



# Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-657-3864 | 651-282-5332 TTY | [www.pca.state.mn.us](http://www.pca.state.mn.us)

April 6, 2007

TO: INTERESTED PARTIES

RE: Bushmills Ethanol Plant Modification

Enclosed is the Environmental Assessment Worksheet (EAW) for the proposed Bushmills Ethanol Plant Modification, Kandiyohi County. The EAW was prepared by the Minnesota Pollution Control Agency (MPCA) and is being distributed for a 30-day review and comment period pursuant to the Environmental Quality Board (EQB) rules. The comment period will begin the day the EAW availability notice is published in the EQB Monitor, which will likely occur in the April 9, 2007, issue.

Comments received on the EAW will be used by the MPCA in evaluating the potential for significant environmental effects from this project and deciding on the need for an Environmental Impact Statement (EIS). Written comments on the EAW should be submitted to Mike Rafferty and will be accepted until 4:30 p.m. on May 9, 2007.

A final decision on the need for an EIS will be made by the MPCA Commissioner after the end of the comment period. If a request for an EIS is received during the comment period, or if the Commissioner recommends the preparation of an EIS, the MPCA Citizens' Board (Board) will make the final decision. The final EIS need decision will also be made by the Board if so requested by the project proposer, other interested parties or MPCA staff and if this request is agreed to by one or more members of the Board or the MPCA Commissioner. The Board meets once a month, usually the fourth Tuesday of each month, at the MPCA office in St. Paul. Meetings are open to the public and interested persons may offer testimony on Board agenda items. A listing of Board members is available on request by calling 651-296-7306.

Please note that comment letters submitted to the MPCA do become public documents and will be part of the official public record for this project.

If you have any questions on the EAW, please contact Mike Rafferty at 651-297-7173.

Sincerely,

A handwritten signature in black ink, appearing to read "Myrna M. Halbach".

Myrna M. Halbach, P.E.  
Assistant Division Director  
Industrial Division

MMH:mbo

Enclosure

# ENVIRONMENTAL ASSESSMENT WORKSHEET

**Note to reviewers:** The Environmental Assessment Worksheet (EAW) provides information about a project that may have the potential for significant environmental effects. This EAW was prepared by the Minnesota Pollution Control Agency (MPCA), acting as the Responsible Governmental Unit (RGU), to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer supplied reasonably accessible data for, but did not complete the final worksheet. Comments on the EAW must be submitted to the MPCA during the 30-day comment period which begins with notice of the availability of the EAW in the *Minnesota Environmental Quality Board (EQB) Monitor*. Comments on the EAW should address the accuracy and completeness of information, potential impacts that are reasonably expected to occur that warrant further investigation, and the need for an EIS. A copy of the EAW may be obtained from the MPCA by calling 651-297-8510. An electronic version of the completed EAW is available at the MPCA Web site <http://www.pca.state.mn.us/news/eaw/index.html#open-eaw>.

- Project Title:** Bushmills Ethanol Plant Modification
- Proposer:** Bushmills Ethanol  
**Contact Person** Erik Osmon  
**and Title** General Manager  
**Address** 17025 Highway 12 Northeast  
Atwater, Minnesota 56209  
**Phone** 320-974-8050  
**Fax** 320-974-0805
- RGU:** Minnesota Pollution Control Agency  
**Contact Person** Mike Rafferty  
**and Title** Project Manager  
**Address** 520 Lafayette Road North  
St. Paul, Minnesota 55155-4194  
**Phone** 651-297-7173  
**Fax** 651-297-2343
- Reason for EAW Preparation:**  
EIS Scoping  **Mandatory EAW**  **Citizen Petition**  **RGU Discretion**  **Proposer Volunteered**   
**If EAW or EIS is mandatory give EQB rule category subpart number and name:** Minn. R. 4410.4300, subp. 5B
- Project Location:** **County** Kandiyohi County **City/Twp** Atwater/Genessee  
**N** 1/2 **Section** 10 **Township** 119N **Range** 33W

## Figures and Attachments for the EAW:

- Figure 1 U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project location
- Figure 2 General Location Map Based on 2006 Aerial Photography
- Figure 3 General Layout
- Figure 4 National Wetland Inventory (NWI) Map
- Figure 5 U.S. Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS) Soil Map

- Attachment A Minnesota Department of Natural Resources (DNR) Natural Heritage and Nongame Research Program correspondence dated April 26, 2006
- Attachment B Minnesota State Historic Preservation Office (SHPO) correspondence dated April 20, 2006
- Attachment C U.S. Fish and Wildlife Service (USFWS) correspondence dated May 22, 2006

## 6. Description:

### a. Provide a project summary of 50 words or less to be published in the *EQB Monitor*.

Bushmills Ethanol (Bushmills) is proposing to modify their existing dry-mill ethanol production facility (Facility) located near Atwater in Kandiyohi County, Minnesota. The current capacity is 49 million gallons per year (MMGY) of 200-proof ethanol with corn throughput of approximately 17.25 million bushels per year (MMBu/year). The proposed expansion is an increase of 16 MMGY resulting in a facility of 65 MMGY of 200-proof ethanol. The corn throughput will increase by approximately 7.75 MMBu/year to 25 MMBu/year. The water usage will increase by 6 MMGY.

### b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

## I. EXISTING OPERATIONS

### Overview

Ethanol is an alcohol, produced by fermenting corn that is used as a fuel additive or extender. Bushmills produces fuel grade ethanol at its Facility located on the west side of the city of Atwater (City) in Kandiyohi County, Minnesota (Figures 1 and 2). The Facility was constructed in 2005. The basic steps in ethanol production are preparation of the feedstock, fermentation, distillation, and recovery of the alcohol (Figure 3). Residual corn solids in the form of distiller's dried grains with solubles (DDGS), which is used as high protein animal feed, is produced as a byproduct. Air emission sources from ethanol production include receiving, storing, handling, cleaning and grinding of corn; steam production (boiler); drying, storage, handling and shipping of DDGS; fermentation and distillation; storage of ethanol of varying purities at various points in the process; storage of denaturant; and shipping of denatured ethanol. The Facility currently has the capacity to process approximately 17.25 million bushels of corn per year and produce 49 MMGY of 200-proof ethanol per year.

The following summarizes each process as it currently exists at the Facility.

#### Storage/Corn Processing Facility

Corn is delivered by truck to the Facility. Corn is unloaded from trucks into storage bins at the Facility. From the storage bin, metered amounts of corn are fed into the hammermill that grinds the corn into meal.

#### Starch Conversion Process

The starch conversion process breaks down the starch available in the corn and converts it to sugar. The corn meal is metered into the mash mix tank by means of a rotary feeder and mash mingler, where it is converted into a liquefied mash suitable for cooking and blending with backset (thin stillage) for subsequent saccharification and fermentation. In the mash mingler and the mash mix tank, the meal is mixed with hot water, condensate from recovered flash vapor condensate, and some thin recycled stillage from the stillage surge tank. Liquefying enzyme is added to the mash mix tank to initiate the breakdown of long-chain starch molecules. Ammonia is added to maintain the potential of Hydrogen (pH) at a range of 5.5 to 6.5, which is optimum for the liquefying enzyme.

Mash is pumped from the mash mix tank to the jet cooker. The jet cooker injects 150 pounds per square inch of steam under temperature control into the process stream, raising the mash temperature to a cooking temperature of approximately 225° Fahrenheit (107° Celsius). Mash leaves the jet cooker and is cooled by flashing in the flash tank. Overhead vapors from the flash tank are condensed with process water in the direct-contact-process water heater. The condensate from the vent condenser and the process water heater flows by gravity to the hot well. Water from the hot well is pumped to the mash mingler to mix with the meal and the process water. In addition, provisions are made to add backset (thin stillage recycle) as part of the hot process water makeup. Mash is pumped to the liquefaction tank with liquefaction enzyme added to allow time for the enzyme to react with the starch, thereby, reducing the mash viscosity. The mash is then cooled and pH adjusted.

#### Fermentation Process

During the fermentation process, sugars (dextrins) in the mash are converted to ethanol. Cooled mash from the flash vessel is pumped into the liquefaction tanks. After two and one-half hours, the mash is cooled down further and pumped into the fermenters, where an enzyme is added to break down the dextrins into glucose, a simple sugar. Yeast and urea are added to the fermenters, where the yeast converts the sugars into ethanol and carbon dioxide (CO<sub>2</sub>).

The contents of the fermenters are recirculated through the fermenter cooler to remove excess heat and to maintain a consistent temperature range. When fermentation is complete, the fermented beer is transferred to the beer well. The beer well serves as a surge tank connecting batch fermentation with continuous distillation.

The tanks are cleaned and sterilized and a caustic solution is applied to all internal surfaces to prevent infection. The fermenters and beer well are vented to the CO<sub>2</sub> scrubber. The recovered scrubber water, which contains some ethanol, is transferred to the beer well and the CO<sub>2</sub> is vented to the atmosphere or transferred to the CO<sub>2</sub> recovery system for processing. The caustic solution is reused for pH control rather than being discharged to the stormwater pond.

### Distillation and Dehydration Process

In this process, the ethanol is separated from the beer and purified to 200-proof ethanol. Fermented beer from the beer well is preheated and transferred to the beer stripper. The preheated feed is degassed in the upper section of the stripper for removal of CO<sub>2</sub>, which passes through the CO<sub>2</sub> vent condenser for recovery of ethanol and water. The ethanol and water condensate is returned to the beer well. The beer stripper alcohol vapors are condensed and collected in the rectifier feed drum. The condensed vapors are preheated before being pumped to the stripper/rectifier. In the stripper/rectifier, oils are removed, mixed with dilution water, and passed on to the oil decanter. The upper layer of the decanted oil is re-blended with anhydrous ethanol product. The aqueous lower layer flows to the feed drum, where it is mixed with the condensate from the beer stripper and its ethanol content is recovered in the stripper/rectifier.

