger. Where State financing is appropriate, a financial assistance package may be influenced by this evaluation, i.e., a less polluting alternative may receive a more favorable funding arrangement in order to make it a more financially attractive alternative.”*

Additional guidance on how to evaluate cost effectiveness and affordability are provided in the sections below.

#### 5.3.2.1 Cost Effectiveness

An alternative must be cost effective to be considered reasonable. Cost effectiveness should be evaluated in two ways: overall cost increase and unit cost of pollutant removal in comparison to the baseline alternative.

The total cost increase of each alternative needs to be estimated. The cost estimate is typically based on a concept level design with limited engineering; sufficient detail in the cost estimate should be provided so that the basis can be verified. The estimate should be the Net Present Value (NPV) of the 20-year life-cycle cost including land acquisition, capital cost, and operation and maintenance (O&M) costs. The applicant shall propose the discount rate, along with justification, for use in estimating operation and maintenance costs in current dollars. For upgrades to existing facilities, only the cost basis for the upgrade should be considered, i.e. additional capital and O&M costs.

In some cases, the applicant will be requested to calculate unit costs for pollutant removal to provide additional information to evaluate the relative cost effectiveness of each of the treatment alternatives. Refer to Appendix A for detailed procedures for estimating unit costs.

#### 5.3.2.2 Affordability

Although a 20% total cost increase is generally considered the threshold for both cost effectiveness and affordability, the applicant may provide additional information on the affordability of the less degrading alternative.

For public sector discharges, alternatives where the projected per connection service fees are not greater than 1.4% of the median adjusted gross household income are generally considered affordable. This is the affordability criterion currently being used

by the Water Quality Board for the wastewater revolving loan program. Secondary socioeconomic factors that can be considered to evaluate affordability for public-sector discharges include debt indicators (such as bond rating and overall net debt), socioeconomic indicators (such as unemployment rate), and financial management indicators (such as property tax revenue and property tax collection rate).

For private sector discharges, the determination of the affordability of less degrading alternatives will be based on an evaluation of the effect on profitability, liquidity, solvency and leverage of the entity in comparison to industry benchmarks.

Worksheets to assist with the calculation of these economic indicators are available from EPA (<http://water.epa.gov/scitech/swguidance/standards/economics/>).

#### 5.3.2.3 Other Considerations

In selecting the preferred alternative, the following additional items should be considered and evaluated:

1. Alternative Operations and Maintenance (O&M) scenarios should be considered in the ranking process. An Alternative O&M scenario will generally be considered feasible if the annual cost increase is no more than 10% of the annual operating cost or 20% of the 20-year NPV, whichever is less.
2. In evaluating the feasibility of alternatives, the review should consider the current zoning for the community surrounding the facility.
3. The review of the selected alternative should also include factors such as reliability, maintainability, operability, sustainability, and adaptability to potentially changing discharge requirements.

Sustainability for the purposes of this evaluation is defined as the degree that the management method minimizes the depletion or damage to natural resources.

4. When different alternatives have similar potential to reduce degradation of water quality, other ancillary water quality benefits should be considered such as maintenance or enhancement of instream flow or habitat.
5. Optional mitigation projects may also be included with any selected alternative when it is deemed to be cost effective and environmentally beneficial. If the discharger includes a mitigation project with an alternative, consideration should be given to the expected net benefits to water quality of both the discharge and mitigations when ranking project alternatives.
6. Also included in the review should be consideration of the sensitivity of the receiving water and its potential for overall improvement based on existing watershed assessment and planning documents.

### *5.3.3 Selecting the Preferred Alternative*

Based on all of the factors considered, the applicant will recommend the preferred alternative to DWQ for review and approval.

For DWQ to fairly evaluate alternatives, the following information should be provided for each alternative process:

1. A technical description of the treatment process.
2. Rank alternatives from least degrading to most degrading based on the mass of pollutants removed.
3. Evaluation of cost effectiveness, including estimation of total cost and unit cost for pollutant removal.
4. Evaluation of affordability, if necessary.
5. Evaluation of the reliability, maintainability, operability, sustainability, and adaptability of each alternative.

## **5.4 Optional Public Notice of the Alternatives Analysis**

Once the preferred alternative is selected, an optional public comment period may be conducted (see Section 3.5.2). If no optional reviews are conducted, the public has an opportunity to comment during the mandatory UPDES public comment period.

