FACT SHEET/STATEMENT OF BASIS

MHA NATION CLEAN FUELS REFINERY
MAKOTI, NORTH DAKOTA

Facility Name:	MHA Nation Clean Fuels Refinery
NPDES Permit No:	ND-0030988
Responsible Official:	Tex G. Hall, Chairman Fort Berthold Tribal Business Council Three Affiliated Tribes
Facility Contact:	Horace Pipe, Refinery Project Manager
Phone Number:	(701) 726-5894
Permit Type:	New Major Industrial Facility/Indian Country

Background Information

This new permit is proposed for wastewater discharges associated with the planned Mandan, Hidatsa and Arikara Nation (MHA Nation) Clean Fuels Refinery to be located on the Fort Berthold Indian Reservation near Makoti in Ward County, North Dakota. The MHA Nation applied to EPA Region VIII for an NPDES permit on November 9, 2004.

The proposed refinery is a new facility yet to be constructed. Construction is scheduled to begin in 2007. Once operational, the facility will process synthetic crude oil and local butane supplies into various petroleum products including gasoline, diesel and other distillate blending fuels. Anticipated capacity of the facility is 10,000 barrels per stream day (BPSD) of synthetic crude and 3000 BPSD of field butane. Syncrude feedstock for the refinery will originate from northern Alberta, Canada and will be supplied via an already existing pipeline nearby. Field butane and natural gas will be supplied locally. A soybean based 300 BPSD Bio-diesel refinery is also planned for the site but may not be constructed as part of the initial effort.

The proposed refinery will include atmospheric distillation, hydrotreating, and hydrocracking processing units for the synthetic crude, a hydrogen plant utilizing natural gas, and butane processing units. Other areas of the proposed refinery affecting wastewater discharges include: rail and truck loading and unloading facilities, a tank farm, blending facilities, office and maintenance buildings, and fire suppression system. Contaminated (oily) stormwater will be managed separately from uncontaminated (non-oily) stormwater.
In the DEIS for the proposed facility, there are two different refinery configurations proposed. One is the Proposed Alternative (DEIS Figure 2-7) and the other under Alternative 4, a reconfiguration designed to minimize impacts to onsite wetlands and replacing the wastewater holding ponds with a tank system (DEIS Figure 2-15). Both configurations are being considered for final design and will be evaluated as part of the draft NPDES permit.

Legend

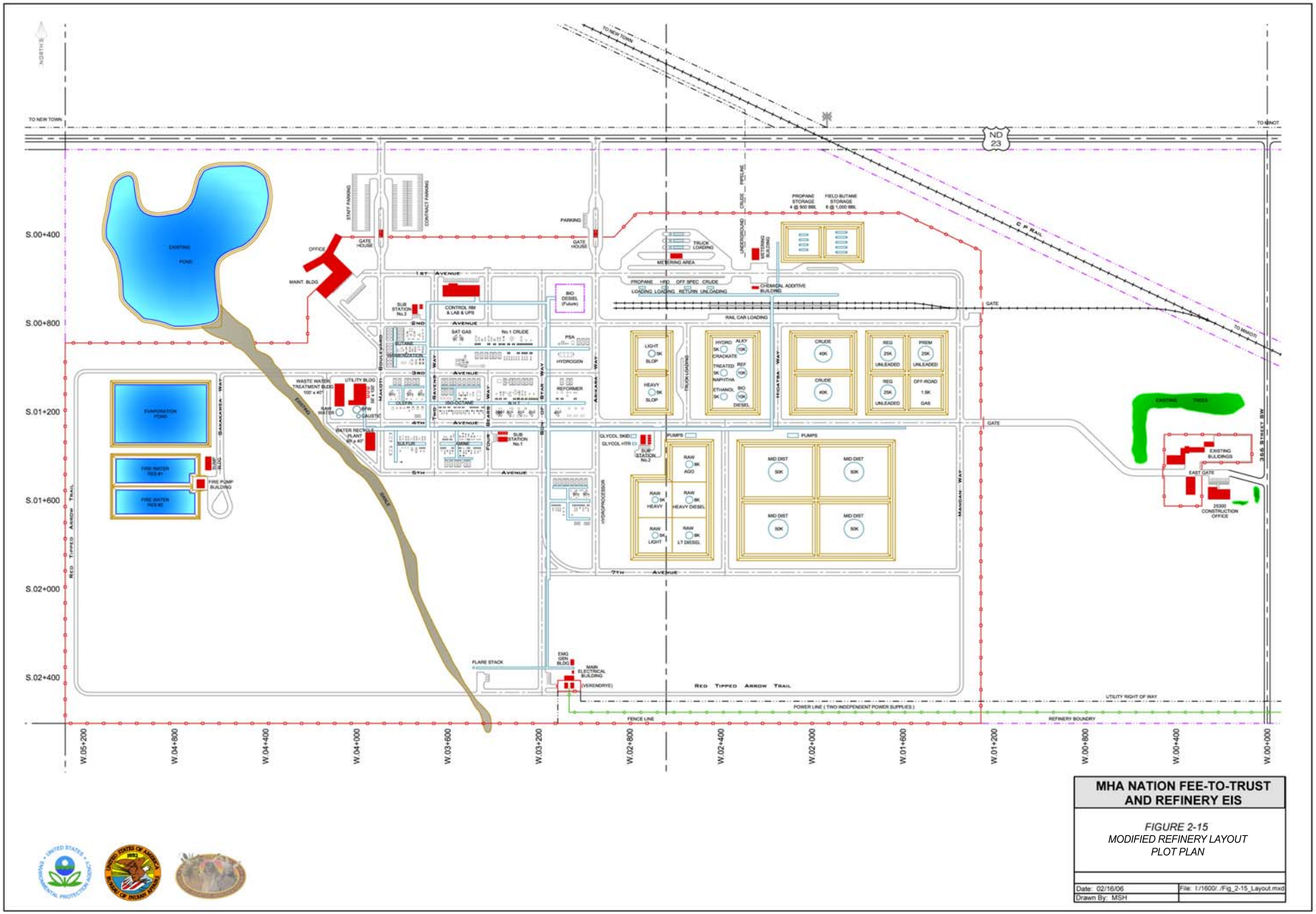
- Refinery Site Fenceline
- Power Line

200 0 200 400 FEET

MHA NATION FEE-TO-TRUST AND REFINERY EIS

FIGURE 2-7
SITE LAYOUT

Date: 1123/23/2005	File: 1600 DETAIL.dwg
Drawn By: ETC	Layout: 001



MHA NATION FEE-TO-TRUST AND REFINERY EIS

FIGURE 2-15
MODIFIED REFINERY LAYOUT
PLOT PLAN

Date: 02/16/06	File: I:/1600/../Fig_2-15_Layout.mxd
Drawn By: MSH	

Wastewater Sources and Treatment

There are four sources of wastewater associated with the operation of the proposed MHA Nation Clean Fuels Refinery:

- Process wastewater from refinery operations
- Contaminated (oily) stormwater from process areas of the refinery
- Uncontaminated (non-oily) stormwater from areas outside the process operations of the refinery
- Sanitary wastewater (POTENTIAL)

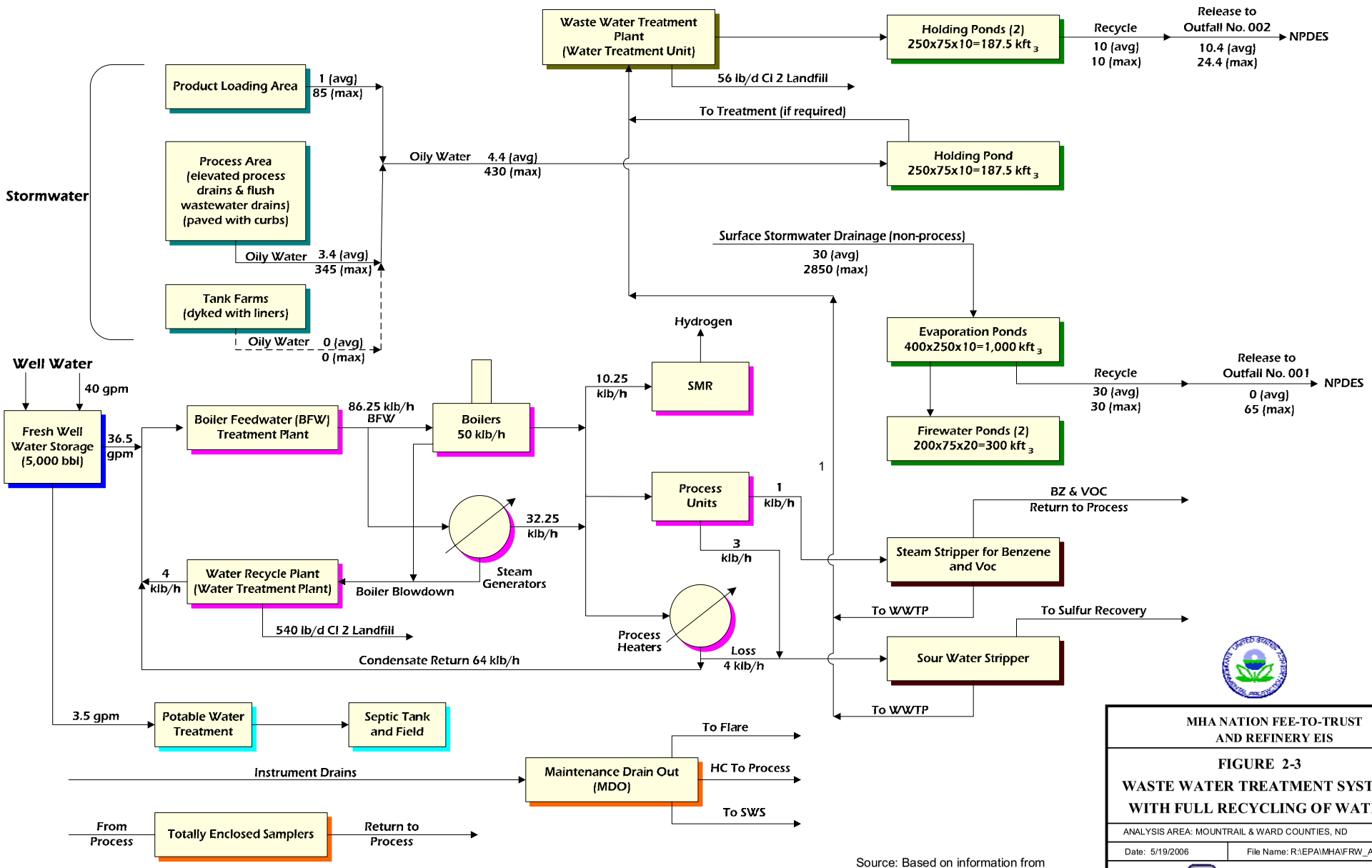
Process Wastewater

Process wastewater discharges associated with petroleum refining operations will be collected and treated prior to recycle back to refinery operations or discharged. The raw water source for the refinery operations is well water. The refinery design includes plans to utilize recycled water from certain operations to the extent feasible. Make-up water for process operations is treated prior to use in the boilers and steam generators for the refinery operations (hydrogen production, process units, process heaters). Blowdown from the boilers will be sent to a water recycling plant and recycled as make-up water. Condensate return flow from the process heaters can also be recycled as make-up water or be sent to the wastewater treatment processes if the quality becomes a problem for use as recycle. Other process wastewater includes water that is removed during crude processing operations in individual refinery units. All process wastewater will be collected in segregated closed drainage pipes and routed to either a steam stripper to remove VOCs and benzene or to a sour water stripper (SWS) to remove sulfides and ammonia. The process wastewater is then sent directly to the wastewater treatment plant. The wastewater treatment unit processes include the following units: API separator ►dissolved air floatation ►equalization tank ►biological treatment ►clarifier.

Under the Proposed Alternative in the DEIS, the wastewater (after treatment) will be directed to one of two final holding ponds. The treated process wastewater can then either sent as recycle back to make-up water system for process operations or discharged. DEIS Figure 2-3 shows the operation with no recycling and DEIS Figure 2-4 shows the operation with full recycling of treated wastewater.

Under Alternative 4 in the DEIS, the wastewater treatment system will be designed to meet the definitions of wastewater treatment unit and tank system under RCRA 40 CFR 260. The biological treatment will meet the aggressive biological treatment definition under hazardous waste rules at 40 CFR 261.31(b). The wastewater is then routed to final holding tanks prior to recycle or discharge. See DEIS Figure 2-16.

Potential pollutants contained in the discharge of process wastewater will be evaluated and limited under Outfall 002 in the proposed NPDES permit for this facility.



Source: Based on information from Greystone Environmental Consultants, Inc.

