

AMMONIA - FREQUENTLY ASKED QUESTIONS

Introductory Questions:

1. Why has the state adopted new criteria for ammonia? The previous criteria for ammonia have not been revised since 1987. Water quality criteria for ammonia are necessary to protect aquatic life. In 1999, EPA published an Update of Ambient Water Quality Criteria for Ammonia. These revised national criteria are in the form of total ammonia, rather than un-ionized ammonia, and provide more accurate protection for aquatic life. The new default acute criterion for ammonia depends upon pH and fish species, while the default chronic criterion depends on pH and water temperature. The chronic criterion also takes into consideration the presence or absence of early life stages of fish. In June 2005, the Water Quality Control Commission (Commission) adopted EPA's revised ammonia criteria as part of the Basic Standards for Surface Water (Regulation No. 31, available at: <http://www.cdphe.state.co.us/op/regs/waterregs/100231basicstandards1205and1207.pdf>).
2. Are the new ammonia criteria appropriate for Colorado? In order to answer this question, the Colorado Wastewater Utility Council (<http://www.cwwuc.org>) sponsored an independent evaluation of EPA's 1999 criteria which was completed in 2004. This evaluation found that the criteria were appropriate for both cold water and warm water surface waters in Colorado. Following a June 2005 rulemaking hearing, the Commission determined that the criteria were appropriate for Colorado.
3. Will the changes to the Basic Standards ammonia criteria have an impact on all dischargers in the state? The new ammonia criteria will be adopted as enforceable standards in all river basins in the state. If your facility (e.g., municipal and some industrial plants) discharges ammonia in its effluent, then the changes in the ammonia criteria and standards could affect your future ammonia permit effluent limits. In general, facilities that discharge to cold water segments may have less stringent ammonia permit effluent limits while facilities that discharge to warm water segments may have more stringent ammonia effluent limits. The significance of any changes will depend on site-specific factors such as pH, temperature, and dilution flow of the receiving stream segment. If your facility does not discharge ammonia, then the changes to the ammonia standards will not affect your discharge permit.
4. What is the timetable for adopting the new criteria in different basins? The Water Quality Control Commission will be considering adoption of site-specific water quality standards based on the new ammonia criteria for waters in the San Juan and Gunnison River Basins in June 2006. A special Commission hearing to consider adoption of site-specific water quality standards based on the new ammonia criteria for waters in all other basins in the state is scheduled for March 2007. If site-specific modifications (applicable just to your facility and receiving water) are not adopted, then the default criteria for ammonia will be adopted by the Commission as site-specific standards. The new ammonia standards will not be used to develop permit effluent limits until they are adopted by the Commission at these hearings.

5. Where can I get additional information to help my governing board or elected officials understand the importance of these changes? Contact information for several organizations is provided below.

Water Quality Control Division Contacts:

You can get information online at: <http://www.cdphe.state.co.us/wq/wqhom.asp>
 Permitting Questions – Lynn Kimble, 303-692-3615, Lynn.Kimble@state.co.us or
 Standards Questions – Sarah Johnson, 303-692-3609, Sarah.Johnson@state.co.us
 AMMTOX Questions – Eric Oppelt, 303-692-3608, Eric.Oppelt@state.co.us
 Rulemaking Hearing Questions – Paul Frohardt, 303-692-3468, Paul.Frohardt@state.co.us

Ammonia Criteria Implementation Workgroup Chair:

Pat Nelson – 720-286-5070, pnelson@ch2m.com

Colorado Wastewater Utility Council Contacts:

You can get information online at: <http://www.cwwuc.org>
 Mentoring Questions – Paul Ferraro, 303-504-2177, pferraro@ix.netcom.com
 Other Questions – Amy Woodis, 303-286-3240, awoodis@mwr.dst.co.us

Ammonia Standards/Hearing Questions:

1. What are the new Basic Standards table values for ammonia? In June 2005, the Water Quality Control Commission adopted new ammonia criteria in Regulation No. 31, The Basic Standards and Methodologies for Surface Waters. The new criteria are in the form of equations for total ammonia (as N mg/L):

The *acute criterion* (applicable to the daily maximum value in your facility's permit) depends on whether or not salmonids (trout species) are expected to be present in your discharge facility's receiving stream:

