

RECLAMATION

Managing Water in the West

Record of Decision for the Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment

Approved:



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Date



U.S. Department of the Interior
Bureau of Reclamation

Introduction

This Record of Decision (ROD) documents the Bureau of Reclamation's selection of the Preferred Alternative for water treatment for the Northwest Area Water Supply Project (Project). The Regional Director of Reclamation's Great Plains Region is the responsible official for the decision made in this ROD. The Federal decision to be made is the selection of an alternative for a water treatment process and facility that is the responsibility of Reclamation. As the lead agency for the purposes of compliance with the National Environmental Policy Act (NEPA) of 1969, Reclamation prepared the Environmental Impact Statement (EIS) that is focused on water treatment for the Project. Four water treatment alternatives, including no action and three action alternatives, were evaluated in the Final EIS. Reclamation's Preferred Alternative, developed from the alternatives analyzed in detail, was identified in the Final EIS.

The cooperating agencies involved in preparing this Final EIS are:

- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency (EPA)
- Three Affiliated Tribes (Mandan, Hidatsa, and Arikara Nation)
- North Dakota State Water Commission
- City of Minot, North Dakota
- Garrison Diversion Conservancy District

Summary of Action

The Project is a bulk water supply system that will serve the municipal and rural water needs of northwestern North Dakota. Figure 1 identifies the communities and rural water systems that will be served, along with other geographic information about the Project service area.

Reclamation proposes to construct a biota water treatment plant (WTP) for the Project to treat the source water from Lake Sakakawea before it is delivered into the Hudson Bay basin. Four alternatives have been developed to further reduce the risk of transferring potentially invasive species from the Missouri River basin to the Hudson Bay basin. As part of this proposed action, Reclamation will implement construction methods and operational measures to further reduce the risk of invasive species transfer that may occur as a result of an interruption in the treatment process and breach in the buried pipeline to the Minot WTP.

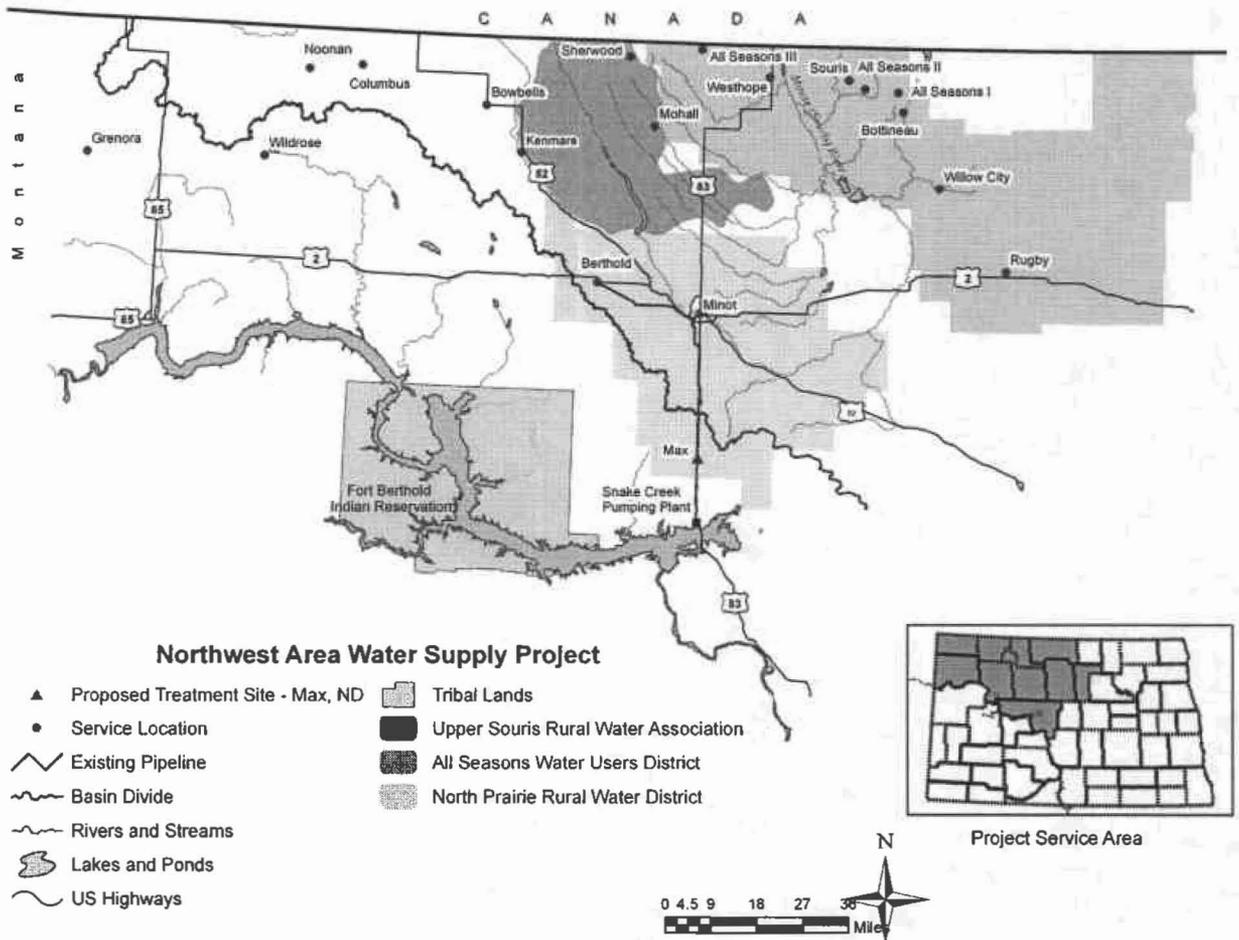


Figure 1. Northwest Area Water Supply Project Service Area.

