

NPDES Permit Effluent Limits

FLOW: YEAR 2020

DESIGN AVERAGE FLOW - 4.5 MGD 3.125 GPM
DESIGN MAXIMUM DAILY FLOW – 11.70 8.125 GPM
DESIGN PEAK HOURLY FLOW – 15.70 MGD 10,900 GPM
DESIGN PEAK INSTANTANEOUS FLOW – 18 MGD 12,500 GPM
PLANT RECYCLE FLOW – 0.677 MGD 470 GPM

POPULATION (YEAR 2020) 20,050

LOADINGS: YEAR 2020

BOD5 12,500 LB/DAY
TSS 10,100 LB/DAY
TKN 1,500 LB/DAY

EFFLUENT LIMIT REQUIREMENTS:

RECIEIVING STREAM – ROCK RIVER

EFFLUENT LIMITS:

CBOD

WEEKLY AVG. MAX. 40 MG/L
MONTHLY AVG. MAX. 20 MG/L

TSS

WEEKLY AVG. MAX. 45 MG/L
MONTHLY AVG. MAX 25 MG/L

NH3-N

DAILY MAX.
APRIL – OCTOBER 2.3 MG/L
NOVEMBER – MARCH 7.2 MG/L

PH RANGE 6-9 STD. UNITS
CHLORINE RESIDUAL 0.05 MG/L

FECAL COLIFORM

DAILY MAX.
MAY – OCTOBER 400 colonies per 100 ML

INFLUENT PUMPING

| | |
|-----------------|--------------------------|
| TYPE | LAKESIDE INCLINED SCREWS |
| NUMBER | 2+1 FUTURE |
| CAPACITY (EACH) | 12,500 GPM 18 MGD |
| CAPACITY (FIRM) | 12,500 GPM 18 MGD |
| LITF | 38.45 FT |

PRIMARY TREATMENT

SCREENING

| | |
|----------|---|
| TYPE | PARKSON HYCOR STEP SCREEN FINE (1/4 INCH OPENINGS) MECHANICAL CLEANED |
| NUMBER | 2+1 MANUAL RACK |
| CAPACITY | 9.0 MGD, EACH |

GRIT REMOVAL

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|----------|--------------------------------|
| TYPE | S & L PISTA GRIT SYSTEM VORTEX |
| NUMBER | 1 |
| CAPACITY | 30 MGD |

INFLUENT FLOW MEASUREMENT

| | |
|----------|----------------------|
| TYPE | PARSHALL FLUME |
| SIZE | 36-INCH THROAT WIDTH |
| CAPACITY | 32.6 MGD |

OXIDATION DITCHES

| | |
|--------------------------|---|
| TYPE | EMICO CARROUSEL |
| NUMBER | 2 |
| VOLUME EACH | 3.117 MIL. GALLONS |
| TOTAL | 6.234 MIL. GALLONS (833,300 CU. FT) |
| LOADING RATE | 15 LB BOD/DAY/1,000 CU. FT. |
| HYDRAULIC DETENTION TIME | 33.2 HRS @ 4.5 MGD 9.5 HRS @ 15.7 MGD |
| OXYGEN REQUIREMENTS | 35,500 LB. OXYGEN/DAY (W/50% PEAKING FACTOR) |
| AERATION EQUIPMENT | |
| TYPE | EIMCO MECHICAL LOW SPEED IMPELLER |
| NUMBER | 4 (2 EACH TANK) |
| HP | 150 EACH, 450 HP (FIRM), 600 HP TOTAL |
| CONTROL | IMPELLER SUBMURGENCE VFD (1 AERATOR EACH TANK) ROYCE D.O. PROBE |

FINAL CLARIFICATION

| | |
|--------------|--|
| TYPE | EMICO CIRCULAR STATIC FLOCCULATOR SUCTION BIOSOLIDS WITHDRAWAL |
| NUMBER | 2 |
| SIZE | 100 FT DIA. X 15 FT SWD |
| SURFACE AREA | 7,854 SQ. FT EACH 15,708 SQ. FT TOTAL |
| VOLUME | 118,000 CUBIC FT. (EACH) 236,000 CUBIC FT. (TOTAL) |