For salmonids (trout) present:

$$acute\ criterion = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

For salmonids (trout) absent:

$$acute\ criterion = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

The *chronic criterion* (applicable to the 30-day average value in your facility's permit) depends on whether or not fish early life stages (see question 4) are expected to be present in your discharge facility's receiving stream:

For Fish Early Life Stages present:

$$chronic\ criterion = 0.854 * \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * MIN \left(2.85, 1.45 * 10^{0.028(25 - T)} \right)$$

For Fish Early Life Stages absent:

$$\text{chronic criterion} = 0.854 * \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 1.45 * 10^{0.028 * (25 - \text{MAX}(T, 7))}$$

In these two equations for chronic ammonia criteria, "Early life stages" refers to all fish species, not just trout. Early life stages include the pre-hatch embryonic period, the post hatch free embryo or yolk-sac fry, and the larval period, during which the organism feeds. Juvenile fish, which are anatomically rather similar to adults, are not considered early life stages. Since ammonia is less toxic to juvenile and adult fish than at earlier life stages, a somewhat relaxed standard is available for use when early life stages are expected to be absent from the aquatic ecosystem.

2. What do these equations mean to dischargers? The toxicity of ammonia to aquatic life is strongly dependent on the pH and temperature of the receiving stream. At higher pH and temperature levels, toxicity is higher and ammonia permit effluent limits tend to be more stringent. The chronic equations include a consideration of both pH and temperature. The acute equations (not shown in the figures 1 or 2 below) include only pH.