MHA NATION FEE-TO-TRUST AND REFINERY EIS

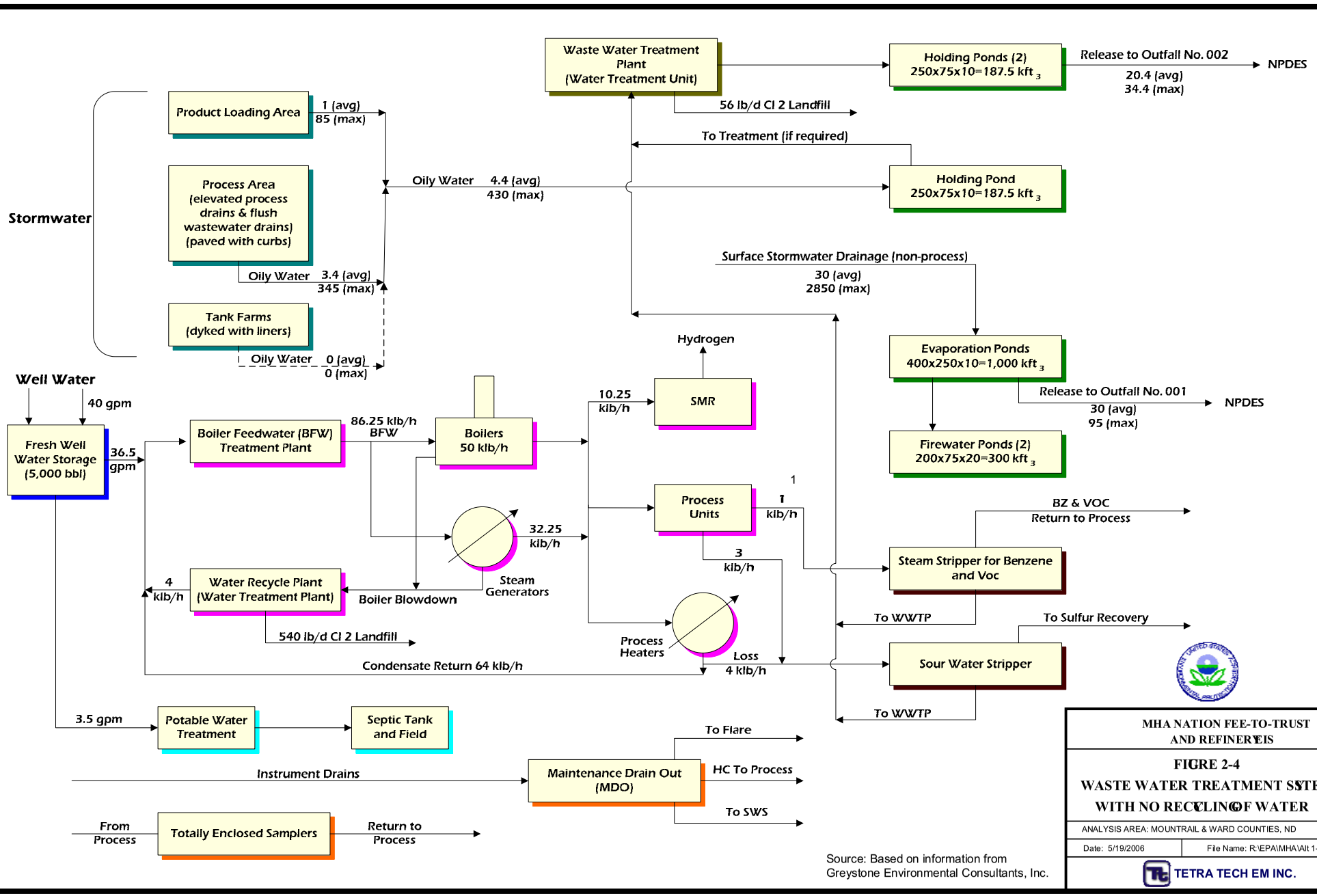
FIGURE 2-3

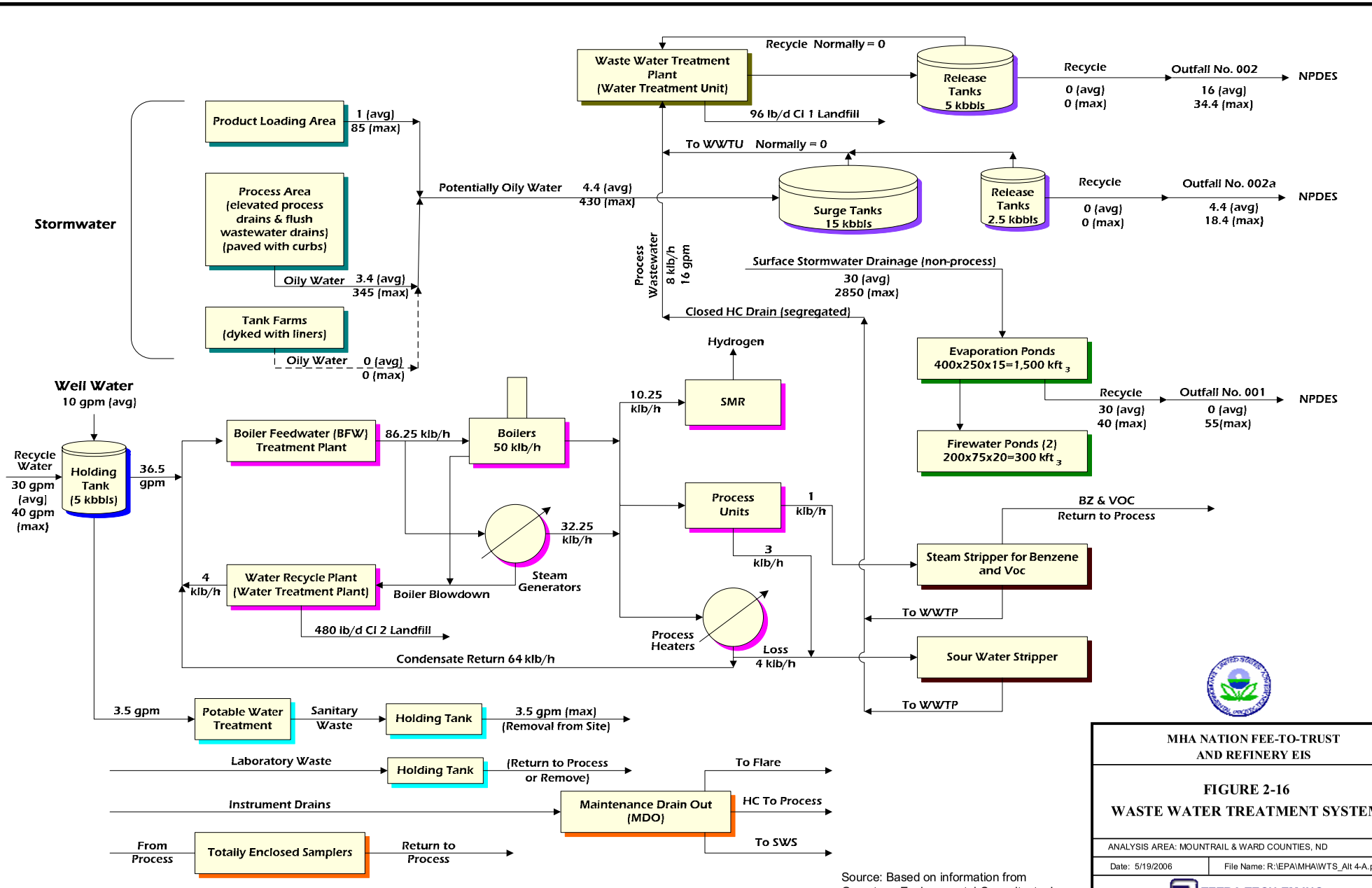
WASTE WATER TREATMENT SYSTEM WITH FULL RECYCLING OF WATER

ANALYSIS AREA: MOUNTRAIL & WARD COUNTIES, ND

Date: 5/19/2006 | File Name: R:\EPA\MHA\FRW_Alt 1-A.ppt

TETRA TECH EM INC.


Waste Water Treatment Plant (Water Treatment Unit)
Holding Ponds (2) 250x75x10=187.5 kft 3
Release to Outfall No. 002
20.4 (avg)
34.4 (max)
NPDES
56 lb/d Cl 2 Landfill
To Treatment (if required)
Holding Pond 250x75x10=187.5 kft 3
Stormwater
Product Loading Area
1 (avg)
85 (max)
Process Area (elevated process drains & flush wastewater drains) (paved with curbs)
Oily Water 4.4 (avg)
430 (max)
Oily Water 3.4 (avg)
345 (max)
Tank Farms (dyked with liners)
Oily Water 0 (avg)
0 (max)
Surface Stormwater Drainage (non-process)
30 (avg)
2850 (max)
Hydrogen
Evaporation Ponds 400x250x10=1,000 kft 3
Release to Outfall No. 001
30 (avg)
95 (max)
NPDES
Firewater Ponds (2) 200x75x20=300 kft 3
Well Water
40 gpm
Fresh Well Water Storage (5,000 bbl)
36.5 gpm
Boiler Feedwater (BFW) Treatment Plant
86.25 klb/h BFW
Boilers 50 klb/h
10.25 klb/h
SMR
Process Units
1
1 klb/h
BZ & VOC
Return to Process
32.25 klb/h
Steam Generators
3 klb/h
Steam Stripper for Benzene and Voc
4 klb/h
Water Recycle Plant (Water Treatment Plant)
Boiler Blowdown
To WWTP
To Sulfur Recovery
540 lb/d Cl 2 Landfill
Process Heaters
Loss 4 klb/h
Sour Water Stripper
Condensate Return 64 klb/h
To WWTP
3.5 gpm
Potable Water Treatment
Septic Tank and Field
To Flare
Instrument Drains
Maintenance Drain Out (MDO)
HC To Process
To SWS
From Process
Totally Enclosed Samplers
Return to Process
Source: Based on information from Greystone Environmental Consultants, Inc.
MHA NATION FEE-TO-TRUST AND REFINERY EIS
FIGURE 2-4
WASTE WATER TREATMENT SYSTEM WITH NO RECYCLING OF WATER
ANALYSIS AREA: MOUNTRAIL & WARD COUNTIES, ND
Date: 5/19/2006
File Name: R:\EPA\MHA\Alt 1-A.ppt
TETRA TECH EM INC.



Source: Based on information from Greystone Environmental Consultants, Inc.

MHA NATION FEE-TO-TRUST AND REFINERY EIS

FIGURE 2-16
WASTE WATER TREATMENT SYSTEM

ANALYSIS AREA: MOUNTRAIL & WARD COUNTIES, ND

Date: 5/19/2006 | File Name: R:\EPA\MHA\WTS_Alt 4-A.ppt

TETRA TECH EM INC.

Contaminated (oily) Stormwater

Contaminated (oily) stormwater will be collected in segregated drains that collect runoff from precipitation that falls directly on the areas of the refinery that have a high potential for contact with oil, products and byproducts produced during refining operations. Areas surrounding each process unit, the loading and unloading areas, and equipment cleaning areas are considered as having a high potential for contact with those materials. The high potential contact areas will be paved and curbed to prevent precipitation runon and release of the wastewater to the area outside the area.

(Under the Proposed Alternative in the DEIS) Contaminated (oily) stormwater will be collected in segregated drains and sent to a holding pond. The wastewater will be tested and if further treatment is required, it will be routed to the wastewater treatment facility. If further treatment is not required, the wastewater will be directed to one of the two final effluent holding ponds and recycled or discharged through Outfall 002 as described above for the process wastewater.

(Under Alternative 4 in the DEIS) The contaminated (oily) stormwater will be collected in segregated drains and sent to a series of surge tanks. The wastewater will then be normally sent for further treatment in the wastewater treatment unit. In the event the capacity of the surge tanks and/or wastewater treatment unit hydraulic capacity is exceeded, the segregated oily stormwater can be sent to a series of release tanks and discharged or held to return back to the wastewater treatment unit if further treatment is necessary to meet discharge requirements. The treated wastewater could then be recycled or discharged through Outfall 002 as described above for the process wastewater. An additional discharge outfall (002a) will be required under this alternative as the holding capacity for treated wastewater has been substantially reduced and a discharge of segregated stormwater due to precipitation events may be necessary.

Potential pollutants contained in the discharge of contaminated (oily) stormwater will be evaluated and limited under Outfall 002 and Outfall 002a (for Alternative 4 in the DEIS) in the proposed NPDES permit.

Uncontaminated (non-oily) Stormwater

Uncontaminated (non-oily) stormwater will be collected as segregated runoff from precipitation that falls on areas of the refinery outside the areas considered as high potential contact with oil, product and byproducts. These areas within the boundaries of the site include roads in the process areas, unpaved areas, parking areas, building runoff, etc. The run-off from the site will be conveyed for collection using surface ditches next to roadways, etc. There may also be some site runon contribution from upgradient areas surrounding the refinery property that will contribute to the runoff from the site. The site configuration is designed to let precipitation flow generally towards the lowest elevation of the site where it will be collected, piped and sent to a large holding pond. The wastewater can then be used as make-up water for the firewater system as necessary or discharged.

The management of uncontaminated (non-oily) stormwater will be similar under the Proposed Alternative and Alternative 4 under the DEIS. Potential pollutants contained in the discharge of uncontaminated (non-oily) stormwater are evaluated and limited under Outfall 001 in the proposed NPDES permit.

(POTENTIAL) Sanitary Wastewater

Sanitary wastewater will be collected and treated in a package wastewater treatment plant. Flow is projected to be approximately 3.5 gpm or 5000 gallons per day. Potential pollutants contained in the discharge of sanitary wastewater are evaluated and limited under Outfall 003 in the proposed NPDES permit.

New Source Determination

On December 2, 2004, EPA Region 8 issued a New Source Determination for the proposed facility as required by 40 CFR §122.21(l)(2)(ii). EPA Region 8 determined that the proposed facility is in fact a new source (defined in 40 CFR §122.2) and is subject to New Source Performance Standards (NSPS) for the Petroleum Refining Point Source Category pursuant to 40 CFR §419. The New Source Determination was public noticed between December 23 and 29, 2004 in several newspaper publications in the geographical area of the proposed site location. A public comment period of 30 days was opened by the public notice and ended on January 29, 2005. One phone call was received by EPA during the public comment period from the Mountrail County Record requesting additional information on the proposed facility. No challenges to EPA's New Source Determination were received during the public comment period.

EPA NPDES Major/Minor Determination

EPA completed an NPDES Permit Rating Work Sheet for the proposed MHA Nation Clean Fuels Refinery in accordance with EPA policy on major/minor facility classification. (USEPA Memorandum from James Elder to Regional Water Management Division Directors. June 27, 1990). The proposed facility scored 95 points and received a ranking of "major". A minimum score of 80 is required for a "major" ranking. The Rating Work Sheet is contained in the Administrative Record for this permit.

EPA's Environmental Review Requirements

Since the proposed facility was determined by EPA to be New Source, and the issuance of an NPDES permit will be a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1970 (NEPA), the MHA Nation is required to comply with EPA's environmental review procedures for the New Source NPDES Program requirements of 40 CFR Part 6, Subparts A-D and F.

