# AGENDA
# CITY COUNCIL
# WORK SESSION
# CITY OF EAST GRAND FORKS
# February 22, 2011
# 5:00 PM

**CALL TO ORDER**

**CALL OF ROLL**

**DETERMINATION OF A QUORUM**

1. Wastewater Interconnect Study – Greg Boppre
2. Additional Parking Downtown – Jim Richter
3. 2010 Building Inspections Report – Tom Spoor
4. Airborne Custom Spraying – John Wachter
5. Zamboni for Civic Center – Dave Aker
6. HVAC System for Police Department – Chief Hedlund

**ADJOURN**

**Upcoming Meetings**

Regular Meeting – March 1, 2011 – 5:00 PM – Council Chambers

Work Session – March 8, 2011 – 5:00 PM – Training Room

Regular Meeting – March 15, 2011 – 5:00 PM – Council Chambers

Engineering
Consulting Engineers & Land Surveyors

**FEBRUARY 18, 2011**

# FACILITY PLAN
# Addendum

**FOR**

# SANITARY SEWER SYSTEM INTERCONNECT

# EAST GRAND FORKS, MINNESOTA

DRAFT

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

_____

Greg L. Boppre, P.E., Reg. No. 19171

1600 Central Avenue NE, East Grand Forks, MN 56721 PO Box 385, 218-773-1185 Fax 218-773-3348

**I. INTRODUCTION** . . . . . 1

A. General . . . . . 1

B. Scope, Purpose and Problem Areas . . . . . 1

C. Planning Area . . . . . 1

**II. SUMMARY AND RECOMMENDATIONS** . . . . . 1-2

**III. ENVIRONMENTAL ASSESSMENT** . . . . . 3

A. Description of Existing Environment Without the Project . . . . . 3

1. Air Quality & Climate . . . . . 3
2. Endangered Species . . . . . 4
3. Soil Conditions . . . . . 4
4. Topography . . . . . 4
5. Subsurface Conditions . . . . . 4-5
6. Historical - Archaeological . . . . . 5
7. Land Use . . . . . 5
8. Recreation . . . . . 5
9. Population . . . . . 5-6
10. Transportation . . . . . 6
11. Wildlife and Wildlife Habitat . . . . . 6
12. Vegetation . . . . . 6-7
13. Surface Waters . . . . . 7

B. Future Environment Without the Project . . . . . 7

C. Documentation . . . . . 7-11

D. Evaluation of Alternatives . . . . . 11

1. Evaluation of Alternative Sites . . . . . 11
2. Evaluation of Alternative Systems . . . . . 11-12
3. Summary of Alternative Impacts . . . . . 12

E. Environmental Impacts of the Proposed Project . . . . . 12-13

F. Adverse Impacts Which Cannot Be Avoided, and Steps to Minimize Impacts . . 13

G. Relationship Between Local Short Term Use of Man's Environment and the Maintenance and Enhancement of Long Term Productivity. . . . . 13

H. Irreversible and Irretrievable Commitments of Resources to the Proposed Project Should it be Implemented. . . . . 14

**IV. EXISTING WASTEWATER FLOWS** . . . . . 14

A. Existing Treatment System . . . . . 14

B. Present Effluent Standards . . . . . 14


DRAFT

C. Existing Wastewater Characteristics . . . . . 14-15
E. Sanitary Sewer System . . . . . 15
F. Storm Sewer System . . . . . 15
G. Water Consumption Records . . . . . 15-17
**V. DESIGN PARAMETERS** . . . . . 17
A. Upgrade Stabilization Ponds . . . . . 17
1 Projected Wastewater Flows and Loadings . . . . . 17
2. Design Flows . . . . . 17-18
3. Design Basis . . . . . 19
4. Pond Size Required . . . . . 19
5. Design Recommendations . . . . . 20
6. Design Summary Stabilization Ponds . . . . . 20-21
B. Regionalization . . . . . 21
1. Summary . . . . . 21
2. Influent Wastewater Changes . . . . . 22
3. Unit Process Description . . . . . 22-23
Table 1 . . . . . 22a
4. Hydraulic Capacity Considerations . . . . . 23
5. Treatment Capacity Considerations . . . . . 24
Table 2 . . . . . 24a
6. Conclusions and Recommendations . . . . . 25
**VI. DISCUSSION OF WASTEWATER TREATMENT ALTERNATIVES** . . . . . 25-29
**VII. EVALUATION AND SELECTION OF ALTERNATE** . . . . . 29
**VIII. DESCRIPTION OF PROPOSED ALTERNATE** . . . . . 29
**IX. PUBLIC PARTICIPATION** . . . . . 29
**X. COST ESTIMATE** . . . . . 30
**XI. PROPOSED PROJECT FUNDING** . . . . . 30
**XII. MINNESOTA POLLUTION CONTROL AGENCY (MPCA) FORMS (EXHIBIT 12)** . . . . . 30
A. MPCA Design Flow & Loading Determination . . . . . 30
B. Environmental Information Worksheet (EIW) . . . . . 30
C. Facilities Plan Submittal Checklist . . . . . 30
D. State Environmental Review Process Mailing List Form . . . . . 30
E. Facilities Plan for Wastewater Treatment Systems . . . . . 30
F. Project Maps . . . . . 30

DRAFT

**EXHIBIT LIST**

| NO. | DESCRIPTION |
|---|---|
| **1** | **Location Maps** |
| | * Minnesota Map |
| | * Polk County Map |
| | * Highway Map |
| **2** | **Response Letters** |
| | * Minnesota Department of Natural Resources |
| | * West Polk Soil & Water Conservation District |
| | * Natural Resources Conservation Service |
| | * Department of the Army Corps of Engineers |
| | * Polk County Environmental Services |
| | * City of East Grand Forks |
| **3** | **Soil Conditions** |
| **4** | **Topography Maps** |
| **5** | **Existing Conditions** |
| | * Aerial Map |
| | * Existing Lagoon Plan Sheet |
| | * Existing EGF Watermain Map |
| | * Existing EGF Sanitary Sewer Map |
| | * Existing EGF Storm Sewer Map |
| **6** | **Project Maps** |
| | * Project Layout Map |
| **7** | **NPDES/SDS Permit** |
| **8** | **Sanitary Sewer & Water Data** |
| | * Water Consumption Records Graph (monthly) |
| | * Water Consumption Records Graph (daily) |
| | * Wastewater Flows Graph |
| | * 2008, 2009, 2010 Daily Wastewater Flows |
| | * 2008, 2009, 2010 Waterflows Calibration History |
| **9** | **Notice of Public Hearing** |
| | * Resolution Authority Facility Plan |
| | * Public Hearing Comments |

DRAFT

**10 Sewage Fund Analysis**

* Cost of Service Analysis (COSA)

**11 EGF-GF Wasterwater Interconnect Update**

(Powerpoint Slides)

* Technical Memorandum - $AE_2S$ - Wastewater Interconnect Treatment Concept

**12 Minnesota Pollution Control Agency (MPCA) Forms**

* MPCA Design Flow & Loading Determination
* Environmental Information Worksheet (EIW)
* Facilities Plan Submittal Checklist
* State Environmental Review Process Mailing List Form
* Facilities Plan for Wastewater Treatment Systems
* Project Map

DRAFT

# I. INTRODUCTION

## A. GENERAL

This is an addendum to the **2006 FACILITY PLAN**.

The City of East Grand Forks is located in the west central part of Polk County, in northwest Minnesota at the intersection of U.S. Highway 2 and Minnesota Trunk Highway 220. The City is located on the east banks of the Red River of the North adjacent to Grand Forks ND (see Exhibit 1).

The population of the City in 1980 was 8,537. The 1990 population was 8,659 and in 2000 was 7501.

According to the East Grand Forks MPO, the estimated population for 2009 was 8,712. (Page 6)

The adopted growth rate for the City is 1.2%, so using a base of 8,712 in 2009 we should reach 11,060 by the year 2029.

The City of East Grand Forks has a sanitary sewer collection system consisting of 187,000 feet of 8" - 16" VCP and PVC Pipe, 12 lift stations, 30,000 feet of 4" to 30" forcemain and a stabilization pond treatment system consisting of 1 - 240 acre primary pond and 1 - 95 acre secondary pond. Average daily flows for the city of East Grand Forks are approximately 1,162,000 gallons per day with peak days of 5,591,000 gallons per day. The permit pond treatment system has an average design for 1,400,000 gallons per day.

## B. SCOPE, PURPOSE AND PROBLEM AREAS

Presently there is one (1) major problem area (PA) within the existing sanitary sewer treatment system:

PA 1) The existing sewage treatment ponds are approaching their maximum capacity and do not meet current MPCA design standards.

This facility plan has been prepared as requested by the City of East Grand Forks and was written with the purpose of developing and evaluating the upgrading of the existing wastewater treatment system or regionalization and to determine the best sanitary sewer treatment plan to serve the City of East Grand Forks.

## C. PLANNING AREA

The planning area for the City of East Grand Forks, encompasses the entire City of East Grand Forks, Polk County, Minnesota.

# II. SUMMARY AND RECOMMENDATIONS

This facility plan has been prepared in accordance with U.S. Environmental Protection Agency regulation guidelines and the Minnesota Pollution Control Agency Chapter 7077 - Section 7077.0272 - Facilities Plan for wastewater treatment systems.

DRAFT

There are three alternatives that were considered site, system and impact to achieve a cost-effective method to provide wastewater facilities for those areas, within the planning area, that were determined to have needs. This need was defined as either causing a violation of water quality standards, effluent standards, and possible pollution of ground waters or conditions which equipment or systems are operating at, near, or above their capacity or near the end of the expected life.

Alternatives evaluated for the City of East Grand Forks were:

PA 1: TREATMENT SYSTEM

A. Do nothing.

B. Construct Mechanical Treatment Plant.

C. Phase I - Upgrade the existing stabilization pond treatment system to increase capacity and to meet current MPCA design standards.

D. Regionalize

In summary, the following are the selected Alternatives for the treatment problem area:

PA1: Phase 1 - construct lift station and forcemain and send wastewater for treatment to Grand Forks, ND.

Phase 2 - Decommission existing stabilization ponds and construct equalization ponds.

The preliminary estimated cost for the selected alternate is as follows:

| | |
|---|---|
| Problem Area 1 (PA 1) | $7,200,000.00 |
| **TOTAL** | **$7,200,000.00** |

The City is proposing to fund these projects through the use of grant/loan funds from various state and federal agencies with the loan funds being repaid through increased user fees. The following agencies are being considered as funding sources for each step of the project.

Step 1 - Facility Plan -

City of East Grand Forks

Step 2 - Plans & Specs.

Public Facilities Authority/Minnesota Pollution Control Agency (PFA/MPCA)

Step 3 - Construction

PFA/MPCA

The proposed funding agency, proposed payback and user fees are discussed in Section XI - Proposed Project Funding.

DRAFT

# III. ENVIRONMENTAL ASSESSMENT

## A. DESCRIPTION OF EXISTING ENVIRONMENT WITHOUT THE PROJECT

### 1. AIR QUALITY & CLIMATE

Air quality in the East Grand Forks area is generally good. Occasionally in the winter, when snow cover in western Minnesota and the Dakotas is light, there may be some problem with blowing dust accompanying south-westerly and northwesterly winds. The general rural nature of the area and the lack of heavy industry or concentrations of automobiles results in no significant air quality problems.

The East Grand Forks area has a continental climate characterized by wide variations in temperature, light to moderate precipitation, plentiful sunshine and nearly continuous air movement. Weather patterns consisting of cold dry air from the polar regions and warm moist air from tropical regions often move quickly into the area, resulting in extreme temperature variations. In the winter, movement of polar air into the region often results in bitter cold temperatures. Temperatures drop to 0 degrees F. or below on an average of 60 days each year.

The average precipitation during January, February, and March is 2.15 inches and the average yearly snowfall is 34.9 inches. Spring is a time of rapid and large changes in temperature and precipitation. During April the most rapid warming occurs, with the average monthly temperatures 18 degrees higher than those of March. The average day of last frost is May 19, but freezing temperatures have been recorded as late as June. Average precipitation during April, May, and June is 6.25 inches, about three times that of the winter months.

The summer months are characterized by nearly continuous bathing of weather patterns from the arid south. The average precipitation during the summer is 7.37 inches, slightly more than that of the spring months. The summers are warm but not hot, as maximum temperatures of 90 degrees or more occur on an average of only 12 days a year. The first frost of fall, which occurs in mid to late September, signals the end of the growing season and indicates that about 2 months remain until winter. Average frost penetration in East Grand Forks is 4.5 feet, with extreme of about 7 feet. A large decrease in precipitation occurs during the transition from summer to fall; the average total precipitation for October, November, and December is 2.58 inches, one - third that of the total summer precipitation. The temperature changes which accompany the rapidly moving winter weather systems may be extreme and, when accompanied by blizzard conditions, may present a threat to the life and well-being of humans, farm animals, and wildlife. The mean annual precipitation for the city of East Grand Forks is approximately 18.5 inches. The above statistics were received from the Grand Forks County Extension Agency.

DRAFT

## 2. ENDANGERED SPECIES

Although the City of East Grand Forks is situated adjacent to the Red Lake River and the Red River of the North, it is unlikely that any of the threatened or endangered species, as they appear in State and Federal designations, are present in the area other than as casual migrants. The only endangered federal species is the Gray Wolf and this area is on its peripheral range. There have been several Bald Eagle sightings in the area. Two nests has been found in the area but are not located in the proposed construction area. Birds such as the prairie chicken and the sand hill crane, both state threatened species, probably nested in the area at one time, it is unlikely due to the intensive agriculture in the area at present, that these species will become reestablished. The regional non-game wildlife biologist has been contacted and has determined that the location and design of this project is such that it will have no adverse affects on the species (see Exhibit 2).

## 3. SOIL CONDITIONS

The principal soil associations in this area are of the Bearden-Colvin Complex as classified by the Soil Survey of Polk County, Minnesota; United States Department of Agriculture and Natural Resources Construction Services in Cooperation with Minnesota Agricultural Experiment Station. The general characteristics of these soils as outlined by the Soil Survey of Polk County, Minnesota are poorly drained soils formed in lake laid silts, very fine sands, clays, silts or calcareous glacial till. Attached as (Exhibit 3) is a general outline of the Soil Survey of Polk County, Minnesota characteristics for this principal soil group and other soils in the adjacent area.

More specifically, the soils are described in Section 5 - Subsurface Conditions. Also refer to Exhibit 2 for response letters.