## **6.0 LEVEL II ADR: STATEMENT OF SOCIAL, ENVIRONMENTAL, AND ECONOMIC IMPORTANCE (SEEI)**

Beyond the alternatives analysis, the second key component of a Level II ADR is a Statement of Social, Environmental, and Economic Importance (SEEI). The SEEI evaluates the societal benefits of the proposed activity by documenting factors such as: employment, production, tax revenues, housing, and correction of other societal concerns (i.e., health or environmental concerns). This portion of the ADR provides the project proponent the opportunity to document that the overall benefits of the project outweigh any negative consequences to water quality. As a result, the project proponent is best served by making this portion of the ADR as thorough as possible. At a minimum this portion of the review should contain the following:

1. A description of the communities directly affected by the proposed project, including factors such as: rate of employment, personal or household income, poverty level, population trends, increasing production, community tax base, etc.
2. An estimate of important social and economic benefits that would be realized by the project, including the number and nature of jobs created and projected tax revenues generated.
3. An estimate of any social and economic costs of the project, including any impacts on commercial or recreational uses.
4. A description of environmental benefits of the project and associated mitigation efforts (if any). For instance, if a project would result in an increase in stream flow that would provide additional habitat and a net benefit to stream biota, this benefit would be documented in this section of the review.
5. Documentation of local government support.

As with the Alternatives Analysis portion of the ADR, the size and scope of the SEEI should be commensurate with the size of the proposed project. The applicant may reference existing documents that address alternatives such as an Environmental Assessment or Environmental Impact Statement. Also, it is in the best interest of the project proponent to make the SEEI as thorough as possible if the project is likely to be controversial.

## 6.1 Regulatory Framework

The need for SEEs comes from 40 CFR 131.12(a)(2), which states, “Where the quality of waters exceeds levels necessary to support fish, shellfish, and wildlife and recreation in and on the water, the quality shall be maintained and protected unless the State finds, ..., that allowing lower water quality is necessary to accommodate important social or economic development in the area in which the waters are located...” (emphasis added).

Accordingly, UAC R317-2-3.5(c)(4) specifically calls for SEE demonstrations:

*“Although it is recognized that any activity resulting in a discharge to surface waters will have positive and negative aspects, information must be submitted by the applicant that any discharge or increased discharge will be of economic or social importance in the area.*

*The factors addressed in such a demonstration may include, but are not limited to, the following:*

*(a) employment (i.e., increasing, maintaining, or avoiding a reduction in employment);*

*(b) increased production;*

*(c) improved community tax base;*

*(d) housing;*

*(e) correction of an environmental or public health problem; and*

*(f) other information that may be necessary to determine the social and economic importance of the proposed surface water discharge.”*

## **6.2 Important Considerations in Developing SEEs**

This section provides guidance for some of the social, environmental, and economic considerations that the applicant may want to include with the SEE portion of the Level II ADR. The DWQ anticipates that the specific information provided in the SEE will vary depending on the nature of the project and the community or communities that will be affected by the proposed activity. Many of the decisions relating to the social, environmental, and economic considerations are local in nature and the local government agencies should be consulted to determine directions that are appropriate.

The purpose of the SEE is to demonstrate that the degradation will support important social, environmental, and economic development in the local area. The SEE is not about the economic benefits to an individual or corporation. Instead, the SEE is intended to support an informed public discussion and decision about the pros and cons of allowing water quality degradation. If the lowering of water quality resulting from the preferred alternative is not in the overriding public interest, then a non-degrading alternative must be selected or the permit will be denied. If the lowering of water quality is found to be in the overriding public interest, this finding is documented and submitted for public comment along with the draft permit incorporating the preferred alternative.

Following are the factors that should be considered while preparing the SEE:

1. Effects on Public Need/Social Services

Identify any public services, including social services that will be provided to or required of the communities in the affected area as a result of the proposed project. Explain any benefits that will be provided to enhance health/nursing care, police/fire protection, infrastructure, housing, public education, etc.

2. Effects on Public Health/Safety

Identify any health and safety services that will be provided to or required of the communities in the affected area as a result of the proposed project. Explain any benefits that will be provided to enhance food/drinking water quality, control disease vectors, or to improve air quality, industrial hygiene, occupational health or public safety. One example is the construction of a central treatment plant to correct problems with failing septic systems. Another example might be removal or additions of toxic or bacteriological pollutants, which reduce life expectancy and increased illness rates.

