

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law)

Permit No. MO-0118117

Owner: South St. Joseph Industrial Sewer District WWTP  
Address: 1409 Lower Lake Road, St. Joseph, MO 64504

Continuing Authority: Same as above  
Address: Same as above

Facility Name: South St. Joseph Industrial Sewer District WWTP  
Facility Address: 1409 Lower Lake Road, St. Joseph, MO 64504

Legal Description: See Page 2 - 11  
UTM Coordinates: See Page 2 - 11

Receiving Stream: See Page 2 - 11  
First Classified Stream and ID: See Page 2 - 11  
USGS Basin & Sub-watershed No.: See Page 2 - 11

is authorized to land apply sludge from the facility described herein, in accordance with the limitations and monitoring requirements as set forth herein:

**FACILITY DESCRIPTION**

Industrial no-discharge, land application. Wastewater is discharged to City of St. Joseph POTW under Permit No. 101012. Sludge is land applied. SIC #4952, 2879, 2047, and 2075

This permit authorizes only the land application of sludge under the Missouri Clean Water Law; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

April 1, 2015      July 22, 2016  
Effective Date      Modification Date

Sara Parker Pauley, Director, Department of Natural Resources

June 30, 2018  
Expiration Date

John Madras, Director, Water Protection Program

**FACILITY DESCRIPTION** (continued)

Sludge lagoons #1 - #4 and grit lagoon #2 no longer receive sludge. The existing sludge contained in these lagoons is being land applied in preparation for closure of the lagoons. Sludge lagoons #2 and #4, and grit lagoon #1 have been cleaned. Two concrete sludge digesters with clay liner have been constructed inside grit lagoon #1. All new sludge is stored in the two concrete digesters.

**Facility Type:**

No-discharge/sludge is land applied/wastewater is discharged to St Joe WWTF for annual flows into gaining stream on the 303(d) list for *E. coli*. This permit also evaluates and limits subsurface discharges from the unlined lagoons.

Permitted Feature #001 – Sludge lagoons #1 - #4, grit lagoon #2 and the northern portion of grit lagoon #1. Pending the evaluation and approval of the liner in the northern portion of grit lagoon #1, this area can be used as a flow equalization basin.

Legal Description: S ½, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338445, Y = 4398697  
Receiving Stream: Tributary to Missouri River  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #002 – Monitoring Well #1

Legal Description: SE ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338736, Y = 4398568  
Receiving Stream: Groundwater  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #003 – Removed from permit.

Permitted Feature #004 – Monitoring Well #2

Legal Description: SW ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338411, Y = 4398566  
Receiving Stream: Groundwater  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #005 – Monitoring Well #3

Legal Description: SW ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338232, Y = 4398573  
Receiving Stream: Groundwater  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #006 – Monitoring Well #4

Legal Description: NW ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338248, Y = 4398775  
Receiving Stream: Groundwater  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #007 – Monitoring Well #5

Legal Description: NE ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338731, Y = 4398800  
Receiving Stream: Groundwater  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #008– Concrete Storage Digester #1(North)

Legal Description: NE ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338657, Y = 4398777  
Receiving Stream: Tributary to Missouri River  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Total depth: 12 feet  
Upper operating level: 10 feet  
Lower operating level: 0 feet  
Freeboard: 2 feet  
Storage volume (upper to lower operating level) 4,328,490 gallons

Permitted Feature #009 – Concrete Storage Digester #2 (South)

Legal Description: NE ¼, SE ¼, Sec. 25, T57N, R36W, Buchanan County  
UTM Coordinates: X = 338654, Y = 4398725  
Receiving Stream: Tributary to Missouri River  
First Classified Stream and ID: Missouri River (P) (0226) 303(d)  
USGS Basin & Sub-watershed No.: 10240011-0106

Total depth: 12 feet  
Upper operating level: 10 feet  
Lower operating level: 0 feet  
Freeboard: 2 feet  
Storage volume (upper to lower operating level) 4,148,546 gallons

Permitted Feature #010– Land Application Site SR #1, 160 acres

Legal Description: W ½, Sec. 3, T56N, R36W, Buchanan County  
UTM Coordinates: X = 334264, Y = 4395947  
Receiving Stream and ID: Contrary Creek (C) (0269)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #011 – Land Application Site SR #2, 42 acres

Legal Description: NE ¼, NE ¼, Sec. 14, T56N, R36W, Buchanan County  
UTM Coordinates: X = 336922, Y = 4393274  
Receiving Stream: Tributary Horseshoe Lake  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #012– Land Application Site SR #3, 49 acres

Legal Description: E ½, SW ¼, Sec. 9, T56N, R36W, Buchanan County  
UTM Coordinates: X = 333042, Y = 4394018  
Receiving Stream: Tributary to Old Mud Lake  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #013 – Land Application Site SR #4, 78 acres

Legal Description: N ½, SE ¼, Sec. 20, T56N, R36W, Buchanan County  
UTM Coordinates: X = 331946, Y = 4391036  
Receiving Stream: Tributary to Old Mud Lake  
First Classified Stream and ID: Old Mud Lake (L3) (7065)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #014 – Land Application Site SR #5, 100 acres

Legal Description: N ½, NW ¼, Sec. 30, T56N, R36W, Buchanan County  
UTM Coordinates: X = 329502, Y = 4390411  
Receiving Stream: Tributary to Missouri River (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #015 – Land Application Site SR #6, 80 acres

Legal Description: SE ¼, Sec. 24, T56N, R37W, Buchanan County  
UTM Coordinates: X = 328670, Y = 4390855  
Receiving Stream: Tributary to Missouri River (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #016 – Land Application Site SR #7, 237 acres

Legal Description: S ½, Sec. 10, T55N, R37W, Buchanan County  
UTM Coordinates: X = 324842, Y = 4384223  
Receiving Stream: Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0301

Permitted Feature #017 – Land Application Site SR #8, 30 acres

Legal Description: NE ¼, NE ¼, Sec. 25, T55N, R37W, Buchanan County  
UTM Coordinates: X = 328406, Y = 4380260  
Receiving Stream: Sugar Creek (C)  
First Classified Stream and ID: Sugar Creek (C) (0271)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #018 – Land Application Site SR #9, 80 acres

Legal Description: S ½, NW ¼, Sec. 13, T55N, R36W, Buchanan County  
UTM Coordinates: X = 337226, Y = 4382780  
Receiving Stream: Tributary to Contrary Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #019 – Land Application Site JS 1, 160 acres

Legal Description: W ½, W ½, Sec. 33, T60N, R31W, DeKalb County  
UTM Coordinates: X = 381213, Y = 4425901  
Receiving Stream: Tributary to Middle Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0705

Permitted Feature #020 – Land Application Site JS 2, 115 acres

Legal Description: N ½, N ½, Sec. 14, T60N, R30W, DeKalb County  
UTM Coordinates: X = 395023, Y = 4430655  
Receiving Stream: Tributary to Muddy Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0808

Permitted Feature #021 – Land Application Site JS 3, 480 acres

Legal Description: E ½, Sec. 11, T60N, R30W, DeKalb County  
UTM Coordinates: X = 395117, Y = 4431603  
Receiving Stream: Tributary to Grand River (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #022 – Land Application Site JS 4, 240 acres

Legal Description: N ½, Sec. 9, T60N, R30W, DeKalb County  
UTM Coordinates: X = 391623, Y = 4432297  
Receiving Stream: Tributary to Groomer Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #023 – Land Application Site JS 4a, 40 acres

Legal Description: SW ¼, SE ¼, Sec. 9, T60N, R30W, DeKalb County  
UTM Coordinates: X = 391803, Y = 4431316  
Receiving Stream: Tributary to Muddy Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0808

Permitted Feature #024 – Land Application Site JS 5, 40 acres

Legal Description: NE ¼, NE ¼, Sec. 8, T60N, R30W, DeKalb County  
UTM Coordinates: X = 390616, Y = 4432534  
Receiving Stream: Groomer Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #025 – Land Application Site JS 6, 195 acres

Legal Description: SW ¼, Sec. 17, T61N, R29W, Davies County  
UTM Coordinates: X = 398263, Y = 4437550  
Receiving Stream: Tributary to Grand River (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #026 – Land Application Site JS 7, 240 acres

Legal Description: W ½, Sec. 18, T61N, R29W, Davies County  
UTM Coordinates: X = 396628, Y = 4437829  
Receiving Stream: Tributary to Grand River (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #027 – Land Application Site JS 8, 320 acres

Legal Description: N ½, Sec. 20, T61N, R29W, Davies County  
UTM Coordinates: X = 398551, Y = 4436472  
Receiving Stream: Tributary to Grand River (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #028 – Land Application Site JS 9, 120 acres

Legal Description: S ½, S ½, Sec. 28, T61N, R30W, Gentry County  
UTM Coordinates: X = 390651, Y = 4434493  
Receiving Stream: Tributary to Wheeler Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #029 – Land Application Site JS 10, 160 acres

Legal Description: SE ¼, Sec. 29, T61N, R30W, Gentry County  
UTM Coordinates: X = 389256, Y = 4434801  
Receiving Stream: Campbell Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0803

Permitted Feature #030 – Land Application Site JS 11, 120 acres

Legal Description: SW ¼, Sec. 36, T61N, R30W, Gentry County  
UTM Coordinates: X = 394931, Y = 4432767  
Receiving Stream: Groomer Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0807

Permitted Feature #031 – Land Application Site JS 12, 200 acres

Legal Description: NW ¼, Sec. 5, T61N, R31W, Gentry County  
UTM Coordinates: X = 378884, Y = 4442308  
Receiving Stream: Stillhouse Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0802

Permitted Feature #032 – Land Application Site JS 13, 160 acres

Legal Description: E ½, W ½, Sec. 4, T61N, R31W, Gentry County  
UTM Coordinates: X = 380672, Y = 4442106  
Receiving Stream: Tributary to Stillhouse Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0802

Permitted Feature #033 - Land Application Site JS 14, 240 acres

Legal Description: N ½, N ½, Sec. 34, T61N, R31W, Gentry County  
UTM Coordinates: X = 382477, Y = 4434485  
Receiving Stream: Tributary to Hickory Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0801

Permitted Feature #034– Land Application Site JS 16, 240 acres

Legal Description: N ½, Sec. 31, T61N, R31W, Gentry County  
UTM Coordinates: X = 377495, Y = 4434399  
Receiving Stream: Tributary to King Lake (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0702

Permitted Feature #035 – Land Application Site JS 17, 240 acres

Legal Description: NW ¼, Sec. 27, T62N, R31W, Gentry County  
UTM Coordinates: X = 382187, Y = 4445261  
Receiving Stream: Stillhouse Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0802

Permitted Feature #036 – Land Application Site JS 19, 80 acres

Legal Description: S ½, SE ¼, Sec. 32, T62N, R31W, Gentry County  
UTM Coordinates: X = 379682, Y = 4442847  
Receiving Stream: Tributary to Stillhouse Branch  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0802

Permitted Feature #037 – Land Application Site JS 20, 80 acres

Legal Description: N ½, S ½, Sec. 33, T62N, R31W, Gentry County  
UTM Coordinates: X = 380956, Y = 4443283  
Receiving Stream: Tributary to Stillhouse Branch  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0802

Permitted Feature #038 – Land Application Site RP 1, 160 acres

Legal Description: SE ¼, Sec. 7, T59N, R30W, DeKalb County  
UTM Coordinates: X = 388613, Y = 4421844  
Receiving Stream: Tributary to Middle Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0705

Permitted Feature #039 – Land Application Site RP 1a, 80 acres

Legal Description: S ½, NE ¼, Sec. 7, T59N, R30W, DeKalb County  
UTM Coordinates: X = 388605, Y = 4422431  
Receiving Stream: Tributary to East Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0704

Permitted Feature #040 – Land Application Site RP 2a, 50 acres

Legal Description: SW ¼, NW ¼, Sec. 8, T59N, R30W, DeKalb County  
UTM Coordinates: X = 389233, Y = 4422427  
Receiving Stream: Tributary to East Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0704

Permitted Feature #041 – Land Application Site RP 2, 50 acres

Legal Description: SE ¼, NW ¼, Sec. 8, T59N, R30W, DeKalb County  
UTM Coordinates: X = 389737, Y = 4422404  
Receiving Stream: Tributary to Irvins Branch (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0710