The United States Bureau of Indian Affairs (BIA) and EPA in cooperation with the U.S. Army Corps of Engineers, and the MHA Nation are developing an Environmental Impact Statement (EIS) that will fulfill both BIA and EPA environmental review requirements. A draft EIS (DEIS) will be completed prior to public notice of a proposed NPDES permit for the facility [40 CFR §124.10(b)] and will be included in the Administrative Record for the draft permit in accordance with 40 CFR §124.9. A final EIS (FEIS), including a recommendation to issue or deny an NPDES permit, will be included in the Administrative Record for the final NPDES permit in accordance with 40 CFR §124.18. If the FEIS recommends denying the NPDES permit, reasons for the recommendation will be identified and a list of measures, if any, which the MHA nation could take to cause the recommendation to be changed. If the FEIS recommends issuing the final

permit, the FEIS will recommend the actions, if any, which the MHA Nation should take to prevent or minimize any adverse environmental impacts.

Endangered Species Act Coordination

Under the February 22, 2001 Memorandum of Agreement with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, EPA agreed to implement actions to demonstrate compliance with the Endangered Species Act (ESA) for certain activities under the NPDES permitting program. In accordance with the MOA, EPA must make a determination of effects on Threatened and Endangered Species (both listed and candidate species) for this federal action of issuing an NPDES permit.

For this action, EPA has determined that the issuance of this permit may affect but is not likely to adversely affect Threatened and Endangered species that are present in the project area. EPA will include information regarding its determination and related correspondence between EPA and the U.S. Fish and Wildlife Service in the Administrative Record kept for this permit.

EPA's determination regarding this permit's potential to affect Threatened and Endangered species is based on the permit requirements which have been included in the draft NPDES permit after considering existing Tribally-adopted water quality standards for the Fort Berthold Indian Reservation, and the State of North Dakota water quality standards without an allowance for mixing zones, i.e. end-of-pipe.

Since this is a new facility and there is no existing monitoring data for the discharge, the permit also contains additional monitoring requirements for priority pollutant compounds that may be present but are not anticipated. Re-opener provisions in the permit allow for inserting additional water quality based effluent limits protective of aquatic life and public water supply uses when unanticipated pollutants are detected during this additional monitoring.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of a federal undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. According to Section 301 of the act, "undertaking" means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including (a) those carried out by or on behalf of the agency, (b) those carried out with federal financial assistance, (c) those requiring a federal permit license, or approval, and (d) those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency. Section 106 compliance also applies to non-federal lands when federal funding, licensing, permitting, and approval are required.

This permitted effluent discharge is not expected to affect historic or cultural resources. Moreover, because the locations of the outfalls were disturbed previously, construction of the outfalls would not affect historic or cultural resources.

The proposed facility is not expected to substantially affect cultural resources. The till plain and pothole setting of the project area has soils that are generally good for cultivation, but support a comparatively low diversity of natural resources. These conditions correspond to a low potential for prehistoric or historic cultural resources other than readily visible farm complexes.

A records search for the project site was completed through the North Dakota State Historical Society. The records search indicated that no cultural resource investigations and no known sites are on file for the project area. The North Dakota SHPO (Swenson 2005) and the Cultural Preservation Office of the Three Affiliated Tribes (Crows Breast 2005) have reviewed the available information for the project area. Both offices have concurred that there is a low potential for significant cultural resources in the project area, and both have recommended a determination of no historic properties affected.

The farm complex near the refinery site will not be affected by the proposed action and the farm complexes near the pipeline and power line corridors can be avoided. The primary affect resulting from implementation of this alternative would be modification of the old Soo Line Railroad branch line that runs through the property. The line itself would not be moved or removed, but a new siding would be constructed from the line into the refinery. This addition would not adversely impact the historic character of the rail line. The farm house and outbuildings would not be disturbed for construction of the refinery or production of the forage for buffalo.

Project Location

The proposed MHA Nation Clean Fuels Refinery will be located on 190 acres of land that is part of a 469 acre parcel of land purchased by the Three Affiliated Tribes (MHA Nation) on July 22, 2003. The remaining land, 279 acres, is proposed for growing feed for the MHA Nation buffalo herd. The land is located in the northeast corner of the Fort Berthold Indian Reservation and in Ward County, North Dakota. Following the purchase of the land, the MHA Nation requested the Department of the Interior, Bureau of Indian Affairs (BIA) accept the land into trust status. The land transfer is considered a major federal action and subject to environmental review in accordance with the National Environmental Policy Act (NEPA). BIA (in cooperation with EPA, F&WS and the MHA Nation) has primary responsibility to fulfill the NEPA requirements for the land transfer.

The general land area encompassing the proposed MHA Nation Clean Fuels Refinery site consists of nearly level glacial till plains and rolling hills. The area is within the glaciated prairie pothole region and includes numerous seasonal, semi-permanent, and permanent wetlands that capture seasonal snowmelt and rainwater. Prior to agricultural development of the land, mixed cool and warm season prairie grasses were predominant with intermix broad-leaved annual and perennial forbs and numerous legumes. Current land use is generally dry land farming of cereal crops (wheat and barley) intermixed with cattle ranching in the drier and hillier portions of the region.

The site itself is largely underdeveloped agricultural property with adjacent land primarily planted with wheat and barley. The site elevation ranges between 2074 and 2112 feet above mean sea level and its topography is relatively flat with slopes less than three percent. Drainage in the site area is generally east to west towards tributaries of the Missouri River (Lake Sakakawea). The East Fork of Shell Creek runs adjacent to the northern border of the project site and generally flows west towards Lake Sakakawea. Characteristics of the site include seasonal and semi-permanent wetlands, mixed grass prairie, wooded draws, intermittent seasonal drainages, and seasonal crops.

The climate of the site area is characterized by wide seasonal and diurnal temperature and precipitation variations. Average annual precipitation is 16.06 inches with the highest average

monthly values (3.66 inches) in June and the lowest monthly average (0.33 inches) in February. Summer thunderstorms occur on about 34 days in the year and account for a majority of the total annual precipitation amounts. Approximately 80 percent of the annual precipitation total occurs between April and September. Spring snowmelt drains into wetland depressions and the depth of ponded water varies dependant on the amount of snow cover. In late spring and summer, these wetland depressions receive direct precipitation and runoff from the surrounding watershed and by late summer, the wetlands draw down or dry through evaporation and seepage.

Prairie Pothole Wetlands

Within the proposed MHA Nation Clean Fuels Refinery site boundaries, sixteen prairie pothole wetland areas totaling 33.6 acres were identified in a field investigation performed by Greystone Environmental Consultants, Inc. during development of the DEIS. Wetlands delineation was done in accordance with Level 2 Routine On-site Method as described in the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). The prairie pothole wetlands within the project area were classified as palustrine wetlands and further characterized as Palustrine-Emergent-Temporarily-Flooded (PEMA), Palustrine-Emergent-Seasonally-Flooded (PEMC) and Palustrine-Emergent-Semi-permanently-Flooded (PEMF).

The largest wetland characterized in the field investigation was an 11.7 acre wetland in the NW1/4 of Section 19. The location is on the lowest elevation contour in Section 19 and was classified as a PEMF wetland. The wetland collects precipitation and runoff primarily from the local watershed. This wetland likely contains areas of open water during certain times of the year and is drained by a culvert on the northern boundary. The culvert is constructed under Highway 23 and after flowing under an additional culvert under the railroad, drains to a tributary of the East Fork of Shell Creek. The large wetland appears to receive water from a north-south wetland swale that traverses the site on the west side of the proposed site. This wetland swale appears to receive surface flow from an off-site wetland across the south property boundary. Flow of the water is generally from south to north across the site. According to the preliminary site plans, the wetland swale is the location where treated process wastewater and stormwater discharges will be located. Soils in this wetland swale were characterized as Parnell (Pa) and consist of a silt loam with low chromas. The delineation also indicated that the hydrology may be influenced by groundwater due to the depth of the elevation contour; however, the area was dry during the October 2003 field investigation.

Both the 11.7 acre wetland and the wetland swale have been determined to be jurisdictional wetlands by the U.S. Army Corps of Engineers(2005) and will be considered waters of the U.S. for establishing effluent limitations and conditions in the proposed NPDES permit.

Receiving Water

As described above, the location receiving discharges from the proposed MHA Nation Clean Fuels Refinery will be the wetland swale located in the NW1/4 of Section 19, Township 152N, Range 87W. The wetland swale is tributary to the East Fork of Shell Creek through natural drainageways (wetlands, sloughs, swales) and constructed culverts under Highway 23 and the railroad, north of the wetland areas. Major site construction activities are not expected to occur in this area. Some modification of the north-south wetland swale that feeds into the wetland will take place during construction of the facility and drainage of direct precipitation on the site and watershed runoff into the wetland area may somewhat change the hydrologic characteristics of the wetland.

Tributaries of the East Fork of Shell Creek including the natural drainageways and the wetland swale discharge location best describe the receiving water for discharges from the proposed facility. No historic flow measurements are available for the tributaries but are assumed to be zero cubic feet per second (cfs). due to the hydrologic characteristics of the East Fork of Shell Creek described above. No flow data is available for the wetland swale or wetland system that will receive discharges from the facility but it will be assumed that there are times of the year that the low flow in the wetlands is zero cfs.

The East Fork of Shell Creek flows generally in a westerly direction towards Lake Sakakawea before entering the Van Hook Arm of the Lake at Parshall Bay, near Parshall, ND. The East Fork of Shell Creek is generally ephemeral and likely has extended periods with very low or no flow during the year. A USGS gage station is located on the East Fork of Shell Creek near Parshall, ND approximately fifteen miles from the project site location. There are no other monitoring stations closer to the site. The gage station (06332523) was established in 1991 and collects continuous data on stream flow. For the period from 1991 through 2002, annual mean flow ranges from 2.19 cubic feet per second (cfs) in 1992 to 15.1 cfs in 1999. Peak daily flows for the same period of record range from 31 cfs on May 12, 2000 to 1,170 cfs on March 27, 1999. Flow in the East Fork of Shell Creek is highly dependant on summer precipitation events and runoff that occurs during March and April. Low flows occur during winter months each year and in 2001, monthly low flows of zero cfs were recorded in January, February, August and September.

The East Fork of Shell Creek remains primarily within the external boundaries of the Fort Berthold Indian Reservation as it travels towards Lake Sakakawea, however, approximately one mile from the proposed project site it traverses the boundary of the Reservation into the State of North Dakota for a short distance, prior to returning back to the Reservation. As such, water quality based effluent limits (WQBELs) developed for the proposed facility will take into consideration both Tribally-adopted water quality standards and State of North Dakota water quality standards.

Monitoring Data for East Fork of Shell Creek

Limited data is available on water quality for the East Fork of Shell Creek in the vicinity of the proposed project location. Data was collected periodically on USGS gage station 06332523 located near the mouth below Parshall, ND. In 2001, Confluence Consulting performed additional monitoring at three locations of the East Fork of Shell Creek. The following data was presented in the Water Resources Technical Report developed by Greystone Environmental Consultants Inc. as part of the DEIS.

USGS April 1990 – June 1991

	Maximum	Minimum	Median
pH (s.u.)	9.9	8.4	8.9
Dissolved oxygen (mg/L)	10.8	7.3	--
Hardness (mg/L as CaCO3)	420	240	--

July 1991 – September 1992

	Maximum	Minimum	Median
pH (s.u.)	9.1	8.1	8.7
Dissolved oxygen (mg/L)	11.6	4.6	6.8
Hardness (mg/L as CaCO3)	470	250	350

USGS 1991-2002

	Maximum	Minimum	Median	Mean
pH (s.u.)	8.80	7.80	8.37	8.40
Dissolved oxygen (mg/L)	12.50	4.60	8.82	9.05

2001 Stream Survey

	2A	2B	2C
Temperature C°	20.2	18	18.9

Water Quality Standards (WQS)

Tribally-adopted Water Quality Standards

The MHA Nation adopted water quality standards for surface waters within the external boundaries of the Fort Berthold Indian Reservation (Tribally-adopted WQS) through a resolution adopted by the Tribal Business Council of the Three Affiliated Tribes of the Fort Berthold Reservation on May 11, 2000. The Tribally-adopted WQS are intended to protect surface water designated uses through specific numeric and narrative water quality criteria and antidegradation provisions. The Tribally-adopted WQS have not yet been federally approved by EPA, however, they will be considered for establishing effluent limitations for discharges from the proposed MHA Nation Clean Fuels Refinery in accordance with EPA's *Guidance on EPA's NPDES and Sludge Management Permit Procedures on Federal Indian Reservations* (November 16, 1993).

Wetlands: The Tribally-adopted WQS apply to all wetlands on the Reservation that are not constructed and considered "waters of the Tribes". The wetland located in the NW1/4 of Section 19 falls within these criteria. The Tribally-adopted WQS indicate wetlands shall be subject to narrative criteria and applicable antidegradation provisions and shall be generally considered capable of supporting aquatic biota (e.g. fish, macroinvertebrates, amphibians or hydrophytic vegetation) on a regular or periodic basis. The goal of water quality is described as maintaining naturally occurring levels within the natural range of variation for the individual wetland. For substances that are not naturally occurring, water quality requirements shall be based on protecting uses of the wetland consistent with antidegradation requirements, the Tribes narrative water quality criteria assigned to hydrologically connected surface waters, or appropriate criteria guidance issued by the Environmental Protection Agency.

