

The City of Sturgis Wastewater Treatment Plant Septage Waste Receiving Facility Operating Plan

Introduction/Purpose:

The City of Sturgis Wastewater Treatment Plant is owned and operated by the City of Sturgis (“the City”) under NPDES permit MI0020451. The City would like to expand its customer base to include Heartland / Cruiser RV Service Center and Cade Lake Campground. Heartland / Cruiser RV Service Center is a privately owned recreational vehicle service center in Howe, Indiana. Cade Lake Campground, owned and operated by St. Joseph County, includes a recreational vehicle dump station. Liquid waste from recreational vehicles is regulated under the Michigan Public Act 451 Part 117 regulations governing receipt and treatment of domestic septage. The City has previously accepted recreational vehicle (“RV”) septage with no issues.

Facility Information:

Treatment Plant Address:

The City of Sturgis Wastewater Treatment Plant
2101 Treatment Plant Rd.
Sturgis, Michigan, 49091
St. Joseph County

Treatment Plant Contact Information:

Tom Sikorski
Wastewater Treatment Plant Supervisor
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The City of Sturgis Wastewater Treatment Plant services 3,883 sewer customers residing in the City of Sturgis, the Village of Burr Oak and portions of the Township adjoining the City, and into Indiana across the State lines. The plant uses a combination of physical, chemical and biological methods to meet effluent limits. A detailed description of the WWTP processes is attached to the end of this plan. The capacity of the plant is outlined in the table below (nutrient loading based on operating records for the year following the new headworks startup (Sept. 2014 to Dec. 2015) and 2033 Basis of Design).

	Hydraulic	Organic (BOD5)
Plant Rating	2.8 MGD (average) 3.6 MGD (max)	5,141 lbs./day (average)
Current Loading	1.14 MGD (average) 2.5 MGD (max)	2,348 lbs./day (average)
Excess Capacity	1.66 MGD (average)	2,7493 lbs./day

Proposed Septage Receiving Operations:

The City plans to accept domestic RV septage which is a subcategory of domestic septage as defined in Michigan Public Act 451, Part 117, §11701(f) as, “septage pumped from a home septic tank, recreational vehicle, cesspool, portable toilet, type III marine sanitation device, or similar storage or treatment works that receives only domestic septage.” The City does not plan to accept any form of septage, domestic or otherwise, other than RV waste.

The City proposes to receive RV septage from Heartland / Cruiser RV Service Center through a new connection to the City’s sanitary sewer system via the LaGrange County Regional Utility District’s

collection system. The City proposes to receive RV septage from Cade Lake Campground dump station through a new connection to the City's sanitary sewer system via the Village of Burr Oak's forcemain.

The Heartland / Cruiser RV Service Center dump stations will serve as one receiving location for RV septage. The dump stations will be used to empty tanks of RV units prior to work being performed on the units. The use of these dump stations will be exclusively limited to units being serviced. The Cade Lake Campground dump station will serve as the other receiving location for RV septage. The campground has a total of 62 campsites (44 electric sites). The RV dump station will be available only for registered guests.

Receiving Location Addresses:

Heartland / Cruiser RV Service Center
N. 750 West
Howe, Indiana, 46746

Cade Lake Campground
68911 Plumb School Rd.
Sturgis, Michigan, 49091

Receiving Location Contact Information:

DRV Luxury Suites
0160 W 750 N
Howe, Indiana, 46746
Office – 260-562-1075

St. Joseph County Parks
PO Box 427
Centerville, Michigan, 49032
St Joseph County Parks - (269) 467-5519
Campground - (269) 651-3330 (May-Oct).
www.stjosephcountymi.org

Hours of Operation:

The Heartland / Cruiser RV Service Center will be available for units being serviced during normal business operation hours Monday through Friday from 8:00 AM to 5:00 PM.

If approved, a new connection at the Heartland / Cruiser RV Service Center would connect the dump stations to the City's WWTP in June 2016. A magnetic flow meter will be installed during the construction of the new connection to monitor flow from the service center. If the plan is approved the service center would send approximately 600 gallons of RV septage to the City per month based on usage at a similar facility Heartland RV owns in Elkhart, Indiana. A map showing Heartland / Cruiser RV Service Center and the City's WWTP is attached below.

The Cade Lake Campground dump station will be available for registered guests twenty four (24) hours a day during the camping season, May 1 to Columbus Day.

If approved, a new connection at Cade Lake Campground would connect the campground dump station to the City's WWTP in 2016. A magnetic flow meter will be installed during the construction of the new connection to monitor flow from Cade Lake Campground. If the plan is approved Cade Lake would send approximately 2,200 gallons of RV septage to the City per day when the campground is at full capacity (44 electric sites at 50 gpd). A map showing Cade Lake Campground and the City's WWTP is attached below.