The biota WTP will be located near Max, North Dakota on land acquired by the State of North Dakota for Project purposes (figure 2). The site is 41 acres in size and is located within the Missouri River basin.

The EIS and this ROD have been prepared in accordance with the NEPA, the Council on Environmental Quality's NEPA regulations (40 CFR 1500-1508), and the Department of the Interior policies. The decision made here is based on the Final EIS filed with the EPA (FES 08-62) on December 5, 2008 and noticed by the Reclamation in the *Federal Register* on December 5, 2008, and by the EPA on December 12, 2008.



Figure 2. Proposed biota WTP site. (Aerial view)

Alternatives Considered in the Final EIS

The Final EIS analyzed these alternatives:

- **No Action** – The preferred treatment alternative identified in the Final Environmental Assessment (Houston Engineering Inc. et al. 2001) and selected in the Finding of No Significant Impact (Reclamation 2001) prepared for the Project. This alternative would include chemical disinfection of raw Missouri River water prior to being delivered into the Hudson Bay basin. For all alternatives, including No Action, additional safeguards included in the construction of the buried pipeline between Max and the Minot WTP further reduce the risk of transferring invasive species. Ultraviolet (UV) disinfection along with softening and filtration would be provided at the existing Minot WTP.
- **Basic Treatment Alternative** – This treatment alternative would include a pre-treatment (coagulation, flocculation, sedimentation) process followed by chemical and UV disinfection prior to the water crossing the basin divide. The purpose of the pre-treatment process is to reduce raw water turbidity which can influence the effectiveness of the disinfection processes. Softening and filtration would be provided at the existing Minot WTP.
- **Conventional Treatment Alternative** – This treatment process would include a pre-treatment process of Dissolved Air Flotation followed by media filtration and disinfection using UV and chemicals within the Missouri River basin. Softening and filtration would be provided at the existing Minot WTP.
- **Microfiltration Alternative** – This treatment alternative would include pre-treatment (coagulation, pin floc) followed by membrane filtration and chemical and UV disinfection processes prior to the water crossing the drainage divide. Softening and filtration would be provided at the existing Minot WTP.

Environmentally Preferable Alternative

All of the alternatives, including No Action, evaluated in the Final EIS are considered environmentally preferable because they all present a low to very low risk of biological invasions. The low levels of risk result from the combination of treatment and conveyance features, including the engineering and design safeguards built into the system. While there are differences in risk reduction depending upon the level of treatment, Project-related risks were considered within the context of the much higher risks associated with non-Project pathways. The Project's contribution to the overall risk is minimal for each of the alternatives. The proposed biota WTP location is the same for all alternatives. Although the exact footprint would vary depending upon the treatment regime, construction related impacts would be minimal for all alternatives.

Decision and Rationale for the Decision

The Regional Director, as delegated by the Secretary of the Department of the Interior, has decided to select the Preferred Alternative identified in the Final EIS for implementation. In the Final EIS, UV disinfection (as prescribed for the action alternatives) is added to the No Action Alternative treatment process to become the Preferred Alternative. Figure 3 identifies the treatment processes included in the Preferred Alternative. After the water is treated at the biota WTP it will be conveyed across the drainage divide to the Minot WTP in the existing buried pipeline. This pipeline includes safeguards which further reduce the risk of a pipeline break that could result in a Project-related biological invasion. At the Minot WTP, the water will be treated to Safe Drinking Water Act standards prior to being delivered to water users throughout the service area.

This alternative provides adequate treatment of the water from the Missouri River, before it is delivered through a buried pipeline system to the existing Minot WTP. Through evaluations completed for the EIS, Reclamation has determined that this treatment processes will effectively inactivate potentially invasive aquatic species; as well as cause minimal environmental impacts to the surrounding environment during the construction of the facility.

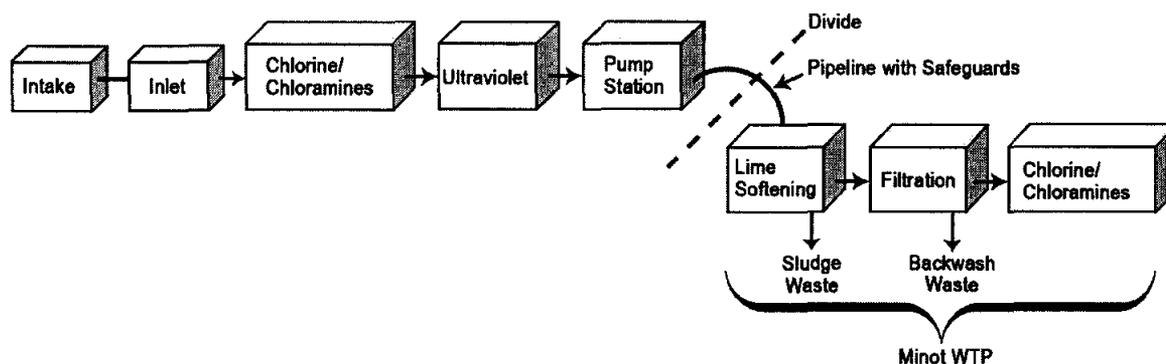


Figure 3. Preferred Alternative.

In making the selection of a water treatment alternative, Reclamation considered the level of risk of a Project-related biological invasion associated with the treatment process and pipeline failure, the effectiveness of each treatment process evaluated, and the overall cost including construction and operation, maintenance and replacement. Based on the evaluations outlined in the Final EIS (Reclamation 2008) and supporting documents, Reclamation has made the following determinations:

- 1) The Preferred Alternative includes treatment processes which are capable of reducing the Project-related risks of a biological invasion even further than what can be achieved by the No Action Alternative, which has already been determined as an adequate level of treatment.