The Tribally-adopted WQS include a Mixing Zone and Dilution Policy that prohibits mixing zones for point source discharges into wetlands. Paragraph (d) of the policy states "*Where dilution flow is not available at critical conditions, the discharge limits will be based on achieving water quality criteria at the end-of-pipe. In addition, discharge limits for all point source discharges to a wetland will be based on achieving water quality criteria at the end-of-pipe.*"

East Fork of Shell Creek: The Tribally-adopted WQS also apply to the East Fork of Shell Creek within the external boundaries of the Fort Berthold Indian Reservation. The Tribally-adopted WQS list designated uses for the East Fork of Shell Creek including Public Water Supply, Primary Contact Recreation, Secondary Contact Recreation, Coldwater Aquatic Life, Warmwater Aquatic Life, Industrial Water Supply, Agriculture and Navigation. Numeric criteria applicable to support aquatic life and public water supply (human health) are listed in Tables 1 & 2 of the Tribally-adopted WQS. The criteria include acute and chronic concentrations for organic constituents, pesticides, and metals as well as non-conventional pollutants such as hydrogen sulfide, ammonia nitrogen, temperature, etc., and indicator parameters such as dissolved oxygen.

These criteria were evaluated against information provided by the MHA Nation in their NPDES permit application, EPA Effluent Guidelines and Standards for the Petroleum Refining Point Source Category (40 CFR Part 419) and the *Development Document for Effluent Limitations Guidelines and Standards for the Petroleum Refining Point Source Category, Final October 1982, EPA 440/1-82/014*, in assessing reasonable potential for discharges to cause or contribute to exceedances of water quality standards. The list of appropriate criteria for this permit includes all pollutants that have been reported as expected to be present in the discharge at any concentration above the applicable analytical detection limit for the pollutant and where a water quality standard for that pollutant exists. Table 1 below lists the criteria for pollutants expected to be present in the discharges from the proposed MHA Nation Clean Fuels Refinery.

TABLE 1
Tribally-Adopted WQS (concentrations are dissolved ug/L)

Pollutant	CAS No.	Aquatic Life Acute (CMC)	Aquatic Life Chronic (CCC)	Aquatic Life Fish Cons.	Public Water Supply
Benzene	71-43-2	--	--	71	1.2
Ethyl benzene	100-41-4	--	--	29000	700
Toluene	108-88-3	--	--	200000	1000
Xylenes	1330-20-7	--	--	--	10000
Phenol	108-95-2	--	--	4600000	300
Hydrogen Sulfide	7783-06-4	--	2	--	--
Ammonia as N	7664-41-7	(b)	(b)	--	--
Barium (tr)	7440-39-3	--	--	--	2000
Aluminum (tr)	7429-90-5	750	87	--	--
Cadmium (tr)	7440-43-9	13.5 (a)	2.7 (a)	84	5.0
Chromium (III) (tr)	7440-47-3	4270 (a)	509 (a)	--	100 (T)
Chromium (VI)		16	11	3400	100
Copper (tr)	7440-50-8	49.9 (a)	30.2 (a)	--	1000
Iron (tr)	7439-89-6	--	1000	--	300
Manganese (tr)	7439-96-5	--	--	--	50
Lead (tr)	7439-92-1	331 (a)	12.9 (a)	--	15
Mercury (T)	7439-97-6	2.4	0.012	0.051	0.050
Nickel (tr)	7440-02-0	3592 (a)	399 (a)	4600	100
Selenium (tr)	7782-49-2	20	5	9000	50
Silver (tr)	7440-22-4	26.8 (a)	--	110000	170
Zinc (tr)	7440-66-6	297 (a)	269 (a)	69000	5000
Chlorine (TRC)	7782-50-5	19	11	--	--
Chloride	16887-00-6	860000	230000	--	--

Fluoride	7782-41-4	--	--	--	4000
Nitrite as N	14797-65-0	--	--	--	1000
Nitrate as N	14797-55-8	--	--	--	10000
pH (s.u.)		7.0-9.0	7.0-9.0	7.0-9.0	--

tr- total recoverable; T- total

(a) *Hardness based concentrations for metals calculated using a hardness of 300 mg/L as $CaCO_3$ and the following formulas:*

CMC *= exp{ma[ln(hardness)}+ba}* ***CCC*** *= exp{mc[ln(hardness)]+bc}*

	ma	*ba*	*mc*	*bc*
cadmium	*1.128*	*-3.828*	*0.7852*	*-3.490*
copper	*0.9422*	*-1.464*	*0.8545*	*-1.465*
chromium (III)	*0.8190*	*3.688*	*0.8190*	*1.561*
lead	*1.273*	*-1.460*	*1.273*	*-4.705*
nickel	*0.8460*	*3.3612*	*0.8460*	*1.1645*
silver	*1.72*	*-6.52*	*-*	*-*
zinc	*0.8473*	*0.8604*	*0.8473*	*0.7614*

(b) *Ammonia as N (unionized) is calculated using the following formula:*

CMC *= 0.52/FT/FPH/2 where:*

FT $= 10^{0.03(20-TCAP)}$ *; $TCAP \leq T \leq 30$*
$= 10^{0.03(20-T)}$ *; $0 \leq T < TCAP$*

FPH *= 1 ; $8 \leq pH \leq 9$*
$= (1+ 10^{7.4-pH})/1.25$ *; $6.5 \leq pH < 8$*

TCAP *= 20 C ; coldwater aquatic life use (IIIA)*
= 25 C ; warmwater aquatic life use (IIIB)

The usual CMC averaging period of one hour may not be appropriate if excursions of concentrations greater than 1.5 times the average occur during the hour; in such cases, a shorter averaging period may be needed. To convert these values to mg/L as N, multiply by 0.822.

CCC *= 0.80/FT/FPH/RATIO where FT and FPH are as above and :*

RATIO *= 13.5 ; $7.7 \leq pH \leq 9$*
$= 20 (10^{7.7-pH}/1 + 10^{7.4-pH})$ *; $6.5 \leq pH < 7.7$*

TCAP *= 15 C ; coldwater aquatic life use (IIIA)*
= 20 C ; warmwater aquatic life use (IIIB)

Temperature:

Eighty-five degrees Fahrenheit (29.44 degrees Celsius). The maximum increase shall not be greater than five degrees Fahrenheit (2.78 degrees Celsius) above background conditions.

Dissolved Oxygen:

	Aquatic Life (IIIA) Use		*Aquatic Life (IIIB) Use*	
	Early Life Stages[1,2]	*Other Life Stages*	*Early Life Stages*[2]	*Other Life Stages*
30-Day Mean	NA	6.5	NA	5.5
7-Day Mean	9.5 (6.5)	NA	6.0	NA
7-Day Mean Minimum[3]	NA	5.0	NA	4.0
1-Day Minimum[3]	8.0 (5.0)	4.0	5.0	3.0

[1] *These are water column concentrations to achieve the required intergravel dissolved oxygen concentrations shown in parentheses.*
[2] *Includes all embryonic and larval stages and all juvenile forms to 30-days following hatching.*
[3] *All minima should be considered as instantaneous concentrations to be achieved at all times.*

Narrative Tribally-adopted Water Quality Standards:

Narrative Tribally-adopted Water Quality Standards describe general characteristics of surface waters and discharges. The narrative standards include the following:

a) *All surface waters on the Reservation shall be free from substances attributable to wastewater discharges or other pollutant sources that:*
   (1) settle to form objectionable deposits,
   (2) float as debris, scum, oil, foam or other matter forming nuisances,
   (3) produce objectionable color, odor, taste or turbidity,
   (4) cause injury to, or are toxic to, or produce adverse physiological responses in humans, animals, or plants; or
   (5) produce undesirable or nuisance aquatic life.

State of North Dakota Standards

The State of North Dakota has adopted water quality standards (State WQS) for surface waters of the State including the East Fork of Shell Creek within the State jurisdiction (NDAC 33-16-02.1). The East Fork of Shell Creek remains primarily within the external boundaries of the Fort Berthold Indian Reservation as it travels towards Lake Sakakawea, however, approximately one mile from the proposed project site it traverses the boundary of the Reservation into the State of North Dakota for a short distance, prior to returning back to the Reservation. The State WQS standards became effective June 1, 2001 and have been approved by EPA. The standards indicate designated uses for waters of the State, specify narrative and numeric criteria to protect those uses, and antidegradation provisions. The State has classified the East Fork of Shell Creek as a Class III stream. According to §33-16-02.1-09, Class III streams are suitable for agriculture and industrial uses such as stock watering, irrigation, washing and cooling. They are of limited seasonal value for immersion recreation, fish life, and aquatic biota. The quality of these waters must be maintained to protect recreation, fish, and aquatic biota. The State WQS were evaluated against the MHA Nation NPDES permit application, etc. as described above to determine reasonable potential for exceedance of water quality standards. Appropriate numeric criteria for Class III streams include values listed in Table 2 and the following additional numeric standards:

Substance or Characteristic	Maximum Limit
Barium (total)	1.0 mg/L
Chlorides (total)	250 mg/L
Chlorine Residual (total)	acute 0.019 mg/L Chronic 0.011 mg/L
Dissolved Oxygen	not less than 5 mg/L
Fecal Coliform	200 fecal coliforms per 100 mL. (applies May 1 – Sept 30)
Nitrates (N) (diss.)	1.0 mg/L
pH	7.0 – 9.0
Phenols (total)	0.3 mg/L (organoleptic criterion)
Phosphorous (P) (total)	0.1 mg/L
Sulfate (total)	750 mg/L
Temperature	Eighty-five degrees Fahrenheit (29.44 degrees Celsius) The maximum increase shall not be greater than five degrees Fahrenheit (2.78 degrees Celsius) above natural background conditions.

TABLE 2
North Dakota State WQS
(concentrations are dissolved, ug/L)

Pollutant	CAS No.	Aquatic Life Value Classes I, IA, II, III		Human Health Value	
		Acute	Chronic	Classes I, IA, II	Class III
Benzene	71-43-2	--	--	1.2	71
Ethyl benzene	100-41-4	--	--	700	29000
Toluene	108-88-3	--	--	1000	200000
Xylenes	1330-20-7	--	--	10000	
Phenol	108-95-2	--	--	21000	4600000
Cadmium (tr)	7440-43-9	15.6 (a)	5.8 (a)	5	--
Chromium (III) (tr)	7440-47-3	4430 (a)	212 (a)	--	100 (T)
Chromium (VI)		16	11	--	100 (T)
Copper (tr)	7440-50-8	39.4 (a)	23.8 (a)	--	1000
Lead (tr)	7439-92-1	331 (a)	12.9 (a)	--	15
Mercury (T)	7439-97-6	1.7	0.91	0.050	0.051
Nickel (tr)	7440-02-0	1190 (a)	132 (a)	100	4600
Selenium (tr)	7782-49-2	20	5	50	--
Silver (tr)	7440-22-4	26.8 (a)	--	--	--
Zinc (tr)	7440-66-6	304 (a)	304 (a)	9100	69000
Fluoride (T)	7782-41-4	--	--	4000	--
Nitrite as N	14797-65-0	--	--	1000	--

tr- total recoverable; T- total

(a) *Hardness based concentrations for metals calculated using a hardness of 300 mg/L as $CaCO_3$ and the following formulas:*

CMC *= exp{ma[ln(hardness)}+ba}* ***CCC*** *= exp{mc[ln(hardness)]+bc}*

	ma	ba	mc	bc
cadmium	*1.128*	*-3.6867*	*0.7852*	*-2.715*
copper	*0.9422*	*-1.700*	*0.8545*	*-1.702*
chromium (III)	*0.8190*	*3.7256*	*0.8190*	*0.6848*
lead	*1.273*	*-1.460*	*1.273*	*-4.705*
nickel	*0.8460*	*2.255*	*0.8460*	*0.0584*
silver	*1.72*	*-6.52*	-	-
zinc	*0.8473*	*0.884*	*0.8473*	*0.884*

Ammonia:

Ammonia (Total as N)

Acute Standard – The one hour average concentration of total ammonia (expressed as N in mg/L) does not exceed more often than once every three years on the average the numerical value given by the following formula:

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

Where salmonids are absent; or

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

Where salmonids are present.

Chronic Standard- The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed more often than once every three years on the average the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:

$$\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH-7.688}} * CV$$

Where: CV= 2.85 when $T \leq 14^0C$; or

$$CV = 1.45 * 10^{0.028*(25-T)} \text{ when } T > 14^0C.$$

Narrative North Dakota State Water Quality Standards

The State of North Dakota water quality standards at 33-16-02.1-08 also include general narrative provisions that are applied to surface waters.

"The following minimum conditions are applicable to all waters of the State except Class II ground waters. All waters of the state shall be:

> "Free from substances attributable to municipal, industrial, or other discharges or agricultural practices that will cause the formation of putrescent or otherwise objectionable sludge deposits.
>
> Free from floating debris, oil, scum, and other floating materials attributable to municipal, industrial, or other discharges or agricultural practices in sufficient amounts to be unsightly or deleterious.
>
> Free from materials attributable to municipal, industrial, or other discharges or agricultural practices producing color, odor, or other conditions to such a degree as to

create a nuisance or render any undesirable taste to fish flesh or, in any way, make fish inedible.

Free from substances attributable to municipal, industrial, or other discharges or agricultural practices in concentrations or combinations which are toxic or harmful to humans, animals, plants, or resident aquatic biota. For surface water, this standard will be enforced in part through appropriate whole effluent toxicity requirements in North Dakota pollutant discharge elimination system permits.

Free from oil and grease attributable to wastewater, which causes a visible film or sheen upon the waters or any discoloration of the surface of adjoining shoreline or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines or prevents classified uses of such waters."

EPA §304(a) Water Quality Criteria

EPA's Office of Science and Technology publishes water quality criteria (EPA Criteria) as guidance for use by States and/or Tribes for use in adopting numeric criteria for protection of designated uses. The EPA Criteria are updated periodically with the latest major revision published in November 2002, *National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047*. Revisions to the aquatic life criteria for cadmium, mercury and ammonia and human health criteria for benzene and mercury were included in the 2002 revisions. In addition, the calculation of hardness dependant metals criteria was updated. EPA also updated its criteria in December 2003, *EPA-822-F-03-012,* for 15 human health water quality criteria including ethylbenzene and toluene. The Tribally-adopted WQS and State WQS did not include some or part of the 2002 and 2003 updates as they were developed prior to publication EPA Region 8 anticipates that both the Tribes and the State will adopt the updated EPA Criteria within the term of the permit.