Permitted Feature #042 – Land Application Site RP 3, 118 acres

Legal Description: S ½, NE ¼, Sec. 18, T59N, R30W, DeKalb County  
UTM Coordinates: X = 388545, Y = 4420667  
Receiving Stream: Tributary to Lost Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0707

Permitted Feature #043 – Land Application Site RP 4, 280 acres

Legal Description: S ½, Sec. 19, T59N, R30W, DeKalb County  
UTM Coordinates: X = 388366, Y = 4418707  
Receiving Stream: Lost Creek (C)  
First Classified Stream and ID: Lost Creek (C) (0495)  
USGS Basin & Sub-watershed No.: 10280101-0707

Permitted Feature #044 – Land Application Site RP 5, 280 acres

Legal Description: N ½, Sec. 30, T59N, R30W, DeKalb County  
UTM Coordinates: X = 388427, Y = 4417833  
Receiving Stream: Tributary to Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0707

Permitted Feature #045 – Land Application Site RP 6, 33 acres

Legal Description: SW ¼, SW ¼, Sec. 30, T59N, R30W, DeKalb County  
UTM Coordinates: X = 387431, Y = 4416734  
Receiving Stream: Tributary to West Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #046 – Land Application Site RP 7, 80 acres

Legal Description: N ½, N ½, Sec. 22, T60N, R30W, DeKalb County  
UTM Coordinates: X = 393131, Y = 4429209  
Receiving Stream: Tributary to Muddy Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0808

Permitted Feature #047 – Land Application Site RP 8, 147 acres

Legal Description: N ½, S ½, Sec. 31, T60N, R30W, DeKalb County  
UTM Coordinates: X = 388106, Y = 4425386  
Receiving Stream: East Fork Lost Creek (C)  
First Classified Stream and ID: East Fork Lost Creek (C) (0497)  
USGS Basin & Sub-watershed No.: 10280101-0704

Permitted Feature #048 – Land Application Site RP 9, 125 acres

Legal Description: NE ¼, Sec. 1, T59N, R31W, DeKalb County  
UTM Coordinates: X = 386957, Y = 4424499  
Receiving Stream: East Fork Lost Creek (C)  
First Classified Stream and ID: East Fork Lost Creek (C) (0497)  
USGS Basin & Sub-watershed No.: 10280101-0704

Permitted Feature #049 – Land Application Site RP 10, 115 acres

Legal Description: W ½, E ½, Sec. 14, T59N, R31W, DeKalb County  
UTM Coordinates: X = 385156, Y = 4421000  
Receiving Stream: Lost Creek (C)  
First Classified Stream and ID: Lost Creek (C) (0495)  
USGS Basin & Sub-watershed No.: 10280101-0706

Permitted Feature #050 – Land Application Site RP 11, 80 acres

Legal Description: W ½, W ½, Sec. 27, T59N, R31W, DeKalb County  
UTM Coordinates: X = 382523, Y = 4417642  
Receiving Stream: Tributary to West Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #051 – Land Application Site RP 11a, 40 acres

Legal Description: NW ¼, NW ¼, Sec. 27, T59N, R31W, DeKalb County  
UTM Coordinates: X = 382562, Y = 4418225  
Receiving Stream: Tributary to Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0706

Permitted Feature #052 – Land Application Site RP 12, 280 acres

Legal Description: E ½, Sec. 36, T60N, R31W, DeKalb County  
UTM Coordinates: X = 387071, Y = 4425515  
Receiving Stream: East Fork Lost Creek (C)  
First Classified Stream and ID: East Fork Lost Creek (C) (0497)  
USGS Basin & Sub-watershed No.: 10280101-0704

Permitted Feature #053 – Land Application Site LS 1, 240 acres

Legal Description: E ½, Sec. 21, T59N, R31W, DeKalb County  
UTM Coordinates: X = 381982, Y = 4419511  
Receiving Stream: Tributary to Lost Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0706

Permitted Feature #054 – Land Application Site LS 2, 120 acres

Legal Description: S ½, SE ¼, Sec. 6, T58N, R31W, DeKalb County  
UTM Coordinates: X = 378666, Y = 4413920  
Receiving Stream: Tributary to Willow Brook Lake (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #055 – Land Application Site LS 3, 60 acres

Legal Description: E ½, SW ¼, Sec. 5, T58N, R31W, DeKalb County  
UTM Coordinates: X = 379685, Y = 4414189  
Receiving Stream and ID: Willow Brook Lake (L1)  
First Classified Stream and ID: Willow Brook Lake (L1) (7438)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #056 – Land Application Site LS 4, 115 acres

Legal Description: S ½, SW ¼, Sec. 4, T58N, R31W, DeKalb County  
UTM Coordinates: X = 380994, Y = 4413721  
Receiving Stream: Willow Brook Lake (L1)  
First Classified Stream and ID: Willow Brook Lake (L1) (7438)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #057 – Land Application Site LS 5, 480 acres

Legal Description: N ½, Sec. 8, T58N, R31W, DeKalb County  
UTM Coordinates: X = 379628, Y = 4413304  
Receiving Stream: Tributary to Willow Brook Lake (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #058 – Land Application Site LS 5a, 80 acres

Legal Description: W ½, SE ¼, Sec. 8, T58N, R31W, DeKalb County  
UTM Coordinates: X = 380006, Y = 4412451  
Receiving Stream and ID: Tributary to Willow Brook Lake (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #059 – Land Application Site LS 5b, 80 acres

Legal Description: E½, SE ¼, Sec. 8, T58N, R31W, DeKalb County  
UTM Coordinates: X = 380423, Y = 4412444  
Receiving Stream: Tributary to Tributary to West Fork Lost Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #060 – Land Application Site LS 6, 120 acres

Legal Description: NW ¼, Sec. 9, T58N, R31W, DeKalb County  
UTM Coordinates: X = 381084, Y = 4413118  
Receiving Stream: Tributary to Tributary to West Fork Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10280101-0703

Permitted Feature #061 – Land Application Site LS 7, 120 acres

Legal Description: NE ¼, Sec. 13, T58N, R32W, DeKalb County  
UTM Coordinates: X = 376887, Y = 4411744  
Receiving Stream: Tributary to Castile Creek (C)  
First Classified Stream: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240012-0501

Permitted Feature #062 – Land Application Site SR 10, 64 acres

Legal Description: SE ¼, NE ¼, Sec. 4, T56N, R36W, Buchanan County  
UTM Coordinates: X = 333801, Y = 4396197  
Receiving Stream and ID: Tributary to Contrary Creek  
First Classified Stream and ID: Contrary Creek (C) (0269)  
USGS Basin & Sub-watershed No.: 10240011-0106

Permitted Feature #063 – Land Application Site SR 12N, 32 acres

Legal Description: NE ¼, SE ¼, Sec. 11, T56N, R36W, Buchanan County  
UTM Coordinates: X = 337034, Y = 4394112  
Receiving Stream: Tributary to Horseshoe Lake  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #064 – Land Application Site SR 12S, 46 acres

Legal Description: SE ¼, SE ¼, Sec. 11, T56N, R36W, Buchanan County  
UTM Coordinates: X = 336974, Y = 4393715  
Receiving Stream: Tributary to Horseshoe Lake  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #065 – Land Application Site SR 15N, 94 acres

Legal Description: S ½, NE ¼, Sec. 1, T55N, R37W, Buchanan County  
UTM Coordinates: X = 328431, Y = 4386384  
Receiving Stream: Tributary to Missouri River  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0108

Permitted Feature #066 – Land Application Site SR 15S, 79 acres

Legal Description: W ½, SE ¼, Sec. 1, T55N, R37W, Buchanan County  
UTM Coordinates: X = 328365, Y = 4385275  
Receiving Stream: Lost Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0108

Permitted Feature #067 – Land Application Site SR 16, 31 acres

Legal Description: NE ¼, NW ¼, Sec. 13, T55N, R37W, Buchanan County  
UTM Coordinates: X = 327764, Y = 4383486  
Receiving Stream: Tributary to Missouri River  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0108

Permitted Feature #068 – Land Application Site SR 17, 70 acres

Legal Description: SW ¼, Sec. 13, T55N, R37W, Buchanan County  
UTM Coordinates: X = 327598, Y = 4382502  
Receiving Stream: Tributary to Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #069 – Land Application Site SR 19, 80 acres

Legal Description: NE ¼, Sec. 20, T55N, R36W, Buchanan County  
UTM Coordinates: X = 331599, Y = 4381551  
Receiving Stream: Tributary to Sugar Creek (C)  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #070 – Land Application Site SR 21, 75 acres

Legal Description: W ½, SE ¼, Sec. 15, T55N, R36W, Buchanan County  
UTM Coordinates: X = 334637, Y = 4382230  
Receiving Stream: Tributary to Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #071 – Land Application Site SR 22, 42 acres

Legal Description: W ½, SW ¼, Sec. 21, T55N, R36W, Buchanan County  
UTM Coordinates: X = 332114, Y = 4380685  
Receiving Stream: Tributary to Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #072 – Land Application Site SR 23, 97 acres

Legal Description: E ½, SW ¼, Sec. 18, T55N, R36W, Buchanan County  
UTM Coordinates: X = 329316, Y = 4382510  
Receiving Stream: Tributary to Little Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #073 – Land Application Site SR 24, 54 acres

Legal Description: S ½, NE ¼, Sec. 26, T56N, R36W, Buchanan County  
UTM Coordinates: X = 336720, Y = 4389732  
Receiving Stream: Tributary to Horseshoe Lake  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0107

Permitted Feature #074 – Land Application Site SR 25, 70 acres

Legal Description: S ½, SE ¼, Sec. 23, T55N, R37W, Buchanan County  
UTM Coordinates: X = 326630, Y = 4380692  
Receiving Stream: Tributary to Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #075 – Land Application Site SR 26 200 acres

Legal Description: W ½, Sec. 24, T55N, R37W, Buchanan County  
UTM Coordinates: X = 327510, Y = 4381446  
Receiving Stream: Tributary to Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #076 – Land Application Site SR 27, 46 acres

Legal Description: W ½, Sec. 16, T55N, R36W, Buchanan County  
UTM Coordinates: X = 332625, Y = 4382713  
Receiving Stream: Tributary to Little Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #077 – Land Application Site SR 28, 150 acres

Legal Description: NW ¼, Sec. 4, T54N, R36W, Platte County  
UTM Coordinates: X = 332225, Y = 4376804  
Receiving Stream: Tributary to Sugar Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0302

Permitted Feature #078 – Land Application Site SR 30, 96 acres

Legal Description: NW ¼, Sec. 23, T55N, R37W, Buchanan County  
UTM Coordinates: X = 326137, Y = 4381963  
Receiving Stream: Tributary to Lost Creek  
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
USGS Basin & Sub-watershed No.: 10240011-0108

Permitted Feature #079 – Land Application Site SR 31, 57 acres  
 Legal Description: W ½, SE ¼, Sec. 12, T55N, R37W, Buchanan County  
 UTM Coordinates: X = 328154, Y = 4383939  
 Receiving Stream: Tributary to Lost Creek  
 First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)  
 USGS Basin & Sub-watershed No.: 10240011-0108

PERMITTED FEATURE #008, #009	TABLE A-1. STORAGE BASIN OPERATIONAL MONITORING REQUIREMENTS					
	The permittee is authorized to conduct land application of sludge as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of sludge shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Storage Basin Operational Monitoring						
Storage Basin Freeboard (Note 1, Page 14)	Feet	*			once/month	measured
Precipitation	Inches	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2016</u> .						

PERMITTED FEATURES #010 - #079	TABLE A-2. LAND APPLICATION OPERATIONAL MONITORING					
	The permittee is authorized to conduct land application of sludge as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of sludge shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Sludge Land Application Operational Monitoring						
Amount Applied	Pounds	*			daily	total
Application Area	Acres	*			daily	total
Application Rate	lbs./acre	*			daily	total
Soil Monitoring (Note 2, Page 14)						
pH – Units	SU	*			once/5 years	composite
Nitrate Nitrogen as N	lbs./acre	*			once/5 years	composite
Available Phosphorus as P (Bray 1-P Method)	lbs./acre	*			once/5 years	composite
MONITORING REPORTS SHALL BE SUBMITTED <u>AS REQUIRED BY THE ANNUAL REPORT</u> .						

\* Monitoring requirement only.