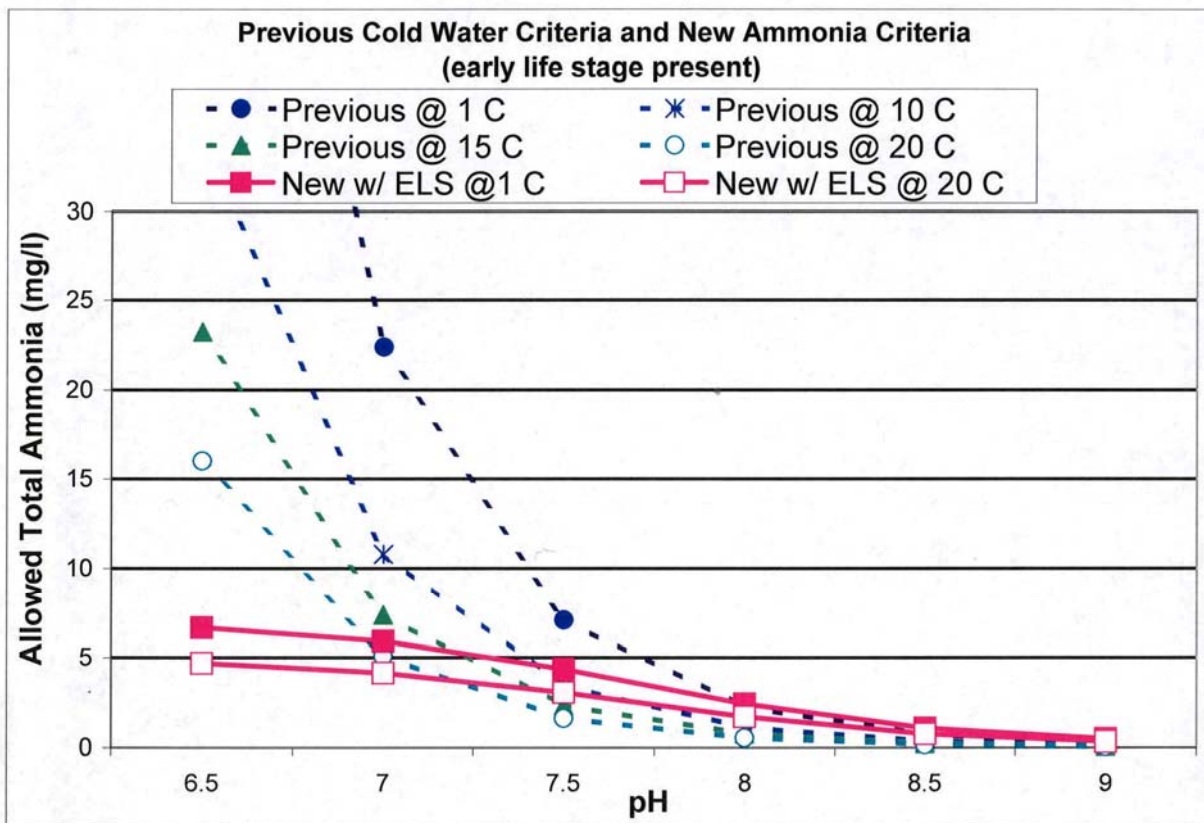


Figure 1

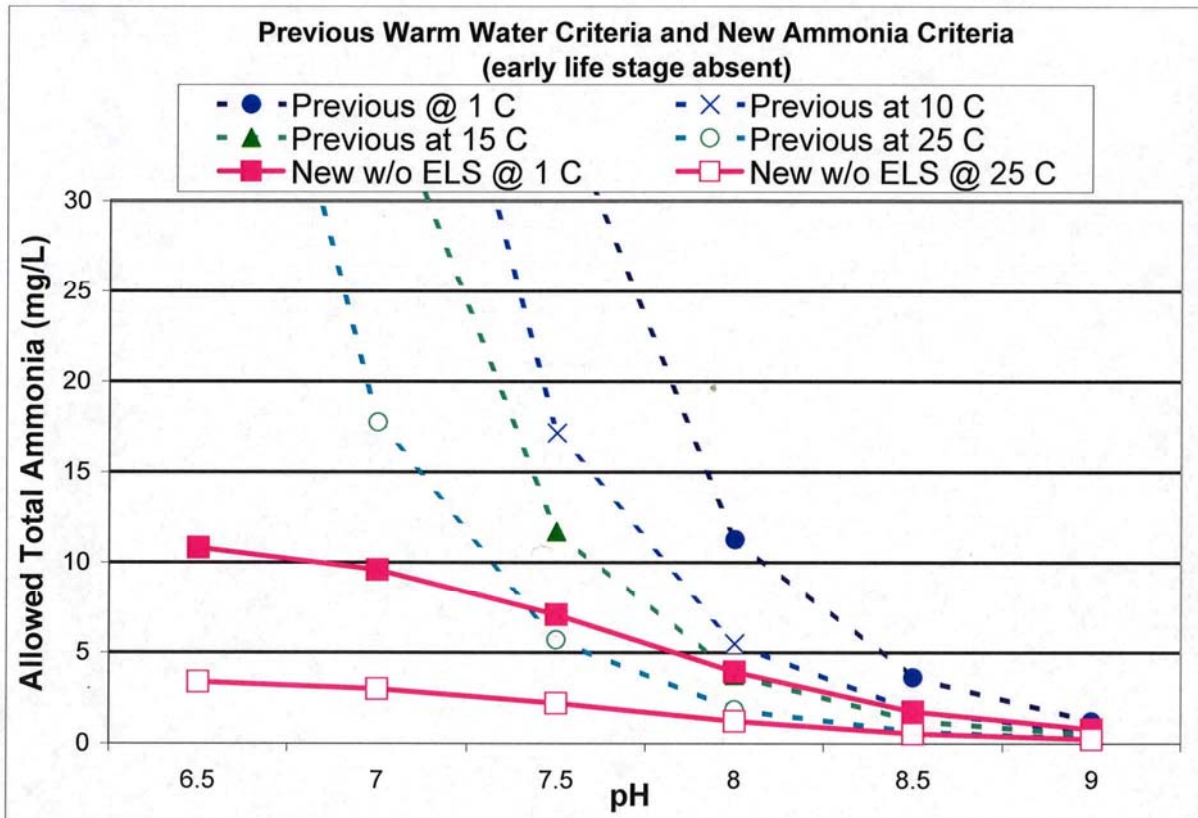


Figure 2

As can be seen in the figures, dischargers to cold water streams may see a slight increase in ammonia limits at higher pHs and temperatures. Dischargers to warm water streams may see a significant reduction in their permit effluent limits unless the current permit effluent limits are based on high temperatures and high pHs. The need to obtain additional treatment will be dependent on the capabilities of their current treatment system.

3. What does “Salmonids Present” or “Salmonids Absent” mean and when does it apply? Because trout (the type of salmonids found in Colorado) are especially sensitive to ammonia, separate equations were developed to protect them. The equations will be generally applicable to cold waters (salmonids present) or warm waters (salmonids absent). There may be cases where trout are present in warm water segments or not present in cold water segments, but these situations can be dealt with on a site-specific basis.
4. When does “Early Life Stage Present” apply? *For Cold Water* receiving streams, it is assumed that early life stages can be present all year long. This assumption can be modified on a site-specific basis if appropriate evidence that early life stages are present for a more limited portion of the year is submitted in the basin hearing. Generally, ammonia limits would be more stringent when early life stages are present.