3. Effect on Quality of Life

Describe the impacts of the proposed project on the quality of life for residents of the affected area with respect to educational, cultural and recreational opportunities, daily life experience (dust, noise, traffic, etc.) and aesthetics (viewscape).

4. Effect on Employment

Explain the impacts of the proposed project on employment practices in the affected area. Identify the number and type of jobs projected to be gained or lost as a result of the proposed project. Will the proposed project improve employment or mean household income in the affected area?

5. Effect on Tax Revenues

Explain the impact of the proposed project on tax revenues and local or county government expenditures in the affected area. Will the project change property values or the tax status of properties? If yes, explain whether that change is a beneficial or detrimental to residents/businesses in the affected area.

6. Effect on Tourism

Discuss the effects the proposed project may have on the economy of the affected area by creating new or enhancing existing tourist attractions. Conversely, describe any impacts resulting from the elimination of or reduction in existing attractions.

7. Preservation of assimilative capacity

Review the pros and cons of preserving assimilative capacity for future industry and development. Applicants are encouraged to talk with local stakeholders such as planning, zoning, and economic development officials about their development plans, and should summarize the communities' position on utilizing assimilative capacity for the proposed project versus future plans or needs.

8. Other Factors

Provide any other information that would explain why it is necessary to lower water quality to accommodate this proposed project. This category should be used to address any social or economic factors not considered above.

### **6.3 Review and Approval of SEEs**

Important social, economic or environmental activity refers to an activity that is in the overriding public interest. The Director will generally consider public projects to be necessary to accommodate social and economic growth unless compelling information exists to the contrary. DWQ may consult with local and State planning and zoning agencies to determine whether or not the project is consistent with the long-term plans of affected communities. Information obtained from local planning groups may be compiled with other material obtained through the ADR process. The Director will make a determination. Appeals to the Director's decision may be made consistent with the procedures for administrative appeals.

#### **6.4 Optional Public Notice of the SEEI**

At a minimum the SEEI material will be submitted for public comment, along with all other Level II ADR materials, through the required public comment processes used for permit applications and renewals. An optional public comment period may be conducted for the SEEI (refer to Section 3.5.2)

## **7.0 SPECIAL PERMIT CONSIDERATIONS**

Most of the implementation procedures discussed in this document are clearly applicable to UPDES permitting procedures. However, the DWQ also issues other types of permits, which have special ADR considerations. This portion of the guidance is incomplete and the reader should contact DWQ for assistance regarding these permits in the interim.

### **7.1 Individual Stormwater Permits**

This portion of the guidance is incomplete and the reader should contact DWQ for assistance in the interim. Stormwater permits are subject to an ADR unless the impact to water quality is temporary and limited.

### **7.2 General Permits**

A number of discharges to surface waters are authorized under general UPDES permits issued by the DWQ:

- Concentrated animal feeding operations (CAFO)
- Concentrated aquatic animal feeding operations
- Construction dewatering or hydrostatic testing
- Construction site stormwater
- Municipal stormwater
- Industrial stormwater
- Drinking water treatment plants
- Private on-site wastewater treatment systems
- Coal mining operations
- Discharge of treated groundwater
- Application of pesticides

New and reissued General Permits will be reviewed for compliance with antidegradation provisions as described in this section.

Individual regulated activities authorized under General Permits through Notice of Intent (NOI) procedures are covered under the antidegradation review for the General Permit and will typically not be required to conduct a Level II ADR. DWQ, after reviewing the submitted NOI, may require an eligible discharge to undergo a Level II Review if it is determined that significant degradation may occur as a result of cumulative impacts from multiple discharges to a water body, as a result of impacts from a single discharger over time, and/or due to the sensitivity of the receiving water.

UPDES General Permits require that discharges authorized under the permit not violate water quality standards and that best management practices (BMP) contained in the permit are implemented. Compliance with the terms of the General Permit is required to maintain authorization to discharge.