<b>PERMITTED FEATURES #002, #004 - #007</b>	<b>TABLE A-3. GROUNDWATER MONITORING WELL MONITORING REQUIREMENTS</b>
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The permittee is authorized to conduct land application of sludge as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. Subsurface discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Groundwater Depth	feet	*			once/quarter****	Measured***
Nitrate Nitrogen as N	mg/L	10			once/quarter****	grab
Fecal Coliform	#/100mL	*			once/quarter****	grab
pH	SU	**			once/quarter****	grab
Aluminum (Total Recoverable)	µg/L	*			once/quarter****	grab
Arsenic (Total Recoverable)	µg/L	50			once/quarter****	grab
Beryllium (Total Recoverable)	µg/L	4			once/quarter****	grab
Boron (Total Recoverable)	µg/L	2000			once/quarter****	grab
Cadmium (Total Recoverable)	µg/L	5			once/quarter****	grab
Chromium III	µg/L	100			once/quarter****	grab
Chromium VI	µg/L	*			once/quarter****	grab
Copper (Total Recoverable)	µg/L	1300			once/quarter****	grab
Iron (Total Recoverable)	µg/L	*			once/quarter****	grab
Lead (Total Recoverable)	µg/L	15			once/quarter****	grab
Mercury (Total Recoverable)	µg/L	2			once/quarter****	grab
Nickel (Total Recoverable)	µg/L	100			once/quarter****	grab
Selenium (Total Recoverable)	µg/L	50			once/quarter****	grab
Zinc (Total Recoverable)	µg/L	5000			once/quarter****	grab
Methylene Chloride	µg/L	4.7			once/quarter****	grab
2, 4-Dichlorophenol	µg/L	93			once/quarter****	grab
Phenol	µg/L	300			once/quarter****	grab
Toluene	µg/L	1000			once/quarter****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2015.

- \* Monitoring requirement only.
- \*\* pH is measured in pH units and is not to be averaged. Water contaminants shall not cause pH to be out of the range of 6.5-9.0 pH units.
- \*\*\* Measure groundwater level in feet below ground surface.
- \*\*\*\* See table below for quarterly sampling

Minimum Sampling Requirements			
Quarter	Months	Parameters	Report is Due
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

<b>PERMITTED FEATURES #001, #008, #009</b>	<b>TABLE A-4. LAND APPLIED SLUDGE MONITORING REQUIREMENTS</b>
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The permittee is authorized to conduct land application of wastewater as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of wastewater shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Sludge Land Applied (Note 3, Page 11)						
pH	SU	*			once/year	grab
Total Kjeldahl Nitrogen as N	mg/kg	*			once/year	grab
Nitrate Nitrogen as N	mg/kg	*			once/year	grab
Ammonia as N	mg/kg	*			once/year	grab
Total Phosphorus as P	mg/kg	*			once/year	grab
Percent Solids	mg/kg	*			once/year	grab
Arsenic (Total Recoverable)	mg/kg	*			once/year	grab
Cadmium (Total Recoverable)	mg/kg	*			once/year	grab
Chromium (Total Recoverable)	mg/kg	*			once/year	grab
Chromium III	µg/L	*			once/year	grab
Chromium VI	µg/L	*			once/year	grab
Iron (Total Recoverable)	mg/kg	*			once/year	grab
Lead (Total Recoverable)	mg/kg	*			once/year	grab
Mercury (Total Recoverable)	mg/kg	*			once/year	grab
Nickel (Total Recoverable)	mg/kg	*			once/year	grab
Selenium (Total Recoverable)	mg/kg	*			once/year	grab

**MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2016.**

\* Monitoring requirement only.

Note 1 - Storage Basin freeboard shall be reported as Storage Basin water level in feet below the overflow level.

Note 2 - Sample the upper 6 to 8 inches of soil. Composite samples shall be collected from each permitted land application site. See Special Condition 16.e Soil Monitoring for additional guidance.

Note 3 - Sludge that is land applied shall be sampled at the storage basin or application vehicle. If no land application occurred during the reporting period from a permitted feature, report as "No Application".

**B. STANDARD CONDITIONS**

**1. Sampling Requirements**

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. All samples shall be taken at the permitted feature(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

**2. Monitoring Requirements.**

- a. Records of monitoring information shall include:
  - 1) The date, exact place, and time of sampling or measurements;

**B. STANDARD CONDITIONS (continued)**

- 2) The individual(s) who performed the sampling or measurements;
- 3) The date(s) analyses were performed;
- 4) The individual(s) who performed the analyses;
- 5) The analytical techniques or methods used; and
- 6) The results of such analyses.

b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department.

3. Sample and Monitoring Calculations

Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. Test Procedures

The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

6. Planned Changes.

- a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
- 1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source; or
  - 2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged.;
  - 3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
  - 4) Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

7. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. An application for renewal of this permit shall be submitted at least 180 days prior to the expiration date of this permit.

**B. STANDARD CONDITIONS (continued)**

**8. Duty to Comply**

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law. The commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

**9. Permit Transfer**

- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

**10. Duty to Provide Information**

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

**11. Inspection and Entry**

The permittee shall allow the Department or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Missouri Clean Water Law, any substances or parameters at any location.

B. STANDARD CONDITIONS (continued)

12. Closure of Treatment Facilities

- a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
- b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

C. SPECIAL CONDITIONS

1. There shall be no discharge of process wastewater or sludge from land application sites. The permittee shall report any discharge or noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
2. This permit may be reopened and modified, or alternatively revoked and reissued, to:
  - a. Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
    - 1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - 2) controls any pollutant not limited in the permit.
  - b. Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
  - c. Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
  - d. Incorporate the requirement to develop a pretreatment program pursuant to 40 CFR 403.8(a) when the Director of the Water Protection Program determines that a pretreatment program is necessary due to any new introduction of pollutants into the Publicly Owned Treatment Works or any substantial change in the volume or character of pollutants being introduced.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

3. All permitted features s must be clearly marked in the field.

4. Water Quality Standards

- a. To the extent required by law, discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- b. General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
  - 1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
  - 2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
  - 3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
  - 4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
  - 5) There shall be no significant human health hazard from incidental contact with the water;
  - 6) There shall be no acute toxicity to livestock or wildlife watering;

C. SPECIAL CONDITIONS (continued)

- 7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
  - 8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
5. Public access to storage areas and land application sites must be controlled by either positive barriers or remoteness of site.
  6. Reporting of Non-Detects:
    - a. An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
    - b. The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
    - c. The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
    - d. Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
    - e. See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
  7. The permittee shall develop, maintain and implement an Operation and Maintenance (O & M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems, including key operating procedures, an aerial or topographic site map with the permitted features, land application fields, and irrigation buffer zones marked, and a brief summary of the operation of the facility. The O & M manual shall be made available to the operator and available to the department upon request. The O&M Manual shall be reviewed and updated at least every five years.
  8. The berms of the storage basin(s) shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage to the berms.
  9. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
  10. Hazardous waste regulated under the Missouri Hazardous Waste Law and regulations shall not be land applied under this permit.
  11. All paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) shall be stored so that these materials are not exposed to stormwater. Spill prevention, control, and/or management shall be provided sufficient to prevent any spills of these pollutants from entering a water of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
  12. Good housekeeping practices shall be maintained on the site to keep solid waste from entry into waters of the state.
  13. Any pesticide discharge from any point source shall comply with the requirements of Federal Insecticide, Fungicide and Rodenticide Act, as amended (7 U.S.C. 136 et. seq.) and the use of such pesticides shall be in a manner consistent with its label.
  14. Release of a hazardous substance must be reported to the department in accordance with 10 CSR 24-3.010. A record of each reportable spill shall be retained with the O & M Manual and made available to the department upon request.
  15. The facility shall ensure that adequate provisions are provided to prevent surface water intrusion into the storage basin(s) and to divert stormwater runoff around the storage basin(s) and protect embankments from erosion.

C. SPECIAL CONDITIONS (continued)

16. Land Application System.

- a. This special condition does not apply to fertilizer products that are exempted under the Missouri Clean Water Law and regulations, 10 CSR 20-6.015(3)(B)8.
- b. Land Application Sites. This permit authorizes land application of sludge to sites within a fifty (50) mile radius of the facility. Land application of sludge is authorized by the permittee to those sites listed in the "Facility Description" of this permit. Land application of sludge by a contract hauler to sites owned, rented, or leased by the permittee must also be listed in the "Facility Description" unless the contract hauler is permitted. Land applications by contract hauler to sites that are not owned, rented, or leased by the permittee are not required to be listed in this permit. Only those pollutants listed in the permit application may be land applied. Permittee requests for additional sites must follow permit modification procedures prior to land application. Additionally, the O&M Manual shall include all additional land application site(s) listed in this permit.
- c. Storage Basins. The minimum and maximum operating water levels for the storage basin(s) shall be clearly marked. Each storage basin shall be operated so that the maximum water elevation does not exceed two feet below the overflow. Storage basins shall be inspected monthly for structural integrity and leaks.
- d. Public Access Restrictions. This permit does not authorize application of sludge to areas to public use areas.
- e. Soil Monitoring.
  - 1) Composite soil samples shall be collected every five years from each field listed in this permit where land application has occurred in the last 12 months or will occur in the next 12 months. No land application shall occur on fields listed in this permit if soil sample results are more the five (5) years old.
  - 2) Soil sampling shall be in accordance with University of Missouri (MU) Guides G9215, Soil Sampling Pastures or G9217, Soil Sampling Hayfields and Row Crops or other methods approved by the department. The recommendation of one composite sample per 20 acres in G9215 and G9217 is not required by this permit, however, this is a useful tool to identify soil fertility fluctuations in larger fields due to past management practices, soil type, and variability of crop yields. There shall be at least one composite sample per 80 acres.
  - 3) Testing shall conform to Recommended Chemical Soil Testing Procedures for North Central Region (North Central Regional Research Publication 221 Revised), or Soil Testing in Missouri (MU Extension Guide EC923), or other methods approved by the department.
  - 4) A summary of the soil test results for each field sampled during the reporting period shall be submitted with the annual report.

17. Land Application Requirements.

- a. Sludge land applications shall not exceed agronomic rates to ensure agricultural use of nutrients and prevent contamination of surface and groundwater. The agronomic rate is the amount of wastewater and/or sludge applied to a field to supply the amount of nutrients to meet to meet the crops fertilizer needs for that year.
- b. No land application shall occur when the soil is frozen, snow covered, or saturated. There shall be no application during a precipitation event or if a precipitation event that is likely to create runoff is forecasted to occur within 24 hours of a planned application.
- c. Land application shall occur only during daylight hours.
- d. Slope limitation for sludge application sites are as follows;
  - 1) Slopes of 6 percent or less there are no limitations.
  - 2) Slopes of 7 to 12 percent, biosolids when may be applied with no limitation when soil conservation practices are used to meet the minimum erosion levels.
  - 3) Slopes greater than 12, apply biosolids only when grass vegetation is maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
- e. Land application shall occur only during daylight hours.
- f. The perimeter of land application fields where runoff is likely to occur shall be checked daily during land application to check for runoff.
- g. Setback distances from sensitive features. There shall be no land application within:
  - 1) 300 feet of any well, sinkhole, losing stream, or cave entrance, water supply stream intake or impoundment;;
  - 2) 150 feet of an occupied residence, public building, or public use area;
  - 3) 50 feet of gaining perennial or intermittent stream, public or privately owned pond or lake;
  - 4) 50 feet of property line or public road.
- h. Sludge should not be applied to fields used to grow food crops for human consumption to be eaten raw, such as leafed vegetables or root crops.
- i. Sludge shall not be applied to within thirty (30) days of grazing or forage harvesting. The recommendations of the State Milk Board shall be followed.

C. SPECIAL CONDITIONS (continued)

- j. The land application equipment shall be visually inspected daily during land application to check for equipment malfunctions and leaks. The application system shall be operated so as to provide uniform distribution of wastes over the entire land application site. Land application equipment shall be calibrated at least once annually.

18. Nutrient Management

Land application to fields listed in this permit shall use the following protocols to determine the amount of sludge to be applied.