## 4. TOPOGRAPHY

East Grand Forks and its surrounding area sit on the lake bed of the former glacial Lake Agassiz and the topography is very flat, except in the vicinity of a watercourse, local relief tends to be 8' or less. The approximate drop across a typical section of land varies from 2 to 3 feet (see Topography maps in Exhibit 4).

## 5. SUBSURFACE CONDITIONS

Subsurface conditions encountered in East Grand Forks vary with the location. Generally, the first 125 feet is predominately quaternary and/or glacial drift deposits made up of fat clays and silts. Below these glacial deposits, is a layer of 500' of ordovician.

There are no known geological faults or failures in or around the East Grand Forks area. The existing clay soil generally has a low to moderate

DRAFT

permeability and appears to be suitable for pond liner. A detailed soils report will be made during the plans and specifications stage.

## 6. HISTORICAL - ARCHAEOLOGICAL

The City of East Grand Forks lies within and along the shore lines of the ancient glacial Lake Agassiz, a lake which extended from near Hudson Bay, Canada south to the present day site of Breckenridge, Minnesota, in the west-central part of the state.

The Minnesota Historical Society has been contacted in regard to the existence of historical and archaeological sites in the area.

## 7. LAND USE

Land use in the East Grand Forks area is used primarily for agriculture. Major crops include small grains, beans, potatoes and sugar beets. Land use within the City is basically residential with commercial businesses, school and some industry. Land around the stabilization ponds is generally agriculture in nature. Refer to Exhibit 2 for Land Use response letters.

No major changes in land use are anticipated during the planning period. Any growth anticipated for the City will probably occur within the present boundaries or immediately adjacent to them. The developments presently platted around the East Grand Forks area may gradually reach their platted capacity, but there is presently a very good supply of platted lots.

## 8. RECREATION

Recreation facilities in the surrounding area are limited. Among those available include: two city parks, two indoor skating rinks, six tennis courts, a swimming pool, a golf courses, and an all weather running track, belonging to the school system.

The Red Lake River and the Red River of the North provides a variety of recreational uses including fishing and scenic viewing and also a Minnesota State Park.

## 9. POPULATION

Population trends over the past several decades indicate that the population of the City of East Grand Forks can be expected to increase at a steady rate. The May 1993 population was shown to be 2,550. Past and projected population figures are shown below.

| YEAR | POPULATION |
|---|---|
| 1950 | 5,049 |
| 1960 | 6,998 |
| 1970 | 7,607 |
| 1980 | 8,537 |



DRAFT

| | |
|---|---|
| 1990 | 8,658 |
| 2000 | 7,501 |
| 2009 | 8,712 |
| 2029 (Projected) | 11,060 |

Population rate in the 1970's declined, but since that time the City has grown by 6% in the 1980's and since 1990, the population has increased at a rate of 2% a year for the past 3 years. In 1997 a major flood occurred, resulting in the loss of several neighborhoods.

Population projections for the twenty year plan period are based on census review data provided by the state demographers population estimates and the population projections furnished by the Metropolitan Planning Organization. The population figures used in determining design flow takes into account the Rural Student Population.

## 10. TRANSPORTATION

East Grand Forks is served by the Burlington Northern Railroad, which is used primarily for transporting grain from the East Grand Forks Elevators to shipping terminals in Duluth and Minneapolis-St. Paul. Traffic varies depending on the harvest season.

East Grand Forks has bus service and commercial air service available in Grand Forks, North Dakota. The City lies at the intersection of Minnesota Trunk Highway 220 and U.S. Highway No. 2. The nearest commercial air service is at the Grand Forks Mark Andrews International Airport which is served by several flights daily. The airport, located west of Grand Forks, North Dakota, is approximately 6 miles from East Grand Forks.

U.S. Mail Parcel Post, United Parcel Service and other trucking companies also serve the East Grand Forks area.

## 11. WILDLIFE AND WILDLIFE HABITAT

The East Grand Forks area provides a variety of wildlife habitats and therefore, supports fairly diverse wildlife. These habitats are primarily associated with vegetation on lands located along the Red Lake River. The area along the river serves as a wildlife corridor especially in areas where the upland is heavily cultivated. The woodlands along the river serve as a wintering area for white-tailed deer, moose, ruffed grouse, various songbirds, owls, hawks, woodpeckers, rabbits, raccoons, skunks, squirrels and other small mammals. The Minnesota Department of Natural Resources was also contacted for their comments (see Exhibit 2).

## 12. VEGETATION

East Grand Forks lies in an area characterized by the influence of glacial periods that occurred in the past. This area consists of moderate stands of

DRAFT

elm, oak, boxelder, ash and small amounts of underbrush and trees. Areas along the river may contain some marshes and sloughs.

**13. SURFACE WATERS**

The Red Lake River which winds its way through the area and westward to the Red River of the North. The river is fairly deep in nature and supports a fair number of species of fish in its deeper pools.

## B. FUTURE ENVIRONMENT WITHOUT THE PROJECT

The no project alternative would have a number of impacts on East Grand Forks, primarily adverse. MPCA documented in a 1991 report that the sewage treatment ponds have a seepage problem. Not doing the project would mean the continuing seepage of sewage from the stabilization ponds into the ground waters and the Red River of the North. Also, the capacity of the existing ponds has reached its maximum. A plan will need to be implemented to accommodate increasing flows from future industrial expansion and population increase.

## C. DOCUMENTATION

The following persons and agencies have been contacted regarding the effects of the project on the existing environment in the planning area.

Mr. Ron Galstad
Attorney at Law
1312 Central Ave NE
East Grand Forks, MN 56721

Minnesota Department of Natural Resources
Section of Wildlife Non-game Program
2115 Birchmont Beach Road NE
Bemidji, MN 56601

Honorable Lynn Stauss
Mayor
PO Box 373
East Grand Forks, MN

Scott Huizenga
City Administrator
PO Box 373
East Grand Forks, MN 56721

DRAFT

NW Regional Development Commission
115 South Main, Suite 1
Warren, MN 56762

John Steiner
Polk County Planning and Zoning
320 Ingersoll Avenue
Crookston, MN 56716

Honorable Warren Strandell
Polk County Board
2024 10th Street SE
East Grand Forks, MN 56721

Red Lake Watershed District
102 N Main
PO Box 803
Thief River Falls, MN 56701

Dennis Gimmestad
State Historical Preservation Office
345 Kellogg Boulevard West
St. Paul, MN 55102-1903

Rich Sanders
Polk County Engineer
820 Old Highway 75 South
Crookston, MN 56716

Lynn Lewis
US Fish and Wildlife
Twin Cities Field Office
4101 East 80th Street
Bloomington, MN 55425-1665

DRAFT

Lawrence Puchalski
USACOE
Bemidji Regulatory Field Office
4111 Technology Drive Suite 295
Bemidji, MN 56601

Tom Balcom
MN Department of Natural Resources
500 Lafayette Road Box 25
St. Paul, MN 55155-4025

Natural Resource Conservation Service
Crookston Field Office
528 Stranger Avenue
Crookston, MN 56716

Jackie Sluss
MN Historical Society
Fort Snelling History Center
St. Paul, MN 55111

Randy Huelskamp
District Conservationist
Natural Resources Concservation Service
528 Strander Avenue
Crookston, MN 56716

Larry Kramka
DNR Waters
2115 Birchmont Beach Road NE
Bemidji, MN 56601

Jim Courneya
MPCA - Detroit Lakes Office
714 Lake Avenue Suite 220
Detroit Lakes, MN 56501

DRAFT

Federal Emergency Management Agency
Natural Hazards Branch
Natural and Tech. Hazards Divison
175 West Jackson - 4th Floor
Chicago, Il 60604

The Honorable Leroy Stumpf
State Senator
102 State Capitol
St. Paul, MN 55155

Congressman Collin Peterson
714 Lake Avenue, Suite 107
Detroit Lakes, MN 56501

US Army Corps of Engineers
Army Corps of Engineers Centre
180 Fifth Street East
St. Paul, MN 55101-1638

The Honorable Debra Kiel
State Representative
102 State Capitol
St. Paul, MN 55155

Mr. Mark Walker
City of Grand Forks Engineering Department
255 N 4th Street
PO Box 5200
Grand Forks, ND 58203

Mr. Al Grasser
City Engineer
City of Grand Forks Engineering Dept.
255 N 4th Street
PO Box 5200
Grand Forks, ND 58203

DRAFT

Mr. Todd Feland
City Public Works Director
724 N 4th Street
Grand Forks, ND 58203

Mr. Rick Duquette
City Administrator
City Hall
255 N 4th Street
PO Box 5200
Grand Forks, ND 58203

Comment letters are included in Exhibit 2.

## D. EVALUATION OF ALTERNATIVES

### 1. EVALUATION OF ALTERNATIVE SITES

#### A. PA 1: POND EXPANSION

The evaluation of alternate sites was limited to the existing stabilization pond site. This site has been in operation since 1958 and has presented no major problem to the City or surrounding residences, other than the leakage problem. Because of the size of operation and the City's existing investment in this site, no other sites would be feasible from an economic standpoint. See Exhibit 5 for Existing Conditions maps and City Wide Existing Utilities.

### 2. EVALUATION OF ALTERNATIVE SYSTEMS

#### A. PA 1:

##### (1) MECHANICAL SYSTEMS:

The construction and operation of the various types of mechanical systems has very little potential for adverse environmental impacts. Actual construction would be limited to the existing stabilization pond site. Since land is available there and the forcemain would not need to be rerouted.

##### (2) UPGRADE STABILIZATION POND SYSTEM:

The upgrading of the existing stabilization pond by installing a new clay liner, raising dike elevation and providing a 3 - cell system will not change the present operation of the stabilization ponds, except to minimize the current leakage problem and provide capacity for future sewage flow. Any environmental impacts would be felt mainly during construction (See Exhibit 2).

DRAFT

**(3) REGIONALIZATION**

The construction and operation of transporting the waste water to Grand Forks, ND has very little potential for adverse environmental impacts. The environmental impacts would be limited mainly during construction.

The ability to transfer the wastewater from East Grand Forks to the City of Grand Forks, ND has several advantages:

- City of East Grand Forks will not have to treat the wastewater
- City of East Grand Forks will be able to decommission existing stabilization ponds at a future date
- City of East Grand Forks will maintain existing infrastructure system

**B. RECOMMENDATION**

Based on the cost analysis and the environmental analysis the most cost-effective analysis appears to be (see Exhibit 6 for project layout maps):

a. PA 1:

Construct lift station and forcemain and send wastewater to Grand Forks, ND.

**3. SUMMARY OF ALTERNATIVE IMPACTS**

**A. PA 1:**

| | |
|---|---|
| (1) No Action | Negative |
| (2) Mechanical System | Negative |
| (3) Upgrade Existing Ponds | Neutral |
| (4) Regionalization | Positive |

## E. ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

**1. PA 1:**

The project as proposed involves constructing a lift station and 9400 LF forcemain. This is not anticipated to have adverse environmental impacts .

There are no wetlands, historical/archaeological sites, or any other sensitive environmental features which will be impacted during construction of the lift station and forcemain.



DRAFT

The project eliminates the City's present sewer treatment problem, gives much needed future capacity for wastewater treatment, and allows for an increase in population and industry over and above the 20-year planning period. The project is not anticipated to result in any indirect development or associated secondary impact. The project will, however, result in an improvement in water quality in the Red River of the North by elimination of excessive seepage and improved discharge water quality.

The project is not energy intensive over the long term. New energy use is limited to the cost of the energy used in the construction process.

## F. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED, AND STEPS TO MINIMIZE IMPACTS

As indicated in the previous discussion, adverse impacts will be very minor and are primarily related to temporary construction impacts. These can be minimized by insuring that project specifications require good construction practices such as preventing erosion from exposed soil surfaces, meeting existing State and Federal Storm Water Permit requirements, and controlling dust, noise and air pollution during construction related activities. A MPCA storm water permit will be applied for during the plans and specifications stage of the project.

## G. RELATIONSHIP BETWEEN LOCAL SHORT TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY.

In the case of the proposed project, negative impacts will be almost exclusively of a short term nature and associated with construction. The overall long term impact of the project will be the improvement of water quality in the Red River of the North and less overall sanitary sewer system maintenance.

The proposed project will to a certain extent, foreclose future use of the pond site. Although conversion of the site back to agricultural land is possible. If the City of East Grand Forks continues to experience moderate growth, the Grand Forks Treatment Plant will be used far beyond the 20 year planning period.

The proposed project is not anticipated to promote a large increase in development in the East Grand Forks area, since the project allows for only a moderate increase in population.

The proposed project involves some commitment of resources, for project construction. As discussed previously, the pond site is probably irretrievably committed to that usage. Construction of the project requires commitment of energy and manpower which are irretrievable.

DRAFT

### H. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES TO THE PROPOSED PROJECT SHOULD IT BE IMPLEMENTED.

1. The proposed project involves some commitment of resources for project construction.

2. Construction of the proposed improvements required commitment of energy and manpower which are irretrievable.

## IV. EXISTING WASTEWATER FLOWS

### A. EXISTING COLLECTION AND TREATMENT SYSTEM

The existing treatment system consists of a master lift station constructed in 1999. The master lift station contains 4 - 4000 gpm pumps and is equipped with a generator back up system. The collected wastewater is pumped through a 30" RCCP forcemain to a 240 acre primary cell and a 95 acre secondary cell. The existing dike is over 12' wide on top, 6' high and the inside slopes are 7:1 and the outside slopes are 4:1. The elevation of the existing dikes are 832 for the primary cell and 830.4 for the secondary cells. This is above the 100 Year Flood elevation 828 established by the Federal Emergency Management Agency.

The City of East Grand Forks has purchased approximately 132 acres of land adjacent to the treatment pond which has been contaminated due to seepage. In 1991, MPCA documented the leakage problem occurring and also ordered the removal of reinforced concrete and oversized concrete rip rap.

### B. PRESENT EFFLUENT STANDARDS

At the present time the city of East Grand Forks had been operating under an existing discharge Minnesota Permit Number 0021814. Following are the discharge limitations as found in the existing permit (see Exhibit 7).

| PARAMETER | CONTROLLED DISCHARGE |
|---|---|
| BOD (mg/1) | 25 mg/l |
| TSS (mg/1) | 45 mg/l |
| Fecal Coliforms (MPN/100 ml) | 200/100 ml |
| PH | 6.0-9.0 |

### C. EXISTING WASTEWATER CHARACTERISTICS

East Grand Forks' existing wastewater characteristics would be classified as domestic and commercial/industrial wastewater. Domestic wastewater would be defined as that wastewater originating from residential sources. Commercial/industrial wastewater would be defined as that water used by business and industry. There is one major industrial user and that is American Crystal Sugar Company, although they use a substantial amount of water, the

DRAFT

majority of their wastewater does not enter the City's wastewater system but is stored in their own treatment ponds.