The updated hardness dependant metals criteria are calculated using the following factors:

CMC = *exp{ma[ln(hardness)}+ba}* ***CCC*** = *exp{mc[ln(hardness)]+bc}*

	ma	*ba*	*mc*	*bc*
cadmium	*1.0166*	*-3924*	*0.7409*	*-4.719*
copper	*0.9422*	*-1.700*	*0.8545*	*-1.702*
chromium (III)	*0.8190*	*3.7256*	*0.8190*	*0.6848*
lead	*1.273*	*-1.460*	*1.273*	*-4.705*
nickel	*0.8460*	*2.255*	*0.8460*	*0.0584*
silver	*1.72*	*-6.59*	*-*	*-*
zinc	*0.8473*	*0.884*	*0.8473*	*0.884*

Ammonia:

The updated ammonia criterion is calculated as follows:

(CMC) Acute Criterion – The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more often than once every three years on the average, the CMC (acute criterion) calculated using the following equations:

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

Where salmonids are absent; or

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

Where salmonids are present.

(CCC) Chronic Criterion- The thirty-day average concentration of total ammonia nitrogen (expressed as N in mg/L) does not exceed, more often than once every three years on the average, the CCC (chronic criterion) calculated using the following equations:

$$\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH-7.688}} * MIN\ (2.85, 1.45*10^{0.028(25-T)})$$

When early life stages are present;

$$\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH-7.688}} * 1.45*10^{0.028(25-MAX(T,7))}$$

When early life stages are absent.

In addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC.

Benzene:

The human health based criterion for benzene was changed to maximum values of 2.2 ug/L for water consumption and 51 ug/L for water plus fish consumption.

Mercury:

The human health based criterion for water plus fish consumption for mercury was changed to a methylmercury fish tissue concentration of 0.3 mg/kg. The updated aquatic life criteria CMC (acute criterion) is 1.4 ug/L and the CCC (chronic criterion) is 0.77 ug/L. EPA Region 8 is recommending that the previous CCC for mercury of 0.012 ug/L be applied to assure protection of the new methylmercury fish tissue criterion.

Ethylbenzene:

The human health based criterion for water + organism and organism only were changed to 530 ug/L and 2,100 ug/L respectively.

Toluene:

The human health based criterion for water + organism and organism only were changed to 1,300 ug/L and 15,000 ug/L respectively.

Summary of Tribally-adopted WQS and State WQS and EPA 304(a) Criteria

The East Fork of Shell Creek remains primarily within the external boundaries of the Fort Berthold Indian Reservation as it travels towards Lake Sakakawea, however, approximately one mile from the proposed project site it traverses the boundary of the Reservation into the State of North Dakota for a short distance, prior to returning back to the Reservation. As such, WQBELs developed for the proposed facility will take into consideration both Tribally-adopted WQS and State of North Dakota WQS.

Narrative Tribally-adopted WQS and State WQS for prohibiting discharges of toxics in toxic amounts [NDAC 33-16-02.1-08: General Water Quality Standards 1.a.(4)], and Tribal *Narrative Water Quality Criteria a. (4)*, will be considered for the proposed facility.

Tribally-adopted WQS and State WQS for temperature will also be considered for the proposed facility. The standard is eighty-five degrees Fahrenheit (29.44 degrees Celsius) and a maximum increase of greater than five degrees Fahrenheit (2.78 degrees Celsius) above natural background condition.

Tribally-adopted WQS for dissolved oxygen will also be considered for the proposed facility. They will be expressed as a seasonal standards for April 1-September 30 of 8.0 mg/L (1-day minimum), 9.5 mg/L (7-day mean), and 6.5 mg/L (30-day mean); and October 1-March 31 of 4.0 mg/L (1-day minimum), 5.0 mg/L (7-day mean), and 6.5 mg/L (30-day mean).

Table 3 presents a summary of the combined Tribally-adopted WQS, State WQS and EPA Criteria that will be evaluated for effluent limitations and monitoring requirements in this permit. The most stringent WQS are in bold. Where the EPA Criteria are more or less stringent than the Tribally-adopted WQS and/or State WQS, the EPA Criteria have been designated as the applicable value in anticipation of adoption of the EPA Criteria by the State or Tribes. Hardness dependant metals standards are calculated using a hardness of 300 mg/L as $CaCO_3$.

In order to determine if there is reasonable potential for pollutants expected in the discharge to cause or contribute to a violation of water quality standards, a comparison of expected discharge pollutant concentrations with Tribally-adopted WQS, State WQS and EPA water quality criteria was completed. The reasonable potential analysis is presented in Table 4.

TABLE 3
Comparison of Tribally-adopted and State WQS and EPA Criteria

Pollutant	Tribally-adopted WQS		State WQS		EPA Criteria	
	Acute	Chronic	Acute	Chronic	Acute	Chronic
Benzene	--	1.2[1]	--	71	--	**2.2**
Ethyl benzene	--	700	--	29000	--	**530**
Toluene	--	1000[1]	--	200000	--	**1300**
Xylenes	--	**10000**	--	--	--	--
Phenol	--	**300**	--	**300**	--	**300**
Hydrogen Sulfide	--	**2**	--	--	--	**2.0**
Ammonia as N	1.9[1]	0.43[1]	**3.2**[2]	**1.1**[2]	**3.2**[2]	**1.1**[2]
Barium (tr)	--	2000	--	**1000**	--	**1000**
Aluminum (tr)	**750**	**87**	--	--	**750**	**87**
Cadmium (tr)	13.5	2.7	15.6	5.8	**6.5**	**0.61**
Chromium (III) (tr)	4270[1]	100[1]	**4430**	**212**	**4430**	**212**
Chromium (VI)	**16**	**11**	**16**	**11**	**16**	**11**
Copper (tr)	49.9	30.2	**39.4**	**23.8**	**39.4**	**23.8**
Iron (tr)	--	**300**	--	--	--	**300**
Manganese (tr)	--	**50**	--	--	--	**50**
Lead (tr)	**331**	**12.9**	**331**	**12.9**	**331**	**12.9**
Mercury (T)	2.4	**0.012**	1.7	0.051	**1.4**	**0.012**[3]
Nickel (tr)	3592	100[1]	**1190**	**132**	**1190**	**132**
Selenium (tr)	**20**	**5**	**20**	**5**	**20**	**5**
Silver (tr)	26.8	--	26.8	--	**25.0**	--
Zinc (tr)	297[1]	269[1]	**304**	**304**	**304**	**304**
Chlorine (TRC)	**19**	**11**	**19**	**11**	**19**	**11**
Chloride	**860000**	**230000**	--	250000	**860000**	**230000**
Fluoride	--	**4000**	--	--	--	--
Sulfate	--	--	--	**750000**	--	--
Nitrite as N	--	**1000**	--	--	--	--
Nitrate as N	--	**10000**	--	1000[4]	--	**10000**
Phosphorous as P	--	--	--	100[4]	--	--
PH (s.u.)	**7.0 – 9.0**		**7.0 – 9.0**		6.5 - 9	

[1] Tribally-adopted WQS is more stringent than EPA Criteria and will be updated to EPA Criteria value.
[2] Ammonia-N values calculated using a pH of 8.5 and a temperature of 15^0C. For State WQS and EPA Criteria, salmonid fish are presumed absent (acute) and early life stages are presumed present (chronic).
[3] EPA Region 8 recommends using a water column concentration of 0.012 ug/L Hg (T) to protect the chronic methylmercury fish tissue criterion.
[4] The values for nitrate and phosphorous are interim guidance. In no case shall the standard for nitrates exceed 10 mg/L for any waters used as municipal drinking water supply.

TABLE 4

Reasonable Potential Analysis
(Treated Process Wastewater and Contaminated Stormwater)
(in ug/L unless otherwise indicated)

Pollutant	NPDES Permit Application		Applicable WQS		Reasonable Potential	
	Daily Maximum	Average Daily	Acute	Chronic	Acute	Chronic
Benzene	10	10	--	2.2	--	Yes
Ethyl benzene	0.0	0.0	--	530	--	No[1]
Toluene	0.0	0.0	--	1300	--	No[1]
Xylenes	NE	NE	--	10000	--	No
Phenol	300	300	--	300	--	Yes
Hydrogen Sulfide	0.0	0.0	--	2.0	--	No[2]
Ammonia as N (mg/L)	145	90	3.2	1.1	Yes	Yes
Barium (tr)	200	10	--	1000	--	Yes
Aluminum (tr)	80	10	750	87	Yes	Yes
Cadmium (tr)	0.0	0.0	6.5	0.61	No[3]	No[3]
Chromium (III) (tr)	0.0	0.0	4430	212	No[2]	No[2]
Chromium (VI)	NR	NR	16	11	No[2]	No2
Copper (tr)	0.0	0.0	39.4	23.8	No[3]	No[3]
Iron (tr)	250	40	--	300	--	Yes
Manganese (tr)	50	20	--	50	--	Yes
Lead (tr)	0.0	0.0	331	12.9	No[3]	No[3]
Mercury (T)	0.0	0.0	1.4	0.012	No[1]	No[1]
Nickel (tr)	50	50	1190	132	Yes	Yes
Selenium (tr)	10	10	20	5	Yes	Yes
Silver (tr)	0.0	0.0	25.0	--	No[3]	--
Zinc (tr)	0.0	0.0	304	304	No[3]	No[3]
Chlorine (TRC)	0.0	0.0	19	11	No	No
Chloride	NR	NR	860000	230000	No[1]	No[1]
Fluoride	3500	1000	--	4000	--	Yes
Sulfate	150000	90000	--	750000	--	Yes
Nitrite as N	NR	NR	--	1000	--	No[1]
Nitrate as N	40	20	--	10000	--	Yes
Phosphorous as P	200	120	--	100[4]	--	Yes[4]
PH (s.u.)	8.00– 8.50		7.0 – 9.0		Yes	

[1] Reported as 0.0 ppm in permit application but likely to be present in discharge. Limits and monitoring will be required for this parameter.
[2] Reported as 0.0 ppm in permit application but likely to be present in discharge. Also covered by ELG. Limits and monitoring will be required for this parameter.
[3] Reported as 0.0 ppm in permit application but likely to be present in the discharge at low concentration so monitoring only will apply.
[4] State WQS is a guideline only, so monitoring only will be required.
NE- reported as not expected to be present
NR- not reported in application

note: Boron was reported in the permit application at 1500 ug/L (daily maximum) and 100 ug/L (average daily) but there are no applicable WQS or EPA Criteria.

Technology Based Effluent Limitations

The proposed MHA Nation Clean Fuels refinery will be a new source and must comply with New Source Performance Standards (NSPS) under the Effluent Limitations Guidelines and Standards for the Petroleum Refining Point Source Category pursuant to §40 CFR 419.36. The proposed refinery size is 10,000 bpsd of synthetic crude plus 3,000 bpsd of field butane for a total refinery throughput of of 13,000 bpsd. The proposed refinery process configuration is covered under Subpart C Petrochemical Subcategory of the Petroleum Refining Point Source Category.

Process Effluent Limitations

Process Configuration (1000 bbl/day) [see §40 CFR 419.42(b)(3)]

Feedstock Process	Feedstock Rate	Relative Rate	Weight Factor	Process Configuration
Crude- Atm. Dist	10	0.769	1	0.769
Cracking (Hydrocracking)	6.872	0.529	6	3.17
Isomerization 3	0.231	13	3.00	
Total				**6.94**

Using the above Process Configuration (6.94) and a 13, 000 bbl/day capacity, a Size Factor (SF) of 0.73 and a Process Factor (PF) of 1.08 are derived pursuant to §40 CFR 419.36(b).

New Source Performance Standards (NSPS): Using the above Capacity, Size and Process factors, the following table shows applicable effluent limitations for this facility. [Limit (lbs/1000 bbl) X (PF) X (SF) = Effluent Limit (lbs/day)] [§40 CFR 419.36(a)]:

TABLE 5

	Effluent Limitation		Effluent Limitations	
	Daily Maximum (lbs/1000 bbl)	Average Daily (lbs/1000 bbl)	Daily Maximum (lbs/day)	Average Daily (lbs/day)
Pollutant				
BOD_5	7.7	4.1	78.92	42.02
TSS	5.2	3.3	53.30	33.82
COD	47.0	24.0	481.71	245.98
Oil and Grease	2.4	1.3	24.60	13.32
Phenolic Compounds	0.056	0.027	0.57	0.28
Ammonia as N	8.3	3.8	85.07	38.95
Sulfide	0.050	0.022	0.51	0.23
Total Chromium	0.116	0.068	1.19	0.70
Hexavalent Chromium	0.0096	0.0044	0.098	0.045
pH			6.0 to 9.0	

BAT, BPT, BCT : Limitations for BAT, BPT, and BCT were also evaluated using the above factors. Only BAT limitations for ammonia as N were more stringent than NSPS standards above. The following BAT limits will be evaluated against water quality standards [§40 CFR 419.33(a)]:

	Daily Maximum (lbs./day)	Average Daily (lbs./day)
Ammonia as N	84.56	38.95

Contaminated Runoff Allowance

Best Professional Judgment (BPJ)

The NSPS do not contain pollutant allowances for contaminated stormwater runoff from process areas. Regulations under §40 CFR 419.36(e) were reserved. The BPT [§40 CFR 419.32(e), BAT [§40 CFR 419.33(f)], and BCT [§40 CFR 419.34(e)] allowances for contaminated runoff were evaluated using best professional judgment (BPJ) for this proposed facility. The BPT/BAT/BCT allowances are based on flow and for this facility, average contaminated stormwater flows of 4.4 gallons per minute (6,336 gallons per day) as reported in the NPDES permit application was used for the allowance calculation. BPT allowances were equivalent to BAT and BCT except for BAT for total chromium was more stringent. The stormwater allowances shown in Table 6 will be added to the process allowances for the total facility effluent limitations (see Table 7).