2) The safeguards designed and constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provides a very low risk of a failure in the pipeline resulting in the transfer and establishment of any of the potentially invasive species evaluated in the EIS.

3) The comparison of the estimated costs of each alternative and the level of risk reduction which can be achieved for these costs demonstrates that the Preferred Alternative is a means of achieving the most cost effective treatment for the Project.

Considerations Relevant to the Decision

The decision to select this alternative was made after carefully weighing economic, social, and technical considerations, as well as the environmental effects analyzed in the Final EIS. Consideration was also given to comments and concerns received from agencies, Tribes, public and private organizations and individuals. In addition, consideration was given to Reclamation's mission of managing, developing, and protecting water and related resources in an environmentally and economically sound manner in the interest of the American public.

Key issues of controversy identified by Reclamation during preparation of the Final EIS were as follows:

- The risk of Project-related biological invasions associated with each of the alternatives. Numerous comments stated the No Action and Basic Treatment alternatives would not provide adequate treatment.
- The risks and consequences of biological invasions and pipeline failure were underestimated in the risk analyses conducted by U.S. Geological Survey (USGS).
- Cost estimates prepared for each of the alternatives were over-estimated in the opinion of some commenters; while other commenters stated that the cost estimates were underestimated.

These issues were presented and addressed in the Final EIS as follows:

- A concern that invasive species could be transferred from the Missouri River basin to the Hudson Bay basin as a result of Project construction and operations. In response to this concern, Reclamation contracted with the USGS Biological Resources Division to evaluate the risk of transferring invasive species as a result of an interruption of the treatment process at the biota WTP and a breach in the conveyance pipeline to the Minot WTP. Scientific experts who evaluated the risk relied on the best available information to conduct the analyses. The final report was peer-reviewed by technical experts both within and outside the USGS. The risks of transferring invasive species via the Project's facilities have been thoroughly estimated and are low to very low. The Preferred Alternative provides effective treatment for a broad range of microorganisms, including all of the potentially invasive species evaluated in the Final EIS.
- To further reduce the risks of biological invasions associated with an interruption in the treatment process at the biota WTP and a breach in the conveyance pipeline to the Minot

WTP, a framework for evaluating the condition of water treatment components and developing long-term monitoring programs would be part of the operation and maintenance of the biota WTP.

- Cost estimates included in the Final EIS are appraisal level designs and should not be considered final engineering design cost estimates. As explained in the Final EIS, the cost estimates were developed based on the best available information with the intent to use these costs as a means of comparing the alternatives.

The following paragraphs are a summary of the results of analyses for other resources presented in the Final EIS.

Adverse effects to historic properties are not anticipated during the construction of the biota WTP. The location of the biota WTP is on property purchased for the Project by the State of North Dakota. In 2003, this property was surveyed for historic properties as disclosed in the Final EIS. The North Dakota State Historic Preservation Officer was consulted and concurred with the determination of “no historic properties affected” for this area. Reclamation will consult with the North Dakota State Historic Preservation Officer, Advisory Council on Historic Preservation, and affected tribes if necessary during the construction of the biota WTP. This action is consistent with the National Historic Preservation Act.

There are no effects to federally threatened or endangered species. Formal consultation with the Fish and Wildlife Service is not required and Endangered Species Act requirements are satisfied.

As stated in the Final EIS, the final design of the biota WTP will determine if any of the seasonal and/or temporary wetlands near the proposed location of this facility would be affected. The decision calls for avoidance of wetlands wherever possible. This action is consistent with Executive Order 11990 for protection of wetlands.

As disclosed in the Final EIS, the Preferred Alternative would not affect Indian trust assets. Indian trust assets that were considered include lands, minerals, hunting and fishing rights, and water rights held in trust by the United States for Indian Tribes and individuals. This action is consistent with Reclamation’s responsibilities for Indian trust assets.

There are no environmental justice issues expected with the implementation of the Preferred Alternative. The Preferred Alternative is consistent with Executive Order 12898 for minority populations and low-income populations.

Construction of a biota WTP and the associated operation, maintenance and replacement costs would have positive regional economic impacts because these impacts are driven by expenditures.

Analysis and consideration of these issues, and resources, along with the associated environmental impacts, are the primary supporting rationale for the selecting of the Preferred Alternative. Each of the alternatives evaluated meet the purpose and need as identified in the

Final EIS, however, the selected alternative provides an acceptable level of risk reduction to minimize or avoid environmental impacts and is cost effective.

The treatment processes included in the selected alternative are capable of reducing the Project-related risks of a biological invasion to a level beyond that which could be achieved in the No Action Alternative, which was determined to be an adequate level of treatment in the 2001 Secretarial determination. Safeguards constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provides a very low risk of a failure in a pipeline resulting in the transfer and establishment of any of the potentially invasive species evaluated in the EIS. And finally, the comparison of the estimated costs of each alternative and the level of risk reduction which can be achieved for these costs demonstrates that the selected alternative is a means of achieving the most cost effective treatment for the Project.

The selection of this alternative is supported by the U.S. Environmental Protection Agency and the North Dakota Department of Health as stated in their comments letters dated February 15, 2008 and March 25, 2008, respectively.

Summary of Comments on the Final EIS

Reclamation received six letters commenting on the Final EIS. Issues raised were very similar to those identified and responded to in the Final EIS.