For Warm Water receiving streams, it is assumed that early life stages can be expected to be present from April 1 through August 31. Again, this assumption can be modified on a

site-specific basis where appropriate evidence on the presence or absence of fish early life stages is submitted in the basin hearing. As with cold water receiving streams, ammonia effluent limits would be more stringent when early life stages are present. It is assumed that early life stages are *not* present from September 1 through March 31 for warm water streams.

The table below contains the Division’s information on when early life stages of different fish species can be expected to be found in both cold and warm water Colorado receiving streams. As the table shows, different species (including trout) have early life stages present during different months of the year. For example, if there is only one trout species present in your discharge facility’s receiving stream, accepting the Division’s default chronic criterion (which assumes that early life stages are present all year long) may be too restrictive.

Expected Presence of Early Life Stage for Selected Colorado Fish Species													
Cold or Warm?	Species	Month											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cold	Mountain Whitefish	X	X	X						X	X	X	X
Cold	Cutthroat Trout				X	X	X	X	X				
Cold	Rainbow Trout			X	X	X	X	X	X				
Cold	Brook Trout	X	X	X	X	X				X	X	X	X
Cold	Brown Trout	X	X	X	X					X	X	X	X
Cold	Longnose Sucker			X	X	X	X	X					
Cold	Mottled Sculpin					X	X						
Warm	White Crappie					X	X	X					
Warm	Creek Chub					X	X	X	X				
Warm	Yellow Perch				X	X	X						
Warm	White Sucker				X	X	X	X	X				
Warm	Carp					X	X	X					
Warm	Golden Shiner					X	X	X					
Warm	N. Redbelly Dace					X	X	X					
Warm	Flathead Chub					X	X	X	X				
Warm	Lake Chub					X	X						
Warm	Spottail Shiner						X	X	X				
Warm	Sand Shiner					X	X	X	X				
Warm	Brassy Minnow					X	X						
Warm	Plains Minnow				X	X	X	X	X				
Warm	Fathead Minnow					X	X	X	X				
Warm	N. Pike Minnow					X	X	X					
Warm	Longnose Dace					X	X	X					
Warm	Redside Shiner					X	X	X					
Warm	River Carpsucker					X	X						
Warm	Blue Head Sucker				X	X	X						
Warm	Black Bullhead					X	X	X					
Warm	Channel Catfish					X	X	X					
Warm	Brook Stickleback						X	X					

Expected Presence of Early Life Stage for Selected Colorado Fish Species													
Cold or Warm?	Species	Month											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Warm	Green Sunfish					X	X	X	X				
Warm	Pumpkinseed					X	X						
Warm	Bluegill					X	X	X					
Warm	Smallmouth Bass					X	X						
Warm	Largemouth Bass					X	X	X					
Warm	Black Crappie					X	X	X					
Warm	Iowa Darter					X	X	X					
Warm	Johnny Darter					X	X	X	X				
Warm	Red Shiner					X	X	X	X				
Warm	Bigmouth Shiner					X	X	X	X				
Warm	Common Shiner					X	X	X	X				
Warm	Plains Killifish					X	X	X	X				

X= early life stages are expected to be present
From: Water Quality Control Division's Prehearing Statement for revisions to the Basic Standards, Regulation #31, February 2005

5. If I disagree with the new ammonia default criteria, what can I do? At the time of individual basin hearings, the Division will propose new ammonia standards. Other parties, including individual entities, will have the opportunity to propose alternatives for the default criteria for individual stream segments. If your facility is located in the San Juan or Gunnison basins, new ammonia criteria will be applied in revising the ammonia standards in these basins at the Commission rulemaking hearing in June 2006. A proposal for segment specific standards has been put together by the Division containing information on the new ammonia criteria. This information is shown as Ammonia Attachment A to this document. A prehearing statement, the Division's discussion of why the proposed standards should be approved by the Commission, will be available in early April 2006. At the same time, formally submitted proposals from other parties on the ammonia criteria are due. In early May 2006, responsive prehearing statements, formal written responses to the Division's (and other parties' proposals), will be due. Following the June 2006 rulemaking hearing, it is anticipated that the new ammonia standards will become effective January 1, 2007.