TABLE 6

	Effluent Limitation		Effluent Limitations	
	Daily Maximum (lbs/1000 gal)	Average Daily (lbs/1000 gal)	Daily Maximum (lbs/day)	Average Daily (lbs/day)
Pollutant				
BOD_5	0.40	0.22	2.53	1.39
TSS	0.28	0.18	1.77	1.14
COD	3.0	1.5	19.01	9.5
Oil and Grease	0.13	0.067	0.82	0.42
Phenolic Compounds	0.0029	0.0014	0.0184	0.0089
Ammonia as N	0	0	0	0
Sulfide	0	0	0	0
Total Chromium	0.0050	0.0018	0.032	0.011
Hexavalent Chromium	0.00052	0.00023	0.0033	0.0015
pH	6.0 to 9.0		6.0 to 9.0	

Total Technology Effluent Limitations

(Process + Stormwater = Total)

TABLE 7

	Process Effluent Limitation		Stormwater Effluent Limitations		Total Effluent Limitations	
	Daily Maximum (lbs/day)	Average Daily (lbs/day)	Daily Maximum (lbs/day)	Average Daily (lbs/day)	Daily Maximum (lbs/day)	Average Daily (lbs/day)
Pollutant						
BOD_5	78.92	42.02	2.53	1.39	81.45	43.41
TSS	53.30	33.82	1.77	1.14	55.07	34.96
COD	481.71	245.98	19.01	9.50	500.72	255.48
Oil and Grease	24.60	13.32	0.82	0.42	25.42	13.74
Phenolic Compounds	0.57	0.28	0.0184	0.0089	0.59	0.29
Ammonia as N	84.56	38.95	0	0	84.56	38.95
Sulfide	0.51	0.23	0	0	0.51	0.23
Total Chromium	1.19	0.70	0.032	0.011	1.222	0.711
Hexavalent Chromium	0.098	0.045	0.0033	0.0015	0.101	0.046
pH	6.0 to 9.0				6.0 to 9.0	

Conversion of Technology Based Mass Limits to Concentration Limits

The mass based technology limits above were converted to concentration based limits using flow information provided in the NPDES Permit Application (Table 8). Under the proposed alternative in the DEIS, with full recycle, the average daily flow is anticipated to be approximately 15,000 gallons per day (gpd) and the maximum daily flow of approximately 35,000 gpd. (See DEIS Figure 2-3) Without recycle average daily and maximum daily flows are anticipated to be approximately 30,000 gpd and 50,000 gpd. (See DEIS Figure 2-4.) Under Alternative 4 of the DEIS, maximum flow is expected to be 76,320 gpd and average 28,800 gpd. For this conversion, the highest maximum flow (Alternative 4) will be used as it would be protective of technology requirements regardless of recycle rates or choice of discharge alternative. Conversion factors are 3.785 l/gal, and 454,500 mg/lb.

TABLE 8

	Effluent Limitation		Effluent Limitations	
	Daily Maximum (lbs/day)	Average Daily (lbs/day)	Daily Maximum (mg/L)	Average Daily (mg/L)
Pollutant				
BOD_5	81.45	43.41	128	68
TSS	55.07	34.96	87	55
COD	500.72	255.48	788	402
Oil and Grease	25.42	13.74	40	22
Phenolic Compounds	0.59	0.29	0.93	0.45
Ammonia as N	84.56	38.95	133	61
Sulfide	0.51	0.23	0.8	0.4
Total Chromium	1.222	0.711	1.9	1.1
Hexavalent Chromium	0.101	0.046	0.16	0.07

Comparison of Water Quality Based and Technology Based Effluent Limitations

Table 9 contains a comparison of water quality and technology based requirements. The more stringent limit will be carried forward as an effluent limitation in the proposed permit:

TABLE 9

Pollutant	Technology Based Limit (ug/L)		Water Quality Based Limit (ug/L)		Most Stringent Limit (ug/L)	
	Daily Maximum	Average Daily	Daily Maximum	Average Daily	Daily Maximum	Average Daily
BOD_5 (lbs/day)	**81**	**43**	**(a)**	**(a)**	81 (a)	43 (a)
COD (lbs/day)	**500**	**255**	**(a)**	**(a)**	500 (a)	255 (a)
TSS (lbs/day)	**55**	**35**	N/A	N/A	55	35
Oil and Grease (lbs/day)	**25.4**	**13.7**	N/A	N/A	25.4	13.7
Benzene	N/A	N/A	--	**2.2**	--	2.2
Ethyl benzene	N/A	N/A	--	**530**	--	530
Toluene	N/A	N/A	--	**1300**	--	1300
Phenol	N/A	N/A	--	**300**	--	300
Phenolic Compounds (lbs/day)	**0.59**	**0.29**	N/A	N/A	0.59	0.29
Hydrogen Sulfide	800	400	--	**2.0**	--	2.0
Ammonia as N (mg/L)	133	61	**3.2**	**1.1**	3.2	1.1
Barium (tr)	N/A	N/A	--	**1000**	--	1000
Aluminum (tr)	N/A	N/A	**750**	**87**	750	87
Cadmium (tr)	N/A	N/A	**6.5**	**0.61**	MON	MON
Chromium (III) (tr)	**1900**	1100	4430	**212**	MON	MON
Chromium (Total) (lbs/day)	**1.22**	0.71	1.84	**0.035**	1.22	0.035
Chromium (VI)	160	70	**16**	**11**	16	11
Chromium (VI) (lbs/day)	0.101	0.046	**0.0067**	**0.0018**	0.0067	0.0018
Copper (tr)	N/A	N/A	**39.4**	**23.8**	MON	MON
Iron (tr)	N/A	N/A	--	**300**	--	300
Manganese (tr)	N/A	N/A	--	**50**	--	50
Lead (tr)	N/A	N/A	**331**	**12.9**	MON	MON
Mercury (T)	N/A	N/A	**1.4**	**0.012**	1.4	0.012
Nickel (tr)	N/A	N/A	**1190**	**132**	1190	132
Selenium (tr)	N/A	N/A	**20**	**5**	20	5
Silver (tr)	N/A	N/A	**25.0**	--	MON	--
Zinc (tr)	N/A	N/A	**304**	**304**	MON	MON
Chloride	N/A	N/A	**860000**	**230000**	860000	230000
Fluoride	N/A	N/A	--	**4000**	--	4000
Sulfate	N/A	N/A	--	**750000**	--	750000
Nitrite as N	N/A	N/A	--	**1000**	--	1000
Nitrate as N	N/A	N/A	--	**10000**	--	10000
Phosphorous as P	N/A	N/A	--	**100**	--	MON
pH (s.u.)	6.0– 9.0		**7.0 – 9.0**		7.0 – 9.0	

(a) Oxygen demanding parameters (BOD, COD) will also be limited by WQS for dissolved oxygen.
MON- Monitor Only

Whole Effluent Toxicity Limitations (Outfall 002)

The MHA Nation Water Quality Standards (Tribally-adopted WQS) contain narrative conditions that ensure surface waters of the Reservation are free from substances in wastewater discharges that "*cause injury to, or are toxic to, or produce adverse physiological responses in humans, animals or plants…"* Implementation of the narrative Tribally-adopted WQS for purposes of NPDES permits "*shall result in appropriate acute and chronic effluent quality limitations consistent with the federal water quality-based permitting found at 40 CFR 122.44(d),* ***including whole effluent toxicity (WET) limitations*** *as required in the latest edition of the EPA Region VIII NPDES Whole Effluent Toxics Control Program document."* (1997 Region 8 WET Policy)

Since the proposed MHA Nation Clean Fuels Refinery will have discharges from Outfall 002 that may contain substances that alone or in combination with other substances that exhibit toxicity to aquatic organisms, whole effluent toxicity (WET) limitations will be imposed in the proposed permit. In accordance with the Region 8 WET Policy, the permit will require both acute and chronic WET limits and monitoring for two species, *ceriodaphnia dubia* and *pimephales promelas* on a quarterly basis. The requirement for both acute and chronic WET limits and monitoring is due to the uncertain nature of the treated process wastewater discharge from this new facility. If the results of at least ten WET tests during this permit term show there is no reasonable potential for acute and/or chronic WET the discharge, the permittee may request a reduction in test frequency and/or number of species. The WET monitoring data collected during this proposed permit term will also be evaluated at the time of permit reissuance for reasonable potential and if a reduction in test frequency and/or number of species tested is warranted.

Proposed effluent limitations and monitoring frequencies for Outfall 002 are presented in Tables 10 and 11 respectively.

Proposed Numeric Effluent Limitations (Outfall 002)

TABLE 10

Pollutant	Effluent Limit (ug/L)		Basis for Effluent Limitation
	Daily Maximum	Average Daily	
Flow, MGD	0.08	0.03	Permit Application , DEIS
BOD_5 (lbs/day)	81	43	§40 CFR 419
COD (lbs/day)	500	255	§40 CFR 419
TSS (lbs/day)	55	35	§40 CFR 419
Oil and Grease (lbs/day)	25.4	13.7	§40 CFR 419
Benzene	NA	2.2	EPA 304(a) Criterion
Ethyl benzene	NA	530	EPA 304(a) Criterion
Toluene	NA	1300	EPA 304(a) Criterion
Phenol	NA	300	EPA 304(a) Criterion, State WQS, Tribal WQS
Phenolic Compounds (lbs/day)	0.59	0.29	§40 CFR 419
Hydrogen Sulfide	NA	2.0	EPA 304(a) Criterion, Tribal WQS
Ammonia as N (mg/L)	3.2	1.1	EPA 304(a) Criterion, State WQS
Barium (tr)	NA	1000	EPA 304(a) Criterion, State WQS
Aluminum (tr)	750	87	EPA 304(a) Criterion, Tribal WQS
Cadmium (tr)	MON	MON	EPA 304(a) Criterion
Chromium (Total) (lbs/day)	1.22	0.035	§40 CFR 419, State WQS,EPA 304(a) Criterion
Chromium (VI)	16	11	EPA 304(a) Criterion, State WQS, Tribal WQS
Chromium (VI) (lbs/day)	0.0067	0.0018	EPA 304(a) Criterion, State WQS, Tribal WQS
Copper (tr)	MON	MON	EPA 304(a) Criterion, State WQS
Iron (tr)	NA	300	EPA 304(a) Criterion, Tribal WQS
Manganese (tr)	NA	50	EPA 304(a) Criterion, Tribal WQS
Lead (tr)	MON	MON	EPA 304(a) Criterion, State WQS, Tribal WQS
Mercury (T)	1.4	0.0012	EPA 304(a) Criterion, Tribal WQS
Nickel (tr)	1190	132	EPA 304(a) Criterion, State WQS
Selenium (tr)	20	5	EPA 304(a) Criterion, State WQS, Tribal WQS
Silver (tr)	MON	MON	EPA 304(a) Criterion
Zinc (tr)	MON	MON	EPA 304(a) Criterion, State WQS
Chloride	860000	230000	EPA 304(a) Criterion, Tribal WQS
Fluoride	NA	4000	Tribal WQS
Sulfate	NA	750000	State WQS
Nitrite as N	NA	1000	Tribal WQS
Nitrate as N	NA	10000	EPA 304(a) Criterion, Tribal WQS
Phosphorous as P	MON	MON	State WQS
pH (s.u.)	7.0– 9.0		State WQS, Tribal WQS
WET, acute	LC_{50} > 100%		Narrative Tribal WQS and State WQS
WET, chronic	IC_{25} > 100%		Narrative Tribal WQS and State WQS
Dissolved Oxygen (mg/L)	April 1 – Sept 30 8.0 (1-day min.) 9.5 (7-day mean) 6.5 (30-day mean) Oct 1 – March 31 4.0 (1-day min.) 5.0 (7-day mean) 6.5 (30-day mean)		Tribal WQS

MON- Monitor Only

The discharge from Outfall 002 shall be free from oil and grease attributable to wastewater, which causes a visible film or sheen upon the waters or any discoloration of the surface of adjoining shoreline or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines or prevents classified uses of such waters.

Proposed Effluent Monitoring Requirements (Outfall 002)

TABLE 11

Pollutant	Monitoring Frequency	Sample Type
Flow, MGD	Daily	Continuous, Recorder
BOD_5 , lbs/day	2X/Week	Composite
COD, lbs/day	Monthly	Composite
TSS, lbs/day	2X/Week	Composite
Oil and Grease, lbs/day	Weekly	Grab
Benzene, ug/L	Monthly	Grab
Ethyl benzene, ug/L	Monthly	Grab
Toluene, ug/L	Monthly	Grab
Phenol, ug/L	Monthly	Grab
Phenolic Compounds, lbs/day	Monthly	Grab
Hydrogen Sulfide, ug/L	Weekly	Grab
Ammonia as N, mg/L	Weekly	Composite
Barium (tr), ug/L	Monthly	Composite
Aluminum (tr), ug/L	Monthly	Composite
Chromium (Total), lbs/day	Monthly	Composite
Chromium (VI), ug/L	Monthly	Grab
Chromium (VI), lbs/day	Monthly	Grab
Iron (tr), ug/L	Monthly	Composite
Manganese (tr), ug/L	Monthly	Composite
Mercury (T), ug/L	Monthly	Composite
Nickel (tr), ug/L	Monthly	Composite
Selenium (tr), ug/L	Monthly	Composite
Chloride, ug/L	Monthly	Composite
Fluoride, ug/L	Monthly	Composite
Sulfate, ug/L	Monthly	Composite
Nitrite as N, ug/L	Monthly	Composite
Nitrate as N, ug/L	Monthly	Composite
Phosphorous as P, ug/L	Monthly	Composite
pH (s.u.)	Daily	Grab or Continuous
WET, acute	Quarterly	Composite
WET, chronic	Quarterly	Grab
Dissolved Oxygen, mg/L	Daily	Grab
Temperature, ^oC	Daily	Grab

Additional Monitoring Requirement for Outfall 002:

Approximately 90 days and 270 days after startup of the facility, monitoring shall be required for:

Total Metals – Table III §40CFR 122 Appendix D
Volatile, acid, and base/neutral compounds – Table II §40CFR 122 Appendix D

Contaminated (oily) Stormwater (Outfall 002a)

Under Alternative 4 of the DEIS, an additional Outfall (002a) is proposed for discharges of segregated contaminated (oily) stormwater. The discharge of this wastewater may be necessary due to the lack of storage capacity in the wastewater tank system to contain all runoff resulting from unusual or episodic precipitation events.