Flow measurements are determined by the City's Sewage Superintendent by recording the daily flows from the master lift station at the computer terminal at the city shop. The Master Lift Station pumps were last calibrated in September 2010. Graphs showing the monthly water and wastewater pumpage is shown in Exhibit 8.

Based on the monthly operations report for the last three years, the average $BOD_5$ and TSS is 123 ppm and 103 ppm, respectively.

## D. SANITARY SEWER SYSTEM

The sanitary sewer serving the City of East Grand Forks consists of 1 master lift station, 11 intermediate lift stations and approximately 187,000 linear feet of gravity sewer pipe ranging in size from 8" to 18". The sanitary sewer is constructed of vitrified clay pipe and PVC pipe. The average depth of the sanitary sewer is 10' to 12' with a maximum depth of 24'. The sanitary manholes are spaced approximately 400 linear feet apart and are either constructed of brick and mortar or of pre-cast concrete. The manholes in the older areas of the City are of brick and mortar construction while the sewer lines serving the newer subdivisions have pre-cast concrete manholes. Manhole covers in the old system have pick holes while the newer ones are watertight. Based on inspections after the 1997 flood videos, the existing sewage collection system is in relatively good condition. A map of the existing Sanitary Sewer System serving East Grand Forks can be found in Exhibit 5.

## E. STORM SEWER SYSTEM

The city has separated all sanitary sewer and storm sewers. In general, the storm sewer lies above the sanitary sewer and is in good condition (see Exhibit 5 for Existing Storm Sewer System).

## F. WATER CONSUMPTION RECORDS

The municipal water supply currently consists of a 4 million gallon water treatment plant. The raw water is obtained from the Red Lake River and pumped into the water plant by three pumps, two (2) 1400 gpm pumps and one (1) 2800 gpm pump. Each 1400 gpm pump is capable of supplying approximately 2,000,000 gallons per day to the plant and the 2800 gpm pump would be capable of supplying 4,000,000 gallons per day. The cities water storage system consists of a 1,000,000 gallon finished water reservoir at the water plant, a 2,000,000 gallon underground reservoir and two (2) 500,000 gallon elevated storage tanks. The distribution system consists of 6" to 16" cast iron, PVC and ACP watermains. The distribution system currently serves approximately 2,472 residential users & 262 industrial users (see Exhibit 5 for Existing East Grand Forks Watermain map). Based on water pumping records kept by the water plant supervisor, the average city water usage for the last three (3) years is 1,061,312 gallons per day with

DRAFT

peak days up to 1,846,000 gallons. Below is the water pumped from the water plant for 2008-2010. (See Exhibit 8)

| 2008 | | |
|---|---|---|
| **MONTH** | **MONTHLY TOTAL (million)** | **DAILY AVERAGE (mgpd)** |
| January | 29.69 | 0.958 |
| February | 28.69 | 1.025 |
| March | 30.37 | 0.980 |
| April | 30.54 | 1.018 |
| May | 40.43 | 1.304 |
| June | 36.67 | 1.222 |
| July | 34.76 | 1.121 |
| August | 31.00 | 1.223 |
| September | 37.85 | 1.262 |
| October | 30.99 | 1.000 |
| November | 27.98 | 0.933 |
| December | 32.37 | 1.044 |

| 2009 | | |
|---|---|---|
| **MONTH** | **MONTHLY TOTAL (million)** | **DAILY AVERAGE (mgpd)** |
| January | 31.27 | 1.009 |
| February | 28.13 | 1.004 |
| March | 28.83 | 0.930 |
| April | 28.23 | 0.941 |
| May | 31.60 | 1.019 |
| June | 38.21 | 1.274 |
| July | 34.49 | 1.113 |
| August | 36.85 | 1.188 |
| September | 31.10 | 1.037 |
| October | 28.18 | 0.907 |
| November | 26.37 | 0.879 |
| December | 28.41 | 0.916 |

DRAFT

| 2010 | | |
|---|---|---|
| **MONTH** | **MONTHLY TOTAL (million)** | **DAILY AVERAGE (mgpd)** |
| January | 29.08 | 0.938 |
| February | 24.74 | 0.884 |
| March | 27.66 | 0.892 |
| April | 28.33 | 0.944 |
| May | 33.42 | 1.078 |
| June | 32.09 | 1.069 |
| July | 31.06 | 1.002 |
| August | 38.14 | 1.230 |
| September | 28.35 | .945 |
| October | 28.40 | .916 |
| November | 26.26 | 0.875 |
| December | 27.00 | 0.871 |

| | |
|---|---|
| Total Gallons Used - 2010 | 354,515,190 Gallons |
| Average Used Per Month - 2210 | 29,542,933 Gallons |
| Maximum Month - May 2008 | 40,426,000 Gallons |
| Average Daily Usage - 2010 | 971,274 Gallons |

DRAFT

## V. DESIGN PARAMETERS

### A. UPGRADE STABILIZATION PONDS

#### 1. PROJECTED WASTEWATER FLOWS AND LOADINGS

Forecasting for future waste loads must take existing available data and past trends into account. The total present domestic sewage flow was based on the average usage for the last three years, including the commercial, industrial and residential contribution. Estimates of flows and loads for the year 2029 (twenty year planning period) will be based on existing wastewater flows, increases for future residential population and industrial and commercial user increases. It is anticipated that per capita sewage flows in the City of East Grand Forks will not increase.

## 2. DESIGN FLOWS

To determine the design flows for the proposed sewer improvements the existing flow rates from the monthly operation reports were used to deter mine average dry weather flow and wet weather flow.

| EXISTING FLOWS | | | |
|---|---|---|---|
| **MONTH** | **2008 (mgpd)** | **2009 (mgpd)** | **2010 (mgpd)** |
| January | 0.870 | 0.930 | 0.870 |
| February | 0.810 | 0.920 | 1.070 |
| March | 0.870 | 1.380 | 1.880 |
| April | 0.900 | 1.710 | 1.440 |
| May | 0.910 | 1.580 | 1.540 |
| June | 1.030 | 1.390 | 1.380 |
| July | 0.840 | 1.070 | 0.990 |
| August | 0.880 | 0.990 | 0.970 |
| September | 0.960 | 0.930 | 1.130 |
| October | 1.250 | 1.020 | 1.280 |
| November | 1.580 | 0.990 | 1.240 |
| December | 1.100 | 1.020 | 1.090 |

| | | | |
|---|---|---|---|
| Average Flow | 1.000 | 1.160 | 1.240 |
| 180 Day Average Wet Weather Flow (AWW) May-Oct. | .98 | 1.16 | 1.22 |
| Average Dry Weather (ADW) Flow for Sept. 2009 - Feb. 2010 = 0.98 mgd | | | |

The high flows for April 2009 and March 2010 are due to spring flooding..

The determination of design flows are based on the average 2008-2010 flows and a 20 year population increase of 2348 people.

DRAFT

| | | |
|---|---|---|
| Present Average Dry Weather Flow | = | 980,000 gal/day |
| Average I/I (Present AWW - Present ADW) | = | 240,000 gal/day |
| Population increase 2348 (100 gpcd) | = | 234,800 gal/day |
| Average flow from planned industrial increase | = | 100,000 gal/day |
| Estimated average flow from other further unidentified industry | = | 200,000 gal/day |
| Other miscellaneous increases | = | 50,000 gal/day |
| **Design AWWDF** | **=** | 1,804,800 gal/day |

## 3. DESIGN BASIS

**Population:** 8,712 - Current
11,060 - Projected 20 Years (2029)

**Flows:** Design Average Wet Weather Flow 1,804,800 gal./day
(210 Days)

**BOD:** 200 mg/l @ AWWF = 1.8048 mgal./day
BOD Loading = 200 mg/l x 8.34 lb/gal.
x 1.804 mgal.
= 3,010.4 lb/day

**TSS:** 250 mg/l @ AWWF = 1.804 mgal./day
TSS Loading = 250 mg/l x 8.34 lb/gal
X 1.804 mgal.
= 3,761.3 lb/day

## 4. POND SIZE REQUIRED

The primary cell pond design must incur a maximum BOD loading of 22lbs/acre/day.

Based on 210 day Average Wet Weather Flow

**Based on $BOD_5$:**

$$\text{Primary Cell} = \frac{3{,}010.4 \text{ lb/day}}{22 \text{ lb/acre/day}} = 136.8 \text{ Acres}$$

**Existing:**

Primary Cell

$$(240 \text{ Ac.})\left(\frac{43{,}560 \text{ Ft}^2}{\text{Acre}}\right)(3')\left(\frac{7.48 \text{ Gal.}}{\text{Ft}^3}\right)\left(\frac{1 \text{ MGAL}}{10^6 \text{ Gal.}}\right) = 234.6 \text{ MGAL}$$

DRAFT

Secondary Cell

$$(95\ \text{Ac.})\left(\frac{43{,}560\ \text{Ft}^2}{\text{Acre}}\right)(3')\left(\frac{7.48\ \text{Gal.}}{\text{Ft}^3}\right)\left(\frac{1\ \text{MGAL}}{10^6\ \text{Gal.}}\right) = 92.9\ \text{MGAL}$$

Total Storage = 234.6 MGAL + 92.9 MGAL = 327.5 MGAL

Total storage required based on 210 days of storage = (210 days) (1.804 mgal) = 378.8 Mgal

Total Storage 327.5 Mgal < storage required 378.8 Mgal

## 5. DESIGN RECOMMENDATIONS

**Raising Existing Operating Levels to 4 Feet:**

Primary Cell

$$(234\ \text{Ac.})\left(\frac{43{,}560\ \text{Ft}^2}{\text{Acre}}\right)(4')\left(\frac{7.48\ \text{Gal.}}{\text{Ft}^3}\right)\left(\frac{1\ \text{MGAL}}{10^6\ \text{Gal.}}\right) = 305.0\ \text{MGAL}$$

Secondary Cell

$$(95\ \text{Ac.})\left(\frac{43{,}560\ \text{Ft}^2}{\text{Acre}}\right)(4')\left(\frac{7.48\ \text{Gal.}}{\text{Ft}^3}\right)\left(\frac{1\ \text{MGAL}}{10^6\ \text{Gal.}}\right) = 123.8\ \text{MGAL}$$

Total Storage = 305.0 MGAL + 123.8 = 428.8 MGAL

**Cell Storage Required:**

210 Day AWW = 1,804,800 gal./day

(1.804 MGAL/Day)(210 Day) = 378.8 MGAL

By raising the dikes to a 4' operating level the ponds will hold 428.8 MGAL that is over and above the projected 20 year flow of 378.8 MGAL. Therefore, the existing dikes will need to be raised 2 feet.

$$\text{Cell Area Required (210 days storage)} = \frac{(210\ \text{days})\ (1{,}804{,}800\ \text{gpd})}{(7.48\ \text{gal/ft2})(4')\ (43{,}560\ \text{ft2/acre})}$$

= 290.8 acres

Primary Cell = 234 acres

Secondary Cell = 95 acres

Total = 329 acres > 290.8 acres required

DRAFT

## 6. DESIGN SUMMARY STABILIZATION PONDS

| | | |
|---|---|---|
| Design Flow (210 days) | = | 1,804,800 gal./day |
| $BOD_5$ | = | 3,010.4 Lbs./day (200 ppm) |
| Suspended Solids | = | 3761.3 Lbs./day (250 ppm) |
| BOD Pond Loading | = | 22 Lbs./acre (Primary Cell) |
| Storage | = | 210 days (All Cells) |
| Inner Dike Slopes (Max) | = | 4:1 with riprap |
| Oustide Slopes (Min) | = | 4:1 |
| Dikes Top Width | = | 10 ft. |
| Freeboard | = | 3 ft. |
| Liner | = | Clay |
| Fencing | = | Yes |
| Cells (with existing) | = | 3 |
| Exist. Cells Primary | = | 240 ac. |
| Exist Cells Secondary | = | 95 ac. |
| New Primary Cell | = | two 117 ac. |

**Effluent Limitations**

| | | |
|---|---|---|
| $BOD_5$ | = | 25 mg/l |
| TSS | = | 45 mg/l |
| Fecal Coliform | = | 200 MPW/100 ml |
| PH | = | 6 - 9 |

**Proposed Pond Construction**

Reconstruct existing dikes to a 4' operating level, which would result in raising the dikes 2 feet. This would also provide for the 3 feet of freeboard to the dikes.

The design of the stabilization pond will be based on the MPCA "Design Standards for Stabilization Ponds" and the 10 state standard "Recommended Standards For Wastewater Facilities, 1990 Edition".

## B. REGIONALIZATION

1. The City of Grand Forks has conducted a planning effort to address changes to the projected flows and loads to be treated by the Grand Forks wastewater treatment plant (GFWWTP). This memorandum is intended to summarize the anticipated changes and discuss the effects on the WWTP. (*This information from the City of Grand Forks and Advanced Engineering and Environmental Services. Also in Exhibit 11)*

   The City of Grand Forks, North Dakota and the City of East Grand Forks, Minnesota have entered into discussions regarding the feasibility of conveying the East Grand Forks wastewater flow to the GFWWTP. The two cities are situated on opposite sides of the Red River, which also serves as the boundary between North Dakota and Minnesota. This

DRAFT

technical memorandum is intended to generally describe the GFWWTP and discuss the technical feasibility of treating additional wastewater flow from East Grand Forks at the GFWWTP. Since the intent of this memorandum is solely to address treatment, the conveyance of wastewater and inter-state regulatory issues will not be discussed herein.

## 2. INFLUENT WASTEWATER CHANGES

East Grand Forks representatives have indicated that an interconnected wastewater system could be operational as early as 2013. Additionally, a Grand Forks Significant Industrial User's (SIU) flow and loads are also being modified due to changes in their industrial pretreatment processes. East Grand Forks has indicated that their planning period extends to 2025, which will be used as the future flow and load condition. East Grand Forks has further indicated that its existing wastewater lagoons will be converted to equalization basins to attenuate peak flows to a maximum of 1.2 million gallons per day (MGD). However, for planning purposes, a flow of 1.5 MGD was utilized in the process modeling performed to provide a conservative estimate of treatment performance. The existing and future predicted wastewater flows and loads modeled are presented in Table 1.

## 3. UNIT PROCESS DESCRIPTION

The GFWWTP unit processes are described below and presented in Figure 1. A site plan of the facility is presented in Figure 2. Note that the current operation of the GFWWTP includes bypassing approximately 20-percent of influent flow to the existing lagoon system. This practice is planned to be phased out in the future, and the process modeling is based on the full influent flow and load to the GFWWTP.