For the remaining river basins in the state: The new ammonia criteria are scheduled to be implemented into the remaining river basins in Colorado in a rulemaking hearing scheduled for March 2007. The Division will finalize its proposal for revisions to standards in these basins during October 2006, to attach to a draft rulemaking hearing notice that will be reviewed by the Commission at its November 2006 meeting before filing.

A prehearing statement from the Division (and from any other proponents of water quality classification or standards revisions) will be due in early January 2007. Responsive prehearing statements will be due in early February. It is recommended that interested persons provide any information relevant to site-specific ammonia standards (see separate section below) to the Division as early as possible so that the Division can take such information into account in formulating its proposal. At the latest, interested persons should provide any relevant information by the early February deadline for responsive prehearing

statements. Following the March rulemaking hearing, it is anticipated that revised standards would become effective October 1, 2007.

6. What kind of evidence would I need to support a proposal for a different early life stage season? You would need to submit fish sampling surveys or studies that list the fish species found and/or time periods when early life stages are present in your receiving stream. The Division of Wildlife may have this information already. Contact Nicole Vieira at: Nicole Vieira, Ph.D., Water Quality Researcher, Colorado Division of Wildlife, 970-472-4380. Her email address is Nicole.Vieira@state.co.us. You can also check with the Water Quality Control Division for specific requirements.
7. How can I find out if my facility discharges to a warm water or cold water receiving stream? This information is contained in your permit rationale. You can also check the Commission's surface water quality classifications and standards regulations at: <http://www.cdphe.state.co.us/op/regs/waterqualityregs.asp>
8. What is a temporary modification? A description of temporary modifications to water quality standards can be found in Ammonia Attachment B to this document.

Implementation into Permits Questions:

1. What is the Division's timing for implementation into permits? The Division anticipates that all limits based on the new standards will be incorporated into permits at the time of renewal or amendment to increase discharge capacity. Ammonia standards in the San Juan and Gunnison basins will become effective January 1, 2007. All new or renewal permits issued after this date will have the new ammonia standards. If you have a permit in the San Juan or Gunnison basins that was written or renewed in 2006, ordinarily your permit would first have ammonia limits based on the new standards incorporated in the renewal of the permit, scheduled for 2011 (five years following issuance). If your facility is upgraded to increase hydraulic capacity after January 1, 2007, ammonia limits based on the new standards will be included in the permit at the time that hydraulic capacities are increased in the permit. (For other basins, the effective date for the new ammonia standards can be substituted for January 1, 2007 in this example.)
2. What kind of data do I need to determine my permit effluent limits? The Division will use a model called AMMTOX to calculate limits based on the new ammonia standards. The data that are needed for the AMMTOX model are the same as that used in the Colorado Ammonia Model (CAM), which is used to calculate limits based on the current standards. Data needed to run the model include upstream conditions, effluent characteristics, and downstream conditions from your facility:

Upstream data: Upstream temperature, pH, flow, and total ammonia levels should be provided. Ideally, the last five years of data would provide good model input, especially if taken on a weekly basis. Data collected on a less frequent basis may still be useful; therefore, any data (even if older than five years) should be considered.

Effluent data: The expected maximum monthly average flow (design flow) from the facility, average monthly effluent temperature, and pH. Ideally, this would include the last five years of data.

Downstream data: Average monthly downstream temperature and pH. Ideally, the last five years of data collected on a monthly frequency basis, if possible. The data must be collected at a point in the stream where the effluent and stream are completely mixed. In instances where these data do not exist, the model will use default data for pH and temperature.

3. Now that I have the data, how are ammonia limits calculated? The next step is to enter the data into the Division's AMMTOX computer program. The Division uses this computer program to develop effluent limits for facilities. The program predicts what happens in the stream when the effluent mixes with the stream. How close the program predicts what happens in stream is dependent on the amount of site specific data included in the program. The program attempts to simulate the changes predicted in stream relative to pH and temperature. Total ammonia limits are based on the maximum pH and temperature predicted downstream. It should be noted that the Division does not perform any calibration or verification that the program predictions are accurate.