Scope and Purpose and Need of the EIS

Summary Comment:

Several comments stated that the scope of the EIS is too narrow. In order to comply with NEPA, the scope of the EIS must be broader to include the evaluation of the other issues and actions such as the purpose and need for this Project, the availability of in-basin water sources such as the Sondre, Dakota and Minot aquifers, and the impacts to the Missouri River resources.

Summary Response:

Reclamation does not concur with this comment. As stated in Council on Environmental Quality regulations [40 CFR 1501.7(2) and (3)] the lead agency shall “determine the scope and significant issues to be analyzed in depth in the environmental impact statement.” The lead agency also has the authority to “identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review, narrowing the discussion to these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere.” Reclamation addressed these broader issues at an earlier time, with the analyses in the 2001 Final Environmental Assessment, which the EIS incorporates by reference. The United States District Court did not remand for additional analysis on all issues, and in fact, the court has allowed construction to proceed on the Project over the past three years, so long as construction did not pre-determine the treatment process that is the subject of the additional NEPA analysis. While the court did not require Reclamation to prepare an EIS, as a result of internal discussions regarding the orders issued by the Court in 2005, Reclamation chose to go beyond what was ordered by the Court and prepare an EIS. In completing an EIS the agency is

able to conduct additional studies as necessary to evaluate issues, unlike an EA in which agencies rely on existing information to conduct the analysis. Reclamation has addressed the additional issues through an EIS which incorporates the agency's earlier NEPA analyses.

No Action Alternative

Summary Comment:

Several comments stated that the No Action alternative as defined in the EIS is not appropriate. The No Action alternative should be defined as the future without the Project.

Summary Response:

Reclamation does not concur with this comment. Guidance provided by the Council of Environmental Quality (CEQ *Forty Most Frequently Asked Questions*) provides two definitions for the no action alternative. According to this guidance the no action alternative can be defined as a continuing action of the current management direction. The Project is authorized by the Garrison Diversion Unit Reformulation Act of 1986 and construction began in April 2002. The previous NEPA analysis, which is incorporated by reference in the EIS, established the Project need; therefore, defining the no action alternative in the EIS as the treatment process selected in the FONSI (Reclamation 2001) is reasonable as a continuation of the current management direction for the Project. The other action alternatives described in the EIS can be compared to this no action alternative in order to assess the potential impacts of each alternative.

Consequences to Canada

Summary Comment:

Some comments received stated that the EIS should address the transboundary effects that could occur as a result of invasive species being transferred from the Missouri River basin to the Hudson Bay basin.

Summary Response:

Reclamation does not concur with this comment. Reclamation has determined that analyzing the potential consequences to the environment of the Hudson Bay basin within Canada is outside the scope of the EIS. The statutory provisions of NEPA (and the Council of Environmental Quality's regulations implementing NEPA) do not require assessment of environmental impacts within the territory of a foreign country. However, the Final EIS contains additional information on the potential impacts of biological invasions based on the best available scientific data. Because of the complex nature of the interactions between pathogens and parasites and their hosts, such data are limited or do not provide a technical basis for quantitatively predicting the ecological or economic consequences of future invasions. The risk characterizations presented in the Final EIS consider the historical data on past invasions that have occurred elsewhere, as well as the life histories of the invasive species, including the availability and abundance of suitable hosts for parasites and pathogens. The analyses and presentation of this information in the EIS is consistent with direction provided by the Council of Environmental Quality regulations (40 CFR 1052.22) that addresses impacts where information is incomplete or unavailable. For these reasons, the risks and consequences to Canada are essentially the same (low to very low) for all of the alternatives evaluated in the Final EIS.

Dissolved Air Flotation – Filtration Treatment Process

Summary Comment:

One comment stated that it is difficult to understand how the Bureau could have rejected what it termed “basic treatment” (chemical disinfection, plus UV treatment) for the Red River Valley Water Supply Project, instead concluding that dissolved air flotation-filtration (DAF-filtration) was a cost effective treatment process to reduce invasive species transfer risks for all Missouri River water transfer alternatives, yet somehow have concluded, without any adequate explanation, that DAF-filtration was not cost effective for this Project.

Summary Response:

Several factors affect Reclamation’s identification of the preferred treatment technologies for each of these projects. Each of these projects includes an interbasin transfer of water from the Missouri River basin to the Hudson Bay basin, yet they are distinctly different. The Red River Valley Water Supply Project’s preferred alternative included using Missouri River water from the McClusky Canal and transferring it across the basin divide to Lake Ashtabula. Reclamation concluded that filtration should be included in the preferred alternative to provide additional protection against a project-related biological invasion because Missouri River water was being released directly into a body of water (Lake Ashtabula). The Northwest Area Water Supply Project however does not release Project flows directly into a body of water, but rather the flows are contained in an enclosed buried pipeline (constructed with additional safeguards), and conveyed directly into the Minot WTP. Filtration is included as part of the treatment process completed at the Minot WTP.

Waste Stream Management from the Minot WTP

Summary Comment:

Some comments expressed concern about the handling of waste streams from the Minot WTP. The comments suggested Reclamation did not address this issue in the Final EIS and another stated that not enough detail was provided in the Final EIS explanation as to how the waste stream would be treated to inactivate disinfectant resistant pathogens.

Summary Response:

Reclamation addressed the handling of waste streams from the Minot WTP in the Final EIS. In chapter two, page 2-19 of the Final EIS, it states “Waste streams from the Minot WTP would be treated to inactivate disinfectant resistant pathogens, or transported to an appropriate disposal facility in the Hudson Bay basin, or transported for disposal within the Missouri River basin.” The specific treatment used to treat the waste streams from the treatment plant will be determined after the Minot WTP has been modified and composition of the plant waste stream is known. However, this would only be necessary if treatment to inactivate disinfection resistant pathogens is chosen among the three waste stream disposal options.