**Fine Screens –** Influent wastewater enters the Main Treatment Building and flows to two fine screens for initial pretreatment. The screenings are conveyed to two screenings washers and then conveyed to a dumpster for landfill disposal.

**Grit Removal –** The screened influent then enters a vortex grit chamber where grit is removed. The grit is pumped to a grit classifier and concentrator to remove organic material from the grit. The washed grit is conveyed to a dumpster for landfill disposal.

**Reactors –** Following screening and grit removal, the influent flow enters the Distribution Building where flow is distributed to aerated reactors. Sluice gates within the central Distribution Chamber allow the flow path to be manipulated between reactors. There are four existing reactors with space for two future reactors. An internal mixed liquor recycle (IMLR) pump is provided between the distribution chambers of Reactor No. 1 and

DRAFT

## Table 1 – Design GFWWTP Flows and Loads for GF-EGF Wastewater Interconnect

| Flow Source | | Projected Flow, MGD | | | | Projected Load, ppd | | |
|---|---|---|---|---|---|---|---|---|
| | Average Annual | Max Month | Peak Day | Peak Hour | Average Annual BOD | Max Month BOD | Average Annual TKN | Max Month TKN |
| | | | Current Condition | | | | | |
| Grand Forks Domestic | 5.12 | 6.3 | 9.27 | 14.24 | 9,598 | 12,359 | 1,501 | 1,932 |
| Grand Forks SIUs | 2 | 2.51 | 2.76 | 3.2 | 8,378 | 11,326 | 1,067 | 1,338 |
| East Grand Forks | - | - | - | - | - | - | - | - |
| Total | 7.12 | 8.81 | 12 | 17.44 | 17,976 | 23,685 | 2,567 | 3,271 |
| | | Future Design Condition (2025) | | | | | | |
| Grand Forks Domestic | 6.18 | 7.6 | 11.2 | 17.17 | 11,573 | 14,782 | 1,809 | 2,311 |
| Grand Forks SIUs | 2.5 | 2.77 | 3.14 | 3.7 | 7,957 | 13,484 | 5,360 | 6,414 |
| East Grand Forks | 1.5 | 1.5 | 1.5 | 1.5 | 2,752 | 2,752 | 500 | 500 |
| Total | 10.18 | 11.87 | 15.8 | 22.37 | 22,282 | 31,018 | 7,670 | 9,226 |

DRAFT

Reactor No. 6. The IMLR flow allows for nitrate recycle to create an anoxic (nitrate present, but oxygen absent) reactor if the aeration is shut off to the first reactor. Three aeration blowers provide air to the reactor tanks through an aeration manifold. The firm aeration capacity (one blower out of service) is 16,000 scfm. The mixed liquor suspended solids (MLSS) are recycled to the aeration reactors to provide the biomass that degrades the organics (biological oxygen demand, or BOD) to carbon dioxide and water and convert total Kjeldahl nitrogen (TKN) to nitrate. The biomass in the anoxic zone utilizes nitrate as a terminal electron acceptor in place of oxygen to oxidize BOD.

**Flocculation Tank –** Flow exits the reactors and moves to the flocculation basin, which is intended for chemical injection for phosphorus precipitation. This chemical injection is not currently practiced because there is currently no effluent phosphorus limit.

**MBF –** Following the Flocculation Tank, the flow is split between six microbubble floatation (MBF) units. There is space for two additional MBF units, but the equipment is currently not installed. The MBF units are very similar to the dissolved air floatation units that are used for solids thickening. A sidestream of water is saturated with air under pressure and then combined with the mixed liquor flow as it enters the MBF. The saturated air forms bubbles on the suspended solids, which cause the solids to float to the surface where the solids are skimmed to sludge storage hoppers (one hopper per pair of MBFs). The liquid flow is collected in an effluent flume that flows to the effluent pipe and the existing lagoon outfall.

**RAS/WAS –** The solids that are collected in the MBF hoppers are pumped as return activated sludge (RAS) and waste activated sludge (WAS). The RAS is returned to the influent of the reactors to recycle the biomass. The WAS is wasted to the existing lagoons where it is stored and undergoes further stabilization.

**Lagoons –** The existing lagoons comprised the wastewater treatment system prior to construction of the mechanical treatment facility. Lagoon No. 2 is currently used for a 20-percent bypass flow and seeded with WAS to improve treatment. The remaining lagoons are used for effluent storage to improve water quality by settling any remaining suspended solids and allowing for natural disinfection. The stored effluent is sampled and discharged to the Red River multiple times per year.

## 4. HYRAULIC CAPACITY CONSIDERATIONS

The hydraulic capacity of the GFWWTP is sufficient to handle the anticipated flows shown in Table 1 based on the hydraulic profile presented in Figure 3. The anticipated peak hour flow in 2025 is 22.37

DRAFT

MGD, and the GFWWTP is currently rated for a peak hourly flow of 30 MGD

## 5. TREATMENT CAPACITY CONSIDERATIONS

Wastewater process modeling was conducted using BioWIn™ software. Treatment scenarios were developed using the flows and loads presented in Table 1 and using wastewater temperatures of 20°C, 15°C, and 10°C for summer, average, and winter, respectively.

The following scenarios were modeled:

- Current average day flow at summer temperature
- Current average day flow at average temperature
- Current average day flow at winter temperature
- Current maximum month flow at summer temperature
- Current maximum month flow at average temperature
- Current maximum month flow at winter temperature
- Projected 2025 average day flow at summer temperature
- Projected 2025 average day flow at average temperature
- Projected 2025 average day flow at winter temperature
- Projected 2025 maximum month flow at summer temperature
- Projected 2025 maximum month flow at average temperature
- Projected 2025 maximum month flow at winter temperature

The concentrations of pollutants, salts, etc contained in an influent waste water stream must be determined for biological modeling purposes. The fractionalization defines constituent concentrations and also determines the form of key constituents (i.e. soluble BOD and insoluble BOD). Influent wastewater streams were fractionalized based on available data, future SIU estimates, and standard domestic fractionalizations. Model scenarios targeted an 11-day, 12-day, and 16-day solids retention time (SRT) for summer, average, and winter temperatures, respectively. Reactor No. 1 was modeled as an anoxic tank, while Reactor No.2 and Reactor No. 5 were modeled as aerobic tanks. Reactor No. 6 was assumed to be out of service to demonstrate redundancy. The existing chemical phosphorus removal system was not used in the model. The effluent parameters for the modeled scenarios are presented in Table 2.

DRAFT

Table 2 – GFWWTP BioWin Model Output

| Scenario | Effluent, mg/L | | | | | Process Air, scfm | | |
|---|---|---|---|---|---|---|---|---|
| | BOD | Ammonia | Nitrate | Total Phosphorus | WAS Ppd | Tank 2 | Tank 5 | Total |
| Current Annual Average, Summer Temp | 3.3 | 0.26 | 33.40 | 7.56 | 29,213 | 2,319 | 1,281 | 3,600 |
| Current Annual Average, Average Temp | 3.8 | 0.43 | 33.84 | 7.52 | 29,256 | 2,184 | 1,373 | 3,557 |
| Current Annual Average, Winter Temp | 4.6 | 0.68 | 33.83 | 7.85 | 28,356 | 2,124 | 1,475 | 3,599 |
| Current Max Month, Summer Temp | 5.2 | 0.30 | 23.88 | 6.60 | 51,232 | 3,219 | 2,049 | 5,268 |
| Current Max Month, Average Temp | 5.9 | 0.47 | 24.36 | 6.58 | 51,149 | 3,069 | 2,134 | 5,203 |
| Current Max Month, Winter Temp | 7.6 | 0.72 | 24.51 | 7.12 | 49,042 | 3,026 | 2,266 | 5,292 |
| 2025 Annual Average, Summer Temp | 4.4 | 0.14 | 24.04 | 17.21 | 28,679 | 7,132 | 2,264 | 9,396 |
| 2025 Annual Average, Average Temp | 5.0 | 0.28 | 26.35 | 17.39 | 28,813 | 6,465 | 2,927 | 9,392 |
| 2025 Annual Average, Winter Temp | 6.2 | 0.49 | 26.55 | 17.68 | 27,580 | 5,951 | 3,421 | 9,372 |
| 2025 Max Month, Summer Temp | 6.1 | 0.26 | 24.15 | 13.09 | 41,294 | 9,000 | 3,018 | 12,018 |
| 2025 Max Month, Average Temp | 7.2 | 0.26 | 24.24 | 12.60 | 42,196 | 8,392 | 3,751 | 12,143 |
| 2025 Max Month, Winter Temp | 9.1 | 0.46 | 23.61 | 14.43 | 39,584 | 7,741 | 4,405 | 12,146 |

DRAFT

The model output indicates that the existing treatment system will meet the current effluent requirements while maintaining redundancy on the reactors and the blowers.

### 6. CONCLUSIONS AND RECOMMENDATIONS

Considering the information provided to date on the proposed wastewater interconnect, it is fully anticipated based on the modeling performed thus far that the GFWWTP has existing capacity to accept the proposed waste water flows and loads from East Grand Forks, including the consideration of the anticipated changes to SIUs. As such, AE2S recommends continuation of feasibility evaluations for both treatment and the other required components of the proposed GF-EGF Wastewater Interconnect system.

## VI. DISCUSSION OF WASTEWATER TREATMENT ALTERNATIVES

### A. PA 1:

The following alternate treatment systems were considered:

#### 1. DO NOTHING

This option would leave the existing stabilization pond as is. This option is not acceptable because MPCA has demonstrated that the ponds have a seepage problem which must be corrected.

#### 2. CONSTRUCT MECHANICAL TREATMENT PLANT

Although there are several different sewage treatment plants which may be economically feasible to construct, the additional cost of operating a mechanical treatment plant for a City such as East Grand Forks would not be economically feasible compared to the costs of operating stabilization ponds. A full time operator(s) would be required and the overall cost of operating a new system would make the system completely unfeasible.

#### 3. UPGRADE EXISTING STABILIZATION PONDS

This alternative provides an effective solution to the current wastewater treatment problems. In order to meet MPCA requirements, the following improvements to the pond system are required: raise dike to a 4 foot operating level, reconstruct inside dike slope with clay and riprap, construct control structures.

However, this alternative has some volatility, such as operating the stabilization ponds during construction and the condition of the pond bottom. If the pond bottom is wetter than anticipated, the construction cost could go up significantly.

#### 4. REGIONALIZATION

This alternative involves the construction of a lift station and forcemain across the Red River of the North to a meter manhole in Grand Forks, North Dakota. Once the wastewater enters the Grand Forks system, it would be pumped through their infrastructure, ultimately to the wastewater treatment plant. The City of Grand Forks would then treat the

DRAFT

wastewater as they do their own and discharge according to all rules and regulations.

This alternative would also include piping from the stabilization ponds to the lift and upgrades to the inlet, transfer and discharge structures.

This alternative would also have a future project involving the decommissioning of the stabilization ponds and the construction of an equalization pond. It is anticipated that this project would be constructed in 2020.

This alternative provides the most cost effective solution to the current wastewater treatment problem.

**Cost Effective Analysis - PA 1:**

1) Do Nothing - Not Feasible.

2) Construct Mechanical Treatment Plant (Based on 7 Day Peak Flow)

| | |
|---|---|
| Estimated Construction Cost | $10,288,560.00 |
| Land Cost | $600,000.00 |
| Legal & Administration, Contingencies | $1,240,000.00 |
| Design, Construction Engineering & Startup Costs | $1,851,940.00 |
| Subtotal Estimated Project Cost | $13,980,500.00 |
| O & M ($140,000 X 12.462) | $1,744,680.00 |
| Plant Salvage ($1,500,000 X .37689) | -565,335.00 |
| Land Salvage ($10,000 X .37689) | -3,769.00 |
| Total (with Project Cost) | $15,156,076.00 |
| Equivalent Uniform Annual Cost ($15,156,076.00 X .08024) | $1,216,123.54 |

3) Upgrade Existing Stabilization Ponds by Dividing Primary Cell and Raising Existing Dikes

| | |
|---|---|
| Estimated Construction Cost | $8,501,500.00 |
| Land Cost | $0.00 |
| Legal & Administration, Contingencies | $1,275,225.00 |
| Design, Construction Engineering & Startup Costs | $1,275,225.00 |
| Subtotal Estimated Project Cost | $11,051,950.00 |

DRAFT

| | |
|---|---|
| O & M ($30,000 X 12.462) | $373,860.00 |
| Plant Salvage ($936,800 X .37689) | -353,070.00 |
| Land Salvage ($144,000 X .37689) | -54,272.00 |
| Total (with Project Cost) | $11,018,468.00 |
| Equivalent Uniform Annual Cost ($11,018468.00 X .08024) | $841,122.00 |

4. Construct Lift Station, Forcemain

| | |
|---|---|
| Estimated Construction Cost (EGF) | $2,590,672.00 |
| Land Cost | $50,000.00 |
| Legal & Administration, Contingencies | $396,100.00 |
| Design, Construction Engineering & Startup Costs | $396,100.00 |
| Subtotal Estimated Project Cost | $3,432,872.00 |
| O & M (GF) | $447,721.00 |
| Plant Salvage ($936,800 X .37689) | -753,780.00 |
| Future Cost | $4,000,000.00 |
| Total (with Project Cost) | $7,126,813.00 |
| Equivalent Uniform Annual Cost ($11,018468.00 X .08024) | $571,855.00 |

Based on the above analysis, the most effective alternate from a cost standpoint, is regionalization with the City of Grand Forks, ND.

## B. ALTERNATE COST ANALYSIS BETWEEN UPGRADE PONDS AND REGIONALIZATION

### 1. UPGRADE EXISTING STABILIZATION PONDS

The Cities of East Grand Forks, Minnesota and Grand Forks, North Dakota started discussing the possibility of regionalization in early 2010. In March, 2010, a powerpoint presentation was given to the East Grand Forks City Council. In this presentation, the proposed net increase per month for a homeowner that uses 6,000 gallons of water a month was

DRAFT

$13.00. See Attached Table 1 - Wasterwater Rate Summary and Table 2 - Sewage Fund Proforma)

The two cities continued to pursue the proposed interconnect after the March 2010, powerpoint presentation. In January, 2011, an updated powerpoint presentation was given to both City Councils. In this presentation, the proposed projects were identified, the lift station, forcemain and other infrastructure work in East Grand Forks, the Cost of Service Analysis (COSA – See Exhibit 10) and the future decommissioning of the existing stabilization ponds. The proposed rate increase is $11.00 per month for a homeowner that uses 6,000 gallons of water a month (See Attached Table 3 – Wastewater Rate Summary and Table 4 – Sewage Fund Proforma)

Therefore, based on the above alternate cost analysis, again the most cost effective alternate is regionalization with the City of Grand Forks, North Dakota.