The 190-proof ethanol feed vapor exiting from the top of the stripper/rectifier passes through a molecular sieve bed and the ethanol vapors are dehydrated to 199 proof. The ethanol draw at 199+ proof is condensed, cooled, and passed to ethanol product storage.

### Ethanol Storage Tanks

The Facility currently has six aboveground storage tanks (ASTs), including two 750,000-gallon denatured ethanol storage ASTs, one 100,000-gallon 190-proof AST, one 100,000-gallon 200-proof AST, one 100,000-gallon denaturant ASTs, and a 2,000-gallon corrosion inhibitor AST. All six ASTs are located within the Facility's tank farm, which provides secondary containment.

### By-product Processing

Stillage, a by-product of distillation, consists of the remaining solids and water coming off the bottom of the stripper column. The stillage is dried for storage and shipping. The stillage is centrifuged to yield thin stillage and solids fractions. The thin stillage becomes backset water for the cooking (starch conversion) system and fed to the evaporator. The evaporator removes water from the thin stillage to create 32 percent dry matter syrup. The syrup is pumped to the mixing auger to be combined with the wet distillers grains (solids coming off the centrifuge). The mixture is then conveyed into drum dryers.

The particulate emissions from the dryer are controlled by cyclone separators. Fifty percent of the exhaust is recycled to the dryer inlet and the balance is vented to the atmosphere. The resulting DDGS exits the cyclone via an air lock divided by two screw conveyors. The first recycles two-thirds to three-fourths of the product back to the mixing auger and the second conveys the remainder to storage.

Two multiple cyclone dryers and a 125-million-British-Thermal-Unit-per-hour (MMBTU/hr) thermal-oxidizer (TO)/heat-recovery boiler are used at the Facility to control volatile organic compound (VOC) air emissions, particulate matter (PM) air emissions, and PM smaller than ten micron (PM<sub>10</sub>) air emissions. The cyclone dryers and the TO/heat-recovery boiler exhaust into a common stack 72 inches in diameter and 125 feet above grade.

### Evaporation System

The evaporation system is designed to concentrate the thin stillage to syrup containing about 40 percent solids. Condensate from the evaporator collects in the condensate tanks. Heat from the evaporator condensate is recovered, in part, by preheating the entering thin stillage to the evaporator. The condensate is returned to mashing and cooking as process water. The 40 percent concentrated soluble stream is collected and transferred to the DDGS blending operation.

### Other Processes and Equipment

The Facility has one 125-MMBTU/hr natural gas-fired boiler to provide steam for cooking, distilling, evaporating, and other plant uses. The Facility also has one cooling tower.

### Wastewater/Stormwater

The non-process wastewater discharged from the site is a blend of water treatment wastewater (reverse osmosis reject, water softener backflush, and filter backwash) and non-contact cooling water (cooling tower bleed-off and boiler blowdown). The non-process wastewater flows through a buried pipeline to Judicial Ditch 17, a tributary of Middle Fork Crow River. Stormwater from the entire Facility is collected in a sedimentation/detention pond on site. Stormwater flows from the pond via an overflow pipe to Judicial Ditch 17, a tributary of Middle Fork Crow River. As part of a recent permit modification, Bushmills is eliminating several waste streams from the effluent discharge, and is going to install filtration wastewater treatment for the remaining waste stream from the cooling tower.

Process wastewater is recycled into the process and is not discharged from the Facility.

### Water Appropriations

Currently, the Facility holds DNR Appropriation Permit Number 2005-4031, allowing the use of a combined maximum of 500 gallons per minute (gpm) from two on-site wells, unique well numbers 00710401 and 00723664 (Figures 2 and 4). Current average water consumption at the Facility is approximately 400 gpm (210 MMGY) and is expected to increase to approximately 411 gpm (216 MMGY). The additional water needed for the proposed modification will be provided by a combination of additional pumping from the existing two on-site wells. Total water usage from the two existing on-site wells combined will not exceed the approved 500 gpm appropriation.

## **II. PROPOSED PROJECT**

### **Overview**

Bushmills is proposing a Facility modification that would increase its denatured ethanol production 16 MMGY, from 49 MMGY to 65 MMGY. The new pieces of ethanol processing equipment will be built next to existing Facility equipment.

The specific changes will include the following:

### Storage/Corn Processing

A proposed upgrade for the storage/corn process is planned by the addition of a new 730,000-bushel storage bin. The new storage bin will be located adjacent to the existing storage bins within the existing Facility footprint (Figure 3).

### Fermentation Process

Upgrades proposed for the fermentation process include the addition of one new 730,000-gallon fermenter, along with the associated pumps, piping, heat exchangers, and auxiliary equipment. The new fermenter will be added adjacent to the existing fermenters within the existing Facility footprint (Figure 3).

### By-product Processing

As part of the modification, a second DDG cooling cyclone and baghouse will be added. Each will process half of the DDG.

In summary, the following new equipment would be installed at the Facility:

<b>Table 6-1 New Equipment for Proposed Bushmills Expansion</b>	
<b>Equipment</b>	<b>Location</b>
Corn Bin	Outside
DDG Dryer and Baghouse	Inside
Fermenter	Outside

The Facility will continue to operate 24 hours per day, seven days per week, with periodic maintenance shutdown periods scheduled throughout the year.

- c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.**

The purpose of the project is to increase ethanol production at the Facility. Increased corn usage, coupled with increased ethanol production, will likely result in additional income to the local rural community.

- d. Are future stages of this development including development on any outlots planned or likely to happen?**  Yes  No

**If yes, briefly describe future stages, relationship to present project, time line, and plans for environmental review.**

- e. Is this project a subsequent stage of an earlier project?**  Yes  No  
**If yes, briefly describe the past development, timeline and any past environmental review.**

The original Facility was reviewed by the MPCA under the Environmental Review Program in 2004. In addition, Bushmills also obtained Air Emissions, National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS), AST, and Water Appropriation Permits in 2004.

As part of this current expansion, Bushmills is requesting a modification to the Air Emissions Permit.

The MPCA modified Bushmills' NPDES/SDS Permit for the existing Facility to include elimination of several waste streams from the effluent discharge, and installation of wastewater treatment for the remaining waste stream from the cooling tower. The modification also included a schedule for final design, installation, and initiation of operation of wastewater treatment facilities for SD001, and for attainment of final effluent limitations. No additional facility modifications will be necessary for the proposed Facility expansion.

**7. Project Magnitude Data**

<b>Total Project Area (acres)</b>	<u>75.0 acres</u>	<b>or Length (miles)</b>	<u>NA</u>
<b>Number of Residential Units:</b>	<b>Unattached</b> <u>NA</u>	<b>Attached</b> <u>NA</u>	<b>Maximum units per building</b> <u>NA</u>
<b>Commercial/Industrial/Institutional Building Area (gross floor space):</b>			<b>Total square feet</b> <u>106,265</u>
<b>Indicate area of specific uses (in square feet):</b>			
<b>Office</b>	<u>3,450 currently, no change planned</u>	<b>Manufacturing</b>	<u>36,450 currently, no change planned</u>
			<u>Energy Center – 1,300 currently, no change planned</u>
<b>Retail</b>	<u>NA</u>	<b>Other Industrial</b>	<u>DDGS Storage – 22,865 currently, no change planned</u>
<b>Warehouse</b>	<u>NA</u>	<b>Institutional</b>	<u>NA</u>
<b>Light Industrial</b>	<u>NA</u>	<b>Agricultural</b>	<u>14 acres currently, no change planned</u>
<b>Other Commercial (specify)</b>	<u>On-site storage tanks and cooling towers - 42,200 (no change planned)</u>		
<b>Building height</b>	<u>35-125 feet</u>	<b>If over 2 stories, compare to heights of nearby buildings</b> <u></u>	

Height of Existing Buildings/Structures

Heights of existing buildings at the Facility range from 35 feet to 125 feet. The main stack is currently 100 feet above grade.

Height of Proposed New Buildings/Structures

The height for the new fermenter will be approximately 50 feet above grade and the height of the new grain storage bin will be approximately 118 feet above grade.

**8. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.**

**TABLE 8.1  
LIST OF PERMITS AND APPROVALS**

<b>Unit of Government</b>	<b>Type of Application</b>	<b>Status</b>
MPCA	Air Emissions Permit Modification	Submitted separately
MPCA	NPDES/SDS Permit Modification	Submitted separately
Kandiyohi County/City of Atwater	Building Permit	To be submitted

The project will not require any modification to the AST Permit. Bushmills’ existing water appropriation permit allows for appropriations up to 500 gpm. The proposed project will not require a change in the existing appropriation permit. No new wells will be required for this increase in production. The current average water consumption is 400 gpm (210 MMGY) and is expected to increase to 411 gpm (216 MMGY).

9. **Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.**

The Facility is located approximately one and one-half mile west of the City in Kandiyohi County, Minnesota. The Facility is located on a 75-acre site. The site was first developed for light industrial use in late 2004. Prior to 2004, farming was the only land use on the site.

The new fermenter, new grain storage bin, and new DDG cooling cyclone for the proposed Facility modification will take place within the existing Facility footprint. The Facility is bounded to the south by the Burlington Northern Santa Fe Railroad and to the north of U.S. Highway 12. Surrounding properties are agricultural.