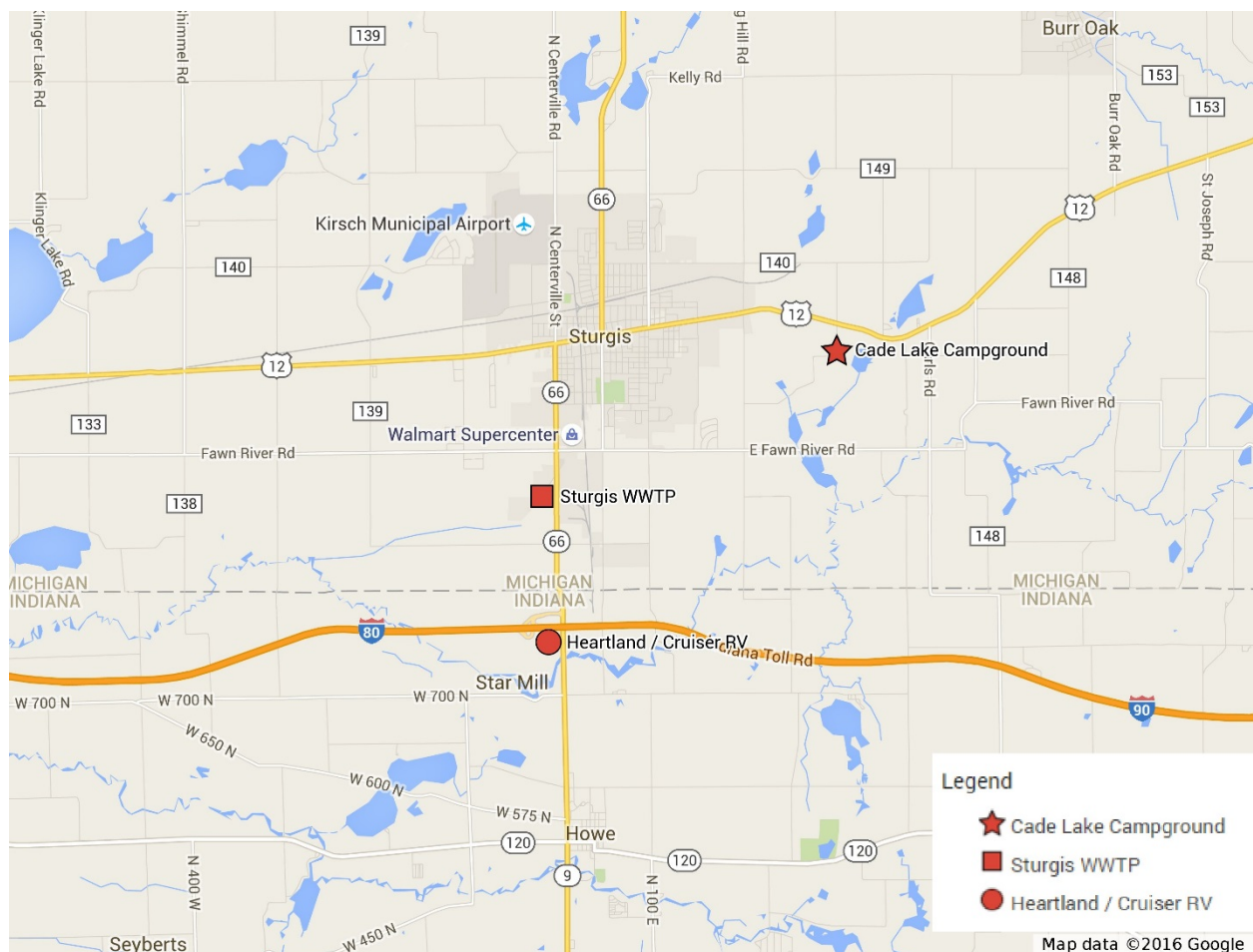
Fee Structure:

Flow from the Heartland / Cruiser RV Service Center will be monitored, added to the LaGrange County Regional Utility District flows, and charged within the LaGrange County Regional Utility District utility bill. Heartland / Cruiser RV Service Center does not plan to charge an additional fee for units being serviced to use the dump station.

Flow from the Cade Lake Campground will be monitored, added to the Burr Oak flows, and charged within the Burr Oak utility bill. St. Joseph County Parks and Recreation does not plan to charge an additional fee for registered guests to use the dump station.