DRAFT

Wastewater Rate Summary

| | | 0<br>Current | 1<br>2010 | 2<br>2011 | 3<br>2012 | 4<br>2013 | 5<br>2014 | 6<br>2015 |
|---|---|---|---|---|---|---|---|---|
| A. | **Meter Charge (service)** | | | | | | | |
| | Current montly rate | $10.00 | $10.00 | $10.00 | $15.00 | $15.00 | $15.00 | $15.00 |
| | Estimated annual revenue | $336,938 | $336,938 | $336,938 | $505,407 | $505,407 | $505,407 | $505,407 |
| | Each $.50 increase generates annully | $18,394 | $0 | $0 | $168,469 | $0 | $0 | $0 |
| B. | **Residential Usage Charge (commodity)** | | | | | | | |
| | Rate as percent of water rate | 50% | 50% | 50% | 75% | 75% | 75% | 75% |
| | Current charge | $2.38 | $2.43 | $2.43 | $3.64 | $3.64 | $3.64 | $3.64 |
| | Estimate annual revenue | $268,375 | $274,025 | $274,025 | $411,038 | $411,038 | $411,038 | $411,038 |
| | Each 10% increase of water rate | $55,709 | $5,650 | $0 | $137,013 | $0 | $0 | $0 |
| C. | **Apartment Charge** | | | | | | | |
| | Current monthly rate | $10.00 | $10.00 | $10.00 | $12.00 | $12.00 | $12.00 | $12.00 |
| | Estimated annual revenue | $115,920 | $115,920 | $115,920 | $139,104 | $139,104 | $139,104 | $139,104 |
| | Each $.50 increase generates annully | $5,796 | $0 | $0 | $23,184 | $0 | $0 | $0 |
| D. | **Commercial Usage Charge (commodity)** | | | | | | | |
| | Percentage of water rate: | 75% | 75% | 75% | 75% | 75% | 75% | 75% |
| | Current charge | $3.33 | $3.64 | $3.64 | $3.64 | $3.64 | $3.64 | $3.64 |
| | Estimate annual revenue | $241,425 | $263,719 | $263,719 | $263,719 | $263,719 | $263,719 | $263,719 |
| | Each 10% increase of water rate | $55,709 | $22,294 | $0 | $0 | $0 | $0 | $0 |
| | Estimated Annual Revenue | $962,658 | $990,601 | $990,601 | $1,319,267 | $1,319,267 | $1,319,267 | $1,319,267 |
| | Homeowner pay monthly on gallons: | | | | | | | |
| | 4,000 | $20 | $20 | $20 | $30 | $30 | $30 | $30 |
| | 6,000 | $24 | $25 | $25 | $37 | $37 | $37 | $37 |
| | 8,000 | $29 | $29 | $29 | $44 | $44 | $44 | $44 |
| | 10,000 | $34 | $34 | $34 | $51 | $51 | $51 | $51 |

DRAFT

Table 1

City of East Grand Forks, Minnesota
**Sewage Fund**
Schedule of Operating Income (Loss) and Cash Flow

| | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 |
|---|---|---|---|---|---|---|
| **Operating Revenues:** | | | | | | |
| Sewage Charges | $1,319,267 | $1,319,267 | $1,319,267 | $990,601 | $990,601 | $962,658 |
| Other Revenue | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Total Operating Revenues | 1,322,267 | 1,322,267 | 1,322,267 | 993,601 | 993,601 | 965,658 |
| **Operating Expenses:** | | | | | | |
| Cost of Sales | 441,596 | 428,734 | 416,247 | 404,123 | 392,352 | 380,924 |
| Administration | 74,194 | 72,033 | 69,935 | 67,898 | 65,920 | 64,000 |
| Depreciation | 539,000 | 539,000 | 539,000 | 539,000 | 329,000 | 329,000 |
| Total Operating Expenses | 1,054,790 | 1,039,767 | 1,025,182 | 1,011,021 | 787,272 | 773,924 |
| Operating Income (Loss) | 267,477 | 282,500 | 297,085 | (17,420) | 206,329 | 191,734 |
| **Cash Flow:** | | | | | | |
| Operating income (loss) | 267,477 | 282,500 | 297,085 | (17,420) | 206,329 | 191,734 |
| Add: | | | | | | |
| Depreciation | 539,000 | 539,000 | 539,000 | 539,000 | 329,000 | 329,000 |
| Debt issuance | | | | | 10,500,000 | |
| Subtract: | | | | | | |
| Capital outlay | | | | | (10,500,000) | |
| Debt payment | (766,000) | (766,000) | (766,000) | (766,000) | (436,000) | (268,000) |
| Net cash flow | 40,477 | 55,500 | 70,085 | (244,420) | 99,329 | 252,734 |
| Beginning cash | 1,455,161 | 1,399,662 | 1,329,577 | 1,573,996 | 1,474,667 | 1,221,933 |
| Ending cash | $ 1,495,638 | $ 1,455,161 | $ 1,399,662 | $ 1,329,577 | $ 1,573,996 | $ 1,474,667 |

DRAFT

Table 2

Wastewater Rate Summary
01/18/11

| | | 0 Current | 1 2010 | 2 2011 | 3 2012 | 4 2013 | 5 2014 | 6 2015 |
|---|---|---|---|---|---|---|---|---|
| A. | **Meter Charge (service)** | | | | | | | |
| | Current montly rate | $10.00 | $10.00 | $10.00 | $12.00 | $12.00 | $20.00 | $20.00 |
| | Estimated annual revenue | $336,938 | $336,938 | $336,938 | $404,325 | $404,325 | $673,875 | $673,875 |
| | Each $.50 increase generates annully | $18,394 | $0 | $0 | $67,388 | $0 | $269,550 | $0 |
| B. | **Residential Usage Charge (commodity)** | | | | | | | |
| | Rate as percent of water rate | 50% | 50% | 50% | 50% | 50% | 50% | 50% |
| | Current charge | $2.38 | $2.43 | $2.48 | $2.48 | $2.48 | $2.48 | $2.48 |
| | Estimate annual revenue | $274,025 | $274,025 | $279,675 | $279,675 | $279,675 | $279,675 | $279,675 |
| | Each 10% increase of water rate | $55,709 | $0 | $5,650 | $0 | $0 | $0 | $0 |
| C. | **Apartment Charge** | | | | | | | |
| | Current monthly rate | $10.00 | $10.00 | $10.00 | $12.00 | $12.00 | $20.00 | $20.00 |
| | Estimated annual revenue | $115,920 | $115,920 | $115,920 | $139,104 | $139,104 | $231,840 | $231,840 |
| | Each $.50 increase generates annully | $5,796 | $0 | $0 | $23,184 | $0 | $92,736 | $0 |
| D. | **Commercial Usage Charge (commodity)** | | | | | | | |
| | Percentage of water rate: | 75% | 75% | 75% | 75% | 75% | 75% | 75% |
| | Current charge | $3.33 | $3.64 | $3.71 | $3.71 | $3.71 | $3.71 | $3.71 |
| | Estimate annual revenue | $263,719 | $263,719 | $269,156 | $269,156 | $269,156 | $269,156 | $269,156 |
| | Each 10% increase of water rate | $55,709 | $0 | $5,438 | $0 | $0 | $0 | $0 |
| | Estimated Annual Revenue | $990,602 | $990,601 | $1,001,689 | $1,092,260 | $1,092,260 | $1,454,547 | $1,454,547 |
| | Homeowner pay monthly on gallons: | | | | | | | |
| | 4,000 | $20 | $20 | $20 | $22 | $22 | $30 | $30 |
| | 6,000 | $24 | $25 | $25 | $27 | $27 | $35 | $35 |
| | 8,000 | $29 | $29 | $30 | $32 | $32 | $40 | $40 |
| | 10,000 | $34 | $34 | $35 | $37 | $37 | $45 | $45 |

DRAFT

Table 3

City of East Grand Forks, Minnesota
**Sewage Fund**
Schedule of Operating Income (Loss) and Cash Flow

| | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 |
|---|---|---|---|---|---|---|---|---|
| **Operating Revenues:** | | | | | | | | |
| Sewage Charges | $1,454,547 | $1,454,547 | $1,454,547 | $1,092,260 | $1,092,260 | $1,001,689 | $990,601 | $990,602 |
| Other Revenue | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Total Operating Revenues | 1,457,547 | 1,457,547 | 1,457,547 | 1,095,260 | 1,095,260 | 1,004,689 | 993,601 | 993,602 |
| **Operating Expenses:** | | | | | | | | |
| Cost of Sales | 468,489 | 454,844 | 441,596 | 428,734 | 416,247 | 404,123 | 392,352 | 380,924 |
| Cost of Sales-coop agrmnt | 421,000 | 421,000 | 421,000 | 210,500 | | | | |
| Administration | 78,713 | 76,420 | 74,194 | 72,033 | 69,935 | 67,898 | 65,920 | 64,000 |
| Depreciation | 471,000 | 471,000 | 391,000 | 391,000 | 391,000 | 329,000 | 329,000 | 249,000 |
| Total Operating Expenses | 1,439,202 | 1,423,264 | 1,327,790 | 1,102,267 | 877,182 | 801,021 | 787,272 | 693,924 |
| Operating Income (Loss) | 18,345 | 34,283 | 129,757 | (7,007) | 218,078 | 203,668 | 206,329 | 299,678 |
| **Cash Flow:** | | | | | | | | |
| Operating income (loss) | 18,345 | 34,283 | 129,757 | (7,007) | 218,078 | 203,668 | 206,329 | 299,678 |
| Add: | | | | | | | | |
| Depreciation | 471,000 | 471,000 | 391,000 | 391,000 | 391,000 | 329,000 | 329,000 | 249,000 |
| Debt issuance | | 4,000,000 | | | | 3,100,000 | | |
| Subtract: | | | | | | | | |
| Capital outlay | | (4,000,000) | | | | (3,100,000) | | |
| Debt payment | (630,237) | (630,237) | (426,160) | (426,160) | (426,160) | (268,000) | (268,000) | (268,000) |
| Net cash flow | (140,892) | (124,954) | 94,597 | (42,167) | 182,918 | 264,668 | 267,329 | 280,678 |
| Beginning cash | 2,145,003 | 2,269,957 | 2,175,360 | 2,217,527 | 2,034,608 | 1,769,940 | 1,502,611 | 1,221,933 |
| Ending cash | $ 2,004,110 | $ 2,145,003 | $ 2,269,957 | $ 2,175,360 | $ 2,217,527 | $ 2,034,608 | $ 1,769,940 | $ 1,502,611 |

DRAFT

Table 4

## VII. EVALUATION AND SELECTION OF ALTERNATE

### A. PA 1:

Alternate A (Do Nothing) is not acceptable, because MPCA will require a water balance to check for leakage and MPCA is pretty sure of the outcome, which will lead to upgrading the stabilization ponds.

Alternate B (Mechanical Treatment Plant) is uneconomical because of the extremely high yearly operation and maintenance cost and the City's investment in its existing treatment system. This option is not acceptable to the City of East Grand Forks.

Alternate C (Construct dike to divide existing primary cell and upgrade existing cells). This alternate appears to be effective, however has volatility to the construction aspect.

Alternate D (Regionalization) appears to be the most cost effective and acceptable to the City of East Grand Forks.

## VIII. DESCRIPTION OF PROPOSED ALTERNATE

### A. PA 1:

The proposed interconnect with the City of Grand Forks, North Dakota would consist of the following major construction items:

Lift Station, forcemain, structure repair

## IX. PUBLIC PARTICIPATION

The City of East Grand Forks will conduct a public hearing (  ) for this facility plan. The alternatives in design and project costs will be discussed and comments from the public will be forwarded.

DRAFT

## X. COST ESTIMATE (PHASE 1)

**PA 1**

| ITEM | QUANTITY | | PRICE | TOTAL |
|---|---|---|---|---|
| Mobilization | 1 | LS | $50,000.00 | $50,000.00 |
| 16” Forcemain | 9000 | LF | $65.00 | $585,000.00 |
| Ductile Iron Fittings | 2112 | LBS | $6.00 | $12,672.00 |
| 24” Steel Casing | 160 | LF | $300.00 | $48,000.00 |
| Directional Bore 16” Forcemain | 400 | LF | $300.00 | $120,000.00 |
| Lift Station Construction | 1 | LS | $1,500,000.00 | $1,500,000.00 |
| Structures, Fencing | 1 | LS | $200,000.00 | $200,000.00 |
| Meter Manhole | 1 | LS | $50,000.00 | $50,000.00 |
| Misc. Piping | 1 | LS | $50,000.00 | $50,000.00 |
| Landscaping | 1 | LS | $25,000.00 | $25,000.00 |
| Subtotal | | | | $2,590,672.00 |
| EALC (25%) | | | | $647,668.00 |
| **TOTAL PHASE 1** | | | | $3,238,340.00 |

DRAFT

## XI. PROPOSED PROJECT FUNDING

The City of East Grand Forks has submitted for placement on the Project Priority List (PPL) for funding from the Water Pollution Control State Revolving Fund (SRF). This funding source is jointly administered by the Minnesota Pollution Control Agency (MPCA) and the Public Facilities Authority (PFA). Projects seeking Rural Development grant/loan funds must also be placed on the MPCA’s Project Priority List. Therefore, the City will fund this project through the use of grant/loan funds and from increases to the sewage rate.