Based on available information, no known environmental hazards exist at the site from past uses. Review of the MPCA Above/Underground Storage Tank leak database revealed that the Facility has no reported spills.

10. **Cover Types. Estimate the acreage of the site with each of the following cover types before and after development:**

**Facility Area**

	<b>Before</b>	<b>After</b>		<b>Before</b>	<b>After</b>
<b>Types 1-8 wetlands</b>	<u>0</u>	<u>0</u>	<b>Lawn/landscaping</b>	<u>5</u>	<u>5</u>
<b>Wooded/forest</b>	<u>0</u>	<u>0</u>	<b>Impervious Surfaces</b>	<u>15</u>	<u>15</u>
<b>Brush/grassland</b>	<u>0</u>	<u>0</u>	<b>Other</b>	<u>10</u>	<u>10</u>
<b>Cropland</b>	<u>45</u>	<u>45</u>	<b>(offices, storage tanks, and stormwater pond)</b>		
			<b>TOTAL</b>	<u>75</u>	<u>75</u>

**Note:** The approximate acreages of each cover type was calculated using color aerial photography dated 2004 from the Farm Service Agency and field verification.

One new fermenter, one new grain bin, and one new DDG cooling cyclone will be constructed on pre-existing impervious surfaces adjacent to existing equipment. No other cover types will be impacted by the proposed modification.

11. **Fish, Wildlife, and Ecologically Sensitive Resources.**

- a. **Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.**

The previous EAW prepared for the Facility in 2004 identified no significant fish or wildlife resources on or near the site that would be disturbed or affected as a result of the previous project. The expansion will occur only in the existing footprint of the Facility.

No potential impacts to habitat will occur for the proposed Facility modification. The one new fermenter and one new grain storage bin will be constructed on existing impervious surfaces adjacent to existing equipment within the current Facility footprint.

- b. **Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial water bird nesting colonies or regionally rare plant communities on or near the site?**  Yes  No

**If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number.** ERDB 20060814

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**Describe measures to minimize or avoid adverse impacts.**

Facility

A coordination letter was sent to the DNR Natural Heritage and Nongame Research Program requesting a review of the Facility area for the presence of recorded threatened, endangered, or special concern wildlife or plant species. A copy of the response letter is located in Attachment A.

The DNR response letter covering the Facility area is summarized below:

“The Minnesota Natural Heritage database has been reviewed to determine if and rare plant or animal species or significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are no known occurrences of rare species or native plant communities in the area searched.” (Sarah D. Hoffmann, DNR - letter dated April 26, 2006)

USFWS

A coordination letter was sent to the USFWS. A copy of the email is located in Attachment C.

The USFWS response is summarized below:

“I am going to assume that as long as the modification stays within the current boundary and the additional discharge goes the same route as the current discharge, I think it would be difficult to say that you would have additional negative impacts on threatened or endangered species. I am also not aware of any endangered or threatened species in the vicinity except for migratory birds that would move through the area.” (Scott Glup, USFWS - e-mail dated May 22, 2006)

12. **Physical Impacts on Water Resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch?**  Yes  No

**If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.**

Review of general water resource data, NWI data, and the DNR PWI indicates that the proposed Facility modification will not involve dredging, filling, stream diversion, outfall structures, dikes, or impoundments. Figure 4 shows the locations of NWI-mapped wetlands.

A site inspection was performed by a licensed, professional engineer on October 25, 2006, to evaluate ongoing or potential erosion issues related to the proposed expansion at the Bushmills ethanol plant. Non-process wastewater discharges from the plant are carried in a buried, 4-inch diameter, schedule 40 PVC pipe south of the Facility. This flow is joined by the site stormwater pond discharge pipe just south of the railroad tracks. The combined flow is routed to the east in a 30-inch diameter steel pipe that connects to the City storm sewer system. The City stormwater discharge pipe terminates just north of the railroad tracks and just west of Kandi-Meeker Road. Flow from this pipe runs in a channel, and passes under Kandi-Meeker Road, through another channel, then under Highway 12, outletting at the source of Judicial Ditch 17.

During the site inspection, a low flow was observed in the City stormwater outlet pipe. This low flow was the only input to Judicial Ditch 17 and was consistent with the facility non-process wastewater discharge at this time of about 107 gpm. The channels were found to be bordered by vegetation and no evidence of erosion was observed in the channels or at the outlet/inlet structures. Based on this evaluation, Judicial Ditch 17 appears to be adequately designed to accept stormwater flow from the City and the continuous discharge from Bushmills. Further, non-process wastewater discharge from the Facility is a small component of the stormwater flow to Judicial Ditch 17. Planned modifications to the Facility will reduce the rate of wastewater discharge. As a result, the non-process wastewater discharge should not cause erosion of Judicial Ditch 17.

13. **Water Use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)?**  Yes  No

**If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.**

Water Appropriation for Facility

A Water Appropriation Permit from the DNR is required for all users withdrawing more than 10,000 gallons of water per day, or 1 MMGY. The purpose of the permit program is to manage water resources to assure an adequate supply to meet long-range seasonal requirements for domestic, municipal, industrial, agricultural, fish and wildlife, recreational, power, navigation, and quality control purposes from waters of the state.

Currently, the Facility holds DNR Appropriation Permit Number 2005-4031 allowing the use of a combined maximum of 500 gpm from two on-site wells – unique well numbers 00710401 and 00723664 (Figures 2 and 4). Current water consumption at the Facility is approximately 400 gpm (210 MMGY) and is expected to increase slightly too approximately 411 gpm (216 MMGY). The additional water needed for the proposed modification will be provided by a combination of additional pumping from the existing two on-site wells. Total water usage from the two existing on-site wells combined will not exceed 500 gpm.

The DNR appropriation permit is based on 20-year usage and includes a resource impact analysis.

Well Monitoring Data

The wells at Bushmills have been monitored since the Facility began production in 2004. The monitoring data has shown over time that the drawdown at the production well varies between four and nine feet at the 400 gpm pumping rate. Additionally, no well modifications or replacements have occurred at the 400 gpm appropriation. No new water appropriation permits have been received by DNR for wells within the area surrounding the facility since production started in 2004.

Temporary Dewatering During Construction

Temporary dewatering is not anticipated during the modification of the Facility.

14. **Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district?**  Yes  No

If yes, identify the district and discuss project compatibility with district land use restrictions.

15. **Water Surface Use. Will the project change the number or type of watercraft on any water body?**  Yes  No

If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. **Erosion and Sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: See below acres; \_\_\_\_\_ cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.**

TABLE 16-1 AMOUNT OF SOIL TO BE MOVED OR DISTURBED		
Proposed Upgrade	Acreage Graded or Disturbed	Amount of Fill/Soil Moved
Fermenter	0.1 acre	500 cubic yards
Grain Storage Bin	0.1 acre	500 cubic yards
<b>Total</b>	<b>0.2 acres</b>	<b>1,000 cubic yards</b>

The project proposer will not be required to obtain an NPDES/SDS General Stormwater Permit for Construction Activities from the MPCA to control erosion and runoff during construction since the project will not disturb more than one acre of land.

The installation of the new fermenter and the storage bin will take place on portions of the Facility that are currently impervious surfaces. No steep slopes or highly erodible soils will be impacted by the proposed Facility modification.

Figure 5 is a soil map for the areas impacted by the Facility modification.

## 17. Water Quality – Surface-water Runoff.

### a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm-water pollution prevention plans.

Presently, surface water flows to a stormwater detention pond to the west of the active portion of the Facility, which discharges through Outfall SD002 to Judicial Ditch 17, approximately two miles east of the plant near the City's wastewater treatment facility. Changes in the quantity and quality of the runoff after the proposed modification are not expected to be significant since much of the site area has already been developed. The amount of impervious surface will not increase.

The MPCA NPDES/SDS Permit No. MN 0067211 for the Facility requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) identifying best management practices. The permit requires the Facility to prepare, retain on site, and implement an SWPPP. The SWPPP has three major objectives associated with industrial activity at the Facility: (1) identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges; (2) describe and ensure the implementation of practices that will be used to eliminate or minimize pollutants in storm water discharges; and (3) assure compliance with the terms and conditions of the permit.

In addition, Bushmills has in place a Spill Prevention, Containment, and Countermeasures (SPCC) Plan that details specific procedures to be followed in the event of a spill of any hazardous and/or oil-like substances. The SWPPP and SPCC Plans are available upon request.

The potential for stormwater contamination by contact with significant materials is limited because material handling and manufacturing process equipment are mostly enclosed. The modified Facility features more indoor storage and material handling, which significantly reduces the amount of significant materials exposed to rain from existing conditions. Fuel could be present to contaminate stormwater in the event of a mishap in fueling vehicles in the plant yard or in the event of a spill or leak of liquid ethanol or denaturant gasoline. Any spill or leak of fuel or finished material in the tank farm area would be captured within the containment dike. Finished material spills at the load out area or from liquid transfer will be minimized by the Facility spill prevention procedures and bulk transfer policy.

Grain fines or dust materials accumulated near loading areas can contaminate stormwater runoff. In the event of an equipment or material handling failure, and if product is spilled or released, any resulting waste residues could contaminate runoff. Lubricating oils or hydraulic fluids leaking from outdoor motors, gear boxes, bearings, or other mechanical equipment can also contaminate stormwater runoff. Inspections and preventive maintenance activities are conducted regularly on material handling and manufacturing process equipment to reduce the potential of stormwater pollution. The likelihood of contamination to stormwater runoff from the mentioned sources is unlikely, and not increased by the proposed modification.