- a. If land application sites listed in this permit are also included as land application sites in another permit the wastewater and sludge applications from other sources shall be included in the application rates in paragraphs b and c of this section. Records of the amount and application rate of wastewater or sludge from other sources must be kept.
- b. The fertilizer recommendation is the amount of nutrients required for a crop to produce the expected yield and shall be based on the following:
- 1) The nutrient recommendation (nitrogen or phosphorus) for each crop. Recommendations can be found in University of Missouri Extension Guide WQ430 Crop/Nutrient Considerations for Biosolids or from publications by other land grant universities in adjoining states,
  - 1) Realistic yield goal for each crop. Yield goals should be based on actual crop yield records from multiple years for each field. Good judgment should be used to counteract unusually high or low yields. If a field's yield history is not available the USDA county wide average or other approved source may be used, and
  - 2) The most recent soil test.
- c. Sludge applications shall be conducted according to one the following nutrient based management practices.
- 1) Nitrogen based application. This can be used when soil test phosphorus (P) levels are 120 pounds or less per acre using Bray P-1 test method, or if the field has been assessed by Missouri Phosphorus Index (P-index) with a low or medium rating. The amount of sludge to be applied shall be adjusted annually based on the Plant Available Nitrogen (PAN) calculation using the current sludge nutrient analysis and the following:
    - (a) For non-legume crops, the nitrogen fertilizer recommendation shall be adjusted to account for nitrogen credits from a preceding legume crop and residual nitrogen from the previous year's application. Nitrogen removal rates can be found in WQ430.
    - (b) For legume crops, the nitrogen removal capacity of the legume crops should be based on the estimated nitrogen content of the harvested crop as defined in WQ430 and a realistic yield goal. The estimated nitrogen content of the crop must be adjusted using nitrogen credits for residual nitrogen fertilizer from the previous year's application.

**PAN** = [Ammonia Nitrogen x volatilization factor\*] + [Organic Nitrogen x 0.2] + [Nitrate Nitrogen]\*Volatilization factor is 0.7 for surface application and 1 for subsurface application.

- 2) Phosphorus based application. This must be used when soil test phosphorus (P) levels are above 120 pounds per acre using Bray P-1 test method, or if the P-index rating is high. The amount of sludge to be applied shall be adjusted annually based the phosphorus content of the current sludge nutrient analysis and may be done applied according to one of the following methods;
    - (a) The annual amount of phosphorus applied shall not exceed the planned crop's phosphorus removal estimate from WQ430, or from publications by other land grant universities in adjoining states or,
    - (b) Multi-year phosphorus applications. Sludge applications can exceed the annual planned phosphate removal estimate for the crop when a multi-year phosphorus application is utilized. The multi-year application must comply with the following conditions:
      - (i) the amount of sludge applied shall not exceed the nitrogen fertilizer recommendation or the estimated nitrogen removal capacity of the planned crop during the year of the application,
      - (ii) the amount of phosphorus banked shall not exceed four years of the estimated crop removal rate for the planned crop rotation.
      - (iii) the actual application rate shall not exceed the multi-year application rate
      - (iv) no additional sludge applications shall occur until the applied phosphorus has been removed from the field by crop removal or harvest.
  - 3) No land application can occur if the P-index rating for a field is very high.
- d. Other Pollutant Limitations and Loading Rates
- 1) Oil and grease application shall not exceed 10,000 pounds oil/acre/year for subsurface injection or soil incorporation. For surface application to growing vegetation, the sludge shall not exceed 15% oil & grease content and shall not exceed 1,000 pounds oil/acre. Avoid heavy application of oil and grease within 30 days before planting of row crops.

C. SPECIAL CONDITIONS (continued)

19. Record Keeping

- a. A daily land application log shall be prepared and kept on file at the permittee office location for each application site. In addition to the Sludge Land Application Operational Monitoring in Table A2, the log shall contain dates of application, weather condition (sunny, overcast, raining, below freezing etc...), soil moisture condition.
- b. A record of monthly visual storage basin inspections, maintenance, and repairs shall be maintained.
- c. A record of land application equipment inspections and calibrations, and field perimeter inspections shall be maintained.
- d. A record of all PAN calculations.
- e. All records and monitoring results shall be maintained for at least five years and shall be made available to the department upon request.

20. Annual Report

An annual report is required in addition to other reporting requirements under Section A of this permit. The annual report shall be submitted by January 28 of each year. The report shall include, but is not limited to, a summary of the following:

- a. Record of maintenance and repairs during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year.
- b. An annual summary for each field used for land application showing the total amount of sludge applied, number of acres used, and application rate (gal or tons/acre)
- c. The report shall include any soil test results taken during the reporting year.
- d. Narrative summary of any problems or deficiencies identified, corrective action taken and improvements planned.
- e. All permit applications, reports required by the permit, or information requested by the Department shall be signed as required by 10 CSR 20-6.010.

21. A permit modification shall be required before placing any wastewater, stormwater, or sludge in Sludge lagoons #1 - #4, grit lagoon #2 listed under Permitted Feature #001. The integrity of the lagoon liner shall be evaluated by a Professional Engineer registered in Missouri for compliance with 10 CSR 20-8.

D. GROUNDWATER MONITORING

1. The permittee shall evaluate and enhance the current groundwater monitoring program to ensure that it is capable of determining if the lagoons have an impact on groundwater quality. The monitoring system must be capable of comparing up-gradient to down-gradient water quality in the first continuous water-bearing zone beneath the impoundment. The monitoring system must be based upon a thorough hydrogeologic characterization of the lagoon area that determines if the current monitoring wells are placed in the appropriate hydrostratigraphic unit to monitor. Any hydrogeologic characterization conducted for the design of the groundwater monitoring program shall be approved by the department's Geological Survey Program and must be conducted under the guidance of a geologist registered in the State of Missouri. This data will be used to determine how much affect, if any, the seepage from the facilities lagoons is having on iron concentration in the groundwater.
  - a. An approved upgradient well shall be installed within 3 years of the effective date of this permit.
2. The condition of the five existing groundwater monitoring wells shall be evaluated for a build-up of fine grained material and structural integrity through redevelopment or down-hole investigative process. If wells are found to be in poor condition new groundwater monitoring wells shall be installed.
3. Groundwater monitoring well #2 cannot be located by the facility and is currently not being sampled. It was installed on top of the south berm near the intersection with the berm between sludge lagoons #2 and #4. Because the sludge from these lagoons has been removed the geohydrological evaluation will determine if this well is still required. If required, the facility shall locate the well and it shall be refurbished if possible, or properly closed and install a new well. If not required, the facility shall locate and properly close the well.
4. The remaining sludge in sludge lagoons #1 and #3 and grit lagoon #2 shall be removed and land applied or taken to a permitted landfill within five years of the effective date of this permit.
5. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date. Please submit progress reports to the Missouri Department of Natural Resources, Kansas City Regional Office, 500 NE Colbern Road, Lee's Summit, MO 64086-4710 and Water Protection Program, P.O. Box 176, Jefferson City, MO 65102.

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**STATEMENT OF BASIS**  
**MO-0118117**  
**SOUTH ST. JOSEPH INDUSTRIAL SEWER DISTRICT WWTP**

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit

A Statement is not an enforceable part of a Missouri State Operating Permit.

**Part I – Facility Information**

Facility Type: NON-POTW – No-discharge/sludge land application/ wastewater is discharged to St. Joe WWTF – SIC #4952, 2879, 2047, 2075

Facility Description:

Sludge lagoons #1 - #4 and grit lagoon #2 no longer receive sludge. The existing sludge contained in these lagoons is being land applied. Sludge lagoons 2 and 4, and grit lagoon #1 have been cleaned out. Two concrete sludge digesters with clay liners have been constructed inside grit lagoon #1. All new sludge produced is stored in the two concrete digesters. All wastewater discharges are regulated by the City of St. Joseph Pretreatment Program Permit No. 101012

**Part II – Modification Rationale**

This operating permit is hereby modified to include eighteen (18) additional land application fields as Permitted Features #062-#079 and to correct a typographical error in Table A-4 on page 14. The effluent limit for Chromium III has been changed to monitoring only.

No other changes were made at this time.

**Part III – Administrative Requirements**

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

**DATE OF STATEMENT OF BASIS:** MARCH 23, 2016

**COMPLETED BY:**

**GREG CALDWELL, ENVIRONMENTAL SCIENTIST**  
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**WATER PROTECTION PROGRAM**  
**OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT**  
**(573) 526-1426**  
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**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**FACT SHEET**  
**FOR THE PURPOSE OF RENEWAL**  
**OF**  
**MO-0118117**  
**SOUTH ST. JOSEPH INDUSTRIAL SEWER DISTRICT WWTP**

Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for industrial land application and groundwater monitoring.

**Part I – Facility Information**

Facility Type: NON-POTW – No-discharge/sludge land application/ wastewater is discharged to St. Joe WWTF – SIC #4952, 2879, 2047, 2075

**Facility Description:**

Sludge lagoons #1 - #4 and grit lagoon #2 no longer receive sludge. The existing sludge contained in these lagoons is being land applied. Sludge lagoons 2 and 4, and grit lagoon #1 have been cleaned out. Two concrete sludge digesters with clay liners have been constructed inside grit lagoon #1. All new sludge produced is stored in the two concrete digesters. All wastewater discharges are regulated by the City of St. Joseph Pretreatment Program Permit No. 101012

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

- No.

Application Date: 11/30/09  
Expiration Date: 07/22/09

**Facility Performance History:**

During an inspection in 1993 it was observed that the grit lagoons had no surface water and the sludge lagoons had varying degrees of surface water coverage. Since the lagoons were not sealed this was an indication that they were leaking. A Groundwater Monitoring Well and Sampling Plan was implemented in 1996. Initial results showed iron concentrations of the five monitoring well ranging from 44.5 mg/L to 374 mg/L. The facility also began removing and land applying sludge from the lagoons. Grit lagoon #1 was cleaned out and a clay liner installed along with two concrete sludge digesters. All new process sludge is stored in the concrete digesters. Sludge has been removed from sludge lagoons #2 and #4 and is currently being removed from sludge lagoon #1. Recent Discharge Monitoring Report (DMR) data shows a significant decrease of iron concentration, but effluent limitations are still being exceeded.

The facility was last inspected on October 3, 2013 and was found to be in non-compliance due to no available background data. The groundwater DMR data was reviewed for the last 5 years. Exceedances of limitations for iron, lead, cadmium, and fecal coliform were reported. The exceedances for fecal coliform were due to the testing methodology. Since testing methodology was changed, no exceedances have been reported.

Operator has a Class B Wastewater Treatment Certification.

### Modifications Included with Renewal

The two concrete digesters constructed inside grit lagoon #1 have been added to the permit as Permitted Features #008 and #009, that portion of grit lagoon #1 has been removed from Permitted Feature #001. The unused portion of grit lagoon #1 north of Sludge Digester #1 is included in Permitted Feature #001. The previous permit included all five monitoring wells with Outfall #002. This did not allow for the DMR for each well to be entered into the departments' database. Each monitoring well is now a separate permitted feature which will allow for individual entry of the DMRs. Land application fields that are currently used for sludge applications were also added as permitted features. In addition, several newly acquired land application fields have been added to the permit. Many of these new fields are pasture and hay land which will allow for a greater window of opportunity for land application. Once the permit is issued, any addition of monitoring wells or land application fields will require a permit modification.

The facility is proposing to use the northern portion of grit lagoon #1 as a flow equalization basin when discharges to the city exceed 5 MGD. A clay liner was installed in grit lagoon #1 when the concrete digesters were constructed. However, the unused portion may not have had a consistent water level that is adequate to maintain the integrity of the liner. The facility is in the process of obtaining a construction permit to evaluate the liner for this purpose. Upon completion and approval, this portion of Permitted Feature #001 may be used as a flow equalization basin. All other lagoons in Permitted Feature #001 are unlined. The use of any portion of Permitted Feature #001 for storage of wastewater or sludge after the removal of existing sludge will require an investigation by a P.E. registered in Missouri as to the integrity of the lagoon liner. A permit modification will be required prior to placing any stormwater, wastewater, or sludge these portion of Permitted Feature #001.

This renewal removes all conditions related to emergency bypass. All discharges are regulated by the City of St. Joseph Pretreatment Program Permit No. 101012.

### Groundwater Monitoring

The facility initiated a groundwater monitoring plan in 1996. Initial monitoring results showed groundwater iron concentrations ranging from 44.5 mg/L to 345 mg/L. Since then, removal of sludge from three of the six lagoons has greatly decreased the iron concentration however; they still exceed the water quality standard for groundwater.