Biofilm Control

Summary Comment:

One comment voiced a concern about the control of biofilm within the main transmission pipeline. At the proposed water treatment plant near Max (North Dakota), chemical disinfectants are proposed to be added to control biofilms in the transport pipeline between Max and Minot. There appears to be a 12.3 mile long section of the pipe south (upstream) of the plant, in which water is not disinfected and the biofilm formation is not controlled. Given that biofilms may carry microorganisms which could diminish the effectiveness of chemical and UV disinfection

measures, we seek clarity on the rationale for limiting initial chemical disinfectant treatment to the Max water treatment plant and not upstream.

Summary Response:

Reclamation acknowledges this concern. The potential for biofilm formation in the raw water pipeline from Lake Sakakawea and the biota WTP in Max and its potential impact on the efficacy of biota treatment will be addressed in the final design phase of the biota WTP.

Failure Detection Systems

Summary Comment:

One comment was received relative to the failure detection systems. It stated that failure detection systems in water treatment plants are designed to detect human pathogens. Particle detection systems have been improved, and but there are also back-up systems to detect pathogens and failures of such systems. Water treatment plants are shut down when human pathogens are found to have passed through water treatment plants. USBR has not demonstrated that these detection systems are adequate for the types of spores and non-human pathogens that are at issue in these cases. This is demonstrated by their continued assertion about human pathogens being adequate surrogates for fish pathogens.

Summary Response:

Reclamation does not concur with this comment. The best available information on the treatment of water is based on human health pathogens including failure detection systems and particle detection systems. The United States government has not developed water treatment standards, rules or regulations specifically for use in reducing the risk of a successful introduction of an invasive species through interbasin water transfers. Therefore, Reclamation has based its analysis on the best available information developed largely in the drinking water treatment arena resulting in treatment standards promulgated under the Safe Drinking Water Act. Water treatment plants are not shut down any time human pathogens are found to have passed through as the comment states. Rather, treatment plants are shut down when they fail to meet design specifications based on requirements of Safe Drinking Water Act. The comment fails to note that the range of physical characteristics and disinfection resistance of human and fish pathogens (including *Myxobolus cerebralis*) are very similar and in the fact, the same treatment technologies developed for drinking water treatment are applied in fish hatcheries to control fish diseases.

Effectiveness of UV Disinfection

Summary Comment:

One comment letter stated that the Final EIS significantly overstates the findings of Hedrick et al. (2008) regarding the effectiveness of UV disinfection and other treatments for *Myxobolus cerebralis*. The Hedrick study determined that inactivation was erratic. Also, the UV transmissivity of the water used in the Hedrick et al. (2008) experiments was much higher than raw water from Lake Sakakawea. Finally, the No Action alternative treatment would not expose the spores to desiccation, freezing or prolonged exposure to temperatures over 20 degrees Celsius, and, therefore, the findings of Hedrick et al. (2008) do not imply any reduction in risk of transfer.

Summary Response:

Reclamation does not concur with the statement that the findings of the Hedrick et al. study were overstated. Hedrick et al. (2008) reported at least 4.75 log reduction in myxospores infectivity for all of the UV doses studied. This clearly demonstrates that all of the dosages studied were effective, and inactivation was not erratic at any dose tested. Hedrick et al. (2008) reported greater than 5.05 log reduction of myxospores at a UV dosage of 40 mJ/cm² as stated in the Final EIS. Therefore, it is clear that the Final EIS correctly cited Hedrick et al. (2008), and did not overstate the findings. In fact, Hedrick et al. (2008) states “In our current trial with myxospores, all doses of UV tested were effective (Table 2); thus, the 40-mJ/cm² commercial standard for water treatments is sufficient for complete inactivation of myxospores at the densities (2,500 myxospores/worm) tested.”

Reclamation agrees that the UV transmissivity of Lake Sakakawea water is less than that of the water evaluated in the Hedrick et al. (2008) experiments. For this Project, the UV transmissivity of the water from Lake Sakakawea will be considered by Reclamation in the final design of the disinfection system to achieve the appropriate UV dosage.

It should be noted that *Myxobolus cerebralis* has never been detected in North Dakota (Final EIS p. 3-8); however, if *Myxobolus cerebralis* myxospores were present in Lake Sakakawea and were not inactivated by the treatment processes at the biota WTP at Max, and were released in the Hudson Bay basin through a pipeline failure, those spores would likely be exposed to freezing, desiccation, or prolonged exposure to temperatures over 20 degrees Celsius. This clearly further reduces the Project-related risk.

Summary Comment:

One comment was received stating that the inactivation of those organisms susceptible to UV may be a temporary state since repair and recovery can occur over time under certain circumstances. This is relevant to those organisms lost to the Hudson Bay Basin through leakage, pipeline failure, or loss due to improper filtrate handling at Minot.

Summary Response:

Reclamation does not concur with this comment. Mofidi (2003)¹ reported DNA repair in bacteria, but did not observe DNA repair in viruses or protozoa. To Reclamation’s knowledge, there are no scientific studies documenting DNA repair in *Myxobolus cerebralis*. Even if a DNA repair occurred, the main water transmission pipeline which has been constructed between Lake Sakakawea and Minot includes several safeguards to reduce the risk of a biological invasion due to pipeline failure. These safeguards reduce the risk by ensuring quick detection of and response to a pipeline leak or break. Waste streams from the Minot WTP will be treated to inactivate disinfectant resistant pathogens, or transported to an appropriate disposal facility in the Hudson Bay basin, or transported for disposal within the Missouri River basin.