An antidegradation review will be conducted for the entire class of general permittees that are authorized under the General Permit. The antidegradation review will consist of the following items:

- 1) *Identify the pollutants that may contribute to water quality degradation.*  
The pollutants that are reasonably expected to occur in discharges covered under the General Permit will be identified. These pollutants will be considered to have the potential to degrade high quality waters.
- 2) *Ensure that existing uses of the receiving waters will be protected.*  
The discharge of pollutants must not impair the existing uses of receiving waters. Methods that may be utilized to demonstrate the protection of existing uses include the determination of water quality based effluent limits (WQBEL) through a wasteload analysis, acute and/or chronic whole effluent toxicity (WET) testing, and implementation of best management practices (BMP) for stormwater and best practicable technology (BPT) for treatment of process water.
- 3) *Documentation and public notice of the antidegradation review.*  
The antidegradation review will be documented and public noticed with the draft General Permit.

The level of effort of the antidegradation review will depend on the nature of the General Permit, the number of dischargers anticipated to fall under the permit, and the sensitivity of the receiving waters; however, the level of effort will typically be limited since discharges with a significant potential to degrade water quality are required to obtain an individual discharge permit.

### **7.3 §401 Water Quality Certifications**

The Clean Water Act gives authority to each state to issue a Section 401 Water Quality Certification (§401 Certification) for any project that needs a Section 404 Permit, NPDES permit, FERC hydropower license, or other federal permit or license. The §401 Certification is a verification by the state that the project will not violate water quality standards. The §401 Certification is conducted pursuant to UAC R317-15. DWQ works with applicants to avoid and minimize impacts to water quality and may require actions on projects to protect water quality. These required actions are called conditions.

#### **7.3.1 §404 Dredge and Fill Permits**

Section 404 of the Clean Water Act regulates the placement of dredged or fill material into the “waters of the United States.”. The U.S. Army Corps of Engineers (USACE) administers the §404 permit program dealing with these activities (e.g., wetland fills, in-stream sand/gravel work, etc.) in cooperation with the EPA and in consultation with other public agencies. Nationwide general permits are issued for activities with impacts not deemed to be significant. Individual permits are issued for activities that are considered to have more than minor adverse impacts. For both individual and nationwide §404 permits, states have an obligation to certify, certify with conditions, or not certify §404 permits under §401 of the Clean Water Act. Antidegradation reviews

involving the placement of dredged or fill material will be performed via the §401 Certification process.

Section 73-3-29 of the Utah Code requires any person, governmental agency, or other organization wishing to alter the bed or banks of a natural stream to obtain written authorization from the State Engineer prior to beginning work. The Stream Alteration Program was implemented in 1972 in order to protect the natural resource value of the state's streams and protect the water rights and recreational opportunities associated with them. In 1988, the U.S. Army Corps of Engineers issued Regional General Permit 40 (GP-40) which allows an applicant to obtain both state approval and authorization under Section 404 of the Clean Water Act through a single application process. Although not all stream alteration activities qualify for approval under GP-40, many minimal impact projects can be approved under this joint permit agreement. These activities are subject to ADR requirements (R317-2-3.5.a.1.).

Antidegradation and compliance with water quality standards will be addressed and implemented through DWQ's §401 Water Quality Certification process. Applicants who fulfill the terms and conditions of applicable §404 Permits and the terms and conditions of the corresponding §401 Water Quality Certification will have fulfilled the antidegradation requirements. Additional antidegradation considerations may be incorporated into §404 Permits and the corresponding §401 Water Quality Certifications at the time of permit issuance. DWQ will not issue a §401 Water Quality Certification where degradation resulting from the project is not necessary to accommodate important social, environmental, or economic development.

The decision making process for Individual §404 Permits is contained in the §404(b)(1) guidelines (40 CFR Part 230) and contains the elements for a Level I and Level II ADR. Prior to issuing a permit under the §404(b)(1) guidelines, USACE must: 1) make a determination that the proposed discharges are unavoidable (i.e., necessary); 2) examine alternatives to the proposed activity and authorize only the least damaging practicable alternative; and 3) require mitigation for all impacts associated with the activity. A §404(b)(1) findings document is produced as a result of this procedure and is the basis for the permit decision. Public participation is also provided for in this process. Level I and Level II ADRs will be met through §401 Water Quality Certification of Individual §404 Permits that will typically rely upon the information contained in the §404(b)(1) findings document. However, if significant water quality degradation may occur as a result of the proposed activity, DWQ will require the applicant to provide additional documentation to complete a formal Level II Review.

