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October 4, 2002

Ms. J. Signe Snortland
Dakotas Area Office
Bureau of Reclamation
304 E. Broadway
P.O. Box 1017
Bismarck, ND 58502

Re: Comments on Draft Specific Plans of Study
Red River Valley Water Supply Study

Dear Ms. Snortland:

As a member of the Technical Team and engineering consultant for the Eastern Dakota Water Users (EDWU) for the Red River Valley Water Supply Project (Red River Project), I have reviewed the draft Specific Plan of Study (SPOS) for the Biota Transfer, Engineering, Financial Analysis, Hydrology, and Needs Assessment study areas. Please accept the following comments based on my review:

Draft Biota Transfer SPOS

Although the importance of this issue is recognized, I did not complete a detailed review of the draft Biota Transfer SPOS at this time. Due to the sophisticated nature of the biota transfer issue, it is anticipated that a number of entities will be involved in addressing the biota transfer issue, representing the State of North Dakota and the Red River Valley's interests. Nonetheless, I will continue to monitor progress and provide technical input, as appropriate.

Draft Engineering SPOS

Based on a review of the draft Engineering SPOS, it appears that a number of my June 29, 2001 comments were incorporated into the current SPOS document. Thank you for addressing my previous comments. Per my latest review, please note the following items:

1. **ENGINEERING 1 – TASKS ASSOCIATED WITH OTHER SPOS's:** In the list of tasks in the paragraph under this heading, the "analysis of potential water conservation water demand reductions" item seems confusing. Perhaps a more appropriate term for this item would be "analysis of potential water conservation practices and associated water demand reductions".

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2. **Engineering 1.1.2 – Develop MR&I Water System Summary Reports:** In the last sentence of the paragraph under this heading, it appears that the word "undated" should have been "updated".

3. **Engineering 4.3 – Develop Design Criteria for Water Treatment Facilities:** Although probably included in the catch-all bulleted item listed as "Other treatment process requirements", a specific bullet item for liquid and solids residuals (i.e. sludges, backwash water, and reverse osmosis concentrate) handling and disposal would be a prudent consideration given the potentially significant technical, financial, and environmental impacts.

4. **Engineering 4.5.3 – Develop Design Criteria for Ring Dike Storage:** As a likely water quality and operational concern for this storage facility, a specific bullet item for algae growth and taste and odor control could be considered.

5. **Engineering 4.11 – Review Design Criteria:** In the first sentence of the paragraph under this heading, it would seem appropriate to review Engineering 4.1 **through** 4.10 prior to being used in Engineering 5.

6. **Engineering 5.3 – Design of MR&I Water Treatment Facilities:** As noted under Engineering 4.3, consideration could be given to include a specific bullet item for liquid and solids handling and residuals disposal.

7. **Engineering 5.5.3 – Design of Ring Dike Storage:** As noted under Engineering 4.5.3, consideration could be given to include a specific bullet item for algae growth and taste and odor control.

8. **Engineering 7.1 – Development of System Operation Plans:** With the current emphasis on water system security, it is assumed that the reference to "potentially foreseeable unplanned events that could jeopardize the ability of the system to treat/deliver water" would extend beyond a breach in the biota treatment process. In accordance with vulnerability assessment and emergency response planning requirements, it would be prudent to include the consideration of features and elements that provide the appropriate level of system security for the facilities and systems developed under the evaluated alternatives.

<u>Draft Financial Analysis SPOS</u>

Upon review of the draft Financial Analysis SPOS, the document generally appears to be well organized and offers a good description of the assumptions to be utilized during the analysis. I found it difficult, however, to provide specific comments on the intended application of the SPOS beyond the process previously used for the Phase II Study without real examples to consider. I intend to be heavily involved in the various tasks associated with the Financial SPOS; therefore,

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I will have the opportunity to provide additional comments or concerns as they arise over the course of the financial analysis process.