¹ Mofidi, Alex. Metropolitan Water District of Southern California. *Pathogen Reactivation in the Distribution System*. Presented at AwwaRF Technology Transfer Workshop, Costa Mesa, California. September 2003.

Susceptibility of Lake Whitefish

Summary Comment:

One comment stated that the Final EIS statement that “there is little natural reproduction of rainbow trout or other salmonids known to be susceptible to whirling disease in the receiving waters” is incorrect and does not acknowledge that the susceptibility of lake whitefish has not been determined. *Myxobolus cerebralis* could be spread considerable distances by fish that carried the organism but exhibit no signs of Whirling disease.

Summary Response:

Reclamation does not concur with this comment. For those salmonids that have been tested, the susceptibility to *Myxobolus cerebralis* varies greatly among species. Some species (e.g., rainbow trout) are highly susceptible. Others (e.g., brown trout) are carriers, but generally do not show clinical symptoms of whirling disease. Still others (e.g., lake trout) appear to be refractory, or totally immune to infection. The susceptibility of lake whitefish has not been tested; therefore, their susceptibility has not been determined as stated in the Final EIS on page 4-12.

Regardless of whether carrier species (if any) are present, adverse consequences of transfer and establishment of *Myxobolus cerebralis* (through Project-related or non-Project pathways) would be strongly influenced by the presence of susceptible species. This was noted by scientific experts from the Canadian federal government, who stated in their April 6, 2006 comment letter on the Red River Valley Water Supply Project Draft EIS that “... there are very few water bodies in the Canadian portion of the area of concern where there are self supporting populations of rainbow trout *Oncorhynchus mykiss* and those salmonids that are resident in the area of concern are relatively unaffected by the presence of *M. cerebralis*.”

Risk Analysis Critique by Dr. Drake

Summary Comment:

There were several comments regarding the methodology and findings of the USGS risk analysis. In addition, one comment stated that “EPA staff, including those familiar with risk assessments on invasive pathogens, have indicated to MNDNR that Dr. Drake’s critique [of the risk analysis for the Red River Valley Water Supply Project] is sound and well regarded.”

Summary Response:

The USGS risk analysis on which Dr. Drake commented was extensively peer reviewed. Peer reviewers included USGS invasive species experts, EPA Office of Research and Development researchers, past and present members of EPA's Risk Assessment Forum, and private sector ecologists and invasive species biologists working for consulting firms in both the United States and Canada.

EPA provided their formal comments on the Northwest Area Water Supply Draft EIS in their letter of March 25, 2008. In accordance with Section 102(2)(C) of the NEPA and 42 U.S.C. Section 4332(2)(c), and Section 309 of the Clean Air Act, 42 U.S.C. Section 7609, staff of the EPA reviewed the Draft EIS and rated the alternatives as “EC” (environmental concern) and the overall analysis provided by the Draft EIS as “1”. According to EPA’s rating criteria, this overall rating of EC-1 means that the review has identified environmental impacts that should be avoided in order to fully protect the environment and that the EIS adequately sets forth the environmental impact(s) of the alternatives. No further analysis or data collection are necessary.

The EPA comment letter made no reference to Dr. Drake's critique of the USGS Red River Valley Water Supply Project risk analysis. However, the EPA did provide a comment (shown below) recommending the addition of ultraviolet treatment (at Max, North Dakota) prior to crossing into the Hudson Bay basin, resulting in *a further reduction of biota prior to transfer over the basin divide.*

"For the no action alternative, we suggest a minor treatment design change to provide additional safeguards and risk reduction for the pipeline between Max and Minot and to further manage the risk uncertainties. The application of ultraviolet treatment (UV) technology at Max, instead of Minot would provide additional safeguards at minimal additional cost and would result in a further reduction of biota prior to transfer over the basin divide. This design change would further reduce risks associated with breach of the pipeline."

2001 Secretarial Determination

Summary Comment:

Some comments urged Reclamation to seek a new determination of adequate treatment from the Secretary of the Interior; based on their opinion that the 2001 determination signed by the Secretary in 2001 is no longer valid.

Summary Response:

Reclamation and the Department of the Interior do not concur. As stated in previous sections of this ROD, treatment processes included in the selected alternative are capable of reducing the Project-related risks of a biological invasion to a level beyond that which could be achieved in the No Action Alternative, which was determined to be an adequate level of treatment in the 2001 Secretarial determination. Safeguards constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provides a very low risk of a failure in a pipeline resulting in the transfer and establishment of any of the potentially invasive species evaluated in the EIS. And finally, the comparison of the estimated costs of each alternative and the level of risk reduction which can be achieved for these costs demonstrates that the selected alternative is a means of achieving the most cost effective treatment for the Project.

Cumulative Impacts

Summary Comment:

Several comments stated that the Final EIS fails to analyze cumulative impacts associated with other interbasin water transfer projects.

Summary Response:

Reclamation does not concur with this comment. In considering cumulative effects under NEPA, agencies evaluate the proposed action in relation to other past, present and reasonably foreseeable future actions to determine whether the incremental effects of the proposed action in combination with other actions produce a significant effect that would not otherwise have occurred. Reclamation evaluated cumulative impacts in the Final EIS (p. 4-21 and 4-22). The incremental risk posed by this Project would be very low, and would not significantly affect the overall risk considering non-Project pathways; therefore, no cumulative effects are anticipated.

Alternative Cost Estimates

Summary Comment:

A comment stated that the cost estimate included in the Final EIS for the Conventional Treatment Alternative is overstated by more than 70%.