For activities covered under a Nationwide §404 Permit, the antidegradation review will be conducted in conjunction with DWQ's review of the Nationwide Permit for §401 Water Quality Certification pursuant to UAC R317-15. The antidegradation review for Nationwide Permits will be conducted by DWQ similar to the process for UPDES General Permits (Section 7.2). For minor activities covered under Nationwide Permits (e.g., road culvert installation, utility line activities, bank stabilization, etc.), antidegradation requirements will be deemed to be met if all appropriate and reasonable BMPs related

to erosion and sediment control, project stabilization, and prevention of water quality degradation are applied and maintained. The §401 Water Quality Certification may place additional conditions upon the Nationwide Permit to prevent or minimize water quality degradation.

### *7.3.2 Federal Energy Regulatory Commission Licenses*

The Federal Energy Regulatory Commission (FERC) licenses the operation of dams that generate hydroelectric power. Applicants for these licenses are required to obtain §401 Water Quality Certification. Antidegradation and compliance with water quality standards will be addressed and implemented through DWQ's §401 Water Quality Certification process. Applicants who fulfill the terms and conditions of an applicable FERC license and the terms and conditions of the corresponding §401 Water Quality Certification will have fulfilled antidegradation requirements. DEQ will not issue a §401 Water Quality Certification where degradation resulting from the project is not necessary to accommodate important social or economic development. Hydroelectric dams affect water quality in the impounded reservoir and in the downstream receiving water. The antidegradation review for the water quality certification will focus on the degradation in water quality that may result from the construction of the dam and operation of the reservoir. DWQ may place conditions on operations or require other actions to mitigate the effects on water quality.

As part of the antidegradation review for the §401 Water Quality Certification for a FERC License, DWQ will require the applicant to complete a formal Level II Review if significant water quality degradation may occur.

When a project undergoes relicensing with FERC, the relicensing certification process will compare the water quality under the current FERC license with projected water quality in the future under the proposed FERC license. If this comparison shows no additional degradation in water quality, then a Level II Review will not be required.

## **8.0 FUTURE ITERATIONS OF THE IMPLEMENTATION GUIDANCE**

For the topics listed below in Section 8.1, the guidance is incomplete. The existing guidance provided for these topics represents DWQ's current thinking but is incomplete and should be applied with caution. For activities requiring ADRs, but not yet completely addressed in guidance, the permittee should consult DWQ for assistance. These ADRs will be conducted on a case-by-case basis consistent with the requirements of R317-2-3.

### **8.1 Planned Future Additions to the Guidance**

1. Stormwater Permits. Guidance for municipal, industrial and construction stormwater permitting.
2. Pretreatment Program. Guidance for how antidegradation provisions should be applied to the pretreatment program.

## REFERENCES

Environmental Protection Agency. 2008. Toxic Weighting Factors Database (Excel Spreadsheet). Environmental Protection Agency, Office of Water, Washington, D.C. EPA-HQ-OW-2008-0517-0713

Environmental Protection Agency. 2012. Toxic Weighting Factors Methodology. United States Environmental Protection Agency, Office of Water, Washington, D.C. EPA - 820-R-12-005

Utah Division of Water Quality. 2014. Utah Division of Water Quality: Quality Assurance Program Plan for Environmental Data Operations. State of Utah, Department of Environmental Quality, Division of Water Quality.

## APPENDIX A

### EXAMPLE PROCEDURES FOR RANKING AND WEIGHTING PARAMETERS OF CONCERN AND ALTERNATIVES

This appendix provides example procedures for ranking and weighting parameters of concern and alternatives that would be appropriate for more complex reviews. Site specific Level II ADRs may vary from this approach.

#### A-1 Ranking and Weighting Parameters of Concern

This section provides an example of how to quantitatively rank and weight toxic parameters that may be appropriate for more complex reviews. Example ranking and weighting calculations shown below are provided in the *UDWQ ADR Spreadsheet Tools* that are a companion to this guidance document.

1. Determine the assimilative capacity of the receiving water for each pollutant. The assimilative capacity is determined by comparing the ambient concentration in the receiving water to the water quality criteria for each pollutant. Ambient concentration is characterized by a summary statistic such as the average or 80<sup>th</sup> percentile value of the data. The water quality criteria can be found in UAC R317-2-14 and may be temperature, pH and/or hardness dependent. An example calculation of the assimilative capacity in the receiving water is shown in Table A-1.