The Division has made the AMMTOX program available and has provided an opportunity for technical training in the use of this model, permittees and their consultants should be able to make reasonable projections of these expected limits. On a limited basis, until the Commission reaches the decision, the Division can provide a general forecast of the range of ammonia limits for a specific discharge with the understanding that these may be revised. Permittees have the ability to use models to determine ammonia limits. It is suggested that prior to modeling, agreement on use of the model be obtained from the Division.

4. My facility discharges industrial waste with a small amount of ammonia. We have not had an ammonia effluent limit in the past. Do I need to be concerned now? If you have had detectable ammonia in your discharge, it is possible to get an ammonia limit in your permit. Depending on the level of ammonia in your discharge, the Division may determine that a reasonable potential exists for ammonia standards to be exceeded. Effluent permit limits are based on a reasonable potential analysis that the ammonia levels in the discharge may cause or contribute to an exceedance of the water quality standard for your receiving stream. This determination is based on the number of samples that have been collected by the discharger and the amount of variability of the ammonia levels in the effluent. Based on this information, a "factor" is determined. This factor is then multiplied by the maximum ammonia value measured of your facility's effluent. If the resulting ammonia value is greater than the proposed effluent limit, then the effluent limit is applied. If the ammonia value is less than the effluent limit but reasonably close and there is doubt as to the ability of the facility to meet the ammonia limits, monitoring probably would be required as of the effective date of the permit with a compliance schedule for any facility changes needed to meet the permit effluent limits at the end of the compliance schedule.
5. My stream is not use-protected, i.e., it is "reviewable." Will antidegradation apply? If your facility discharges to a reviewable stream segment and application of the new ammonia standards in a renewed permit would result in an increased loading to the receiving stream, an antidegradation review would be required. Antidegradation considerations for ammonia will be applied to all discharges to reviewable waters, just as they are now. These considerations are outlined in the Water Quality Control Division's Antidegradation Implementation Guidance available at:
<http://www.cdphe.state.co.us/op/wqcc/Guidance/wqguiddoc.html>.

6. My facility discharges to a cold water stream. Does antibacksliding apply? Yes, however, if the antidegradation requirements are met, the antibacksliding requirements will be met as well.
7. Will compliance schedules be available? Compliance schedules are generally based on the time needed to complete treatment changes required to meet standards. In order for the schedule to extend past the expiration date of the permit, there must be a temporary modification in place with an expiration date that is later than that in the permit.
8. What information do I need to submit a request for a temporary modification? A description of temporary modifications to water quality standards can be found in Ammonia Attachment B to this document. There also will be substantial costs of compliance with the new ammonia criteria for some entities, once the criteria are adopted as standards in individual basins and implemented in discharge permits. Economic impacts on a per capita basis may be most significant for small communities located on warm water streams and currently using lagoon treatment systems. Permittees are encouraged to assess cost information at the same time they are evaluating other information related to the new ammonia criteria. Once the financial ability to build a facility is determined, it is important to evaluate the timing so that a reasonable date for compliance can be determined.

Any permit that is in the process of being renewed or issued on the date of the hearing will incorporate the new criteria. The Division does not intend to reopen issued permits. For such permits, the new criteria are expected to be included at the time of renewal. Therefore, an important factor in evaluating time frames is when your permit is up for renewal. If your permit expires in 2007, it should be assumed that you will have the new criteria. Permits issued in 2006 may not be subject to the new criteria until 2011. If your permit does not expire until after 2007, you should factor in the time period between the Commission hearing and the permit expiration date as part of your schedule.

Another element of the timing is the collection of data to determine appropriate ammonia limits. Since the program being used by the Division to calculate values under the new criteria is similar to the Colorado Ammonia Model, the Division may be able to calculate the new limits with the present data. Depending on the age of the data and quantity of data it may be prudent to factor in collection of at least one year of new data. The next important element is to determine the time necessary to perform the needed modifications. This should include an engineering study which evaluates whether the effluent limits can be met via operational controls.

If the effluent limits will require plant modifications, then time needs to be included for design, construction, and startup of the plant. Included in this process is the determination of how the project will be funded. If no data or limited data are needed, the funding for modifications are available, and the plant modifications are minor to moderate, it is possible that the project can be completed within a permit cycle. The request for a temporary modification should include a discussion of these elements and a reasonable estimate of the time needed.