SURFACE SETTLING RATE

| | |
|-----------|-------------------|
| @ 4.5 MGD | 286 GPD/SQ. FT. |
| @ 15.7 | 1,000 GPD/SQ. FT. |

DETENTION TIME

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|--------|-------------|
| @ 4.5 | = 9.4 HOURS |
| @ 15.7 | = 2.7 HOURS |

SOLIDS LOADING RATE (@ 3500 MG/L)

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|------------------------|---------------------|
| @ 4.5 MGD + RAS (4.5) | = 0.7 LB/SQ. FT/HR |
| @ 15.7 MGD + RAS (9.0) | = 1.91 LB/SQ. FT/HR |

WEIR OVERFLOW RATE (870 FT. WEIR)

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|------------|---------------|
| @ 4.5 MGD | 5,172 GPD/FT |
| @ 15.7 MGD | 18,000 GPD/FT |

RAS PUMPING

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|---------------------------|--|
| TYPE | HAYWARD / GORDON CENTRIFUGAL |
| NUMBER | 2 + 1 STANDBY |
| CAPACITY (EACH) | 470 GPM TO 2,400 GPM (15% TO 150% OF 405 MGD) |
| DESIGN MAXIMUM CONTROL | 6,400 GPM VARIABLE SPEED; FLOW-PACED |

DISINFECTION

| | |
|-------------------------------|---|
| TYPE | TROJAN 4000 ULTRAVIOLET LIGHT |
| U.V. TRANSMISSION | 65% |
| NO. OF BANKS | 2 |
| NUMBER OF MODULES PER BANK | 3 EXPANDABLE TO 4 |
| LAMPS PER MODULE | 10 |
| NUMBER OF LAMPS | 60 EXPANABLE TO 80 |
| UV INTENSITY | 130,846 uw / cm ² (80% INITIAL LAMP OUTPUT) |
| DETENTION TIME | 0.265 SECONDS |
| UV DOSE | 34,674 uWs / cm ² |

EFFLUENT MEASURENT

| | |
|----------|----------------------|
| TYPE | PARSHALL FLUME |
| SIZE | 36-INCH THROAT WIDTH |
| CAPACITY | 32.6 MGD |

BIOSOLIDS WASTING (WAS)

| | |
|----------|-------------------------------|
| TYPE | HAYWARD GORDON CENTRIFUGAL |
| NUMBER | 1 + 1 |
| CAPASITY | 100 TO 500 GPM |
| CONTROL | VFD, TIMER |

AEROBIC DIGESTION

| | |
|------------------|--------------------------|
| TANKS | CIRCULAR, CONCRETE TANK |
| NUMBER | 2 |
| SIZE (EACH) | 60 FT. DIA. X 16 FT. SWD |
| VOLUME (TOTAL) | 660,000 GAL. |
| STORAGE CAPACITY | 27.5 DAYS @ 5% TS |

| | |
|---------------|-------------------------|
| BLOWERS | ROOTS |
| TYPE | POSITIVE DISPLACEMENT |
| NUMBER | 2 + 1 STANDBY |
| SIZE (EACH) | 1,325 SCFM |
| AERATION RATE | 30 SCFM/1000 CUBIC FEET |
| CONTROL | VFD |
| HP | 125 HP EACH |

**THICKENED DIGESTED
BIOSOLIDS PUMPING**

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|----------|---------------------------------|
| TYPE | HAYWARD / GORDON |
| NUMBER | CENTRIFUGAL |
| CAPACITY | 1 + 1 STANDBY 140 TO 240 GPM |

THICHENED WAS PUMPING

| | |
|----------|--------------------------|
| TYPE | MOYNO PROGRESSIVE CAVITY |
| NUMBER | 2 |
| CAPACITY | 100 GPM (MAX) @ 5% TS |
| CONTROL | VARIABLE SPEED; LEVEL |