Table A-1: Example Assimilative Capacity Determination

Parameter of Concern	Ambient Concentration (mg/L)	Water Quality Criteria (mg/L)	Assimilative Capacity	
			Used <sup>1</sup>	Available <sup>2</sup>
A	0.85	1.25	68%	32%
B	0.06	0.95	6%	94%
C	2.5	5.0	50%	50%
1: Assimilative Capacity Used = (Ambient Concentration/Water Quality Criteria) * 100				
2: Assimilative Capacity Available = 100 – Assimilative Capacity Used				

2. Determine the toxic weighting factor for each pollutant. EPA derives TWFs from chronic aquatic life criteria (or toxic effect levels) and human health criteria (or toxic effect levels) established for the consumption of fish in order to account for differences in toxicity across pollutants and to provide the means to compare mass loadings of different pollutants (EPA 2012). EPA considers TWFs appropriate for use in the calculation of cost-effectiveness values because such values only serve as indicators of the relative cost effectiveness of treatment technology options and not as absolute metrics.

EPA has calculated TWFs for 1,064 chemicals and the equations and results for calculating TWFs are contained in a set of Excel Worksheets known as the TWF Database (EPA 2008).

In addition, the TWFs can be used to calculate toxic weighted pound equivalents (TWPE) of pollutant removed as described below.

3. Rank and weight the toxic parameters of concern based on assimilative capacity and TWF.

The assimilative capacity used and toxic weighting factor can be multiplied to calculate a factor (assimilative capacity-toxic weighting factor) that may be used to rank and weight the POCs. An example of ranked and weighted toxic POCs is provided in Table A-2.

Table A-2: Example Ranking and Weighting of Toxic Parameters of Concern

Parameter of Concern	Rank	Assimilative Capacity Used	Toxic Weighting Factor	Assimilative Capacity - Toxic Weighting Factor
A	1	68%	4.04	2.75
B	2	6%	23.10	1.46
C	3	50%	0.63	0.32

## A-2 Ranking Alternatives

This section provides an example of how to quantitatively rank alternatives for more complex reviews. Example ranking and weighting calculations shown below are provided in the *UDWQ ADR Spreadsheet Tools* that are a companion to this guidance document.

### Evaluation of Degradation

For more complex evaluations of alternatives, the ranking of alternatives should be based on the development of a matrix giving the weighting of each parameter of concern and the mass of pollutant removed by each alternative. The applicant will need to estimate the mass of each parameter removed by each treatment alternative based on the best available information. Toxic and non-toxic pollutants should be evaluated separately.

Example procedures for ranking the alternatives for toxic pollutants are provided below:

1. Estimate the amount removed of each pollutant for each alternative.

Based on the best available information, estimate the amount of each pollutant removed, or not discharged to the receiving water, for each alternative. Because toxic pollutants differ in the amount that is considered toxic, the reductions in pollutant discharges need to be adjusted for toxicity by multiplying the estimated removal quantity for each pollutant by a normalizing weight, called a toxic weighting factor (TWF). The TWF for each pollutant measures its toxicity relative to copper, with more toxic pollutants having higher TWFs. The use of toxic weights allows the removals of different pollutants to be expressed on a constant toxicity basis as toxic weighted pound-equivalents (TWPE, lb-eq) and summed to yield an aggregate measure of the reduction in pollutant discharge that is achieved by a treatment alternative (Table A-3).

EPA has calculated TWFs for 1,064 chemicals and the equations and results for calculating TWFs are contained in a set of Excel Worksheets known as the TWF Database (EPA 2008).