9. If I don't ask for a temporary modification, and later find I need additional time, what are my options? It is strongly recommended that all dischargers begin to evaluate their facility's capability to meet the new ammonia standards in a timely manner. Where a permittee or new discharger becomes aware of the need for a temporary modification after the initial round of hearings in 2006-07, they may request that the Commission hold a site-specific

hearing to consider adoption of a temporary modification to the ammonia standards for the stream segment that is/will receive the discharge.

Facility/Costs and other Considerations Questions:

1. What ammonia removal processes are being used in Colorado?

Ammonia is most commonly removed through a process called nitrification, which is a biological process that converts ammonia to nitrate. This process occurs concurrent with the oxidation of organic matter, most commonly using an activated sludge process. In order to ensure that nitrification occurs, the operating conditions for the activated sludge process must be altered, generally resulting in a reduction in the treatment capacity of the system, particularly during the colder parts of the year since the nitrification process is sensitive to temperature. For plants that are marginal in terms of capacity, the need to nitrify can result in inadequate capacity. Other processes that are sometimes used are breakpoint chlorination (very rare, if at all, in Colorado), and separate stage nitrification generally using a fixed film process such as trickling filters or biological aerated filters (BAFs). Both of these processes would generally occur after a process to remove organic matter.

It should be kept in mind that ammonia removal will likely result in high levels of nitrate in the discharge. If your receiving stream has a water supply use designation, additional treatment (denitrification) may be necessary to remove the nitrate before discharge. This additional treatment step can add cost. Future nutrient criteria also could place limitations on the amount of nitrate that can be discharged. Accordingly, it may be prudent to consider both nitrification and denitrification as part of treatment process upgrades.

2. I have a lagoon system. Can I meet the new ammonia standards?

Typically, lagoons can not meet ammonia nitrogen limits below 10 mg/L. It is suggested that if you operate a lagoon system, you collect effluent data on ammonia to determine what ammonia levels the facility produces.

3. Upgrading my facility will cause treatment charges to increase. Is there an alternative to upgrading the facility?

The alternatives to upgrading your facility are dependent on factors such as the actual flow vs. the design flow, and the location of your facility. Potential options include:

- Reducing the design flow of your facility. If a smaller design flow for the plant is used in the permit calculations, it can result in higher ammonia limits. For this to work, it requires that there is a significant difference between the actual and design flows.
- Request tiered limits. Rather than reducing the design flow of the plant, you can request tiered limits be applied in the permit. Again if there is a significant difference between the design flow and actual flows, it may be possible to obtain permit limits that do not require upgrades until flows increase.
- Evaluate different methods for effluent disposal such as discharge to groundwater, land application or evaporation. Although some of these methods of discharge may also require treatment plant changes.

Options that you may actually consider will depend on your specific facility needs.

4. What is the cost of additional ammonia removal?

The cost of ammonia removal can be wide ranging. For example, if a plant has adequate capacity in an activated sludge system, the primary effect would be a significant increase in aeration requirements. However, if a plant is marginal in capacity, the need to nitrify year-round could result in significant capital expense in terms of adding basins, clarifiers, aeration capacity, and associated support facilities, or a separate stage process such as nitrifying trickling filters or BAFs. In addition, nitrification can create problems with pH, requiring chemical addition to offset. Another cost could be the potential need to remove the nitrate produced through nitrification, which might not otherwise be present in the effluent. Upgrades to a facility can also result in increased capacity requiring operators with higher certification levels.

5. Are there grants or other funding sources available to assist in meeting these new limits? If so, how can I apply for one?

Currently, there are only four sources of grant funds available for wastewater infrastructure improvements: the Energy Impact Assistance Fund, Community Development Block Grant Program, USDA Rural Development and the State Domestic Wastewater Grant Program.

The Department of Local Affairs (DOLA) administers the Energy Impact Assistance Fund and the Community Development Block Grant Program. The Energy Impact Assistance Fund provides grants up to \$500,000 to communities that are “political subdivisions socially or economically impacted by the development, processing or energy conversion of minerals and mineral fuels. . .” Application deadlines are April 1, August 1 and December 1 each year.

The program uses a maximum grant/loan funding guideline of \$1,000,000 per project, offers a 5% interest rate on its loans, and provides a 20 year maximum term. DOLA has been able to effectively fund all projects that have met the program criteria in recent years.