**BIOSOLIDS THICKENING /
DEWATERING**

| | |
|-----------------|---|
| TYPE | KOMLINE – SANDERSON GRAVITY BELT/ BELT FILTER PRESS COMBINATION |
| NUMBER | 2 |
| SIZE | 2-METER BELT |
| CAPACITY (EACH) | 70 GPM @ 5.0% TS 160 GPM @ 2.0% TS 400 GPM @ 0.5% TS |
| LOADING (EACH) | 1,600 LB/HR @ 2.0% TS BASD ON 6 HRS. OPERATION 5 DAYS PER WEEK |
| FEED SOLIDS | 0.5 TO 5.0% TS |
| DICHARGE SOLIDS | |
| THICKENING | 5.0% TS |
| DEWATERING | 16.0% TS |

LIFT STATIONS

- (1) Independence Court - located off north Galena Ave. on Liberty Court. Submersible pump station with two 87 gpm pumps at 20' TDH. High level alarm and emergency pump around available. Station is equipped with an Omni Site emergency call out system.
- (2) Lowell Park - located on Lowell Park Road 300' north of Galena Ave. Submersible pump station with two (2) Hayward Gordon chopper pumps. Pumps are rated at 320 GPM @ 70TDH, with a 20 HP motor at 1750 RPM. Station is equipped with an Omni Crystal Ball monitoring system for emergency call outs. Station is equipped with an 8" diameter ABB Magnetic Flow Meter. Emergency pump around available.
- (3) Chula Vista - located on private property at 706 East Fellows Street. Smith & Loveless Formula X 4B2B Lift Station. Two (2) 20 HP pumps, 100 GPM, TDH 19.3, 900 RPM. Station is equipped with an Omni Crystal Ball Monitoring System for emergency call outs. Emergency pump around available.
- (4) Raynor - located on the south side of the Rock River on East River Road (Route 2). Hydromatic station with two 320-gpm pumps at 12.8' TDH with 5 hp U.S. motors. Ventilation, sump pump, lights and dehumidifier provided. Emergency pump around available. Station is equipped with a Omni Site emergency call out system,
- (5) Purity Mills - located on private property at the east end of Woodlawn Ave. Submersible pump station with two Yeoman pumps, 500 gpm at 35' TDH. Station is equipped with an Omni Crystal Ball Monitoring System for emergency call outs. Station is equipped with a 8" diameter ABB Magnetic Flow meter. Emergency pump around available.
- (6) Tilton Park - located in the northeast section of the city at east end of Tilton Park Drive, S&L package lift station with two 200 gpm pumps at 42.8 TDH with 10 hp motors Ventilation, sump pump, lights and dehumidifier provided. Emergency pump around available. Station is equipped with a Omni Site emergency call out system.
- (7) Castellan Subdivision - located 5 miles west on Ill Rt. 2. Myers pump lift station with 2 - 25 hp submersible pumps, with a capacity of 205 GPM at a total head of 117 feet and operate at 1750 RPM. Emergency pump around is available. Station is equipped with an emergency Omni Site call out system

**CITY OF DIXON
WASTEWATER TREATMENT FACILITY
LIFT STATIONS
COLLECTION SYSTEM**

Revised: October 2008

RESPONSIBLE OFFICIALS / OPERATING STAFF

Dixon City Hall, P.O. Box 386, Dixon, IL. 61021

| | |
|-----------------------------------|--------------------|
| Mayor: | James G. Burke |
| Commissioner of Public Properties | Clark G. Kelly |
| Commissioner of Streets | Ralph M. Contreras |
| Commissioner of Public Safety | David P. Blackburn |
| Commissioner of Finance | Roy G. Bridgeman |

Dixon WWTP, 2600 W. Third Street, Dixon, IL. 61021 Phone 815-288-3383

| | | |
|-------------------------------------|---------------|-----------------------------------|
| Treatment Facility Superintendent | Dan Mahan - | Class 1 Certificate of Competency |
| Treatment Facility Foreman/Lab Tech | Tim Stover - | Class 2 Certificate of Competency |
| Treatment Facility Operator | Tim Love - | Class 1 Certificate of Competency |
| Sanitary Sewer Maintenance Operator | Josh McNitt - | Class 3 Certificate of Competency |