Draft Hydrology SPOS

Similar to the draft Financial Analysis SPOS, the draft Hydrology SPOS appears to be well organized and conveys a detailed method of analysis. Hydrology is not a technical area in which I am particularly qualified to provide detailed technical review and comment. Based on my previous involvement in the study process and review of the SPOS, I offer the following comments:

1. **Hydrology 3.3.1 – Surface Water Quantity Data Compilation:** The paragraph under this study task refers to the update of a report that estimated streamflows in the applicable river sources on a monthly basis. I am very concerned with a monthly approach to estimating streamflows and strongly recommend that daily streamflows be considered as the delineation benchmark. This recommendation is based on the premise that users need water on a daily basis and are unable to average their respective usage over the course of several days, much less over a one-month period of time.

2. **Hydrology 4.3 – Specific River Studies:** With respect to the previous study effort that did not include detailed study of the Red Lake River, I was very pleased to note the inclusion of the Red Lake River under this study task. In the previous study effort, it was assumed that East Grand Forks and Grand Forks could rely on the Red Lake River to meet their water needs with only a limited amount of dependence on the Red River by Grand Forks. Without a detailed evaluation of the Red Lake River, this assumption, if incorrect, could lead to substantially inaccurate study results and ultimately result in failure to identify significant water supply shortages for Grand Forks. It should also be noted that if shortages were identified at Grand Forks, the shift in increased dependence on the Red River by Grand Forks could potentially contradict the conclusions determined by the previous study.

3. **Hydrology 4.3 – Specific River Studies:** In addition to including the Red Lake River as a candidate for study, it should be noted that there are a number of Red River Valley communities that utilize river water sources other than those listed under this study heading. These sources include the Pembina River (Langdon), the Park River (Park River), and the Goose River (Mayville) systems, which are some of the larger tributaries of the Red River. If not intended for detailed evaluation under the hydraulic study of the Red River, it would be prudent to study these river systems from water quantity and water quality perspectives for the benefit of the entities listed above.

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Draft Needs Assessment SPOS

As noted in my comments regarding the draft Engineering SPOS, it appears that many of my June 29, 2001 comments were incorporated into the current Needs Assessment SPOS. However, I would like to reemphasize some of my past comments and present a couple of others as identified per my latest review:

1. **INTRODUCTION:** The first paragraph seems to clearly limit the Needs Assessment to the Red River Valley in North Dakota. I am not comfortable with excluding the Cities of Moorhead and East Grand Forks, Minnesota from the study efforts based on their locations on the Red River, their reliance on surface water, and the fact that their water supply needs must be met.

2. **Needs 1.2.2 – Planning Assumptions:** I support the assumption of a 50-year planning period and would object to a shorter planning period. As the planning process progresses, consideration may need to be given to extending the planning horizon beyond 2050 to maintain a 50-year planning period.

3. **Needs 1.4.1 – Population Projections:** As noted in my comment above, I support a 50-year planning period as it is intended to ultimately address long-term water needs. As suggested in the SPOS, the Needs Assessment will rely upon demographic modeling techniques to complete population projections to estimate water demand, identify potential water supply shortages, and develop potential solutions. As a result, the conclusions of the demographic model ultimately steer the analysis and provide primary direction for the project.

   It is my understanding that demographic models are very useful in gathering historical data and utilizing that data to generate projections, typically in the range of 10 to 15 and sometimes 25 years into the future. When applying demographic modeling techniques over extended planning horizons (such as 50 years), however, it is reasonable to assume that the margin of error could become significant and fail to account for a range of possibilities. Failing to account for potential growth could result in the implementation of inadequate systems and a need for supplemental infrastructure prior to the culmination of the planning period. Many of the alternatives under consideration for meeting the long-term water needs of the Red River Valley will not be readily and economically expandable. Therefore, it is critical to construct the ultimate water supply solution right the first time. It is my recommendation that the population projection methodology takes into consideration the strong continued population growth in the Red River Valley and subsequently allows a sensitivity analysis for the associated water supply features/infrastructure to allow the ultimate users to understand the ramifications of this growth.