- b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.**

Buildings/structures on the site include an office, AST tank farm, cooling towers, fermentation operations and control, and distillation and evaporation. The Facility has gravel and paved roads and parking areas. The topography of the site area and surrounding areas is generally flat. Small areas of the roads and the railroad, which border the site, ultimately drain into the site. There are no curbs or gutters on the adjacent streets.

Stormwater from the entire site drains to the stormwater pond on the west side of the Facility prior to discharge from the site. Stormwater will be discharged from the site from one outfall. Stormwater is discharged at Outfall SD002, as authorized by NPDES/SDS Permit No. MN0067211. This discharge flows via buried piping to Judicial Ditch 17, approximately two miles east of the plant near the City's wastewater treatment facility. Judicial Ditch 17 is a tributary to the Middle Fork Crow River.

The quantity and quality of the runoff is not expected to change post expansion, and will result in no change to receiving water quality.

## **18. Water Quality – Wastewater.**

- a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.**

### Non-process Wastewater

The non-process wastewater currently discharged from the site is a blend of water treatment wastewater (reverse osmosis reject, water softener regeneration, and filter backwash) and non-contact cooling water (cooling tower bleed-off and boiler blowdown). The non-process wastewater is discharged via the existing outfall SD001, and flows via buried piping to Judicial Ditch 17 approximately two miles east of the Facility. Judicial Ditch 17 flows to the Middle Fork Crow River, approximately 5.7 miles downstream. The continuous discharge of these wastewaters is authorized under the recently modified NPDES/SDS Permit No. MN0067211. A sampling point exists on the discharge pipe in the process building after the non-process wastewater is combined. Samples are collected as required by the NPDES/SDS Permit. The current permitted discharge of 144,900 gpd consists of non-process wastewater streams as follows:

- Reject waters from the reverse osmosis system = 96,000 gpd
- Cooling water blowdown = 45,000 gpd
- Multi-filters = 3,500 gpd
- Water softener regeneration = 400 gpd

The project modification and revised permit will result in the discharge of fewer non-process wastewater streams. Boiler blowdown and reject water from the reverse osmosis system will be reused in the process. The multimedia filter system will be expanded and the backwash waste stream will be treated for solids removal and reused in the process. The softener regeneration will be performed at an off-site facility.

Cooling tower blowdown will remain as the only non-process wastewater discharge. The maximum discharge rate will be 90 gpm (129,600 gpd) during full production in summer. Table 18-1 characterizes the non-process wastewater discharge as it is now and as it is expected to be with Facility modification. The flows shown in Table 18-1 are monitored as required by the NPDES/SDS Permit.

<b>TABLE 18-1            CHARACTERIZATION OF NON-PROCESS            WASTEWATER DISCHARGE</b>		
<b>Source</b>	<b>Current average            discharged (gallons            per day)</b>	<b>Modified            maximum            discharge (gallons            per day)</b>
Cooling tower blowdown	106,560	129,600
Reverse osmosis reject	43,200	0
Water softener backflush	14	0
Iron filter backwash	4,320	0
<b>Total</b>	<b>154,094</b>	<b>129,600</b>

Process and sanitary wastewater

No process wastewater is discharged now by the Facility, nor will it be in the future. The process wastewater is now, and will continue to be, recycled and reused.

Sanitary wastes generated at the Facility are discharged to an individual septic system located on-site. The Facility modification is not expected to generate additional sanitary wastes.

- b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.**

Non-process wastewater will continue to be discharged to Judicial Ditch 17 from Outfall SD001. Judicial Ditch 17 is a non-classified water in the state and the default use classifications are 2B, 3B, 4A, 4B, 5, and 6. The quality of class 2B surface waters of the state shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life and their habitats. These waters are to be suitable for aquatic recreation, but are not protected as a source of drinking water. The quality of class 3B surface waters of the state shall be such as to permit their use for general industrial purposes, except for food processing, with only a moderate degree of treatment. The quality of class 4A and 4B waters, respectively, shall be such as to permit their use for irrigation without significant damage or adverse effects upon any crops or vegetation usually grown in the waters or area, including truck garden crops, and Class 4B waters shall be such as to permit their use by livestock and wildlife without inhibition or injurious effects. The quality of Class 5 waters of the state shall be such as to be suitable for aesthetic enjoyment of scenery, to avoid any interference with navigation, or damaging effects on property. The uses to be protected in Class 6 waters may be under other jurisdictions and in other areas to which the waters of the state are tributary, and may include any or all of the uses listed in parts 7050.0221 to 7050.0225, plus any other possible beneficial uses.

The NPDES/SDS Permit for the Facility has been modified. The permit includes a schedule for installation to meet the permit conditions of wastewater treatment as well as the discharge standards that are protective of water quality in Judicial Ditch 17. The resulting treatment will reduce hardness and dissolved solids concentrations, improving the quality of the discharge stream. For example, the concentration of total dissolved solids will be reduced from the current value of 1,500 milligrams per liter (mg/L) to less than 700 mg/L.

The initial permit limits and modified discharge limits are listed below:

Parameter	Concentration Limitation or Range	
	Initial Permit	Modified Permit
<b>5-day Biochemical Oxygen Demand, mg/L</b>	25	na
<b>5-day Carbonaceous Biochemical Oxygen Demand, mg/L</b>	na	25
<b>Total Suspended Solids, mg/L</b>	30	30
<b>pH Range, Standard Units</b>	6.0 - 9.0	6.0 - 9.0
<b>Temperature, deg F (daily maximum)</b>	86	86
<b>Chlorine, Total Residual, mg/L</b>	0.038	0.038
<b>Bicarbonates, meq/L</b>	na	5.0
<b>Specific Conductance, umhos/cm</b>	na	1000
<b>Total Dissolved Solids, mg/L</b>	na	700
<b>Hardness, Total (as CaCO<sub>3</sub>), mg/L</b>	na	250
<b>Phosphorus, Total (as P), mg/L</b>	monitor	monitor
<b>(additional monitoring)</b>	na	*

\* Additional monitored parameters include: boron, chloride, magnesium, calcium, potassium, sodium, and sulfate.

- c. **If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.**

The project will not involve wastes being discharged into a publicly owned wastewater treatment facility. See Item 18a of this EAW for a discussion on sanitary wastes.

- d. **If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.**

Not applicable.

**19. Geologic hazards and soil conditions.**

- a. **Approximate depth (in feet) to**      **Ground water:** 63' 2" **minimum;** 63' 3" **average.**  
**Bedrock:** 136' **minimum;** 258' 6" **average.**

**Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.**

Based on review of the well and boring records for the Facility's wells, Unique Numbers 00710401 and 00723664, bedrock was encountered at 381 and 136 feet below grade (bg), respectively. The average depth to ground water for the wells is approximately 63 feet bg. No on-site hazards to ground water are known to exist.

- b. **Describe the soils on the site, giving SCS classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.**

The USDA – NRCS Soil Survey Geographic (SSURGO) database was used in assessing existing soil resources. The SSURGO database provides digitized soil information at a level of detail comparable to NRCS County Soil Surveys. Based on a review of these resources for Kandiyohi County, the following soils are found within the existing facility expansion footprint: Glencoe clay loam, Delft loam, Grovecity loam, Wadenill-Sudburg loam, and Canisteo-Harps loam. These soils have topsoils ranging from loamy clay to clay. The project area is located within soils that have been previously disturbed during construction of the original facility in 2004, and it is not anticipated that the soils would exhibit the original profile. These characteristics provide a low to moderate saturated hydraulic conductivity and generally low susceptibility to wind and rill or sheet erosion. Due to the low to moderate saturated hydraulic conductivity of the soils on the proposed project area, the potential for spills contaminating the ground water, if responded to properly, is not great.

To facilitate appropriate employee response during construction, spill prevention and response procedures found in the existing Industrial SWPPP and SPCC Plan will be followed. These procedures would include providing secondary containment for fuel stored on site, keeping Material Safety Data Sheets for all chemicals used during construction, and training employees in proper spill cleanup procedures and spill report requirements. The existing SPCC Plan and Industrial SWPPP would be modified to reflect the facility expansion. As stated previously, the SWPPP and SPCC Plan are available upon request.

**20. Solid Wastes, Hazardous Wastes, Storage Tanks.**

- a. **Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.**

Construction and demolition debris generated as a result of the proposed modification are expected to be minor in quantity and all such wastes will be properly disposed of by the construction contractor(s). The Facility does not generate significant amounts of solid waste. Corn solids remaining from the ethanol production process are dried and sold as DDGS, an animal feed product. Municipal solid waste generated at the plant is stored in dumpsters before disposal at an off-site landfill.

Hazardous wastes generated by the facility include solvents used for parts washing and laboratory wastes. These wastes are stored in steel barrels and transported off site to a commercial recycler. Waste lubricating oils from the plant are recycled.

No significant change to solid or hazardous waste generation is expected as a result of the proposed expansion.

- b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.**

Ethanol and regular unleaded or natural gasoline, used as a denaturant, are currently stored at the Facility. The ASTs are located above ground within a suitable containment area. No AST upgrades are proposed for the Facility modification. No new toxic or hazardous materials will be used in the process as a result of the modification.

- c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.**

The Facility currently has a lined (secondary containment) tank farm, which is where the existing ASTs are located (Figure 2). Each tank is equipped with electronic overfill protection, electronic level gauge, and emergency relief valve. Product is bottom loaded into tanker trucks and rail cars. VOC emissions from these tanks are included in the Facility emission total. The Facility currently has:

- one 100,000-gallon 200-proof tank
- one 100,000-gallon 190-proof tank
- one 100,000-gallon denaturant tank
- two 750,000-gallon denatured ethanol storage tanks
- one 2,000-gallon corrosion inhibitor tank

Current production/process tanks located indoors include:

- three 730,000-gallon fermenters;
- one 18,000-gallon yeast tank;
- one 985,000-gallon beer well;
- one 16,000-gallon slurry tank

Certain tanks at the Facility are regulated under AST Permit No. 123524, issued by the MPCA. The Permit includes standards and methods of operation designed to prevent, detect and contain leaks from the storage tanks. No new regulated ASTs will be added for this modification, so the AST Permit will not need to be modified.