Summary Response:

Reclamation does not concur with this comment. Cost estimates included in the Final EIS for all of the alternatives were developed at an appraisal level using the best available unit price data. While appraisal-level cost estimates have a higher level of uncertainty than final design estimates, the estimates included in the Final EIS (p.2-7 through 2-22) can be used to compare the relative difference in costs between the alternatives.

Treatment Goals

Summary Comment:

Some comments stated that the Final EIS does not establish treatment goals which can be used to measure acceptable or unacceptable performance of the treatment systems evaluated. Thus there is no way to assess whether the treatment is in fact "adequate".

Summary Response:

Reclamation does not concur with this comment. The United States has not developed water treatment standards, rules of regulations for water treatment to avoid ecological impacts of invasive species related to interbasin water transfers. Therefore, Reclamation cannot recognize specific water treatment goals in the EIS as standards for biota treatment or interbasin transfers. However, Reclamation used the best scientific information available to evaluate the potential risks associated with the transfer of invasive species and the most current information regarding water treatment technologies to develop alternatives evaluated in the EIS. As stated in the Final EIS, drinking water standards provide an appropriate framework for evaluating the efficacy of the proposed control systems for removal or inactivation of potentially invasive species. Technical analyses can help guide decision makers and stakeholders, but ultimately the determination of adequate treatment is a policy issue dependant upon risk tolerance.

Risk Analysis of Potentially Invasive Species

Summary Comment:

Several comments challenged the methodology and subsequent results of the risk analysis conducted by the USGS.

Summary Response:

Reclamation does not concur with this comment. In evaluating the risks of biological invasions, Reclamation considered treatment and containment efficacy for a range of microorganisms (including the risk of control system failure), along with geographical distribution and life history characteristics of potentially invasive microorganisms and their hosts, and the potential for competing non-Project pathways to yield successful invasions. The risk characterizations presented in the USGS Risk Analysis were based on quantitative, categorical, and narrative analyses, and included an extensive discussion of uncertainties. The risk analysis was extensively peer-reviewed by experts both within and outside the USGS, and represents the best available scientific information on the subject.

Federal Responsibility under the Winters Doctrine

Summary Comment:

Some comments stated that the Final EIS fails to address the protection and preservation of tribal water rights as required by the Winters doctrine.

Summary Response:

Reclamation does not concur with this comment. Tribal water rights, to the extent possible are addressed in the Final EIS (p. 4-30). The proposed action would not affect any claim to water tribes have or would have under the Winters doctrine. If a tribe would quantify and exercise their reserved water right, the volume of water available for other users in the Missouri River basin and the Project might be affected.

Environmental Commitments and Monitoring

As explained in the Final EIS, Reclamation will implement all practicable means to avoid and/or minimize adverse environmental impacts that may result from the construction and operation and maintenance of a biota WTP for the Project. The following mitigation and monitoring commitments will be implemented as integral parts of the decision to avoid or minimize adverse effects. Mitigation activities will be coordinated and administered by the Impact Mitigation Assessment Team which was established prior to start of Project construction activities in 2002. The purpose of this team has been to monitor the construction of other portions of the Project to ensure full compliance with the environmental commitments made in the Finding of No Significant Impact issued by Reclamation in 2001. Members of this team include representatives from federal and state agencies. Reclamation has demonstrated a commitment to environmental protection by implementing recommendations from this team during previous Project construction activities.

An adaptive management plan will be developed by Reclamation, in accordance with the Department of the Interior's policy and guidance, to monitor and implement environmental mitigation measures. Specific areas of environmental mitigation that will be addressed through adaptive management are those issues/resources where there is uncertainty regarding actual impacts that may result from the Preferred Alternative, such as risk mitigation for invasive species. Construction or operational changes of the Preferred Alternative will be evaluated prior to implementation.

The following mitigation commitments have been adopted and will be implemented:

Risks of Invasive Species

- A computerized supervisory control and data acquisition system will be designed to monitor the entire operation of the biota WTP.
- Standby power units will be located at the biota WTP to ensure continuous monitoring in case of a temporary or total power outage.

- All waste streams from the biota WTP will be retained and disposed of at an approved disposal site within the Missouri River basin.
- All waste streams from the Minot WTP will be treated to inactivate disinfection resistant pathogens, or transported to an appropriate disposal facility in the Hudson Bay basin, or transported for disposal within the Missouri River basin.
- Water quality monitoring of raw water sources will be implemented prior to final design to determine how seasonal changes in water quality may affect biota WTP design.
- A long-term monitoring plan for the biota WTP will be developed to assess treatment efficacy.
- An emergency response plan will be developed for the biota WTP, with special emphasis on preventing potential transfer of invasive species in the event of a plant malfunction.
- Reclamation will assume ultimate responsibility for the construction and operation, maintenance, and replacement of the biota WTP.
- Reclamation will coordinate with the State of North Dakota through the State Water Commission, to assure adequate operation, maintenance, and replacement of the delivery system biota transfer control measure features including isolation valves.
- Reclamation will consult with the U.S. EPA and other stakeholders as appropriate to develop an adaptive management plan to assess control system efficacy and make modifications to the control system if the risk changes significantly. The plan will be developed in accordance with the Department of the Interior Policy guidance (Order 3270) and the report *Adaptive Management, the U.S. Department of the Interior Technical Guide* (Williams et al. 2007).

Wetlands

- Avoid construction of all above-ground permanent facilities in wetlands. If they cannot be avoided, they will be mitigated on an acre for acre basis to comply with the provisions established for the Garrison Diversion Unit in the Dakota Water Resources Act of 2000.