Table A-3: Example Toxic Pollutant Removal Estimation for an Alternative

Toxic Parameter	Influent		Effluent		Removal		Toxic Weighting Factor	TWPE Removal (lb-eq/yr)
	(mg/L)	(lb/day)	(mg/L)	(lb/day)	(lb/yr)	(%)		
Ammonia	1	3.61	0.1	0.36	1,184.3	90%	0.0014	1.7
Arsenic	0.05	0.18	0.005	0.02	59.2	90%	4.04	239.2
Cadmium	0.02	0.07	0.005	0.02	19.7	75%	23.1	456.0
Copper	0.05	0.18	0.005	0.02	59.2	90%	0.63	37.3
Hexavalent chromium	0.05	0.18	0.005	0.02	59.2	90%	0.51	30.2
Iron	0.07	0.25	0.01	0.04	79.0	86%	0.0056	0.4
Lead	0.05	0.18	0.005	0.02	59.2	90%	2.24	132.6
Mercury	0.0001	0.00036	0.0001	0.00036	-	0%	120	0.0
Selenium	0.05	0.18	0.05	0.18	-	0%	1.1	0.0
Silver	0.01	0.04	0.004	0.01	7.9	60%	16.5	130.3
Total chromium	0.05	0.18	0.005	0.02	59.2	90%	0.076	4.5
Total residual chlorine	0.5	1.80	0.01	0.04	644.8	98%	0.509	328.2
Zinc	0.04	0.14	0.005	0.02	46.1	88%	0.047	2.2
Total								1,362.6

2. Rank the alternatives based on total equivalent weight removed.

Using the total toxic weighted pound equivalents removed, rank the alternatives (Table A-4).

Table A-4: Example Alternatives Ranking by Toxic Pollutant Removal

Alternative	Removal (lb-eq/yr)	Rank
Alternative 4	1,333	1
Alternative 5	1,012	2
Alternative 2	957	3
Alternative 3	886	4
Alternative 1	759	5

For non-toxic pollutants such as TSS, BOD, TN, and TP, due to the varying mass of each pollutant observed in the discharge, the amount removed needs to be normalized. The suggested approach is to calculate a unitless removal ratio of pollutant removal for each alternative to the maximum pollutant removal amongst all of the alternatives (Table A-5); however, other normalization methods could be appropriate.

Table A-5: Example Alternatives Ranking by Pollutant Removal for Non-Toxic Pollutants

Alternatives	POC A			POC B			POC C			Weighted Removal Ratio	Rank
	Removal (lb)	Removal Ratio <sup>1</sup>	Weight <sup>2</sup>	Removal (lb)	Removal Ratio <sup>1</sup>	Weight <sup>2</sup>	Removal (lb)	Removal Ratio <sup>1</sup>	Weight <sup>2</sup>		
Alternative 4	15	0.75	50%	15	0.50	30%	20	1.00	20%	0.73	1
Alternative 2	15	0.75	50%	10	0.33	30%	20	1.00	20%	0.68	2
Alternative 3	20	1.00	50%	5	0.17	30%	10	0.50	20%	0.65	3
Alternative 1	10	0.50	50%	20	0.67	30%	15	0.75	20%	0.60	4
Alternative 5	8	0.40	50%	30	1.00	30%	10	0.50	20%	0.60	5
Baseline	10	0.50	50%	8	0.27	30%	15	0.75	20%	0.48	6
Maximum	20			30			20				
1: POC removal normalized to maximum removal of all treatment alternatives, i.e. ratio of removal from alternative to max. removal of all alternatives.											
2: Weighting factor from the ranking and weighting of POCs.											

### Evaluation of Cost Effectiveness

In some cases, the applicant will be requested to calculate unit costs for pollutant removal to provide additional information to evaluate the relative cost effectiveness of each of the treatment alternatives. The unit cost of toxic pollutant removal is calculated using the total cost of the alternative and the equivalent pollutant mass removed that was previously determined (Table A-6).

Table A-6: Example Cost Effectiveness of Alternatives for Toxic Pollutant Removal

Alternative	Total Cost	Total Cost Increase	Pollutant Removal (lb-eq)	Unit Cost (\$/lb-eq/yr)	Unit Cost Increase
Alternative 1	\$1,100	10%	14	\$78.57	-18.3%
Alternative 2	\$1,400	40%	14.5	\$96.55	0.4%
Alternative 3	\$1,300	30%	13.5	\$96.30	0.1%
Alternative 4	\$2,000	100%	16	\$125.00	30.0%
Alternative 5	\$1,500	50%	15	\$100.00	4.0%
Baseline	\$1,000		10.4	\$96.15	

Since it is not possible to determine an equivalent mass of removal for non-toxic pollutants, the unit cost should be presented for each non-toxic pollutant under each alternative.