All exterior ASTs are provided with secondary containment to contain 110 percent of the contents of the largest AST, as well as runoff from a significant rainfall event. The Facility has an SPCC Plan in place.

One new 730,000-gallon fermenter will be added adjacent to the existing fermenters as part of the proposed Facility modification.

21. **Traffic. Parking spaces added:** 0 **Existing spaces (if project involves expansion)** 40  
**Estimated total average daily traffic generated:** 150 current, 194 future  
**Estimated maximum peak hour traffic generated (if known) and its timing:** 75 percent between 8:00 A.M. and 5:00 P.M.

**Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.**

Increased vehicle traffic is anticipated due to the increase in grain receiving and product load out. Traffic congestion is not anticipated and no traffic improvements are planned at this time.

22. **Vehicle-related Air Emissions. Estimate the effect of the project’s traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.**

The increase in vehicle traffic as a result of increased grain delivery and product load out will be up to an additional 44 trucks per day.

23. **Stationary Source Air Emissions. Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult EAW Guidelines for a listing), any greenhouse gases (such as CO<sub>2</sub>, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.**

**Sources of Air Emissions and Pollution Control Equipment**

The following is a summary of air emission sources and emission control equipment at the Facility. Item 6b of the EAW describes the process steps. The Facility operates in accordance with requirements listed in the Air Emission Permit No 06700061-002, issued by the MPCA. This Air Emission Permit will require modification as a result of the proposed project.

Corn Receiving and Handling. Fugitive particulate emissions from the truck and rail unloading area, elevators, conveyers, and corn bins will be exhausted through a negative pressure ventilation system, which will continuously pull air from these sources through a baghouse.

Corn Milling and Handling. Corn from the surge bin is fed to a hammermill located outside. A blower is used to force the milled corn from the hammermill into a cyclone that discharges into the blender. The blender mixes the milled corn with water to start the ethanol production process. The air leaving the top of the cyclone enters a baghouse.

Hammermills. The air exiting the hammermills will be routed to a baghouse. There will be one baghouse to control particulate emissions from all hammermills.

Batch Fermentation. The vents of the fermenters, as well as the vents from other vessels in the process building, will all be tied into the inlet of one direct contact scrubber. The gas coming off the fermenters and other vessels will flow up through a bed of nylon packing. Water will flow down through the bed. A continuous blow-down of this water will flow back into the process stream. CO<sub>2</sub> and other non-condensing gases leaving the scrubber will be vented to the atmosphere.

Distillation/Dehydration. The beer resulting from the fermentation will run through a continuous vacuum distillation system to remove and rectify the ethanol. The vapor outlet of the distillation column will be piped directly to a set of condensers that discharge liquid ethanol to the 190-proof tank. From the 190-proof tank, the liquid will pass through a molecular sieve and then to the 200-proof condenser and will then be stored in the 200-proof storage tank. The gases leaving the condensers will be vented to the thermal oxidizer prior to venting to the atmosphere.

Dried Distillers Grain and Handling. Distillers grain will be dried in a rotary drum dryer system. All of the exhaust from the dryers will pass through the TO to control particulate and VOC emissions. DDGS will be cooled in a cyclone-type cooler system. Gases leaving the cooler will be vented to the DDG cooling cyclone and baghouse to control particulate emissions prior to venting to the atmosphere. Dried distillers grain is pneumatically conveyed to an enclosed building. Dried distillers grain will be pneumatically loaded into trucks/railcars with the exhaust air passing through a baghouse prior to venting to the atmosphere.

Ethanol Storage Tanks. The product will be pumped daily from the 200-proof tank to one of the denatured ethanol tanks. A small amount of natural gasoline will be simultaneously pumped from the denaturant tank to the denatured ethanol tank involved. All of these tanks will be fitted with internal floating roofs to control air emissions. Each tank will also have a fire valve, a level gauge, and overflow protection.

Thermal Oxidizer/Heat-Recovery Boiler (TO/HRB). A 125-MMBTU/hr TO/HRB will provide steam for cooking, distilling, evaporating, and other plant uses. Because the two 45-MMBTU/hr dryers will vent to the TO, the HRB inlet includes this heat. The TO will be used to control air emissions and reduce odors from plant operations. To assure that odors are controlled at the Facility, Bushmills plans to direct nearly every odor or VOC emission point source to the TO.

Flares. Methanator and load-out flares will be used to control emissions from the methanators and ethanol truck loading.

Diesel-powered Fire Water Pump Engine. The fire water pump engine will be limited to 500 hours of operation on a 12-month rolling sum basis. The unit will be rated at 190 horsepower.

Rail Cars Loading/Unloading. Ethanol rail cars will be limited to rail cars that are dedicated to handling ethanol. Emissions from this loading operation will be uncontrolled.

Bushmills will be a minor synthetic source with respect to both the prevention of significant deterioration and the Title V Permitting process. Emissions for criteria pollutants for the modification of the Facility are presented in Table 23-1. This table includes information about the emission estimates before the Facility started operation, as well as the actual emissions found over time. Expansion of ethanol production will not change actual emissions.

<b>Table 23-1</b>		
<b>Total Post-Expansion Facility Controlled Emission Summary</b>		
<b>Pollutant</b>	<b>Permitted Emissions (tons per year)</b>	
	<b>Permitted Emissions</b>	<b>Actual Emissions</b>
Carbon Monoxide	95.1	2.7
Nitrogen Oxides	91.5	91.5
VOCs	95	29.5
Total PM	39.1	27.62
PM <sub>10</sub>	27.1	15.34

The draft air emissions permit also allows the Facility to bypass the ethanol load out flare while loading into tanker trucks up to five million gallons of ethanol per 12-month period if the flare is down.

All of the emissions resulting from operating under these alternative operating scenarios are included in the above stated emissions estimates and Bushmills must keep records that demonstrate compliance with the limits stated.

24. **Odors, noise and dust. Will the project generate odors, noise or dust during construction or during operation?**  Yes  No

**If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)**

Odors

Fermentation tanks and DDGS driers are usually the main contributors to odor issues at ethanol facilities. The emissions vented to the dryer stack are controlled by the TO, which destroys a minimum of 97 percent of the organic compounds believed to cause odors. Bushmills has not received any complaints to date regarding odors. No significant change in odor from the Facility is expected as a result of the Facility expansion.

Noise

Significant additional noise impacts from the project to surrounding neighbors are not anticipated. Trucks may idle occasionally while waiting to load or unload. Bushmills has not received any complaints to date regarding noise. No sensitive receptors are located within one kilometer of the Facility.

Based on the Guidance to Noise Control in Minnesota, the nearest receiver is a resident, which designates the site as a Class 1 noise area. To meet state noise standards, the following noise levels would not be exceeded at the nearest receiver:

	L50 (dBA)	L10 (dBA)
Day	60	65
Night	50	55

dBa = decibels, as a time weighted average

During construction, noise from heavy equipment would be generated during daylight hours. Once the Facility is operational, additional noise would be generated by increased truck traffic to and from the Facility, as well as by plant equipment.

#### Dust

Dust will be generated as part of construction activities such as grading, the stockpiling and placement of aggregate material, cement delivery, and paving activities. In an effort to minimize dust from construction equipment, paved roads will be used, where possible, to access construction areas. Water trucks will be used to wet areas of exposed soil during dry and/or windy conditions. Permanent vegetation will be established both as an erosion control measure and to minimize dust generation after construction is complete.

Dust generated from the additional traffic associated with the expansion is expected to be minimal since all roadways and driveways within the Facility area will be paved. Bushmills has not received any complaints to date regarding dust. The current dust control plan will be amended as needed to account for additional truck traffic.

#### 25. **Nearby resources. Are any of the following resources on or in proximity to the site?**

- a. **Archaeological, historical, or architectural resources?**  Yes  No
- b. **Prime or unique farmlands or land within an agricultural preserve?**  Yes  No
- c. **Designated parks, recreation areas, or trails?**  Yes  No
- d. **Scenic views and vistas?**  Yes  No
- e. **Other unique resources?**  Yes  No

**If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.**

- a. **Archaeological, historical, or architectural resources:** The Minnesota SHPO has been contacted regarding this proposed project. No archaeological, historical, or architectural resources were identified within the areas to be disturbed during construction of the proposed project. A copy of SHPO's letter is included with this EAW as Attachment B.

The Facility site was farmed prior to its construction in 2004. All of the proposed construction areas, then, have been previously disturbed. There are no historic structures located on these proposed construction sites now and previous land uses have not identified the presence of archeological properties.

- b. **Prime or unique farmlands or lands within an agricultural preserve:** Prime farmland is described by the NRCS as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. According to the list of soil survey map units, no soils that meet the soil requirements for prime farmland in Kandiyohi County will be impacted by the proposed Facility expansion.
- c. **Designated parks, recreation areas, or trails:** There are no known parks, recreation areas or trails in the area.
- d. **Scenic views and vistas:** Scenic views or vistas are not present in the area.

e. **Other unique resources:** According to the Kandiyohi County Comprehensive Plan, a designated Wildlife and Waterfowl Area exists approximately 1,415 feet southwest of the current Facility on the south side of the Burlington Northern Santa Fe Railroad. This area will not be impacted by the proposed Facility expansion.