Groundwater studies of Missouri River alluvium indicate that iron concentrations tends to be higher than previously established effluent limits. The departments' Missouri Geological Survey (MGS) agrees that background iron content of the Missouri River alluvial aquifer is generally high in relation to regulatory limits. MGS reviewed the 1996 Groundwater Monitoring Well Installation and Groundwater Monitoring Report that was submitted by the facility. They recommend that due to the age of the existing monitoring wells they be evaluated and if found to be in poor condition, new monitoring wells be installed. MGS also recommend that background data be collected from a location upgradient of the existing wells to minimize influence from the lagoons. There are several wells in the area, but MGS indicated that they may not be a reliable source for background data. Once the facility installs a monitoring well for background data, it can be used to evaluate the influence leakage from the lagoons is having on groundwater iron concentrations.

## **Part II – Receiving Stream Information**

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." Should this facility discharge, the receiving stream and/or 1<sup>st</sup> classified receiving stream's beneficial water uses to be maintained, are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(4)].

**RECEIVING STREAM(S) TABLE:**

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC**
Missouri River	P	0226	AQL , DWS , GEN , HHP , IND , IRR , LWW , SCR , WBC B	10240011-0106
Sugar Creek	C	0271	AQL , GEN , HHP , IRR , LWW , SCR , WBC B	10240011-0302
Willow Brook Lake	L1	7438	AQL , DWS , GEN , HHP , IRR , LWW , SCR , WBC B	10280101- 0703
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10240011- 0106
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10240011- 0107
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10240011- 0107
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10240011- 0301
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0705
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0808
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0807
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0807
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0807
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0803
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0802
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0801
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0702
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0704
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0710
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0703
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0703
8-20-13 MUDD V1.0	C	7630	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0703
8-20-13 MUDD V1.0	C	3960	AQL, HHP, IRR, LWW, SCR, WBC(B)	10280101- 0501

\* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW), Human Health Protection (HHP). \*\* - Hydrologic Unit Code

**Part III – Rationale and Derivation of Effluent Limitations & Permit Conditions**

**ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

Not Applicable; The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

**ANTI-BACKSLIDING:**

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

Not Applicable; This permit is being issued under state authority only, federal anti-backsliding regulations do not apply.

**ANTIDEGRADATION:**

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

**AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**

As per [10 CSR 20-6.010(3)(B)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS & SEWAGE SLUDGE:**

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address:

<http://extension.missouri.edu/main/DisplayCategory.aspx?C=74>, items WQ422 through WQ449.

- Permittee land applies sludge in accordance with Standard Conditions III and a Department approved sludge management plan.

**COMPLIANCE AND ENFORCEMENT:**

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

Not Applicable; The permittee/facility is not currently under Water Protection Program enforcement action.

**LAND APPLICATION**

The Missouri Soil Testing Association provides a list of accredited labs at <http://soilplantlab.missouri.edu/soil/msta.aspx>.

**NUTRIENT MANAGEMENT**

For more information or examples on calculating nitrogen application rates and PAN consult MU Guide 9186 Calculating Plant-Available Nitrogen and Residual Nitrogen Fertilizer Value in Manure.

Conversion Factors for laboratory testing results: [mg/L or mg/kg or ppm] x [conversion factor] = [pounds per Unit Volume]

<u>Unit Volume</u>	<u>Conversion Factors</u>
lbs./acre inch	0.226
lbs./1,000 gallons	0.0083
lbs./100 cubic feet	0.0062
lbs/ton (wet weight)	0.002

The Missouri P-Index is a tool to evaluate the potential for phosphorus loss from land application fields. It uses information such as soil test phosphorus result, cropping practices, RUSLE, land cover, and distance to water to calculate a rating for the risk phosphorus transport from the field. The P-index is available at <http://nmplanner.missouri.edu/tools/pindex.asp0>.

Agronomic rate can also be obtained by using the University of Missouri Extension online fertilizer recommendation calculator at <http://soilplantlab.missouri.edu/soil/scripts/manualentry.aspx>.

**SCHEDULE OF COMPLIANCE (SOC):**

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(10), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on October 25, 2012 the department issued a policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as an affordability analysis.

Not Applicable ; This permit does not contain a SOC.

**SPILL REPORTING:**

Per 10 CSR 24-3.010, any emergency involving a hazardous substance must be reported to the department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the Noncompliance Reporting requirement found in Standard Conditions Part I.

**STORMWATER POLLUTION PREVENTION PLAN (SWPPP):**

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

Not Applicable ; At this time, the permittee is not required to develop and implement a SWPPP.

**VARIANCE:**

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

Not Applicable ; This operating permit is not drafted under premises of a petition for variance.

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

**40 CFR 122.41(M) - BYPASSES:**

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

Not Applicable ; This renewal removes all conditions related to emergency bypass. All discharges are regulated by the City of St. Joseph Pretreatment Program Permit No. 101012.

**303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):**

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Applicable ; The Missouri River is listed on the 2012 Missouri 303(d) List for *E. Coli*.

– This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Missouri River.

**Part V – Permit Limits Determination**

**PERMITTED FEATURES #008, #009 – STORAGE BASIN OPERATIONAL MONITORING**

**OPERATIONAL MONITORING TABLE:**

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Freeboard	feet	1	*				
Precipitation	inches	1	*				
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

\* - Monitoring requirement only.

\*\* - Parameter not previously established in previous state operating permit.

**Basis for Limitations Codes:**

- |  |                                    |
|--|------------------------------------|
| 1. State or Federal Regulation/Law       | 7. Antidegradation Policy          |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model             |
| 3. Water Quality Based Effluent Limits   | 9. Best Professional Judgment      |
| 4. Lagoon Policy                         | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy                        | 11. WET Test Policy                |
| 6. Antidegradation Review                |                                    |

**PERMITTED FEATURES #008, #009 – DERIVATION AND DISCUSSION OF LIMITS:**

- **Freeboard.** Monitoring requirement only.
- **Precipitation.** Monitoring requirement only.

**Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Freeboard	once/month	once/year
Precipitation	once/day	once/year

**PERMITTED FEATURE #010 - #079– LAND APPLICATION FIELD SOIL MONITORING**

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
pH	SU	1	*			NO	**
Nitrate Nitrogen as N	lbs/acre	1	*			NO	**
Available Phosphorous as P (Bray P-1 Method)	lbs/acre	1	*			NO	**
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

\* - Monitoring requirement only.

\*\* - Parameter not previously established in previous state operating permit.

**Basis for Limitations Codes:**

- |  |                                    |
|--|------------------------------------|
| 1. State or Federal Regulation/Law       | 7. Antidegradation Policy          |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model             |
| 3. Water Quality Based Effluent Limits   | 9. Best Professional Judgment      |
| 4. Lagoon Policy                         | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy                        | 11. WET Test Policy                |
| 6. Antidegradation Review                |                                    |

**PERMITTED FEATURE #010 - #061– DERIVATION AND DISCUSSION OF LIMITS:**

- **pH.** Monitoring requirement only.
- **Nitrate Nitrogen as N.** Monitoring requirement only.
- **Available Phosphorous as P.** Monitoring requirement only.

**PERMITTED FEATURE #001, #008, #009 – SLUDGE APPLICATION**

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
<b>SLUDGE MONITORING</b>						
pH	SU	*			YES	**
Total Kjeldahl Nitrogen as N	mg/kg	*			YES	**
Nitrate Nitrogen as N	mg/kg	*			YES	**
Ammonia as N	mg/kg	*			YES	**
Total Phosphorus as P	mg/kg	*			YES	**
Percent Solids	mg/kg	*			YES	**
Arsenic (Total Recoverable)	mg/kg	*			YES	**
Cadmium (Total Recoverable)	mg/kg	*			YES	**
Chromium III	mg/kg	*			YES	**
Chromium VI	mg/kg	*			YES	**
Copper (Total Recoverable)	mg/kg	*			YES	**
Lead (Total Recoverable)	mg/kg	*			YES	**
Mercury (Total Recoverable)	mg/kg	*			YES	**
Nickel (Total Recoverable)	mg/kg	*			YES	**
Selenium (Total Recoverable)	mg/kg	*			YES	**

\* - Monitoring requirement only.

\*\* - Parameter not previously established in previous state operating permit.

**PERMITTED FEATURES #001, #008, #009 – DERIVATION AND DISCUSSION OF LIMITS:**

- **pH.** Monitoring requirement only. Monitoring for pH is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]
- **Total Kjeldahl Nitrogen as N.** Monitoring requirement only. Monitoring for Total Kjeldahl Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]
- **Nitrate Nitrogen as N.** Monitoring requirement only. Monitoring for Nitrate Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]
- **Ammonia as N.** Monitoring requirement only. Monitoring for Ammonia as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]
- **Total Phosphorus as P.** Monitoring requirement only. Monitoring for Total Phosphorus as P is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]
- **Arsenic (Total Recoverable).** Monitoring requirement only. Monitoring for Arsenic is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Cadmium (Total Recoverable).** Monitoring requirement only. Monitoring for Cadmium is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Chromium III.** Monitoring requirement only. Monitoring for Chromium III is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]

- **Chromium VI**. Monitoring requirement only. Monitoring for Chromium VI is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Copper (Total Recoverable)**. Monitoring requirement only. Monitoring for Copper is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Lead (Total Recoverable)**. Monitoring requirement only. Monitoring for Lead is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Mercury (Total Recoverable)**. Monitoring requirement only. Monitoring for Mercury is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Nickel (Total Recoverable)**. Monitoring requirement only. Monitoring for Nickle is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Selenium (Total Recoverable)**. Monitoring requirement only. Monitoring for Selnium is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]
- **Available Phosphorus as P (Total Recoverable)**. Monitoring requirement only. Monitoring for Available Phosphorus as P is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]

**Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
<b>SLUDGE MONITORING</b>		
pH	once/year	once/year
Total Kjeldahl Nitrogen as N	once/year	once/year
Nitrate Nitrogen as N	once/year	once/year
Ammonia as N	once/year	once/year
Total Phosphorus as P	once/year	once/year
Percent Solids	once/year	once/year
Arsenic (Total Recoverable)	once/year	once/year
Cadmium (Total Recoverable)	once/year	once/year
Chromium III	once/year	once/year
Chromium VI	once/year	once/year
Copper (Total Recoverable)	once/year	once/year
Lead (Total Recoverable)	once/year	once/year
Mercury (Total Recoverable)	once/year	once/year
Nickel (Total Recoverable)	once/year	once/year
Selenium (Total Recoverable)	once/year	once/year

**PERMITTED FEATURES #002, #004 - #007– GROUNDWATER MONITORING WELL MONITORING**

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Groundwater Depth	feet	*			NO	
Nitrate Nitrogen as N	mg/L	10			YES	5
Fecal Coliform	#/100mL	*			YES	1
pH	SU	**			NO	
Aluminum (Total Recoverable)	µg/L	*			NO	
Arsenic (Total Recoverable)	µg/L	50			YES	0.5 mg/L
Beryllium (Total Recoverable)	µg/L	4			NO	
Boron (Total Recoverable)	µg/L	2000			NO	
Cadmium (Total Recoverable)	µg/L	5			NO	
Chromium III	µg/L	100			NO	Chromium (Total Recoverable)
Chromium VI	µg/L	*				**
Copper (Total Recoverable)	µg/L	1300			NO	
Iron (Total Recoverable)	µg/L	*			YES	0.3 mg/L
Lead (Total Recoverable)	µg/L	15			NO	
Mercury (Total Recoverable)	µg/L	2			NO	
Nickel (Total Recoverable)	µg/L	100			NO	
Selenium (Total Recoverable)	µg/L	50			YES	0.5 mg/L
Zinc (Total Recoverable)	µg/L	5000			NO	
Methylene Chloride	µg/L	4.7			YES	.005 mg/L
2, 4-Dichlorophenol	µg/L	93			NO	
Phenol	µg/L	300			NO	
Toluene	µg/L	1000			NO	

\* - Monitoring requirement only.

\*\* - Parameter not previously established in previous state operating permit.