Migratory Birds

- Before every construction season, the Impact Mitigation Assessment Team will meet to develop measures to minimize impacts to migratory birds. This will be incorporated into the adaptive management plan. Construction activities that would occur between January 1 and July 31 will be discussed.
- In areas with migratory bird crossing concerns, transmission and communication lines associated with the Project will be buried, where practical. If burial is not possible, the lines will be designed and located to avoid raptor collisions and/or electrocutions pursuant to Avian Power Line Interaction Committee protocol (1994, 1996, and 2005).

The Impact Mitigation Assessment Team will ensure that the appropriate measures are utilized for protection of migratory birds.

Federally Listed Threatened and Endangered Species

- The Impact Mitigation Assessment Team will review the location of the biota WTP to determine if additional field surveys are needed to determine the occurrence of listed species.
- If threatened or endangered species are encountered during construction, Reclamation would immediately consult with the U.S. Fish and Wildlife Service to determine appropriate steps to avoid any effects to these species, including cessation of construction in the area.

Historic Properties

- If unanticipated cultural resources are encountered during construction, all ground disturbing activities in the immediate area of the resource will be stopped until Reclamation can consult with the State Historic Preservation Officer and appropriate Tribes to evaluate the resource per 36 CFR Part 800.13.

Secretary's Determination Regarding Adequate Treatment

The Project was originally authorized under the Garrison Diversion Reformulation Act of 1986 which was amended by the Dakota Water Resources Act of 2000. A requirement of these acts states:

Delivery of Water into the Hudson Bay Basin - Prior to construction of any water systems authorized under this Act to deliver Missouri River water into the Hudson Bay basin, the Secretary, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirements of the Treaty between the United States and Great Britain relating to Boundary Waters Between the United States and Canada, signed at Washington, January 11, 1909 (26 Stat. 2448; TS 548) (commonly know as the Boundary Waters Treaty of 1909) [DWRA Section 1 (h)]

In January 2001, then Secretary of the Interior, Bruce Babbitt, signed a *Determination to meet the requirements of the Boundary Waters Treaty of 1909 by providing adequate treatment of water transported from the Missouri River into the Hudson Bay Drainage through the Northwest Area Water Supply Project*. This determination recognized the complex planning and development process completed for the Project and the considerable technical review by the United States and Canada since 1993, via the Garrison Consultative Group and the Garrison Joint Technical Committee. Following consultations with the EPA and the Department of State as required by the Garrison Diversion Reformulation Act of 1986, and in consideration of the extensive technical review, Secretary Babbitt determined that the proposed treatment was adequate.

The Secretary's determination identified the following guiding principals, through consultation with the EPA and the Department of State, in accepting the recommended project design. These guiding principals were:

1. *Appropriate biota transfer controls should be in the place to minimize the potential risk of known or unknown invasive pathogens entering the Hudson Bay basin.*
2. *The project design should fully comply with the intent of the Boundary Waters Treaty of 1909, and meet the legal requirements of the Garrison Diversion Reformulation Act of 1986.*
3. *The most cost-effective biota transfer control measures should be used.*
4. *The requirements of NAWS, a unique project, are specific to that project; the agencies will consider other projects on a case-by-case basis considering their unique qualities to ensure compliance with the Boundary Waters Treaty.*

Based on the technical analyses conducted for the EIS and the guiding principles included in the Secretary's determination, Reclamation finds:

- The ROD approves a treatment regime within the Missouri River Basin that is more rigorous than the treatment identified in the 2001 Environmental Assessment and selected in the Finding Of No Significant Impact.
- The treatment regime approved by this ROD includes features that are the same as identified in the 2001 determination, or surpass the requirements of the 2001 determination by providing additional treatment of the water within the Missouri River basin.
- The selected alternative will not have long-term, or permanent adverse consequences, when compared to the No Action Alternative.
- Given this level of treatment, the risk of transferring macroscopic organisms through the Project is practically zero.
- For microscopic organisms, the risk of biological invasions through Project-related pathways is low to very low.
- The risk of invasion through competing non-Project pathways is many magnitudes higher than the Project-related risk.
- The United States government has not developed water treatment standards, rules or regulations specifically for use in reducing the risk of a successful introduction of an invasive species through interbasin water transfers. Therefore, the Safe Drinking Water Act and associated research provide the best available information to compare treatment capabilities evaluated in the Final EIS alternatives. The treatment selected in the ROD meets Safe Drinking Water Act disinfection requirements, even though there are no regulatory standards for treating water for invasive species for ecological reasons.
- Treatment processes included in the selected alternative are capable of reducing the Project-related risks of a biological invasion to a level beyond that which could be

achieved in the No Action Alternative, which was determined to be an adequate level of treatment in the 2001 Secretarial determination.

- Safeguards constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provides a very low risk of a failure in a pipeline resulting in the transfer and establishment of any of the potentially invasive species evaluated in the EIS.
- The comparison of the estimated costs of each alternative and the level of risk reduction which can be achieved for these costs demonstrates that the selected alternative is a means of achieving the most cost effective treatment for the Project.

Therefore, in consideration of the aforementioned findings, the Secretary's determination of January 2001, reached in consultation with the Department of State and the EPA, is affirmed.

Implementing the Decision

A decision on the proposed action can be made no sooner than 30 days after publication of a notice of availability of the Final EIS in the *Federal Register* by the EPA. Implementation of a decision may take place immediately after issuance of this Record of Decision. Reclamation will work with the EPA, State of North Dakota and other stakeholders as appropriate to begin implementing the actions and complete the tasks necessary to comply with the environmental commitments described herein during the implementation of the selected alternative.