26. **Visual impacts. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks?**  Yes  No

**If yes, explain.**

27. **Compatibility with plans and land use regulations. Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency?**  Yes  No

**If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.**

The current Facility is located outside the corporate limits of the City. The current Facility is located in an area zoned A-1 Agricultural Preservation and is compatible with the Kandiyohi County Comprehensive Land Use Plan. The proposed Facility expansion will require a county building permit and will also be compatible with the Kandiyohi County Comprehensive Land Use Plan.

28. **Impact on infrastructure and public services. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project?**  Yes  No

**If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)**

The proposed Facility expansion will not require the installation of new utilities, roads/ infrastructure, or other public services.

29. **Cumulative impacts. Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the “cumulative potential effects of related or anticipated future projects” when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).**

Cumulative impacts include those caused by the addition of the project to past, present, and foreseeable future activities.

*Air Quality:* Air emissions from the proposed project were analyzed as described in Item 23. No exceedances of air quality standards or health benchmarks are anticipated and, in conjunction with similar projects and other proposed projects in the vicinity, no overall significant deterioration of air quality will result. No other current or proposed air emission sources are present in the vicinity of the Facility.

Water Use: Currently, the Facility holds DNR Appropriation Permit Number 2005-4031 allowing the use of a combined maximum of 500 gpm from two on-site wells, unique well numbers 00710401 and 00723664 (Figures 2 and 4). Current water consumption at the Facility is approximately 400 gpm, or 210 MMGY, and is expected to increase to approximately 411 gpm, or 216 MMGY. The additional water needed for the proposed expansion will be provided by a combination of additional pumping from the existing two on-site wells. Total water usage from the two existing on-site wells combined will not exceed 500 gpm.

Water users in the vicinity of the Facility include a golf course and the City's municipal wells. Current water usage at the facility has caused no conflicts with either the golf course or the City's municipal wells. The proposed pumping rate after the expansion will increase by approximately 11 gpm. This minor increase is not anticipated to impact water users in the vicinity of the Facility. As part of a cumulative impact analysis, it is recognized that the continued construction of ethanol plants will result in increase water appropriation needs in the region.

Surface Water/Stormwater: Presently, surface water flows to a stormwater detention pond to the west of the active portion of the Facility, which discharges through Outfall SD002 to Judicial Ditch 17, approximately two miles east of the plant near the City's wastewater treatment facility. Changes in the quantity and quality of the runoff after the proposed expansion are not expected to be significant since much of the site area has already been developed. The amount of impervious surface will not increase. With stormwater control requirements in the area, it is not anticipated that this project, in conjunction with similar projects or other proposed projects, will result in increased stormwater impacts. Currently, there are no other stormwater discharges in the vicinity of the Facility.

Surface Water Discharge: Discharges from the project were analyzed as described in Item 18. The project expansion will result in additional non-process wastewater discharge; however, the quality of discharge will improve. Water treatment process and discharge locations will not change. The predicted concentrations of pollutants in the non-process wastewater will meet the existing water quality discharge standards. There are no other discharges upstream from the Facility and standards have accounted for this discharge.

**30. Other Potential Environmental Impacts. If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.**

No environmental impacts other than those noted in the previous responses are anticipated.

**31. Summary of issues. List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.**

No issues were identified that would require additional evaluation/ongoing coordination.

**RGU CERTIFICATION.**

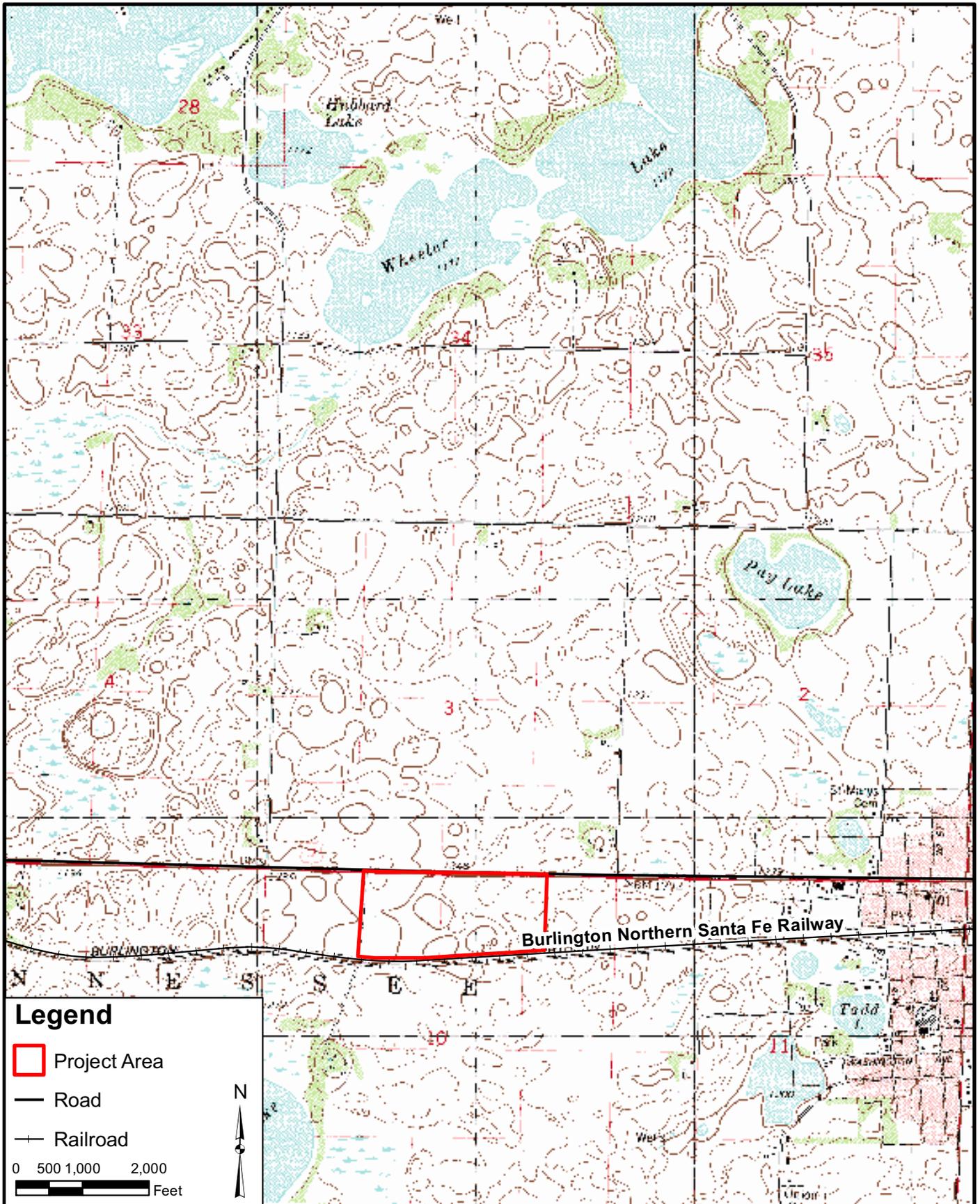
I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minn. R. 4410.0200, subps. 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer:   
**Myra M. Halbach, P.E.**  
**Assistant Division Director**  
**Industrial Division**

Date: 06 APRIL 2007

*The format for the alternative Environmental Assessment Worksheet form has been approved by the Chair of the Environmental Quality Board pursuant to Minn. R. 4410.1300 for use for animal feedlot projects. For additional information contact: Environmental Quality Board, Room 300, 658 Cedar St., St. Paul, Minnesota, 55155, 651-201-2492, or voice mail: 800-657-3794. For TTY, call 800-627-3529 and ask for Minnesota Planning. This form can be made available in an alternative format, such as audiotape. This form is available at <http://www.eqb.state.mn.us/review.html>.*



SOURCE: DIGITAL 7.5 MINUTE USGS TOPOGRAPHIC DATA AND OTHER DATA PROVIDED BY MNDNR DATA DELI.