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4. **Needs 1.4.2 – Economic Development (Industrial Growth) Projections:** I support the study of a range of economic development scenarios, provided that an equitable amount of energy is devoted to exploring positive outlooks for development compared to less positive economic development forecasts.

5. **Needs 3.3 – Water Demand:** I take exception with the assumption that the remaining independent water systems serving less than 500 people will continue to operate an independent system that meets their future needs. Based on recent trends, it would be much more simplistic and realistic to assume that all systems serving less than 500 people would eventually rely on regional water systems over the course of the 50-year planning horizon, as approximately half of the communities less than 500 people currently rely on regional systems for their water service. This assumption could be further supported by the economic challenges associated with replacing aging infrastructure, complying with heightening regulations, and implementing and operating technologically advanced treatment facilities. Arguably, small systems will ultimately realize that regional systems are able to spread the financial burden associated with these challenges over a larger user base and benefit from economy of scale factors.

6. **Needs 3.3 – Water Demand:** It should be recognized that some of the bulleted information items sought under this task could be difficult to obtain due to present record keeping practices by some municipalities. Such information includes: 1) service connections by types; 2) annual and monthly treated water use by type; and 3) monthly wastewater return flow data.

7. **Needs 4.1.3 – Preparation of Current Regulatory Overview for MR&I Systems:** Regarding the bulleted list of regulations, please note that the Enhanced SWTR (ESWTR) and Disinfectants/ Disinfection By-Products (D/DBP) Rule actually consist of a series of regulations that are being implemented in phases over an extended period of time. Currently, these include the Interim ESWTR (IESWTR), the Long-Term 1 ESWTR, the Long-Term 2 ESWTR, Stage 1 of the D/DBP Rule, and Stage 2 of the D/DBP Rule. Many systems have implemented improvement projects or are in the process of planning for or implementing improvements to comply with these regulations. Although Stage 2 of the D/DBP Rule may not have a significant impact, specific attention should be given to the LT2ESWTR considering its focus on the inactivation/removal of *Cryptosporidium* and its potential applicability to the predominantly agricultural Red River Valley watershed. With respect to the trend of heightening regulation, it is also possible that subsequent phases of these rules could be implemented in the future and could have major implications to systems of the Red River Valley.

   Recognizing that the list presented is admittedly not comprehensive, it should be noted that the Filter Backwash Recycling Rule was omitted while Radon is listed in duplicate.

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8. **NEEDS 5 – WATER CONSERVATION ANALYSIS FROM ENGINEERING SPOS:** As noted in my June 29, 2001 comment letter, water use in North Dakota is extremely low on a per capita basis in comparison to national statistics. Although water conservation efforts in other areas have been successful in reducing water demand, it is probable that these conservation efforts would be less effective in the Red River Valley, as it appears that most residents tend to use water conservatively already.

9. **NEEDS 6 – FUTURE MR&I WATER DEMAND:** In accordance with previous comments, I am pleased to find that design criteria for system sizing and analysis will be based on maximum day use as well as average day use.

10. **Needs 6.2 – Future Population Projections:** Special consideration should be given to population projections for regional systems and rural areas. For instance, projections for rural systems located near larger population centers such as Fargo, Grand Forks, and Wahpeton will likely need to include a significant growth rate. Regarding the comment on including unserved rural residents who have expressed interest in joining adjacent systems, it would seem more appropriate to include all unserved residents whether interested or not. Even though this is somewhat unrealistic, this would serve as a mechanism to account for some limited development around some of the rural communities while some of the rural residents remain unserved.

Thank you for the opportunity to review these documents and provide comments. The responsible entities should be commended for the significant amount of effort put forth in preparing these thorough SPOS documents. We look forward to working with you and participating in this very important project for the Red River Valley.

Sincerely,

Advanced Engineering and
Environmental Services, Inc.

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