The Community Development Block Grant program provides grants up to \$500,000 to “non-entitlement” municipalities and counties. Funding is provided for public facilities and services that primarily benefit low and moderate income areas. Funding from DOLA can be obtained by working with your DOLA Field Representative. You can locate your representative at: <http://www.dola.state.co.us/fs/index.htm>

USDA Rural Development also offers grants, usually in conjunction with a loan, to communities with populations less than 10,000 who are “unable to get credit elsewhere at reasonable rates and terms.” Funding can be used for wastewater treatment facility improvements if they are modest in size, design, and cost. The project must mainly serve rural business and residents. Funding from USDA Rural Development can be obtained by working with your USDA Field Representative, which can be found at: <http://www.usda.gov/rus/water/states/co.htm>

The Water Quality Control Division administers the State Domestic Wastewater Grant Program. Due to State budget cuts, funding has not been allocated to the program since 2001. The Division also offers \$10,000 planning and design grants to assist communities, population less than 10,000, with up front planning and design costs associated with executing a Water Pollution Control Revolving Loan (WPCRF).

The WPCRF administered by the Division, in conjunction with DOLA and the Colorado Water Resources and Power Development Authority, provides low interest loans for publicly owned wastewater treatment facilities. Under the WPCRF program, the Authority issues bonds to fund leveraged loans (greater than \$2 million.)

6. If there will be a statewide implementation of new ammonia standards, many facilities will need to be upgraded at about the same time. Will there be enough money (grant or loan) available with the state or in the revolving fund for all the WWTPs to upgrade?

It is unclear how much funding will be needed by local communities when these standards are implemented, but DOLA has been able to effectively fund all projects that have met program criteria in recent years.

The WPCRF has approximately \$41 million in loan capacity in 2006. An \$8 million minimum set-aside is reserved for direct loans of \$2 million or less. Of the \$8 million set-aside, up to \$6 million is reserved for loans to qualified disadvantaged communities. In September of each year, loan repayments are deposited into the fund which can be made available for additional direct loans if the \$8 million set-aside is not adequate. Direct loan rates are set at 3.75% for 2006.

Beginning January 1, 2006, governmental entities that qualify as a “disadvantaged community” will be eligible to receive interest rates as low as 0% on loans for water quality related improvement projects. The maximum loan amount: \$2 million up to 20 years for communities with a population less than 5,000. Loan interest rates of 0% are available for communities with a median household income level that is 60% or less of the statewide average (\$28,321) and 1.875% interest rates are available for communities with median household income levels that range between 61% to 80% of the statewide average (\$28,321 and \$37,672.)

Federal funding for this program has been reduced by 50% over the last few years and is expected to be reduced again in 2007. If it is determined that the WPCRF lacks sufficient funds to cover loans for all eligible projects that are ready to proceed within the funding year, the project prioritization procedures as outlined in the 2006 WPCRF Intended Use Plan will be implemented. The Intended Use Plan can be found on the internet at: <http://www.cwrpda.com/WPCRFsubmenu.htm>

7. If there isn't enough money for loans to all facilities needing upgrades, where do we get the funds for plant improvements?

The Division, in conjunction with all funding agencies, meet quarterly to evaluate project proposals and develop funding packages to leverage both state and federal dollars in order to meet the infrastructure demands of the state. The Colorado Water Resources and Power Development Authority (Authority) is an additional source of funding for wastewater infrastructure projects. The Authority operates the Water Revenue Bond Program to provide funds up to \$500 million. The Authority subsidizes the costs of bond issuance for the program. The Authority's web site can provide more information about this program: <http://www.cwrpda.com/Programs.htm>

The private sector remains an important source of funding for local infrastructure. The terms of private sector loans and bond issues are generally less favorable than what is available from the public sector.

8. What will be the consequences if the owners/operators of a facility do not prepare for the impending ammonia standards? Noncompliance with the requirements of federal and state regulations can result in adverse consequences, including penalties. Non-compliance issues should be discussed with the legal counsel advising the governing board of your facility. However, to avoid such situations from occurring in the future, you should contact the Division to discuss regulatory options for your facility, such as compliance schedules and temporary modifications.

9. If I make upgrades to my facility to meet new ammonia permit limits, will the ammonia criteria be revised again in the future? Water quality standards are subject to change based on the availability of new scientific data. Any and all water quality criteria are subject to future change; however, the timing and magnitude cannot be predicted. However, if the past is any indicator, water quality criteria for most parameters are likely to become more stringent in the future.