**FIGURE 1  
USGS LOCATION MAP**

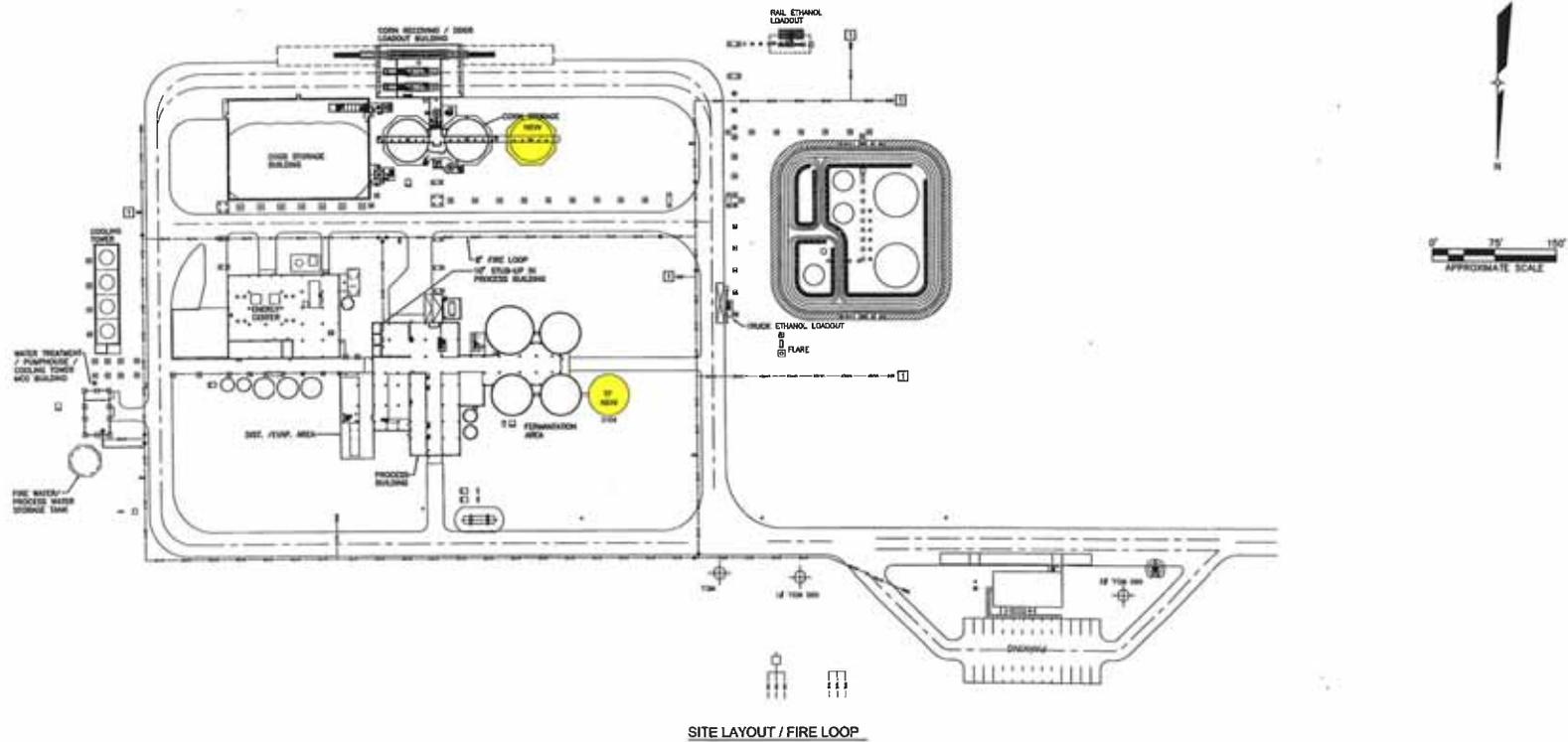
PROPOSED BUSHMILLS ETHANOL EXPANSION  
ATWATER, MINNESOTA

APRIL 2007

89806.03



SOURCE: DIGITAL 2006 AERIAL PHOTOGRAPHY PROVIDED BY FARM SERVICE AGENCY. OTHER DATA PROVIDED BY MNDNR DATA DELI.



SITE LAYOUT / FIRE LOOP

- GENERAL FIRE PROTECTION NOTES**
1. THE FIRE PROTECTION CONTRACTOR SHALL DESIGN THE FIRE PROTECTION SYSTEM BASED ON THE FIRE PUMP CAPACITIES SPECIFIED.
  2. REFERENCE SPECIFICATION SECTION 15300 AND 15099 FOR ADDITIONAL REQUIREMENTS.
  3. THE FIRE PROTECTION CONTRACTOR SHALL DESIGN A HYDRAULICALLY CALCULATED FIRE PROTECTION SYSTEM IN ACCORDANCE WITH NFPA, IFC, FM, LOCAL, STATE, AND FEDERAL CODES. SUBMIT FIRE PROTECTION SHOP DRAWINGS AND HYDRAULIC CALCULATIONS TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL PRIOR TO SUBMITTING THE SAME DOCUMENTS TO THE ENGINEER FOR APPROVAL.
  4. THE 4" UNDERGROUND FIRE WATER DISTRIBUTION LOOP WILL BE BROUGHT TO THE NECESSARY BUILDINGS ON SITE AND STUBBED UP THROUGH THE CONCRETE BY OTHERS. THE FIRE PROTECTION CONTRACTOR IS TO PROVIDE ALL DISTRIBUTION PIPING, VALVES, FITTINGS, SIZES, AND NECESSARY EQUIPMENT TO PROVIDE FIRE PROTECTION AS SPECIFIED AND REQUIRED BY CODE.
  5. WHEN INSTALLING THIS SPRINKLER DISTRIBUTION PIPING, DO NOT WELD ON ANY TANKS OR VESSELS WITHOUT PERMISSION FROM THE SITE PROJECT MANAGER.
  6. [ ] INDICATES FIRE PROTECTION CONSTRUCTION NOTES.
  7. PROVIDE FIRE PUMP PACKAGE AS SPECIFIED TO SUPPLY WATER TO THE FIRE PROTECTION SYSTEM.
  8. PROVIDE A FIRE ALARM PANEL FOR CONTROL AND ALARMING OF FIRE PROTECTION SYSTEM.
  9. TEST SYSTEM AND PROVIDE TEST CERTIFICATES IN ACCORDANCE WITH NFPA.
  10. HATCH INDICATES AREA OF WORK.
  11. PROCESS BUILDING FINISHED FLOOR ELEVATION = 100'-0"

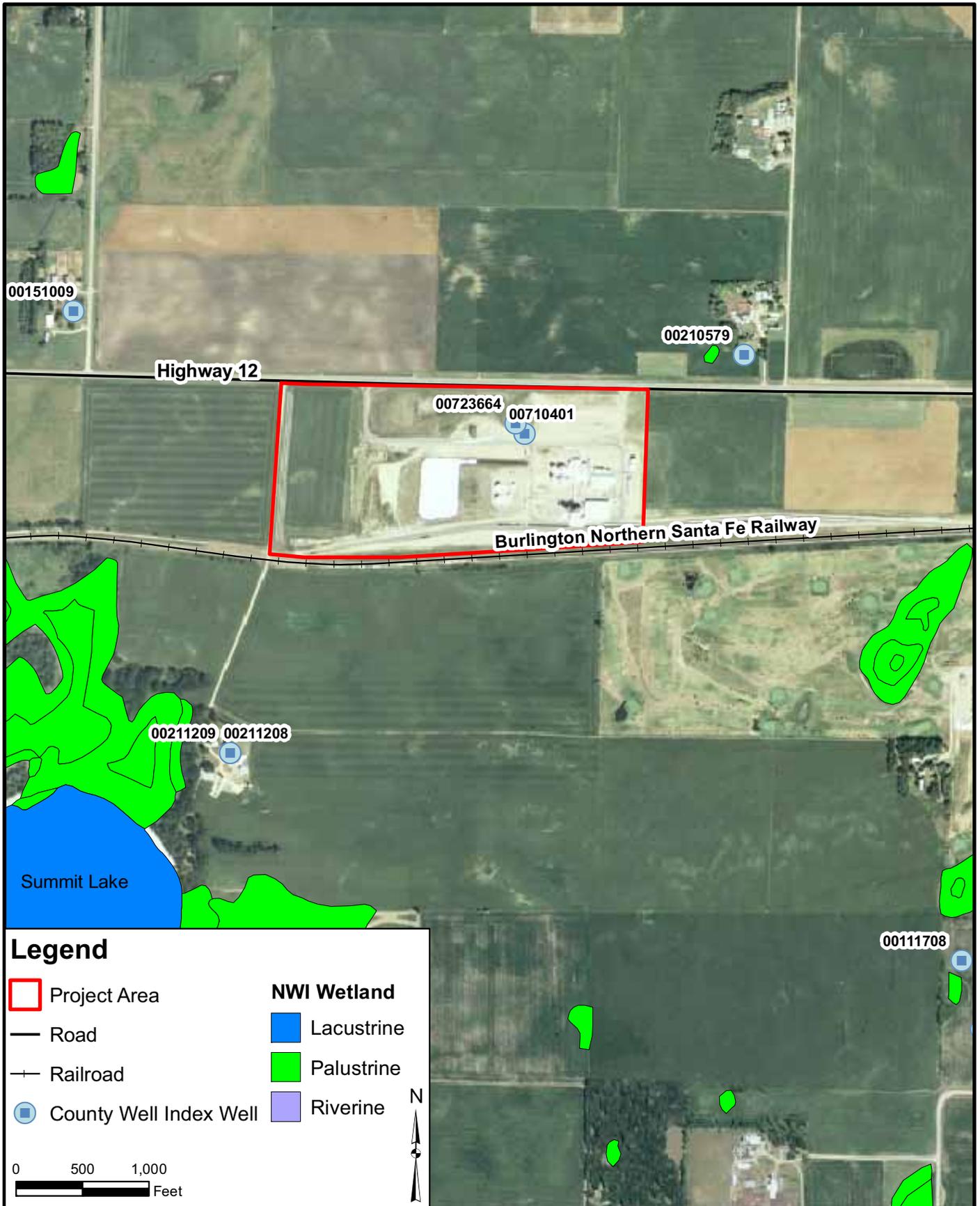
- FIRE PROTECTION CONSTRUCTION NOTES**
- [ ] HYDRANT MOUNTED MONITOR NOZZLE PROVIDED BY OTHERS.

SOURCE: MAP PROVIDED BY FAGEN ENGINEERING LLC.