WASTEWATER TREATMENT FACILITY LOCATION

| | |
|-------------------|---|
| Street Address | 2600 W. Third Street, Dixon, IL. 61021 |
| County | Lee |
| Legal Description | SW 1/4, Sec. 6, T 21N, R. 8E, of the 4th PM |

RECEIVING WATERS

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|-------------------------|------------|
| Receiving Waters | Rock River |
| 7 Day, 10-Year Low Flow | 1194 cfs |

NPDES PERMITS & EFFLUENT LIMITS

| | |
|--------------------------|-------------------|
| NPDES Permit # | IL0026450 |
| Issue Date | May 28, 2004 |
| Effective Date | July 1, 2004 |
| Expiration Date | June 30, 2009 |
| Sludge Disposal Permit # | 2007-SC-2895 |
| Issue Date | February 16, 2007 |
| Expiration Date | January 31, 2012 |

Industrial Dischargers To Dixon WWTP

AMF = Average Monthly Flow

- | | |
|---|---|
| 1. BAY VALLEY FOODS: Commercial food packaging, 126 employees Monitored daily for surcharge purposes | 820 Palmyra Avenue AMF: 6,000,000 gal. |
| 2. DIXONWEB PRINTING COMPANY Large commercial and industrial printers, 250 emp. | 1226 West 7th Street AMF 156,750 gal. |
| 3. RAYNOR MANUFACTURING CO. Overhead garage door manufacturing, 740 emp. | 1101 East River Rd. AMF 875,250 gal. |
| 4. ANCHOR COUPLING Hydraulic hose coupling manufacturer, 130 emp. | Anchor Rd. AMF 39,750 gal. |
| 5. BORG WARNER AUTOMOTIVE CO. Automotive parts manufacturing, 273 emp. | 1350 Franklin Grove Rd. AMF 109,500 gal. |
| 6. FLEX-O-GLASS Plastic films manufacturing, 55 emp. | 1101 Warp Rd. AMF 95,250 gal. |
| 7. PLEWS / EDELMANN Automotive parts manufacturing, 245 emp. | Rt. 38 East AMF 137,250 gal. |
| 8. DO IT BEST Warehouse operations, 130 emp. | Progress Drive Box 507 AMF 54,000 gal. |
| 9. DONALDSON COMPANY INC. Medical supply manufacturing, 180 emp. | 815 Progress Drive AMF 54,000 gal. |
| 10. YORK INTERNATIONAL IMECO INC. Heat exchange equipment, 255 emp. | Dutch Rd. AMF 126,500 gal. |
| 11. SINOW-WEINMAN Scrap metal dealer, 20 emp. | 78 Monroe Ave. AMF 7500 gal. |
| 12. EYELET PRODUCTS Manufacturer of drawn metal cans, 29 emp. | 1709 Eyelet Rd. AMF 51,750 gal. |

COLLECTION SYSTEM OPERATION AND MAINTENANCE EQUIPMENT

1. 2002 Vactor 2100 combination jetter/vacuum sewer cleaning machine.
2. 1994 747-4000 Sniper Trailer jetter.
3. Sewer Televising Van equipped with all televising and safety equipment.
4. Various confined space safety equipment, including air-monitoring devices.

CITY OF DIXON COLLECTION SYSTEM DIAMETER AND FOOTAGE

PIPE (INCHES) FOOTAGE

| | |
|----|---------|
| 30 | 7,796 |
| 27 | 1,417 |
| 24 | 9,292 |
| 21 | 1,572 |
| 20 | 933 |
| 18 | 15,652 |
| 16 | 1,340 |
| 15 | 15,862 |
| 12 | 23,657 |
| 10 | 51,916 |
| 8 | 192,899 |
| 6 | 2,009 |

| | |
|------------------|---------|
| Sewer lineal ft. | 324,345 |
| Sewer miles | 61.43 |