## XII. MINNESOTA POLLUTION CONTROL AGENCY (MPCA) FORMS

Refer to Exhibit 12 to find the following items:

A. MPCA Design Flow & Loading Determination

B. Environmental Information Worksheet (EIW)

C. Facilities Plan Submittal Checklist

D. State Environmental Review Process Mailing List Form

E. Facilities Plan for Wastewater Treatment Systems

F. Project Maps

# Desktop Water Balance
# Two Cell System

**City of East Grand Forks**

| Month | Influent MG | Effluent MG | Rain Inches | Snow Inches | Pond Depths (in feet) * Primary | Secondary |
|---|---|---|---|---|---|---|
| January | 27.92 | | | 17.16 | 3.58 | 4.83 |
| February | 23.45 | | | | 3.92 | 4.83 |
| March | 58.31 | | 1.15 | 6.92 | 4.08 | 4.83 |
| April | 43.25 | | 1.98 | | 4.5 | 4.83 |
| May | 46.11 | | 7.95 | | 5 | 4.75 |
| June | 41.93 | | 2.89 | | 3.5 | 6 |
| July | 30.7 | | 3.38 | | 3.92 | 5.75 |
| August | 29.93 | | 3.2 | | 3.42 | 5.75 |
| September | 33.87 | | 4.92 | | 3.67 | 5.42 |
| October | 39.73 | 90.38 | 1.47 | | 3.75 | 2.5 |
| November | 38.29 | | 0.13 | 3.12 | 3.17 | 5.42 |
| December | 33.74 | | | 4.08 | 3.42 | 5.58 |
| **TOTAL** | **447.23** | **90.38** | **27.07** | **31.28** | **-0.16** | **0.75** |

*** Pond depths are first monthly reading (except last month which is last monthly reading)**

## Water Balance Calculations

| | | |
|---|---|---|
| Total Influent | 447.23 | MG |
| Total Effluent | 90.38 | MG |
| Inf. - Effuent | 356.85 | MG |

| Adjust pond depths | | | | Acres | Acre Feet | Adjust-Gal. | Adjust-MG |
|---|---|---|---|---|---|---|---|
| Primary | -0.16 | feet | | 240 | -38.4 | -12512678.4 | -12.513 |
| Secondary | 0.75 | feet | | 95 | 71.25 | 23216883.75 | 23.217 |
| | | | Total | 335 | 32.85 | 10704205.35 | 10.704 |

| | | | |
|---|---|---|---|
| Inf. - Effluent | 356.85 | MG | |
| Total Acres | 335 | Acres | |
| Total Days | 365 | Days | |
| Adjusted MG. | 10.70421 | MG | |
| Adjusted Influent - Effluent | | | 346.1457947 MG |

**Average Wet Weather Design Flow : Gallons/Day** 1,113,333

**Average influent flow during review period :** 1,225,288 **Gallons/day**

## Estimated Seepage Rate

| | |
|---|---|
| 0.002831 | MG/Acre/Day |
| 2831 | Gallons/Acre/Day |

**Date completed: 2/16/11**

**Directions**

Input numbers- yellow box

Output numbers -green box

Minnesota Pollution Control Agency

**12/1/2009**

# Request for Council Action

Date: February 15, 2011

To: East Grand Forks City Council, Mayor Lynn Stauss, President Dick Grassel, Council Vice President Craig Buckalew, Council Members: Marc Demers, Henry Tweten, Wayne Gregoire, Greg Leigh, and Mike Pokrzywinski.

Cc: File

From: Economic Development Housing Authority

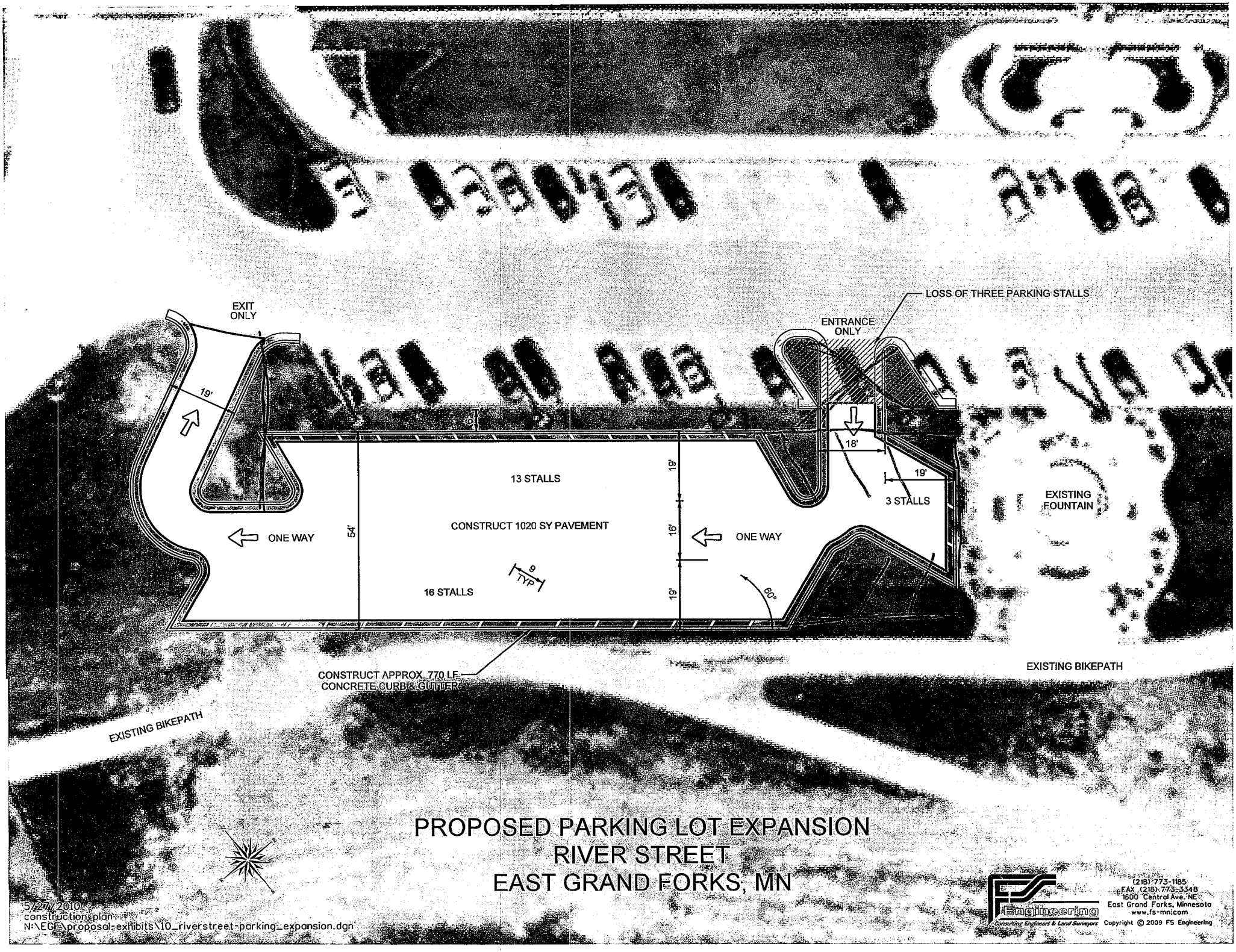
RE: Consider development of additional parking downtown adjacent to the Boardwalk area.

---

In recent years we have discussed the parking situation in the downtown area. We have determined that there is ample parking per say but not enough convenient parking to meet the needs of the growing popularity of the social and business climate. In a small group discussion we have put together a proposal to create more convenient parking particular to the Boardwalk businesses in an attempt to make the area more accessible and successful. We have also identified Fund 434, Downtown Development Fund with a balance of $250,000 as a source of funds available to the project. Project costs have been assessed and in order to move forward we need to determine feasibility and affordability. A copy of the plan and preliminary budget is attached for discussion.

Any question prior to the meeting please call me at 773-2371.

H:\jim\RCA-Template Parking lot.doc




# PROPOSED PARKING LOT EXPANSION
## RIVER STREET
## EAST GRAND FORKS, MN

5/27/2010
construction plan
N:\EGF\proposal-exhibits\10_riverstreet-parking_expansion.dgn

FS Engineering
Consulting Engineers & Land Surveyors
(218) 773-1185
FAX (218) 773-3348
1600 Central Ave. NE
East Grand Forks, Minnesota
www.fs-mn.com
Copyright © 2009 FS Engineering

Estimate of Cost
Parking Lot Expansion
River Street
East Grand Forks, Minnesota

| Description | Quantity | Unit | Unit Price | Total |
|---|---|---|---|---|
| Remove Pavement | 100 | SY | $15.00 | $1,500.00 |
| Remove Concrete Curb & Gutter | 90 | LF | $10.00 | $900.00 |
| Common Excavation | 420 | CY | $10.00 | $4,200.00 |
| Aggregate Base Coarse | 200 | CY | $20.00 | $4,000.00 |
| Concrete Curb & Gutter | 771 | LF | $20.00 | $15,420.00 |
| 7" Concrete Pavement | 1016 | SY | $50.00 | $50,800.00 |
| Striping | 638 | LF | $3.00 | $1,914.00 |
| Seeding | 650 | SY | $4.00 | $2,600.00 |
| | | | | |
| Subtotal | | | | $81,334.00 |
| EALC | | | | $20,333.50 |
| **Total** | | | | **$101,667.50** |

# *VALUATIONS AND REVENUE REPORT-2010*

# *CITY OF EAST GRAND FORKS*

# *BUILDING INSPECTIONS*

---

*BUILDING OFFICIAL*

*TOM SPOOR*

*PERMIT TECHNICIAN*

*JENNIFER BUSHEE*

---

# CITY OF EAST GRAND FORKS CONSTRUCTION RECORD 2010

| | NEW | | | | | | REPAIR | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DWELLING SINGLE (1&2 Family) #PERMITS | DWELLING MULTIPLE #PERMITS UNITS | GARAGE #PERMITS | COMM'L #PERMITS | OTHER #PERMITS | PUBLIC #PERMITS | DWELLING #PERMITS | COMM'L #PERMITS | PUBLIC #PERMITS | OTHER #PERMITS | MOVE SIDEWALK CURB CUT #PERMITS | SIGN #PERMITS | FENCE #PERMITS | **TOTAL VALUE** | **TOTAL** #PERMITS **TOTAL** UNITS |
| Jan | | | | | | | $ 77,000<br>11 | $ 29,000<br>1 | | | | | | $ 106,000 | 12 |
| Feb | | | | | | | $ 25,000<br>5 | $ 4,000<br>1 | | $ 4,000<br>1 | | $ 1,000<br>1 | | $ 34,000 | 8 |
| Mar | | | | | | | $ 43,000<br>9 | $ 90,000<br>3 | | | | | | $ 133,000 | 12 |
| Apr | $ 1,053,000.00<br>5 | | $ 50,000.00<br>2 | | | | $ 85,500<br>18 | $ 114,000<br>4 | | $ 1,000<br>1 | 3 | $ 7,000<br>1 | $ 11,000<br>5 | $1,321,500 | 39 |
| May | | | | $ 320,000<br>1 | | | $ 71,500<br>15 | $1,000<br>1 | | | 5 | $ 1,000<br>1 | $3,000<br>2 | $ 396,500 | 25 |
| Jun | | | $ 65,000<br>2 | | | | $ 143,000<br>28 | $ 2,500<br>1 | | | 2 | $ 2,000<br>1 | $ 2,000<br>2 | $ 214,500 | 36 |
| Jul | $ 658,000<br>3 | | $ 63,000<br>3 | | | | $254,000<br>44 | $59,000<br>2 | | 1000<br>1 | | | $4,000<br>1 | $1,039,000 | 54 |
| Aug | | | $ 31,000<br>1 | | | | $ 337,000<br>72 | $ 67,000<br>3 | | | 2 | | $ 11,000<br>4 | $ 446,000 | 82 |
| Sept | | | $ 80,000<br>3 | | | | $ 332,000<br>71 | $ 150,000<br>1 | | | 2 | | $ 10,000<br>2 | $ 572,000 | 79 |
| Oct | $ 595,000<br>3 | | $ 19,000<br>1 | | | | $ 256,500<br>46 | $ 452,000<br>3 | | | | $ 8,000<br>1 | | $1,330,500 | 54 |
| Nov | $ 227,000<br>1 | | $ 12,000<br>1 | | | | $ 80,000<br>21 | $ 38,000<br>2 | | | | $ 19,000<br>2 | $ 36,000<br>1 | $ 412,000 | 28 |
| Dec | | | | | | | $ 86,500<br>20 | $ 55,000<br>4 | | | | | | $ 141,500 | 24 |
| **TOTAL VALUE** | $ 2,533,000 | $ - | $ 320,000 | $ 320,000 | $ - | $ - | $ 1,791,000 | $ 1,061,500 | $ - | $ 6,000 | $ - | $ 38,000 | $ 77,000 | $6,146,500 | $ 453 |
| TOTAL | 12 | 0 | 13 | 1 | 0 | 0 | 360 | 26 | 0 | 3 | 14 | 7 | 17 | 0 | |
| Misc. Info | | | | | | | | | | | | | | | |

**Comparisons to Revenue Year 2010**

| Type | Permits | Value | % |
|---|---|---|---|
| Bldg | +111 | + $4,157 | +7.5% |
| Plbg | -11 | -$460 | -24% |
| Excavation | -29 | -$1,305 | -37% |
| Rental | -6 | -$3,519 | -29% |
| Mechanical | -4 | -$229 | -14% |
| Other | -1 | -$90 | -100% |
| Total Permits | -60 | -$1,446 | -1.8% |

*2010 was another down year for construction. However, we are 60 permits ahead of 2009.

*In 2010 total revenue was a net decrease of $1,446 amounting to 1.8% decrease from 2009.

*Total Revenue for 2010 was $76,851 and our budget was $145,440. With the revenue income the cost of running the Department was 47% of the budget, revenue 57%.

*The average revenue for the Department in the last 10 years is $81,180. In 2010 we were $59,400, putting us at approximately 27% down from the 10 year average.

Respectively submitted:

Tom Spoor

Building Official

City of East Grand Forks

**Comparisons to Value Year 2010**

| New | Permits | Value | % |
|---|---|---|---|
| Dwell (1&2) | Same | + $183,000 | + 8% |
| Garages | + 7 | + $150,000 | + 88% |
| Commercial | - 3 | - $169,000 | - 34% |
| Public | -1 | -$330,000 | -100% |

| Repair | | | |
|---|---|---|---|
| Dwell (1&2) | + 108 | + $431,000 | + 32% |
| Commercial | + 5 | + $1,461,975 | + 57% |
| Misc | + 1 | - $6,000 | - 50% |
| Sign | Same | - $20,000 | - 34% |
| Fence | -7 | +$24,000 | +45% |
| Totals | + 110 | - $1,198,975 | -16% |

# Request for Council Action

Date: 2/15/11

To: East Grand Forks City Council, Mayor Lynn Stauss, President Dick Grassel, Council Vice President Henry Tweten, Council Members: Marc Demers, Craig Buckalew, Wayne Gregoire, Greg Leigh, and Mike Pokrzywinski.

Cc: File

From: John Wachter

RE: Airborne Mosquito Spraying 2011

---

Background and supporting documentation of request:

Airborne Custom Spaying will provide aerial mosquito spraying for 855 acres of city property along the rivers. The cost will be 2.80/acre. This equates to $2,394 per event. This is a $.15/acre increase over 2010.

This service was not used during the 2010 mosquito spraying season.

Recommendation:

Approve agreement for Airborne Custom Spraying to provide aerial spraying.