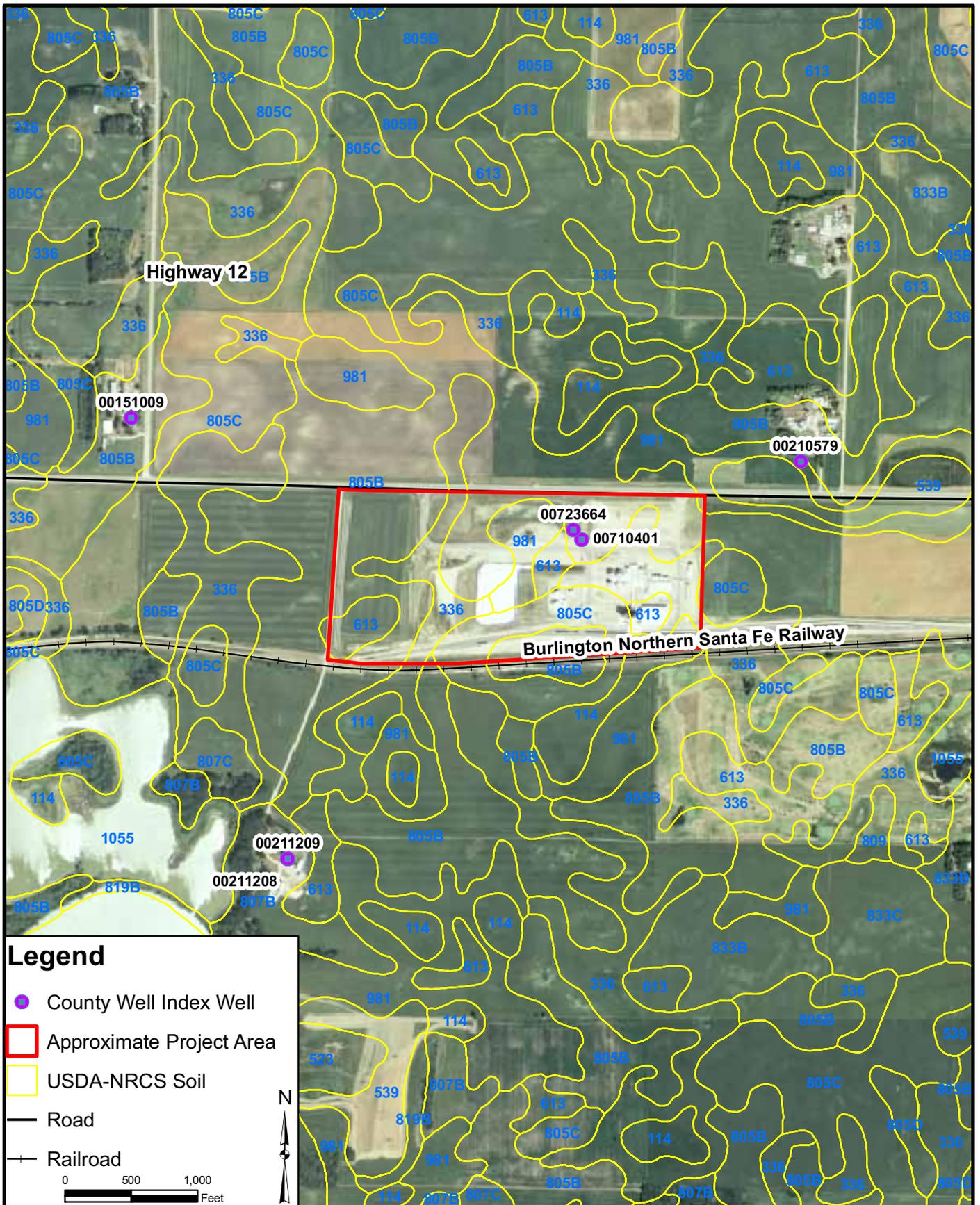
 Earth Tech A Tyco International Ltd. Company	FIGURE 3 GENERAL LAYOUT
	BUSHMILLS ETHANOL ATWATER, MINNESOTA

AUGUST 2006

89806



SOURCE: DIGITAL 2006 AERIAL PHOTOGRAPHY PROVIDED BY FARM SERVICE AGENCY. OTHER DATA PROVIDED BY MNDNR DATA DELI.



SOURCE: DIGITAL 2006 AERIAL PHOTOGRAPHY PROVIDED BY FARM SERVICE AGENCY. OTHER DATA PROVIDED BY MNDNR DATA DELI AND USDA-NRCS.



# Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25  
500 Lafayette Road

St. Paul, Minnesota 55155-40\_\_

Phone: (651) 259-5107 Fax: (651) 296-1811 E-mail: sarah.hoffmann@dnr.state.mn.us

April 26, 2006

Mr. Mark Rothfork  
Earth Tech, Inc.  
3033 Campus Drive West, Suite 290  
Minneapolis, MN 55441



Re: Request for Natural Heritage information for vicinity of proposed Bushmills Ethanol Plant Expansion,  
T119N R33W Section 10, Kandiyohi County  
NHNRP Contact #: ERDB 20060814

Dear Mr. Rothfork,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are no known occurrences of rare species or native plant communities in the area searched.

The Natural Heritage database is maintained by the Natural Heritage and Nongame Research Program, a unit within the Division of Ecological Services, Department of Natural Resources. It is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. Its purpose is to foster better understanding and protection of these features.

Because our information is not based on a comprehensive inventory, there may be rare or otherwise significant natural features in the state that are not represented in the database. A county-by-county survey of rare natural features is now underway, and has been completed for Kandiyohi County. Our information about native plant communities is, therefore, quite thorough for that county. However, because survey work for rare plants and animals is less exhaustive, and because there has not been an on-site survey of all areas of the county, ecologically significant features for which we have no records may exist on the project area.

Please be aware that review by the Natural Heritage and Nongame Research Program focuses only on *rare natural features*. It does not constitute review or approval by the Department of Natural Resources as a whole. If you require further information on the environmental review process for other natural resource-related issues, you may contact your Regional Environmental Assessment Ecologist, Todd Kolander, at (507) 359-6073.

An invoice in the amount of \$66.07 will be mailed to you under separate cover within several weeks of the date of this letter. You are being billed for map and database search and staff scientist review. Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

FOR Sarah D. Hoffmann  
Endangered Species Environmental Review Coordinator

DNR Information: 651-296-6157 • 1-888-646-6367 • TTY: 651-296-5484 • 1-800-657-3929

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**Rothfork, Mark**

---

**From:** Cinadr, Thomas [thomas.cinadr@mnhs.org]  
**Sent:** Thursday, April 20, 2006 12:31 PM  
**To:** Rothfork, Mark  
**Subject:** Historic Resources Information Request - Bushmills Ethanol Plant Expansion

No archaeological sites or historic structures were identified in a search of the Minnesota Archaeological Inventory and Historic Structures Inventory for the search area requested.

The result of this database search provides a listing of recorded archaeological sites and historic architectural properties that are included in the current SHPO databases. Because the majority of archaeological sites in the state and many historic architectural properties have not been recorded, important sites or structures may exist within the search area and may be affected by development projects within that area. Additional research, including field survey, may be necessary to adequately assess the area's potential to contain historic properties.

With regard to Environmental Assessment Worksheets (EAW), a negative known site/structure response from the SHPO databases is not necessarily appropriate information on which to base a "No" response to EAW Question 25a. It is the Responsible Governmental Unit's (RGU) obligation to verify the accuracy of the information contained within the EAW. A "No" response to Question 25a without written justification should be carefully considered. If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic architectural properties, you may need to hire a qualified archaeologist and/or historian. Please contact the SHPO by phone at 651-296-5462 or by email at mnshpo@mnhs.org for current lists of professional consultants in these fields.

The Minnesota SHPO Survey Manuals and Database Metadata can be found at <http://www.mnhs.org/shpo/survey/inventories.htm>

Tom Cinadr  
Survey and Information Management Coordinator Minnesota State Historic Preservation Office  
Minnesota Historical Society  
345 Kellogg Blvd. West  
St. Paul, MN 55102

651-205-4197 (voice)  
651-282-2374 (fax)

**Rothfork, Mark**

**From:** Scott\_Glup@fws.gov  
**Sent:** Monday, May 22, 2006 2:45 PM  
**To:** Rothfork, Mark  
**Cc:** Laurie\_Fairchild@fws.gov  
**Subject:** Re: Bushmills Ethanol

**Attachments:** USFWS.doc; Agency\_Map.pdf



USFWS.doc (31 KB)  
 Agency\_Map.pdf (80 KB)

Mark:

Without specific details of what is planned I can only make the following comments. Laurie, please correct me if you disagree. I am going to assume that as long as the expansion stays within the current boundary and the additional discharge goes the same route as the current discharge, I think it would be difficult to say that you would have additional negative impacts on threatened or endangered species. I am also not aware of any endangered or threatened species in the vicinity except for migratory birds that would move through the area.

Scott Glup  
 Project Leader  
 Litchfield Wetland Management District  
 22274 615 Ave  
 Litchfield, Mn 55355  
 Phone 320-693-2849  
 Fax 320-693-7207

"Rothfork, Mark"  
 <Mark.Rothfork@ea  
 rthtech.com>

05/22/2006 02:08  
 PM

Scott\_Glup@FWS.gov

To

cc

Subject

Bushmills Ethanol

Scott,

Thank you for taking the time to discuss the Proposed Bushmills Ethanol Plant expansion with me. Please find attached a copy of a letter and map that was sent to Laurie Fairchild requesting USFWS input concerning threatened and endangered species that may exist at or in the vicinity of the Waterfowl Production area associated with Summit Lake. If you have any additional comments for concerns please let me know. Thanks again.

~Mark

Mark A. Rothfork

Environmental Services Group

Earth Tech, Inc.  
3033 Campus Drive North  
Suite 290  
Minneapolis, MN 55441

Office Number - (763) 551-1001  
Direct Dial - (763) 551-2416  
Fax Number - (763) 551-2499  
Cell Phone - (612) 991-9582

Email - [Mark.Rothfork@earthtech.com](mailto:Mark.Rothfork@earthtech.com)  
Website - [www.earthtech.com](http://www.earthtech.com)

(See attached file: USFWS.doc) (See attached file: Agency\_Map.pdf)