Technology Limitations

Best Professional Judgment (BPJ)

The NSPS for Petroleum Refining (§40 CFR 419.36) also do not contain provisions for release of segregated contaminated stormwater runoff from process areas. As discussed under Outfall 002 above, regulations under §40 CFR 419.36(e) were reserved.

The BPT [§40 CFR 419.32(e)], BAT [§40 CFR 419.33(f)], and BCT [§40 CFR 419.34(e)] provisions for discharge of segregated contaminated runoff were evaluated using best professional judgment (BPJ) for this proposed facility. The BPT/BAT/BCT provisions limit discharge to segregated contaminated (oily) stormwater that is not commingled or treated with process wastewater that meets the following limitations:

BPT	Oil and Grease <15 mg/L
BAT	Total Organic Carbon <110 mg/L
BCT	Oil and Grease <15 mg/L

The limits cannot be exceeded in either a grab or composite sample of the discharge.

Water Quality Based Effluent Limitations

Numeric and Narrative Water Quality Standards and Criteria

Numeric water quality standards considered in establishing limitations for this discharge would be the same as presented in Table 3 above.

Narrative water quality standards (dissolved oxygen, whole effluent toxicity, etc.) considered in establishing effluent limitations would also be the same as described for discharges through Outfall 002 above.

Reasonable Potential

Water quality standard based effluent limitations will also be evaluated for the discharges of segregated contaminated (oily) stormwater. Pollutants reported in the permit application for the combined process and contaminated (oily) stormwater for Outfall 002 were compared with Tribally-adopted WQS, State WQS and EPA criteria. Table 12 shows the comparison. Tables 13 and 14 show proposed effluent limits and monitoring requirements for Outfall 002a.

Reasonable Potential Analysis (Contaminated (oily) Stormwater)
(in ug/L unless otherwise indicated)
Table 12

Pollutant	NPDES Permit Application		Applicable WQS		Reasonable Potential	
	Daily Maximum	Average Daily	Acute	Chronic	Acute	Chronic
Benzene	10	10	--	2.2	--	Yes
Ethyl benzene	0.0	0.0	--	530	--	No[1]
Toluene	0.0	0.0	--	1300	--	No[1]
Xylenes	NE	NE	--	10000	--	No
Phenol	300	300	--	300	--	Yes
Hydrogen Sulfide	0.0	0.0	--	2.0	--	No[2]
Ammonia as N (mg/L)	145	90	3.2	1.1	Yes	Yes
Barium (tr)	200	10	--	1000	--	Yes
Aluminum (tr)	80	10	750	87	Yes	Yes
Cadmium (tr)	0.0	0.0	6.5	0.61	No[3]	No[3]
Chromium (III) (tr)	0.0	0.0	4430	212	No[2]	No[2]
Chromium (VI)	NR	NR	16	11	No[2]	No2
Copper (tr)	0.0	0.0	39.4	23.8	No[3]	No[3]
Iron (tr)	250	40	--	300	--	Yes
Manganese (tr)	50	20	--	50	--	Yes
Lead (tr)	0.0	0.0	331	12.9	No[3]	No[3]
Mercury (T)	0.0	0.0	1.4	0.012	No[1]	No[1]
Nickel (tr)	50	50	1190	132	Yes	Yes
Selenium (tr)	10	10	20	5	Yes	Yes
Silver (tr)	0.0	0.0	25.0	--	No[3]	--
Zinc (tr)	0.0	0.0	304	304	No[3]	No[3]
Chlorine (TRC)	0.0	0.0	19	11	No	No
Chloride	NR	NR	860000	230000	No[1]	No[1]
Fluoride	3500	1000	--	4000	--	Yes
Sulfate	150000	90000	--	750000	--	Yes
Nitrite as N	NR	NR	--	1000	--	No[1]
Nitrate as N	40	20	--	10000	--	Yes
Phosphorous as P	200	120	--	100[4]	--	Yes[4]
PH (s.u.)	8.00– 8.50		7.0 – 9.0		Yes	

[1] Reported as 0.0 ppm in permit application but likely to be present in discharge. Limits and monitoring will be required for this parameter.
[2] Reported as 0.0 ppm in permit application but likely to be present in discharge. Also covered by ELG. Limits and monitoring will be required for this parameter.
[3] Reported as 0.0 ppm in permit application but likely to be present in the discharge at low concentration so monitoring only will apply.
[4] State WQS is a guideline only, so monitoring only will be required.
NE- reported as not expected to be present
NR- not reported in application

note: Boron was reported in the permit application at 1500 ug/L (daily maximum) and 100 ug/L (average daily) but there are no applicable WQS or EPA Criteria.

Proposed Numeric Effluent Limitations (Outfall 002a)

TABLE 13

Pollutant	Effluent Limit (ug/L)		Basis for Effluent Limitation
	Daily Maximum	Average Daily	
Flow, MGD	0.027	0.0065	Permit Application, DEIS
Oil and Grease, mg/L	15	15	BPJ (40 CFR 419)
Total Organic Carbon, mg/L	110	110	BPJ (40 CFR 419)
Benzene	NA	2.2	EPA 304(a) Criterion
Ethyl benzene	NA	530	EPA 304(a) Criterion
Toluene	NA	1300	EPA 304(a) Criterion
Phenol	NA	300	EPA 304(a) Criterion, State WQS, Tribal WQS
Hydrogen Sulfide	NA	2.0	EPA 304(a) Criterion, Tribal WQS
Ammonia as N (mg/L)	3.2	1.1	EPA 304(a) Criterion, State WQS
Barium (tr)	NA	1000	EPA 304(a) Criterion, State WQS
Aluminum (tr)	750	87	EPA 304(a) Criterion, Tribal WQS
Cadmium (tr)	MON	MON	EPA 304(a) Criterion
Chromium (VI)	16	11	EPA 304(a) Criterion, State WQS, Tribal WQS
Copper (tr)	MON	MON	EPA 304(a) Criterion, State WQS
Iron (tr)	NA	300	EPA 304(a) Criterion, Tribal WQS
Manganese (tr)	NA	50	EPA 304(a) Criterion, Tribal WQS
Lead (tr)	MON	MON	EPA 304(a) Criterion, State WQS, Tribal WQS
Mercury (T)	1.4	0.0012	EPA 304(a) Criterion, Tribal WQS
Nickel (tr)	1190	132	EPA 304(a) Criterion, State WQS
Selenium (tr)	20	5	EPA 304(a) Criterion, State WQS, Tribal WQS
Silver (tr)	MON	MON	EPA 304(a) Criterion
Zinc (tr)	MON	MON	EPA 304(a) Criterion, State WQS
Chloride	860000	230000	EPA 304(a) Criterion, Tribal WQS
Fluoride	NA	4000	Tribal WQS
Sulfate	NA	750000	State WQS
Nitrite as N	NA	1000	Tribal WQS
Nitrate as N	NA	10000	EPA 304(a) Criterion, Tribal WQS
Phosphorous as P	MON	MON	State WQS
pH (s.u.)	7.0– 9.0		State WQS, Tribal WQS
WET, acute	LC_{50} > 100%		Narrative Tribal WQS and State WQS
WET, chronic	IC_{25} > 100%		Narrative Tribal WQS and State WQS
Dissolved Oxygen (mg/L)	April 1 – Sept 30 8.0 (1-day min.) 9.5 (7-day mean) 6.5 (30-day mean) Oct 1 – March 31 4.0 (1-day min.) 5.0 (7-day mean) 6.5 (30-day mean)		Tribal WQS

MON- Monitor Only

The discharge from Outfall 002a shall be free from oil and grease attributable to wastewater, which causes a visible film or sheen upon the waters or any discoloration of the surface of adjoining shoreline or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines or prevents classified uses of such waters.

Proposed Effluent Monitoring Requirements (Outfall 002a)

Table 14

Pollutant	Monitoring Frequency	Sample Type
Flow, MGD	Daily	Continuous, Recorder
TOC, mg/L	Weekly	Composite
Oil and Grease, mg/L, visual	Daily	Visual[1]
Oil and Grease, mg/L	Weekly	Grab
Benzene, ug/L	Monthly	Grab
Ethyl benzene, ug/L	Monthly	Grab
Toluene, ug/L	Monthly	Grab
Phenol, ug/L	Monthly	Grab
Hydrogen Sulfide, ug/L	Weekly	Grab
Ammonia as N, mg/L	Weekly	Composite
Barium (tr), ug/L	Monthly	Composite
Aluminum (tr), ug/L	Monthly	Composite
Chromium (VI), ug/L	Monthly	Grab
Iron (tr), ug/L	Monthly	Composite
Manganese (tr), ug/L	Monthly	Composite
Mercury (T), ug/L	Monthly	Composite
Nickel (tr), ug/L	Monthly	Composite
Selenium (tr), ug/L	Monthly	Composite
Chloride, ug/L	Monthly	Composite
Fluoride, ug/L	Monthly	Composite
Sulfate, ug/L	Monthly	Composite
Nitrite as N, ug/L	Monthly	Composite
Nitrate as N, ug/L	Monthly	Composite
Phosphorous as P, ug/L	Monthly	Composite
pH (s.u.)	Daily	Grab or Continuous
WET, acute	Quarterly	Composite
WET, chronic	Quarterly	Grab
Dissolved Oxygen, mg/L	Daily	Grab
Temperature, ^{o}C	Daily	Grab

[1] A daily visual observation is required. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately. The concentration of oil and grease shall not exceed 15 mg/L in any sample.

Uncontaminated (non-oily) Stormwater (Outfall 001)

Water Quality Based Effluent Limits

Water quality based effluent limits are evaluated for the discharges of uncontaminated (non-oily) stormwater from Outfall 001. A reasonable potential analysis for pollutants expected to be in the discharge from Outfall 001 is presented in Table 15.

TABLE 15 - Reasonable Potential Analysis (Uncontaminated (non-oily) Stormwater) (in ug/L unless otherwise indicated)

Pollutant	NPDES Permit Application		Applicable WQS		Reasonable Potential	
	Daily Maximum	Average Daily	Acute	Chronic	Acute	Chronic
Benzene	0.0	0.0	--	2.2	--	No
Ethyl benzene	0.0	0.0	--	530	--	No
Toluene	0.0	0.0	--	1300	--	No
Xylenes	NE	NE	--	10000	--	No
Phenol	300	0.0	--	300	--	Yes
Hydrogen Sulfide	0.0	0.0	--	2.0	--	No
Ammonia as N (mg/L)	0.0	0.0	3.2	1.1	No	No
Barium (tr)	0.0	0.0	--	1000	--	No
Aluminum (tr)	0.0	0.0	750	87	No	No
Cadmium (tr)	0.0	0.0	6.5	0.61	No	No
Chromium (III) (tr)	0.0	0.0	4430	212	No	No
Chromium (VI)	NR	NR	16	11	No	No
Copper (tr)	0.0	0.0	39.4	23.8	No	No
Iron (tr)	200	0.0	--	300	--	Yes
Manganese (tr)	50	0.0	--	50	--	Yes
Lead (tr)	0.0	0.0	331	12.9	No	No
Mercury (T)	0.0	0.0	1.4	0.012	No	No
Nickel (tr)	0.0	0.0	1190	132	No	No
Selenium (tr)	10	0.0	20	5	Yes	Yes
Silver (tr)	0.0	0.0	25.0	--	No	--
Zinc (tr)	0.0	0.0	304	304	No	No
Chlorine (TRC)	0.0	0.0	19	11	No	No
Chloride	NR	NR	860000	230000	No	No
Fluoride	0.0	0.0	--	4000	--	Yes
Sulfate	60000	0.0	--	750000	--	Yes
Nitrite as N	NR	NR	--	1000	--	No
Nitrate as N	40	0.0	--	10000	--	Yes
Phosphorous as P	300	0.0	--	100[4]	--	Yes
pH (s.u.)	8.00– 8.50		7.0 – 9.0		Yes	

[4] State WQS is a guideline only, so monitoring only will be required.
NE- reported as not expected to be present
NR- not reported in application

note: Boron was reported in the permit application at 1000 ug/L (daily maximum) but there are no applicable WQS or EPA Criteria.

Limits for Outfall 001

Uncontaminated (non-oily) wastewater discharges from Outfall 001 will meet the effluent limitations shown in Table 16. The limits are based on numeric and narrative water quality standards. Proposed monitoring requirements for Outfall 001 are shown in Table 17.