# AIRBORNE CUSTOM SPRAYING

HALSTAD MN

MOSQUITO CONTROL • CROP SPRAYING • CANKER WORM CONTROL

February 3, 2011

Stuart Kovar
City of East Grand Forks
1001 2nd St NE
East Grand Forks, MN 56721

RE: Mosquito Control for 2011

Dear Valued Client:

Airborne Custom Spraying of Halstad, Minnesota, continues its tradition of providing aerial mosquito control service. Our procedure is safe, cost-effective and specifically designed for precise application in populated areas where people are concerned about controlling the nuisance and diseases (West Nile Virus) associated with mosquitoes.

The aircraft, equipment and techniques used by Airborne Custom Spraying are the most current and sophisticated available, meeting all Federal Aviation Administration (FAA) and Minnesota Department of Agriculture requirements. All aspects of operational assignments are fully insured and dedicated solely to aerial mosquito control.

This year, Airborne Custom Spraying will provide its service at a fee of $2.80 per acre, which includes all program development, chemical, and application costs. There is one additional charge for ferry time to and from targeted sites, which averages approximately $100.00 per application, depending upon the distance to your location.

The environmentally friendly adulticide used for aerial mosquito control contains the active ingredient Permethrin. Airborne Custom Spraying applies this mosquitocide in full accordance with all federal and state regulations. When used in this manner, Permethrin will not adversely affect pets, people, gardens or the paint finish on vehicles. Permethrin is the safest, most effective and cost-efficient mosquitocide available today.

Development of a spray program for your area may depend upon the intensity of mosquito populations or budget limitations. Examples of established programs include:

- Applications starting in May and continuing at two-week intervals thereafter.
- Three applications throughout the summer months.
- Spraying only for special outdoor events.
- Spraying for West Nile Virus when found in host.

1507 Hwy 21, Halstad, MN 56548 • Telephone: 218-456-2465 • Fax: 218-456-2468

Our clients find that we offer a low-cost program resulting in optimum mosquito control through the responsible and conscientious manner in which we work.

In addition to mosquito control Airborne Custom Spraying also provides aerial application for Forest Tent Caterpillars. The most effective time to make an application for the caterpillars is May 20th – 30th when leaves are approximately 50% developed. You will need to watch closely for these worms and advise us immediately if you wish to use aerial control methods.

In preparation for the 2011 summer season, enclosed is the necessary paperwork to comply with the FAA and Minnesota Department of Agriculture requirements for aerial mosquito and Forest Tent Caterpillar control. The following paperwork must be approved and **signed by the Mayor of your city.**

1. Authorization Application.
2. Provide aerial mosquito control contacts and phone numbers.
3. Map indicating proposed spray area and vertical obstructions over 150 feet high.
4. Please indicate on the map if there are any DNR-managed properties within the spray zone.

PLEASE NOTE: Applications must be returned by April 20, 2011 to avoid a $100.00 processing fee. This paperwork normally requires 2 - 3 weeks for approval in season; therefore, to avoid delays in spray application, it is necessary to obtain approval as soon as possible.

Completed applications **DO NOT** commit you to spraying.

Thank you for your cooperation and we look forward to serving you in 2011.

Sincerely,

Dean Solum

Dean Solum
Owner / Operator

Enclosures

# AUTHORIZATION APPLICATION

I understand that Airborne Custom Spraying is required to obtain the approval for aerial spraying over the city of East Grand Forks, MN by an authorized representative.

By the powers granted to me, I hereby give my approval for the low flying aircraft waivers required by the Federal Aviation Administration to Airborne Custom Spraying. (This application must be signed by the Mayor of this city.)

_____

Authorized Signature Mayor of City

_____

Date

Please complete application as soon as possible and send to Airborne Custom Spraying for processing and filing.

Expiration Date: *October 31, 2011*

AERIAL MOSQUITO CONTROL CONTACT SHEET
FOR
***East Grand Forks, MN***

Billing Address: _____

_____

_____

County: _____

Acres: _____

Contact Person 1: _____

Telephone: (W) _____

(H) _____

(C) _____

Contact Person 2: _____

Telephone: (W) _____

(H) _____

(C) _____

Mayor of the City: _____

Telephone: (W) _____

(H) _____

(C) _____

## EAST GRAND FORKS, MN

Proposed Spray Area

Summer 2011

Please use a green highligher to draw proposed spray area. Include the amount of acreage to be sprayed.

Mark any vertical obstructions with an asterisk * and highlight with orange. Enter the height of the obstruction next to the *.

Draw and label with a blue highlighter any agricultural fields which may be used for emergency landings and/or dump sites.

**Color Key**

Green - Spray Area

Blue - Emergency Landing

Orange - High Obstruction

N

W E

S

AIRBORNE CUSTOM SPRAYING HALSTAD MN

# Request for Council Action

Date: January 25, 2011

To: East Grand Forks City Council, Mayor Lynn Stauss, President Dick Grassel, Council Vice President Henry Tweten, Council Members: Marc Demers, Craig Buckalew, Wayne Gregoire, Greg Leigh, and Mike Pokrzywinski.

Cc: File

From: Dave Aker

RE: Zamboni

---

Background:
I have received a bid from Zamboni and Olympia for a new ice resurfacer. Zamboni has a bid of $89,000 and Olympia has a bid of $104,000. The MDH has loosen the rules on air quality for zambonis so I believe we can get the zamboni that runs on gas and we haven't had any air quality problems with it. The electric zambonis are quite a bit more in price, about $140,000. We currently have five zambonis:

73 Zamboni – Blue Line Arena
74 Zamboni – Blue Line Arena
74 Zamboni – Park Shop (outdoor ice)
08 Zamboni – VFW Arena
2001 Olympia – Civic Center

We currently have five resurfacers, three of them we cannot get parts anymore. The recommended life for a resurfacer is about seven years from when you buy it. Our need is for a resurfacer at the Blue Line rink, the new resurfacer would go to the Civc Center. Another major problem is the air quality with the old resurfacers, they use propane and it is very dangerous.

The plan is to move the Olympia to the Blue Line and the new resurfacer to the Civic Center. We would then try to sell one of the older models and use the other one for a backup. The plan would be to get a resurfacer every 7 – 10 years and trade off the resurfacer that is next in line.

Recommendation: I would recommend getting the zamboni for $89,000.

Enclosures: The bids from Zamboni and Olympia.

Dave;

I am going to assume that you are going to have to go out to bid on this.

If you want we can send you budget numbers.

If it is equipped the same as the machine shipped in 08 it would run about $89K delivered.

Let me know what we can do to help you with the process at this time.

Thanks

DP

BUDGET QUOTATION

Mr. Dave Aker January 20, 2011

East Grand Forks Parks & Recreation
Box 373

East Grand Forks, MN 56721

Dear Dave,

Thank you for your recent inquiry. Below please find current pricing for the Olympia Millennium ice
resurfacer and available options.

ONE OLYMPIA “MILLENNIUM” ICE RESURFACER $ 104,500.00

OLYMPIA Specifications:

• Two Year Parts and Labor Warranty (does not include general maintenance or consumables)
• Chevrolet Power Train - Serviceable world wide
• Meets 2007 EPA/CARB certified engine requirements
• Automatic transmission
• Four wheel disc brakes
• Propane Fuel System with brackets for two tanks (no tanks provided)
• Emission Control System (3 way catalytic converter and fuel management computer)
• Chrome plated exhaust stack vented 84” above ice surface at rear of machine
• Board Brush
• Automatic Snow Breaker
• Automatic Towel Lift
• Front Dump
• Four 16” Aluminum Alloy Wheels with studded Goodyear tires. (Includes hydraulic jack
and one steel rim spare tire)
• Easily Accessible Hydraulic System
• Reversible Auger System
• Precision Conditioner Control System
• 84" Conditioner with a 6" Driver Side Offset
• Conditioner replaceable runner system
• 1 - 84” blade with blade installation hook set and magnetic blade guard
• Conditioner Lift Remote Grease System & Conditioner Remote Grease Fittings
• Front & Rear Guide Wheels
• Full Instrumentation with Audio/visual warning system for low oil and high temperature,
ammeter, oil pressure gauge, tachometer and water temperature gauge
• Finger Tip Control System

- Full Lighting package (including snow bin and engine compartment lighting)
- Two-tone paint scheme (6 standard color selection)
- Snow Tank Safety Stands
- Safety Labels and basic tool kit
- Safety Seat Shut Off
- 103 cubic feet snow bin capacity (128.75 cubic feet compacted capacity)
- 210 US gallon water tank capacity (Aluminum Alloy Tank with sight gauge & drain valve)
- Wash Water System (54 US gallon Aluminum Alloy Tank with drain valve)
- Owner’s Manual with Maintenance, Operational and Circle Safety Check Videos
- Onsite delivery, setup and training for ice rink staff (at time of delivery)

ESTIMATED FREIGHT TO EAST GRAND FORKS, MN $ 2,000.00

OLYMPIA OPTIONS & ACCESSORIES:

STAINLESS STEEL WATER TANKS $ 1,990.00

STAINLESS STEEL WASH WATER TANK 885.00

CONDITIONER EDGER 6,450.00

4-WHEEL DRIVE SHIFTER KIT 725.00

SPECIAL PAINT COLORS 995.00

BACK UP ALARM 575.00

ADVERTISING RACKS 395.00

EXTRA BLADES 84" 209.00 ea.

AUTOMATIC TIRE WASH SYSTEM 985.00

PARKING BRAKE 995.00

STAINLESS STEEL FLOOD PIPES 490.00

LVR LASER LEVELING SYSTEM $ 16,800.00

The Olympia “MILLENNIUM” ice resurfacer uses a General Motors power train. This power train offers exceptional durability and easy access to replacement parts and service from local GM service facilities.

The new Olympia ice resurfacers come with an industry leading TWO-YEAR parts and labor warranty.

Below are some of the outstanding features found on the new Olympia ice resurfacers.

1.) General Motors Vortec Engine: All new Olympia ice resurfacers come with the new General Motors Vortec 4.3 liter V6 engine technology. The engine meets all EPA/CARB 2007 requirements. These engines deliver longer operating hours between tune-ups. Engine specifications call for tune-ups every 100,000 miles (approximately 3000 hours).

2.) Advanced Emission Controls: The new Olympia resurfacers are equipped with the latest emission controls available. A 3-way catalytic purifier will be install on the machine. In addition, an Autotronics Controls fuel management system is installed on the unit. This fuel management system is designed to control the air/fuel mixture ratio and adjust as required so that the engine is burning the fuel as efficiently as possible. This on board computer makes adjustments to the fuel system to assure that the engine is running at its optimum. When the computer can no longer make the required adjustments, an indicator light on the dashboard of the machine is illuminated alerting the operator that it is time to make manual adjustments or repairs. Both of these items drastically reduce emissions.

3.) Manifold Hydraulic System: In 1996 Olympia introduced a new manifold hydraulic system. This system enables Olympia to reduce the in line components needed to make all hydraulic systems function properly. With the manifold hydraulic system the amount of hydraulic hosing required has been reduced approximately 50%. Ease of maintenance, repairs and adjustments are another significant advantage to the manifold system as all hydraulic adjustments a done from one central manifold location.

4.) 84″ Shaving Blade: All new Olympia ice resurfacer’s standard size conditioner requires an 84″ cutting blade. The 84″ cutting width of the resurfacer gives a 6″ offset to the left side of the machine. This 6″ offset to the conditioner enables the driver to get deeper into the radius corners and to keep the machine further away from the boards on the straight sections. Also included is a built in guide wheel in the conditioner.

5.) Double Top Link Down Pressure System: All Olympia resurfacers are equipped with conditioner units designed with a solid double top link down pressure system which provides constant downward force on the shaving blade.

6.) Automatic Snow Breaker: The new Olympia unit is equipped with a hydraulically operated snow

breaker mechanism. This new feature takes the snow breaker function away from the operator. By installing the automatic snow breaker we have found a lower incidence in repairs and maintenance to the snow breaker components. The automatic snow breaker eliminates the need for the operator to monitor the auger system; this allows the operator to concentrate on driving function.

7.) Miscellaneous features: In addition, below are a few additional items that are standard on the new Olympia resurfacers.

16” tires and wheels

Aluminum wheels (see brochure)

Audio/visual warning system for low oil and high temperature

Clear coat paint system

Replaceable runner system on conditioner

Water level sight gauges on wash water tank and ice making water tanks

Formed metal snow bin tank (no welded tubular frame)

Reversible auger system (enables operator to reverse auger direction if something becomes lodged in augers)

All prices quoted are FOB Olympia factory

Unload In Parking Lot – (Loading Dock not available) Roll back wrecker required for unloading.

Lead time: Approximately 120 – 150 days ARO

All Applicable Taxes Extra

Prices firm for 75 days

If you have any questions or need additional information please contact our office at 1-800-234-5522.

Best Regards,

Jeff Horstman

Becker Arena Products, Inc.

Becker Arena Products, Inc. is an Affirmative Action/Equal Employment Opportunity Employer

**FRANK J. ZAMBONI & CO., INC.**
15714 Colorado Avenue
Paramount, CA 90723-0770
Phone (562) 633-0751
Fax (562) 633-9365
www.zamboni.com

January 18, 2011

Dave Aker
City of East Grand Forks
P.O. Box 373
East Grand Forks, MN 56721

## PROPOSAL

**MODEL:** **Zamboni 545**

**QUANTITY:** **One (1)**

**CAPACITY:** **Full Size**

- Snow Tank
  100 cubic feet (actual volume)
  120 cubic feet (compacted)
- Ice Making Water Tank
  Constructed of High Density Polyethylene
  200 U.S. gallons
  Wash Water System (optional)
  Constructed of High Density Polyethylene
  82 U.S. gallons
  Total Water Capacity
  282 U.S. gallons

**ENGINE:** **Hyundai 2.0 Litre**

- Four cylinder, 66 HP, 16 valve double overhead cam, 129.5 ft. lbs of torque, hydraulic valve lifters, liquid cooled
- Timing belt with automatic belt tensioners, 5 main bearings, full-flow oil filter system for long life and ease of maintenance
- Advanced electronic ignition system
- Meets or exceeds CARB/EPA 2007 standards
- Available in LPG or Gasoline powered
- Load sensing electronic governor enables true “hands-free” engine operation by driver
- On-board engine diagnostic system with fault code readout via dash lamp or diagnostic computer

**ENGINE:**

- Automatic safety shutdowns
- Engine is approved for propane use by Hyundai

**TRANSMISSION:** **Sundstrand Hydrostatic Pump and Motor**

- Continuously variable pump and motor and axial piston-type and offer volumetric efficiencies as high as 95%.
- Maximum drawbar pull even at low speeds and full hydrodynamic braking.
- Allows the use of a smaller and more efficient engine while still providing superior on-ice power.
- Hydrostat enables the conveyor augers to operate at full speed, regardless of vehicle speed, even when slowing for corners.