**PERMITTED FEATURES #002, #004 - #007– DERIVATION AND DISCUSSION OF LIMITS:**

- **Groundwater Depth.** – Monitoring requirement only.
- **Nitrate Nitrogen as N.** – Effluent limitations from the previous state operating permit has been reassessed. The State Water Quality Standards in 10 CSR 20-7.031 Table A, require an effluent limitation for protection of groundwater for the parameter of Nitrate Nitrogen as N of 10 mg/L. Therefore, the effluent limitation has been changed to 10 mg/L, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**

- **Fecal Coliform.** – State Water Quality Standards do not include effluent limitations for fecal coliform for groundwater. The parameter of fecal coliform has been retained as monitoring only requirement as an indicator to the structural integrity of the lagoons.
- **pH.** – 6.5-9.0 SU. pH is addressed in two main sections of the Missouri Clean Water Law that influence permit parameters. In accordance with 10 CSR 20-7.015(8)(A)2., pH shall be maintained in the range of 6.0-9.0 standard pH units. In accordance with 10 CSR 20-7.031(5)(E), water contaminants shall not cause pH to be outside of the range of 6.5 -9.0 standard pH units. However, 40 CFR 122.44(b)(1) and 40 CFR 122.44(d) require that the permit contain the most stringent requirement for a parameter. Therefore, the facility shall be required to maintain a range of 6.5-9.0 standard pH units.
- **Aluminum (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Arsenic (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and they did not meet State Water Quality Standards in 10 CSR 20-7.031 Table A effluent limitation for protection of groundwater. The effluent limitation has been change to 50 µg/L to meet State Water Quality Standards.
- **Beryllium (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Boron (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Cadmium (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Chromium III.** – Effluent limitations from the previous state operating permit have been reassessed and they did not meet State Water Quality Standards in 10 CSR 20-7.031 Table A effluent limitation for protection of groundwater. State Water Quality Standards require monitoring for the effluent parameter of Chromium III. Therefore the effluent parameter of Total Recoverable Chromium has been changed to Chromium III. The Effluent limitation have of 100 µg/L has been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Copper (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Iron (Total Recoverable).** – The effluent limitation for iron has been changed to monitoring only. USGS studies show high concentrations of iron in the groundwater in Missouri River alluvium. The monitoring only requirement along with and assessment of the facilities groundwater monitoring program will be an indicator to the structural integrity of the lagoons.
- **Lead (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Mercury (Total Recoverable).** - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**

- **Nickel (Total Recoverable)**. - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.
- **Selenium (Total Recoverable)**. - Effluent limitations from the previous state operating permit have been reassessed and they did not meet State Water Quality Standards in 10 CSR 20-7.031 Table A effluent limitation for protection of groundwater. The effluent limitation has been change to 50 µg/L to meet State Water Quality Standards.
- **Zinc (Total Recoverable)**. - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.
- **Methylene Chloride**. - Effluent limitations from the previous state operating permit have been reassessed and they did not meet State Water Quality Standards in 10 CSR 20-7.031 Table A effluent limitation for protection of groundwater. The effluent limitation has been change to 4.7 µg/L to meet State Water Quality Standards.
- **2, 4-Dichlorophenol**. - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.
- **Phenol**. - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.
- **Toluene**. - Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.

## **Part VI – Finding of Affordability**

Pursuant to Section 644.145, RSMo., the Department is required to determine whether a permit or decision is affordable and makes a finding of affordability for certain permitting and enforcement decisions. This requirement applies to discharges from combined or separate sanitary sewer systems or publically-owned treatment works.

Not Applicable; The Department is not required to determine findings of affordability because the permit contains no new conditions or requirements that convey a new cost to the facility.

## **Part VII – Administrative Requirements**

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

### **PERMIT SYNCHRONIZATION:**

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit.

**PUBLIC NOTICE:**

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- The Public Notice period for this operating permit was from February 6, 2015 to March 9, 2015. No comments were received.

- The Public Notice period for the modification was from June 10, 2016 to July 11, 2016. No comments were received

**DATE OF FACT SHEET:** MARCH 11, 2015

UPDATED: JULY 14, 2016

**COMPLETED BY:** GREG CALDWELL

**PERMIT WRITER NAME, ENVIRONMENTAL SPECIALIST**

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**

**WATER PROTECTION PROGRAM**

**OPERATING PERMITS SECTION – INDUSTRIAL UNIT**

**(573) 526-1426**

[greg.caldwell@dnr.mo.gov](mailto:greg.caldwell@dnr.mo.gov)

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Water Protection Program



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
FORM A - APPLICATION FOR NONDOMESTIC PERMIT UNDER MISSOURI  
CLEAN WATER LAW

FOR AGENCY USE ONLY	
CHECK NUMBER	14400
DATE RECEIVED	11/3/15
FEE SUBMITTED	\$450.00

Note ▶ PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.

1. This application is for:

An operating permit for a new or unpermitted facility:  
Please indicate the original Construction Permit # \_\_\_\_\_

An operating permit renewal:  
Please indicate the permit # MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

An operating permit modification:  
Please indicate the permit # MO- 0118117 Modification Reason: Add Land Application Sites

1.1 Is the appropriate fee included with the application? (See instructions for appropriate fee)  YES  NO

2. FACILITY

NAME South St. Joseph Industrial Sewer district		TELEPHONE NUMBER WITH AREA CODE (816) 238-3959	
		FAX (816) 238-2750	
ADDRESS (PHYSICAL) 1409 Lower Lake Road	CITY St. Joseph	STATE MO	ZIP CODE 64504

3. OWNER

NAME South St. Joseph Industrial Sewer District		TELEPHONE NUMBER WITH AREA CODE (816) 238-3959	
EMAIL ADDRESS ssjisd@stjoewireless.com		FAX (816) 238-2750	
ADDRESS (MAILING) PO Box 4401	CITY St. Joseph	STATE MO	ZIP CODE 64504

3.1 Request review of draft permit prior to public notice?  YES  NO

4. CONTINUING AUTHORITY

NAME Same	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
		FAX	
ADDRESS (MAILING)	CITY	STATE	ZIP CODE

5. OPERATOR

NAME Same	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE	
		FAX	
ADDRESS (MAILING)	CITY	STATE	ZIP CODE

6. FACILITY CONTACT

NAME Chad Coleman	TITLE General Manager	TELEPHONE NUMBER WITH AREA CODE (816) 238-3959
	E-MAIL ADDRESS ssjisd@stjoewireless.com	FAX (816) 238-2750

7. ADDITIONAL FACILITY INFORMATION

7.1 Legal Description of Outfalls. (Attach additional sheets if necessary.)

001 SE ¼ SE ¼ Sec 25 T 57N R 36W Bucha County  
UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_  
*For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)*

002 ¼ ¼ Sec \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County  
UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_

003 ¼ ¼ Sec \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County  
UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_

004 ¼ ¼ Sec \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County  
UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_

7.2 Primary Standard Industrial Classification (SIC) and Facility North American Industrial Classification System (NAICS) Codes.

001 - SIC 4952 and NAICS \_\_\_\_\_ 002 - SIC \_\_\_\_\_ and NAICS \_\_\_\_\_  
003 - SIC \_\_\_\_\_ and NAICS \_\_\_\_\_ 004 - SIC \_\_\_\_\_ and NAICS \_\_\_\_\_

<b>8. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION</b> (Complete all forms that are applicable.)			
A.	Is your facility a manufacturing, commercial, mining or silviculture waste treatment facility? If yes, complete Form C or 2F. (2F is the U.S. EPA's Application for Storm Water Discharges Associate with Industrial Activity.)	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
B.	Is application for storm water discharges only? If yes, complete Form C or 2F.	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
C.	Is your facility considered a "Primary Industry" under EPA guidelines: If yes, complete Forms C or 2F and D.	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D.	Is wastewater land applied? If yes, complete Form I.	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
E.	Is sludge, biosolids, ash or residuals generated, treated, stored or land applied? If yes, complete Form R.	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
F.	If you are a Class IA CAFO, please disregard part D and E of this section. However, please attach any revision to your Nutrient Management Plan.		
F.	Attach a map showing all outfalls and the receiving stream at 1" = 2,000' scale.		
<b>9. DOWNSTREAM LANDOWNER(S)</b> Attach additional sheets as necessary. See Instructions. (PLEASE SHOW LOCATION ON MAP. SEE 8.D ABOVE).			
NAME KCP&L			
ADDRESS 520 Francis Street		CITY St. Joseph	STATE ZIP CODE MO 64504
10.	I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law to the Missouri Clean Water Commission.		
NAME AND OFFICIAL TITLE (TYPE OR PRINT) Chad Coleman - General Manager		TELEPHONE NUMBER WITH AREA CODE (816) 238-3959	
SIGNATURE <i>Chad Coleman - General Manager</i>		DATE SIGNED 10/27/15	

MO 780-1479 (07-14)

**BEFORE MAILING, PLEASE ENSURE ALL SECTIONS ARE COMPLETED AND ADDITIONAL FORMS, IF APPLICABLE, ARE INCLUDED.**

Submittal of an incomplete application may result in the application being returned.

HAVE YOU INCLUDED:

- Appropriate Fees?
- Map at 1" = 2000' scale?
- Signature?
- Form C or 2F, if applicable?
- Form D, if applicable?
- Form I (Irrigation), if applicable?
- Form R (Sludge), if applicable?
- Revised Nutrient Management Plan, if applicable?

RECEIVED

NOV 05 2015



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM

**FORM I - PERMIT APPLICATION FOR  
OPERATION OF WASTEWATER IRRIGATION SYSTEMS**

Water Protection Program

**FOR AGENCY USE ONLY**

PERMIT NUMBER

MO -

DATE RECEIVED

**INSTRUCTIONS:** The following forms must be submitted with Form I: **FORM B or B2** for domestic wastewater.  
**FORM A** for industrial wastewater.

**1. FACILITY INFORMATION**

1.1 Facility Name

South St. Joseph Industrial Sewer District

1.2 Permit Number

MO- 0118117

1.3 Type of wastewater to be irrigated:  Domestic  Municipal  State/National Park  Seasonal business

Municipal with Pretreatment Program or Significant Industrial Users  Other (explain) Land applied Sludge

SIC Codes (list all that apply, in order of importance) \_\_\_\_\_

1.4 Months when the business or enterprise will operate or generate wastewater:

12 months per year  Part of year (list Months): \_\_\_\_\_

1.5 This system is designed for:

No-discharge  Partial irrigation when feasible and discharge rest of time.

Irrigation during recreation season (April - October) and discharge during November - March.

Other (explain) \_\_\_\_\_

1.6 List the Facility outfalls which will be applicable to the irrigation system.

Outfall Numbers: NA

**2. STORAGE BASINS**

2.1 Number of storage basins: 2

Type of basin:  Steel  Concrete  Fiberglass  Earthen

Earthen with membrane liner

**3. LAND APPLICATION SYSTEM**

3.1 Number of irrigation sites \_\_\_\_\_ Total Acres \_\_\_\_\_

*See Attached*

Location: \_\_\_ 1/4, \_\_\_ 1/4, \_\_\_ 1/4, Sec \_\_\_ T \_\_\_ R \_\_\_ County \_\_\_ Acres

Location: \_\_\_ 1/4, \_\_\_ 1/4, \_\_\_ 1/4, Sec \_\_\_ T \_\_\_ R \_\_\_ County \_\_\_ Acres

Attach pages as needed.

3.2 Attach a site map showing topography, storage basins, irrigation sites, property boundary, streams, wells, roads, dwellings, and other pertinent features.