Service Area:

No service will be established by this plan. The WWTP will not accept any septage from licensed septage haulers delivered to the WWTP. RV septage received will be restricted to the waste generated by campground guests and units being serviced at Heartland / Cruiser RV Service Center.



	Description of Sturgis Wastewater Treatment Plant Processes¹
Screw Pumps²	Two screws, 39" diameter 0-3.3 MGD each, convey raw wastewater from the 24" interceptor sewer and Fawn River Crossing Lift Station forcemain to the Headworks Building
Influent Screening²	One automatic fine screen, continuous filter belt with ¼" openings on a 75° angle, automatic cleaning with screenings compactor. Disposed of at a sanitary landfill One manual bypass bar screen for use when fine screen is offline for maintenance, 35° angle with 1" spacing, screenings cleared with a manual rake
Grit Removal²	Sand and gravel can cause problems in pumps and other mechanical devices. A single Grit Concentrator removes grit particles and concentrates them in a sump at the bottom of the unit. Two grit pumps, each rated at 200 gpm at 25' TDH, conveys grit slurry to a grit washing unit and classifier. The grit is conveyed into a tipping bucket dumpster for disposal at a landfill.
Surge Basin²	Stores flows above 5.2 MGD (Peak Hourly Flow Capacity). Following a surge event, wastewater is routed to the screw pump wet well at a controlled volume. One tank measuring approximately 45.67' by 28' with 8' SWD, with a 76,500 gallon capacity.
Influent Flow Meter²	12" Parshall flume with a 9" insert, with ultrasonic transducer level sensor
Primary Clarification	Large settling basins which remove settleable solids and floatable materials. One(1) circular 35' diameter with 8' SWD, one 45' square with 8'SWD, one 55'diameter with 10'SWD
Trickling Filter Pump Station	Three variable speed non-clog centrifugal pumps lift the water to the trickling filters, each rated 2500 GPM @ 31.0' TDH. Firm pumping capacity with largest pump out of service is 3700 GPM.
Trickling Filters	Large beds of rock, 6.5 feet deep, through which sewage trickles. Microorganisms growing on the rocks remove waste materials by consuming wastes. Two, 104' diameter, four arm reaction driven distributors, with aluminum domes. Forced ventilation with two fans per filter.
Solids contact / Flocculation Basin	Aerated basin in which microorganisms sloughed off from trickling filters are mixed with concentrated sludge settled and returned from the intermediate clarifiers. 89,000 gallons, three positive displacement blowers 10HP, 140 cfm @9psi, each.
Intermediate lift station	One screw, 48" diameter 0-44.4 MGD @ 16.5TDH to lift water up to intermediate clarifier #1. Water flows to intermediate #2 by gravity.
Intermediate Clarifiers	Settling basins which allow sloughed off microorganisms to settle out and be returned to the solids contact basin. One 60' diameter with 14'SWD., one 24' by 120' with 12' SWD.
Flow measurement, pumping, Nitrification Tower	12" Parshall flume with ultrasonic transmitter to measure flow to tower. Three variable speed non-clog centrifugal pumps rated at 2500 GPM @ 63'TDH lift the water to the top of the tower where it trickles down thru plastic cross flow media. Microorganisms growing on the media remove ammonia. Nitrification tower is 55' diameter, 30 ' deep with mechanical variable speed distributor. 72,800 cu ft of media.
Final Clarifiers	Settling basins which allow sloughed off microorganisms to settle out. Two 24' by 120' with 12' SWD.
Chemical Treatment	Phosphorus is removed with the aid of Ferrous Chloride and polymer addition with settling of this sludge occurring in the intermediate clarifiers along with microorganism sloughings. Chlorine is added after final clarifiers to kill harmful bacteria.
Polishing Pond	A lined pond allows time for the chlorine to disinfect and then dissipate before addition of Sodium Metabisulfite to remove excess chlorine before discharge.

¹ City of Sturgis Wastewater Treatment Web Site

² Design Basis Report for City of Sturgis WWTP Improvements (2013)

Final Flow Measurement / Cascade Aerator	24 " Parshall flume with ultrasonic transmitter for flow measurement ahead of Static cascade steps to introduce additional oxygen into water before release to the Fawn River.
Residuals Management	Excess biosolids (Sludge) is held in anaerobic digesters to decompose. The decomposition yields a slurry which is somewhat like a peat slurry. Also methane gas is generated and used to heat the digester. The digested sludge is stored in liquid form awaiting recycling to agricultural land. Two anaerobic digesters 350,000 gallons each. One 140' diameter with 14' SWD storage tank- 1,600,000 gallons.