**DRIVETRAIN:** **Dana/Spicer Axles**

Model 44 Front-rated 4,300 lb.
Model 60 Rear-rated 6,400 lb.

- Rear axle is a rigid full-float design
- Because the 545 uses Spicer/Dana axles that are optimized for our chassis, we offer the industry's highest manufacturer approved axle capacities.
- Our chassis/axle combination is the key to the Zamboni 545 having a turning radius of 16 feet. This is a full 3 feet tighter of most other machines.

**Hub City Transfer Case**

- Rugged cast iron housing for rigid gear and bearing support. Heat-treated alloy steel gears are helical cut for greater strength and lower noise.
- Hydrostatic motor is wet-mounted to housing for long shaft life.

**Chassis**

- 2" X 5" structural steel tubing for high strength and long service.

**HYDRAULICS:** **Sauer Pump and Cassapa Motors**

- High efficiency gear type double pump has separate pump sections for vertical and horizontal augers for the best conveyor performance in the industry. Priority flow divider provides steering circuit.
- Pump is directly mounted to the engine for trouble free service. No belts or pulleys.
- Motors are high efficiency gear type, aluminium bodies with anti-cavitation check valves eliminating the need for case drain line while still providing this feature.

**HYDRAULICS:**

- Hydrostatic transmission features loop flushing which provides fresh fluid from tank to hydrostat for enhanced performance and cooler operating temperature.

**Filtration and Tank**

- Two Donaldson hydraulic filters, (1) 20 micron return line and (1) 10 micron hydrostatic charge loop, ensure a clean environment for all hydraulic components.
- Large 21-gallon tank enhances hydraulic fluid travel to rid the oil of entrapped air and increase heat dissipation.

**SNOW TANK AND AUGERS**

- Large snow capacity and a tank design that provides all areas of the tank to be completely filled, even the top rear corners.
- The 545's snow tank incorporates a smooth bottom and sides, allowing for the snow to slide out with the least amount of residue and at a much lower height.
- Both 10-inch large diameter augers are double-flighted to ensure good performance even during heavy shaving and the augers are teflon coated for durability.

**CONDITIONER:**

- Zamboni Ice Resurfacers have a well-deserved reputation for producing the finest sheet of ice, even after many years of being in use.
- A unique and patented design of spring and hydraulic down pressure is used for superior shaving results.
- Performance will continue for the life of the machine by using replaceable bushings and springs.

**HUMAN ENGINEERING:**

- The operation of the 545 is very simple. The operator sets the engine speed with the "hands-free" governor and drives the machine with a foot control. However, unlike an automotive transmission, the 545 will provide full power and speed to the augers at all times, even while slowing for corners. And the 545 will ensure the snow tank is compacted and completely filled.
- Speed is controlled by the single foot pedal equipped with a "dead-man" safety feature to dynamically brake the vehicle to a stop if the operator's foot leaves the pedal.
- Operator compartment ergonomically designed including steering wheel with a spinner knob.

**HUMAN ENGINEERING:**

- Engine and hydraulic compartment is easily accessed through both side doors for daily maintenance checks, even with the snow tank down.
- Wiring and looms are well routed and protected. Wires are individually labelled for easier service and trouble-shooting.

**FACILITY ENGINEERING:**

- Zamboni Ice Resurfacers offer unparalleled shaving and snow conveyor performance. A quality sheet of ice is among an arena's primary selling features.
- Zamboni has the tightest turning radius in the industry, enabling operators to resurface deeper into their corners.
- The snow tank on the 545 is designed in an enlarged package with a flat bottom and sides. This gives the 545 a low front-dumping height. This is important for both dumping indoors as well as outdoors in adverse conditions.
- Our unique engine and hydrostatic transmission enables the 545 to use a smaller, more efficient engine and can provide significant fuel savings.
- Industry Reports have recommended that arena ventilation be determined by horsepower of the ice resurfacer, which is over half of larger engines used in the competitor's machine. This can translate to considerable energy and facility savings.

**MANUFACTURES STATEMENT:** The 545 is proudly designed and manufactured by Frank J. Zamboni & Co., Inc., in the United States of America.

**WARRANTY:** Twenty four (24) months or 2,000 hours, parts replacement only.

**SAFETY STANDARDS:** The 545 is engineered to meet or exceed O.S.H.A. and A.N.S.I. safety labelling requirements.

**BUDGETARY PRICING:**

**Zamboni 545** Gas Carburetion..... $ 75,500.00

- LPG Carburetion (No Tanks)..... $ 1,095.00
- Board Brush ..... $ 4,865.00
- Back Up Alarm ..... $ 415.00
- 3 Way Catalytic Converter..... $ Standard
- Lambda Fuel Mgmt. System ..... $ Standard
- Chrome Wheels ..... $ Standard
- Electronic Water Level Sight Gauge ..... $ 410.00
- Wash Water System w/ Poly Tank..... $ 4,075.00
- Black Powder Coated Conditioner..... $ Standard
- Conditioner Poly Side Plate..... $ Standard
- Parking Brake..... $ Standard
- Advanced Water System..... $ 4,375.00
- Tire Wash System..... $ 1,175.00
- LPG Low Fuel Light (LPG Machines)..... $ Standard
- Snow Tank Light..... $ 300.00
- Auto Snow Breaker ..... $ 1,485.00
- Stainless Steel Water Distribution Pipe.. $ 335.00

**F.O.B.:** Paramount, CA

**TERMS:** Net 30 days on approved credit.
Shipment 250 days or sooner from receipt of order.
Pricing firm for 30 days.
Pricing does not include any applicable sales tax.

**THANK YOU:** _____ 1/18/11

Doug Peters
Regional Sales Manager

Date

Frank J. Zamboni & Co., Inc.
15714 Colorado Avenue
Paramount, CA 90723
Phone: (562) 633-0751
Fax: (562) 633-9365

# Request for Council Action

Date: February 16, 2011

To: East Grand Forks City Council, Mayor Lynn Stauss, President Dick Grassel, Council Vice President Henry Tweten, Council Members: Marc Demers, Craig Buckalew, Wayne Gregoire, Greg Leigh, and Mike Pokrzywinski.

Cc: File

From: Michael S. Hedlund – Chief of Police

RE: Police Department Building HVAC System Replacement – Final Recommendation

---

Background: As presented to the EGF City Council on January 11, 2011 the EGFPD is in need of a HVAC system replacement. The City of East Grand Forks had an energy evaluation completed by EAPC in May of 2010. The EGFPD subsequently put out a request for proposals for the replacement of the HVAC system and received bids from Grand Forks Heating, McFarlane and Custom Aire. McFarlane was the only company to submit a proposal which matched the recommendations made in the EAPC energy evaluation (replace the existing units with high efficiency gas furnaces and air source heat pumps). Council members requested additional information reference this proposal. Of primary concern was whether the EGF Water & Light Department would be able to provide any funding toward this project due to potential cost savings. I was subsequently in contact with Bonnie Abel of the Water & Light Department who informed me that the McFarlane proposal would qualify for $2,200 in rebates for the new air conditioning systems and the new furnaces would qualify for a rebate of $1,000 from Xcel Energy. Bonnie was also able to estimate that the new furnaces would save us approximately $2,300 per year on our natural gas bill. Any additional contribution from Water & Light would come from the energy conservation budget that they have established. The furnaces would be installed inside the building and the AC units would be mounted outside on the walls of the PD building. The existing rooftop equipment would be removed and this would allow for a potential future roof renovation which has been discussed on a number of occasions.

It is my understanding that there were concerns about possible noise issues from the furnaces but we have been assured that there will not be a noise problem as these furnaces are similar to a home furnace and make very little noise.

---

Recommendation: It is my recommendation that we accept the McFarlane bid that matches the EAPC recommendation. While there is a greater initial cost there is ongoing savings and this proposal also

does create the option for future renovation of the building roof. This would not be possible if we just replaced the existing rooftop units.

Enclosures:

1. Bid from Grand Forks Heating.
2. Bid for roof top units from McFarlane
3. Bid from Custom Aire
4. Bid for interior furnaces from McFarlane
4. Xcel Energy Evaluation
5. EAPC Report

Attachment #2

# McFARLANE
Endless. Expert. Energy.

P.O. Box 12095
Grand Forks, ND 58201
Ph: (701) 772-9511
Fax: (701) 772-7528

| | | |
|---|---|---|
| PROPOSAL SUBMITTED TO<br>EGF Police Dept. | PROPOSAL NUMBER<br>2011-0104 | DATE<br>11/19/2010 |
| STREET | JOB NAME<br>EGF PD HVAC System | |
| CITY, STATE, AND ZIP CODE | JOB LOCATION<br>East Grand Forks | |
| ARCHITECT / DATE OF PLANS | CONTACT PERSON<br>Michael S. Hedlund | JOB PHONE<br>218-773-1104 |

WE PROPOSE TO PERFORM THE FOLLOWING:

**Provide and Install the following.**
**One CARRIER 48TCDB 5 TON Rooftop Unit**
**One CARRIER 48TCDB 6 TON Rooftop Unit**
**One CARRIER 48 TCDE 7 ½ TON Rooftop Unit**

**Includes: Removal of existing RTU's, curb modification adapters, revised gas piping, revised control wiring.**
**Electrical Disconnect and Reconnect by Eagle Electric.**
**Repair of Generator Intake/Exhaust dampers with the addition of Birdscreens.**

**Excludes: Test and Balance of New RTU's.**

**We Propose** hereby to furnish material and labor – complete in accordance with above specifications, for the sum of Thirty Four Thousand Five Hundred Dollars----------($34,500)

Monthly progress payments will be submitted on all projects over $5,000. Monthly progress payments are due by the 20th of the following month. A late payment charge of 1 ½% per month will be accessed on all accounts 30 days past due. All work to be completed in a workmanlike manner according to standard practices. Any alterations or deviations from the above scope of work involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workmen's Compensation Insurance.

Authorized Signature Bill Strauss

Note: This proposal may be withdrawn by us if not accepted within 30 days.

**Acceptance of Proposal** –The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Signature _____

Date of Acceptance: _____ Signature _____

McFARLANE
Endless. Expert. Energy.

P.O. Box 12095
Grand Forks, ND 58201
Ph: (701) 772-9511
Fax: (701) 772-7528

| PROPOSAL SUBMITTED TO | PROPOSAL NUMBER | DATE |
|---|---|---|
| EGF Police Dept. | 2011-0104 Revised | 1/5/2010 |
| STREET | JOB NAME | |
| | EGF PD HVAC System | |
| CITY, STATE, AND ZIP CODE | JOB LOCATION | |
| | East Grand Forks | |
| ARCHITECT / DATE OF PLANS | CONTACT PERSON | JOB PHONE |
| | Michael S. Hedlund | 218-773-1104 |

**WE PROPOSE TO PERFORM THE FOLLOWING:**

**Provide and Install the following.**
**Four Carrier High Efficiency Furnaces**
**Four Carrier 2 Stage Heat Pumps**
**Four Renewaire Energy Recovery Ventilators**

**Includes: Removal of existing RTU's, curb caps, revised gas piping, revised control wiring, furnace venting, revised supply and return air ductwork to allow installation of the furnaces above the ceiling, removal and replacement of ceiling as necessary.**
**Electrical Disconnect and Reconnect by Eagle Electric.**
**Repair of Generator Intake/Exhaust dampers with the addition of Birdscreens.**

**To include Test and Balance of new systems ADD $4,300**

**We Propose** hereby to furnish material and labor – complete in accordance with above specifications, for the sum of Seventy Three Thousand Six Hundred Dollars----------($73,600)

Monthly progress payments will be submitted on all projects over $5,000. Monthly progress payments are due by the 20th of the following month. A late payment charge of 1 ½% per month will be accessed on all accounts 30 days past due. All work to be completed in a workmanlike manner according to standard practices. Any alterations or deviations from the above scope of work involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workmen's Compensation Insurance.

Authorized Signature Bill Starns

Note: This proposal may be withdrawn by us if not accepted within 30 days.

**Acceptance of Proposal** –The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Signature _____

Date of Acceptance: _____ Signature _____

PO Box 637
East Grand Forks, MN 56721
PH: 701-746-0449 FAX: 218-773-2203

**TO:** **McFarlane, Inc.**
**3473 North Washington St**
**PO Box 12095**
**Grand Forks, ND 58208-2095**

**Attention:** **Bill Stauss**
**Phone:** **701-740-0435**
**Email:** **bstauss@mcfarlane-e3.com**

**EGF Police Dept.**
**520 Demers Avenue**
**East Grand Forks, MN 56721**

**Estimate for the electrical construction replacement of 3-heat/cool roof top units as per specifications and as listed below:**

1. Remove and replace 4-existing fluorescent lights in west hallway and report room for the installation of new furnace equipment to be installed
2. Disconnect 3-existing heat/cool roof top units (2-7.5 ton units and 1-15 ton unit)
3. Connect 4-new air conditioner roof top units with disconnects (1–50 amp unit and 3-40 amp units)
4. Install 4-20 amp 120 volt dedicated circuits for new gas furnace units and connect gas furnace units mounted above drop ceiling in building, controlled from unit disconnect switch
5. Install 4-20 amp 120 volt outlets for condensate pump units at each gas furnace
6. Provide 4-18/8 low voltage control conductors from the new gas furnace units to the thermostat control location inside building
7. Install 4-20 amp 120 volt outlets for 4-air to air units located adjacent to the new gas furnaces
8. Install 1-20 amp 120 volt weatherproof GFCI protected duplex outlet on roof top in order to meet 2011 NEC code regulations
9. Disconnect 1-existing steam humidifier unit mounted in duct work in the report room
10. Install 1-100 amp 1PH 208 volt 8-circuit subpanel and 3-60 amp 1PH 208 volt 4-circuit subpanels located adjacent to the new interior HVAC equipment in order to supply them with individual branch circuits

**NOTES**

- Any additions or subtractions to the scope of work as listed above will be completed on a time and material basis
- Any roof repairs or penetration needed for completion of electrical construction will be completed by other
- All branch circuits required to supply new roof top units will be provided by existing conductors, conduits and fused disconnects
- All low voltage control wiring connections at air conditioner roof top units, gas furnaces, air to air units and thermostats will be completed by others
- MN Wiring Certificate and all inspections required by the MN State Electrical Board included in bid price