Proposed Numeric Effluent Limitations (Outfall 001)

TABLE 16

Pollutant	Effluent Limit (ug/L)		Basis for Effluent Limitation
	Daily Maximum	Average Daily	
Flow, MGD	0.095	NA	Permit Application, DEIS
Oil and Grease	15	NA	Narrative Tribal WQS
Biochemical Oxygen Demand 5-Day (mg/L)	45	30	Narrative Tribal WQS
Total Suspended Solids (mg/L)	45	30	Narrative Tribal WQS
Phenol	NA	300	EPA 304(a) Criterion, State WQS, Tribal WQS
Iron (tr)	NA	300	EPA 304(a) Criterion, Tribal WQS
Manganese (tr)	NA	50	EPA 304(a) Criterion, Tribal WQS
Selenium (tr)	20	5	EPA 304(a) Criterion, State WQS, Tribal WQS
Sulfate	NA	750000	State WQS
Nitrate as N	NA	10000	EPA 304(a) Criterion, Tribal WQS
Phosphorous as P	MON	MON	State WQS
pH (s.u.)	7.0– 9.0		State WQS, Tribal WQS
Dissolved Oxygen (mg/L)	April 1 – Sept 30 8.0 (1-day min.) 9.5 (7-day mean) 6.5 (30-day mean) Oct 1 – March 31 4.0 (1-day min.) 5.0 (7-day mean) 6.5 (30-day mean)		Tribal WQS

MON- Monitor Only

The discharge from Outfall 001 shall be free from oil and grease attributable to wastewater, which causes a visible film or sheen upon the waters or any discoloration of the surface of adjoining shoreline or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines or prevents classified uses of such waters.

Proposed Effluent Monitoring Requirements (Outfall 001)

TABLE 17

Pollutant	Monitoring Frequency	Sample Type
Flow, MGD	Daily	Continuous, Recorder
Oil and Grease, mg/L	Daily	Visual[1]
Biochemical Oxygen Demand 5-Day, mg/L	Monthly	Composite
Total Suspended Solids, mg/L	Monthly	Composite
Ammonia as N, mg/L	Quarterly	Composite
Phenol, ug/L	Quarterly	Composite
Iron (tr), ug/L	Quarterly	Composite
Manganese (tr), ug/L	Quarterly	Composite
Selenium (tr), ug/L	Quarterly	Composite
Fluoride, ug/L	Quarterly	Composite
Sulfate, ug/L	Quarterly	Composite
Nitrate as N, ug/L	Quarterly	Composite
Phosphorous as P, ug/L	Quarterly	Composite
pH (s.u.)	Daily	Grab or Continuous
Dissolved Oxygen, mg/L	Daily	Grab

[1] A daily visual observation is required. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately. The concentration of oil and grease shall not exceed 15 mg/L in any sample.

Best Management Practices (BMPs)

In addition to the numeric effluent limits and monitoring requirements for process and contaminated stormwater discharges (Outfall 002 and 002a) and uncontaminated stormwater (Outfall 001), additional requirements will be added to the permit for control of pollutants that are likely to be present in the stormwater systems at the proposed facility.

The permittee will be required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will identify members of the facility's pollution prevention team, contain a site description, a summary of potential pollutant sources and pollutants, and stormwater controls that will be implemented at the site. Specific Best Management Practices (BMPs) will be identified by the permittee in the SWPPP. Examples of appropriate BMPs for this facility include good housekeeping, eliminating or minimizing exposure, preventative maintenance, spill prevention, runoff management, routine facility inspections, and employee training programs, as well as any more stringent measures necessary to meet the water quality standards provisions of the permit. The SWPPP must remain compliant with relevant State, Tribal and local regulations.

There are two distinct stormwater systems proposed for the facility, one to manage oily or contaminated stormwater from process areas and the other for uncontaminated stormwater. For the SWPPP, the permit will require the permittee to evaluate both stormwater systems, uncontaminated and contaminated, for appropriate controls and actions that will minimize pollutants discharged via stormwater from the facility.

The SWPP must be completed and the contents approved for compliance with the terms of this permit by the EPA Region 8 Stormwater Program Coordinator.

(POTENTIAL) Sanitary Wastewater (Outfall 003)

Technology Limitations (BPJ)

Technology requirements for sanitary wastewater discharges (POTWs) are found in 40 CFR Part 133, Secondary Treatment Requirements. The proposed package plant to treat sanitary wastewater is not a POTW but will treat the sanitary wastewater in a similar manner and should be capable of meeting the POTW technology standards. The following technology requirements (40 CFR 133.102) in Table 18 are applied as Best Professional Judgment (BPJ) to discharges from Outfall 003:

TABLE 18 -Effluent Limitation

Pollutant	7-Day Average (mg/L)	Average Daily (mg/L)
BOD_5	45	30
TSS	45	30
pH		6.0 to 9.0

Percentage Removal Requirements

85% BOD_5
85% TSS

Water Quality Based Effluent Limitations

Numeric and Narrative Water Quality Standards and Criteria

Water quality based effluent limits are evaluated for the discharges of treated sanitary wastewater from Outfall 003. The NPDES Permit application for this facility did not include information on the potential sanitary wastewater discharge due to recent design changes for the proposed project that are described under Alternative 4 of the DEIS. Therefore estimates of pollutants present in the discharge were obtained from similar types of sanitary wastewater treatment facilities and the potable water supply information provided in the DEIS. A reasonable potential analysis for pollutants expected to be in the discharge from Outfall 003 is presented in Table 19.

TABLE 19 -Reasonable Potential Analysis (Sanitary Wastewater)
(in ug/L unless otherwise indicated)

Pollutant	NPDES Permit Application		Applicable WQS		Reasonable Potential	
	Daily Maximum	Average Daily	Acute	Chronic	Acute	Chronic
Ammonia as N (mg/L)	NR	NR	3.2	1.1	Yes	Yes
Barium (tr)	NR	NR	--	1000	--	No
Aluminum (tr)	NR	NR	750	87	No	No
Cadmium (tr)	NR	NR	6.5	0.61	No	No
Chromium (III) (tr)	NR	NR	4430	212	No	No
Chromium (VI)	NR	NR	16	11	No	No
Copper (tr)	NR	NR	39.4	23.8	No	No
Iron (tr)	NR	NR	--	300	--	Yes
Manganese (tr)	NR	NR	--	50	--	Yes
Lead (tr)	NR	NR	331	12.9	No	No
Mercury (T)	NR	NR	1.4	0.012	No	No
Nickel (tr)	NR	NR	1190	132	No	No
Selenium (tr)	NR	NR	20	5	Yes	Yes
Silver (tr)	NR	NR	25.0	--	No	--
Zinc (tr)	NR	NR	304	304	No	No
Chlorine (TRC)	NR	NR	19	11	Yes	Yes
Chloride	NR	NR	860000	230000	No	No
Fluoride	NR	NR	--	4000	--	No
Sulfate	NR	NR	--	750000	--	Yes
Nitrite as N	NR	NR	--	1000	--	Yes
Nitrate as N	NR	NR	--	10000	--	Yes
Phosphorous as P	NR	NR	--	100[1]	--	Yes
pH (s.u.)	NR		NR		Yes	

[1]State WQS is a guideline only, so monitoring only will be required.
NR- No information provided in application.

Narrative water quality standards (dissolved oxygen, whole effluent toxicity, etc.) considered in establishing effluent limitations would also be the same as described for discharges through Outfall 002 above, however toxicity is not reasonably expected to be present in the sanitary wastewater discharge.

Proposed effluent limitations and monitoring requirements for Outfall 003 are presented in Tables 20 and 21 respectively.

(POTENTIAL) Proposed Numeric Effluent Limitations (Outfall 003)

TABLE 20

Pollutant	Effluent Limit (ug/L)			Basis for Effluent Limitation
	Daily Maximum	7-Day Average	Daily Average	
Flow, MGD	0.007	NA	0.005	DEIS
Biochemical Oxygen Demand 5-Day (mg/L)	NA	45	30	BPJ (40 CFR 133)
Total Suspended Solids (mg/L)	NA	45	30	BPJ (40 CFR 133)
Ammonia as N (mg/L)	3.2	NA	1.1	EPA 304(a) Criterion, State WQS
Total Residual Chlorine	19	NA	11	EPA 304(a) Criterion, State WQS
Iron (tr)	NA	NA	300	EPA 304(a) Criterion, Tribal WQS
Manganese (tr)	NA	NA	50	EPA 304(a) Criterion, Tribal WQS
Selenium (tr)	20	NA	5	EPA 304(a) Criterion, State WQS, Tribal WQS
Sulfate	NA	NA	750000	State WQS
Nitrite as N	NA	NA	1000	Tribal WQS
Nitrate as N	NA	NA	10000	EPA 304(a) Criterion, Tribal WQS
pH (s.u.)	7.0– 9.0			State WQS, Tribal WQS
Dissolved Oxygen (mg/L)	April 1 – Sept 30 8.0 (1-day min.) 9.5 (7-day mean) 6.5 (30-day mean) Oct 1 – March 31 4.0 (1-day min.) 5.0 (7-day mean) 6.5 (30-day mean)			Tribal WQS

The discharge from Outfall 003 shall be free from floating debris, oil, scum, and other floating materials attributable to municipal, industrial, or other discharges or agricultural practices in sufficient amounts to be unsightly or deleterious.

Percentage Removal Requirements (TSS and BOD_5 Limitation): In addition to the concentration limits for total suspended solids and BOD_5 indicated above, the arithmetic mean of the concentration for effluent samples collected in a 30-day consecutive period shall not exceed 15 percent of the arithmetic mean of the concentration for influent samples collected at approximately the same times during the same period (85 percent removal).

(POTENTIAL) Proposed Effluent Monitoring Requirements (Outfall 003)

TABLE 21

Pollutant	Monitoring Frequency	Sample Type
Flow, MGD	Daily	Continuous, Recorder
Biochemical Oxygen Demand 5-Day, mg/L a/	Monthly	Composite
Total Suspended Solids, mg/L a/	Monthly	Composite
Total Residual Chlorine, ug/L	Daily	Grab
Ammonia as N, mg/L	Quarterly	Composite
Iron (tr), ug/L	Quarterly	Composite
Manganese (tr), ug/L	Quarterly	Composite
Selenium (tr), ug/L	Quarterly	Composite
Sulfate, ug/L	Quarterly	Composite
Nitrite as N, ug/L	Quarterly	Composite
Nitrate as N, ug/L	Quarterly	Composite
Phosphorous as P, ug/L	Quarterly	Composite
pH (s.u.)	Daily	Grab or Continuous
Dissolved Oxygen, mg/L	Daily	Grab

a/ In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.

Solids

Solids generated in the process wastewater treatment unit processes and other solid and hazardous wastes associated with the refinery operations will be managed in accordance with all applicable laws.

Refinery unit processes will generate both listed and characteristic hazardous wastes under RCRA Part 261.

Proposed Alternative DEIS

Under the proposed alternative in the DEIS, the facility would be classified as a Treatment, Storage, and Disposal Facility (TSDF) under RCRA. . The wastewater treatment facility would be designed to meet all RCRA construction requirements for a TSDF. Wastewater management units (ponds, tanks, etc.) would generate sludges that are either listed or characteristic hazardous wastes. Solids removed will be containerized and sent to a third party off-site facility that handles hazardous waste. All treatment storage and disposal of hazardous wastes would comply with 40 CFR Part 268.

Alternative 4 DEIS

Under Alternative 4 of the DEIS, The MHA Nation Clean Fuels Refinery is expected to maintain a status as a Large Quantity Generator under RCRA. All hazardous waste generated at the refinery will be managed in accordance with RCRA regulations. The wastewater treatment unit would be designed to meet the RCRA definitions at 40 CFR 260.10 for wastewater treatment unit, tank, and tank system. The wastewater unit will also meet the requirements under 40 CFR 261.31(b)(2) for aggressive biological treatment. As long as the sludges remain in the wastewater treatment system, they would be exempt from listing under F037.

Sludges generated and removed from the wastewater treatment processes (API Separator, DAF, biological treatment sludge) via the sludge thickening process, possibly a centrifuge with a solvent wash (naptha) will be managed as hazardous waste. Solids removed will be containerized and sent to a third party off-site facility that handles hazardous waste. All disposal of hazardous wastes would comply with 40 CFR Part 268.

In addition, the package sanitary wastewater treatment plant would generate biological sludges that would be disposed of in accordance with 40 CFR Part 503 regulations for biosolids.

Reporting Requirements

Since this facility is classified as a major discharger, monthly reporting requirements will apply. Monitoring results from the previous month's discharge will be required to be reported on a standard Discharge Monitoring Report (DMR) Form, *EPA 3320-1*.

Bruce Kent, USEPA Region VIII
6/16/2006

Comments and responses to comments;

BIA and EPA announced the availability of the Draft EIS, including the NPDES permit in the Federal Register (Volume 71, Number 125, Pages 37092-37093), in press releases and in mailed announcements on June 29, 2006. BIA and EPA held seven public hearings on the Draft EIS including the NPDES permit in Twin Buttes, White Shield, Parshall, Mandaree, New Town, and Makoti, North Dakota between July 31 and August 5, 2006. Written comments were accepted until September 14, 2006.

All comments and responses to those comments can be reviewed in the **"**Response to Comments on the Draft Environmental Impact Statement for the Mandan, Hidatsa, and Arikara Nation's Proposed Clean Fuels Refinery Project". The NPDES specific comments can be found in section D.3 of the Response to Comments in Appendix E of the FEIS.

In addition the NPDES permit specific comments are attached to the NPDES permit fact sheet.

EPA is issuing the NPDES permit with an effective date 30 days after issuance. EPA regulations at 40 C.F.R. 124.19 provide that within 30 days of the final decision on the NPDES permit any person who filed comments on the draft permit or participated in the public hearings may petition the Environmental Appeals Board. 40 C.F.R. 124.19 states in part "…The petition shall include a statement of the reasons supporting that review, including a demonstration that any issues being raised were raised during the public comment period (including any public hearing) to the extent required by these regulations and when appropriate, a showing that the condition in question is based on:(1) A finding of fact or conclusion of law which is clearly erroneous, or (2) An exercise of discretion or an important policy consideration which the Environmental Appeals Board should, in its discretion, review."

Questions should be addressed to:

Robert B. Brobst P.E.
EPA Region 8
TAT questions
Wastewater Unit (8P-W-WW)
1595 Wynkoop Street
Denver, Colorado 80202

Or e-mail Brobst.bob@epa.gov

Robert B. Brobst, P.E.
Wastewater Unit