3.3 Type of vegetation:  Grass hay  Pasture  Timber  Row crops  Other (describe) \_\_\_\_\_

3.4 Wastewater flow (dry weather) gallons/day:

Average annual: 2,000,000 Seasonal \_\_\_\_\_ Off-season \_\_\_\_\_

Months of seasonal flow: —

**3. LAND APPLICATION SYSTEM (continued)**

3.5 Land Application rate per acre (design flow including 1 in 10 year stormwater flows):

Design: \_\_\_\_\_ inches/year    \_\_\_\_\_ inches/hour    \_\_\_\_\_ inches/day    \_\_\_\_\_ inches/week

Actual: \_\_\_\_\_ inches/year    \_\_\_\_\_ inches/hour    \_\_\_\_\_ inches/day    \_\_\_\_\_ inches/week

Total Irrigation per year (gallons): \_\_\_\_\_ Design    \_\_\_\_\_ Actual

Actual months used for Irrigation (check all that apply):

Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

3.6 Land Application Rate is based on:

Nutrient Management Plan (N&P)

Hydraulic Loading

Other (describe) Minimal - 2 Tons/acre

3.7 Equipment type:  Sprinklers  Gated pipe  Center pivot  Traveling gun  Other (describe) Solid Spr

Equipment Flow Capacity: \_\_\_\_\_ Gallons per hour    \_\_\_\_\_ Total hours of operation per year

3.8 **Public Use Areas.** Public access shall not be allowed to public use area irrigation sites when application is occurring. Method of Public Access Restriction:

Site is Fenced     Wastewater disinfection prior to irrigation     Site is not for public use

Other (describe): \_\_\_\_\_

3.9 Separation distance (in feet) from the outside edge of the wetted irrigation area to nearby down gradient features: Land applied Sludge

100 Permanent flowing stream    300 Losing Stream    50 Intermittent (wet weather) stream    \_\_\_\_\_ Lake or pond

50 Property boundary    150 Dwellings    300 Water supply well    \_\_\_\_\_ Other (describe) Per Best Management Practices Biosolids Land Application W/Att

3.10 The facility must develop and retain an Operation and Maintenance (O&M) Plan for the irrigation system.

Date of O&M Plan: \_\_\_\_\_ N/A - Land application of Sludge - no irrigation of WW

**4. CERTIFICATION**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment.

OWNER OR AUTHORIZED REPRESENTATIVE	OFFICIAL TITLE
Chad Coleman	General Manager

EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
<u>ssjisd@stjoe.wireless.net</u>	(816) 238-3959

SIGNATURE	DATE SIGNED
<u>Chad Coleman - General Manager</u>	<u>10/27/15</u>

South St. Joseph Sewer District land application sites to be added to permit

FARMER	Field ID	GPS Name	Town ship	Legal Discription	Acreage
Shane Reagan	SR10	Gwen	T56N, R36W	SE 1/4 of NE 1/4 of Sec. 4	64
Shane Reagan	SR12N	John Oconnor	T56N, R36W	NE 1/4 of SE 1/4 of Sec. 11	32
Shane Reagan	SR12S	John Oconnor	T56N, R36W	SE 1/4 of SE 1/4 of Sec. 11	46
Shane Reagan	SR15N	Griffee	T55N, R37W	SW 1/4 of NE 1/4 of Sec. 1	94
Shane Reagan	SR15S	Griffee	T55N, R37W	SW 1/3 of SE 1/4 of Sec. 1	79
Shane Reagan	SR16	Lenas	T55N, R37W	NE1/4 OF NW 1/4 OF SEC. 13	31
Shane Reagan	SR17	McQueen	T55N, R37W	SW 1/4 of Sec. 13	70
Shane Reagan	SR19	Browning	T55N, 36W	NE 1/2 of Sec. 20	80
Shane Reagan	SR21	Den Meyer	T55N, R36W	SW 1/2 of SE 1/4 of Sec. 15	75
Shane Reagan	SR22	Sampson	T55N, 36W	SW 1/4 of SW 1/4 of Sec. 21	42
Shane Reagan	SR23	Black	T55N, R36W	SE 1/2 & NW 1/4 of SW 1/4 of Sec. 18	97
Shane Reagan	SR24	Jobes	T56N, R36W	S 1/2 of NE 1/4 of Sec. 26	54
Shane Reagan	SR25	Reidy	T55N R37W	S 1/2 of SE 1/4 of Sec. 23	70
Shane Reagan	SR26	Jones	T55N R37W	NW 1/2 & NW 1/2 of SW Sec. of 24	200
Shane Reagan	SR27	Kepler	T55N R36W	NW 1/2 & SE 1/4 of SW1/4 Sec of 16	46
Shane Reagan	SR28	Allens	T55N R36W	S1/4 of NW Sec of 33	150
Shane Reagan	SR30	D. Reagan	T55N, R37W	NW 1/4 NE 1/2 SE 1/2 ofNW 1/4OF Sec 23	96
Shane Reagan	SR31	Faulk	T55N, R37W	SW 1/4 of SE 1/2 of Sec 12	57

Note that SR 1 - SR 9 are already included in our permit.

C. Coleman 10/27/15

All Land Application Sites listed above are located in Buchanan County.

# BUCHANAN COUNTY, MISSOURI

## 2008 PLAT BOOK



*Plat Map locations for added  
land application sites.*

*Chad Coleman 10/21/15*  
**Planning and Zoning** *General Manager SSSISD*

411 Jules St, RM 204 | St. Joseph, MO 64501 | 816.271.1429

[www.co.buchanan.mo.us](http://www.co.buchanan.mo.us)

4600

3600

2600

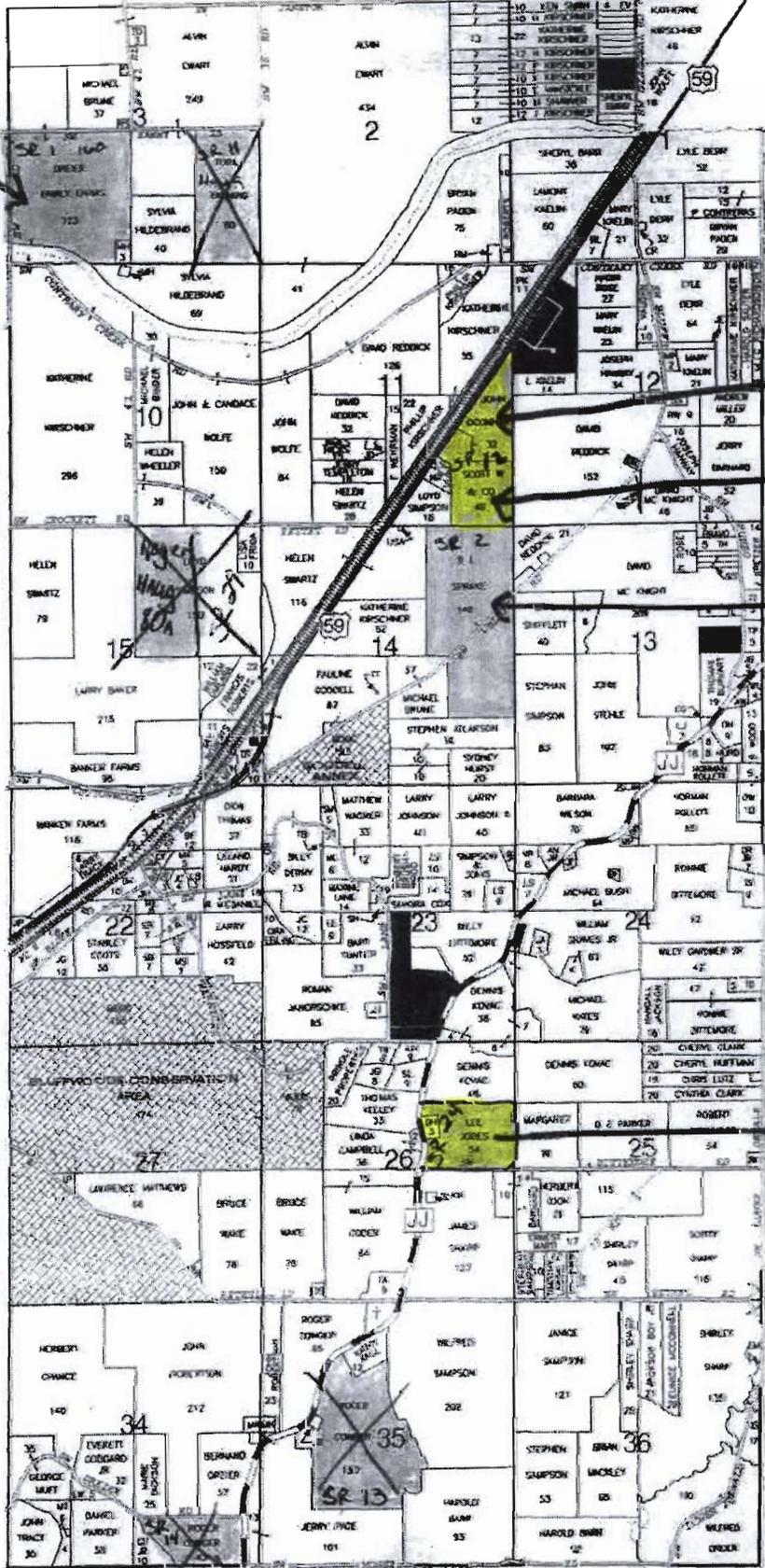
1400

SEE PAGE 10

ST. JOSEPH

6800

SR1



8000

SR12N

SR12S

9400

SR2

10400

SEE PAGE 19

11400

SR24

12400

13400

SEE PAGE 28

WAYNE POLITICAL TOWNSHIP  
RANGE 36 W  
TOWNSHIP 56 N

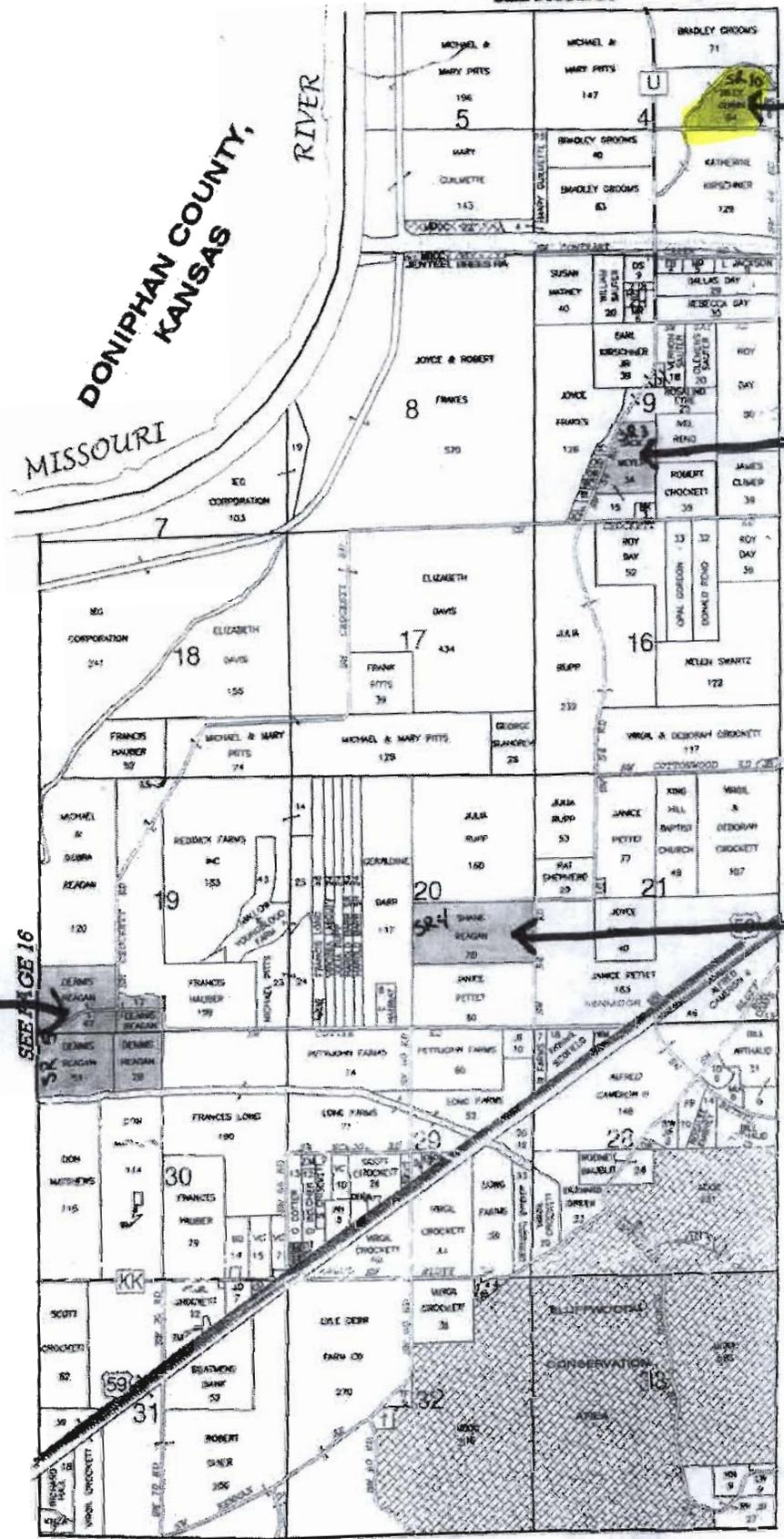


RANGE 36 W  
 TOWNSHIP 56 N  
 WAYNE POLITICAL TOWNSHIP

7600 6600 5600 4600

6800  
8000  
9400  
10400  
12400  
13400

SEE PAGE 10



SR1

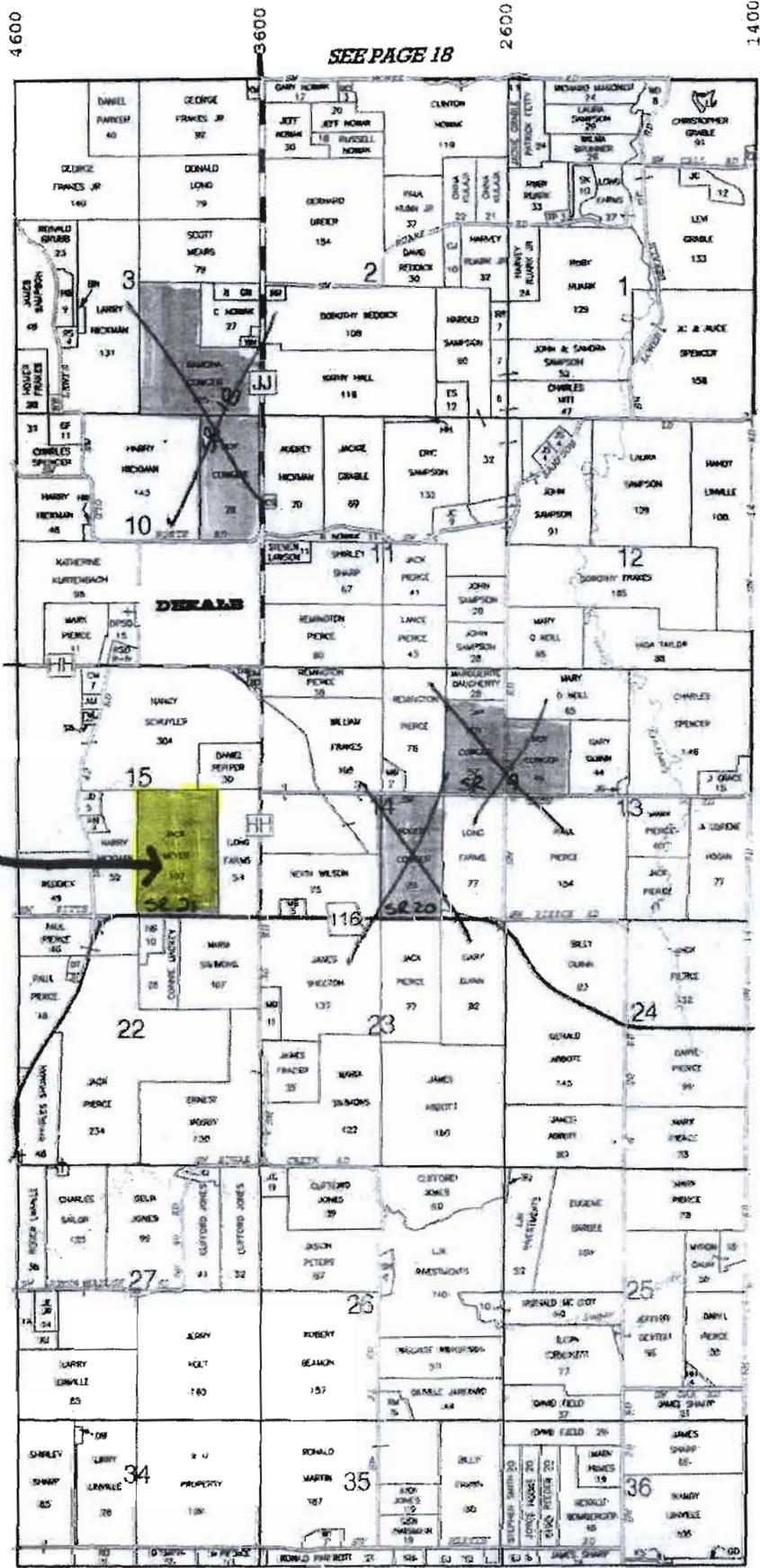
SR3

SR4

SR5

SEE PAGE 16

SEE PAGE 27



**SR21**

SEE PAGE 18

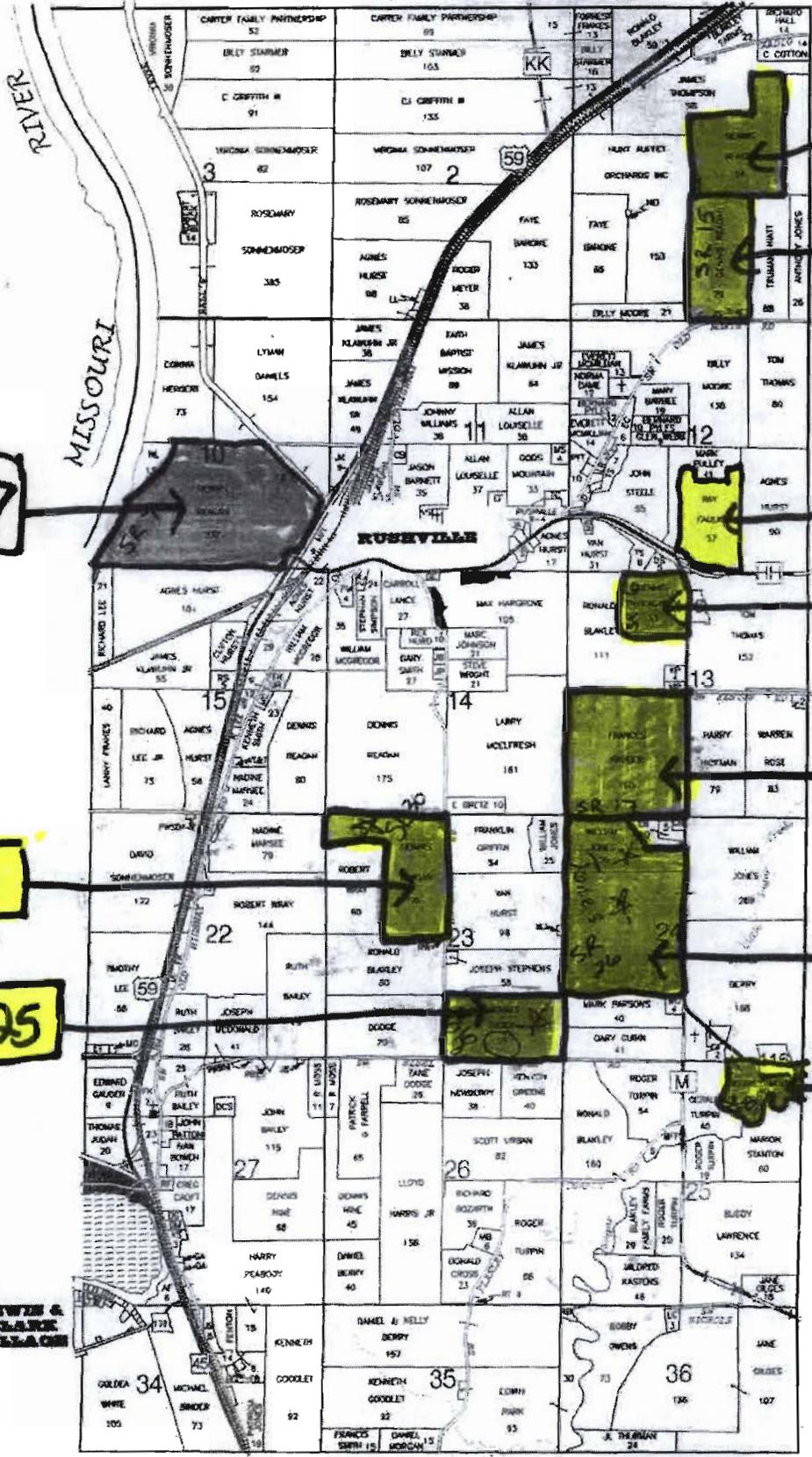
SEE PAGE 29

PLATTE

COUNTY

BLOOMINGTON POLITICAL TOWNSHIP

10600 9600 8600 7600  
SEE PAGE 16



SR7

SR15N

SR15S

SR31

SR16

SR17

SR30

SR25

SR26

SR8

LEWIS & CLARK VILLAGE

PLATTE

COUNTY

RUSH POLITICAL TOWNSHIP

SEE PAGE 17

## **University of Missouri Extension**

WQ426, Revised August 1994

# **Best Management Practices for Biosolids Land Application**

**Ken Arnold**

**Chief of Land Application, Missouri Department of Natural Resources**

**John Dunn**

**Environmental Engineer, Environmental Protection Agency Region VII**

**Jerry D. Carpenter**

**Department of Agricultural Engineering**

Biosolids is domestic wastewater sludge that meets standards for use as a fertilizer or soil conditioner. These standards include monitoring requirements, metal limitations, pathogen reduction, vector requirements and best management practices.

Applying biosolids to land uses the available nitrogen, phosphorus and potash as fertilizer for growing crops. It is an environmentally sound practice sanctioned by the U.S. Environmental Protection Agency (EPA) and the Missouri Department of Natural Resources (DNR). Reusing biosolids on crops, pastures and timberland reduces water pollution. It eliminates the environmental risks and costs associated with sludge disposal options, benefiting all Missourians.

## **Background**

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge. These standards include limitations for the land application of biosolids.

DNR incorporated the EPA standards into the state requirements under the Missouri Clean Water Law and regulations. The state rules include additional requirements that are not covered in the EPA standards. Complying with state regulations automatically meets the EPA sludge standards.

## **Pollutant standards for land application**

Testing for metal, pathogens and other pollutants is required to determine the representative quality of the biosolids. Treat biosolids to reduce pathogens and vectors before application. The concentration of metal and other pollutants in the biosolids determines the acceptability for land application and the appropriate loading rates to protect crops, soils and the environment.

## **Best management practices**

Biosolids that meet the standards for metal, pathogens, vectors and other pollutants are safe to apply when following the best management practices.

Best management practices, or "good farming practices," include agronomic load rates, buffer zones, depth to groundwater, wetlands protection, harvest and grazing deferments, threatened and endangered species protection, field slope limitations, restrictions for frozen or saturated soils, requirements for public-use sites, soil conservation practices and other site restrictions.

The following list of practices is based on the regulations and standard permit conditions:

### **1. No discharge**

Biosolids must not discharge from the application site, except during catastrophic or chronic precipitation exceeding the 1-in-10 year rainfall level.

### **2. Public contact sites and public-use or distribution of biosolids**

- Class A biosolids applied to public-use sites, distributed for general public use or used on vegetable crops, root crops or home gardens must comply with 40 CFR 503 Subpart B.
- A biosolids management plan or engineering report for Class A biosolids used on public sites must be approved by the DNR before use or distribution.
- Do not apply Class B biosolids to public contact areas, residential lawns or turf farms unless the biosolids are incorporated. Restrict public access for 12 months. You must gain approval from the permitting authority.

### **3. Crop restrictions**

Do not apply Class B biosolids to root crops, home gardens or vegetable crops whose edible parts will come in contact with applied biosolids, unless the crops are not used for direct human consumption.

### **4. Harvest and grazing restrictions**

Do not apply biosolids to land within 30 days of harvest or grazing by cattle. Applicators are also subject to requirements of the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.

### **5. Threatened or endangered species**

Applying biosolids must not adversely affect a threatened or endangered species or its designated critical habitat. This is in accordance with section 4 of the Endangered Species Act.

### **6. Nitrogen limitations**

Do not apply more than the agronomic rate of nitrogen needed.

- The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil and crop removals, unless the following conditions are met:

- Nitrogen content of the biosolids does not exceed 50,000 milligrams per kilogram of total nitrogen on a dry weight basis; and
- Biosolids application rate is less than two dry tons per acre per year.
- Report nitrogen compounds as nitrogen in the PAN calculations. Calculate PAN as follows:

$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor})$   
 The volatilization factors are 0.7 for surface application and 1 for subsurface injection.

- You may use alternate PAN calculations if documented by site-specific data and prior approval is obtained from the DNR.
- If you use the University soil test laboratory, the soil test report will provide the net nitrogen to apply for a specific crop and yield goal. If you use a private soil test laboratory, the available nitrogen in the soil must be determined and subtracted from the nitrogen application requirements.

## 7. Buffer zones

Do not apply biosolids within:

- 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
- 300 feet of a losing stream, no-discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
- 150 feet of dwellings;
- 100 feet of wetlands or permanent flowing streams;
- 50 feet of a property line or other waters of the state, including intermittent flowing streams.

## 8. Slope limitations for application sites

- On slopes of 0 to 6 percent, there is no rate limitation
- On 7 to 12 percent slopes, you may apply biosolids when soil conservation practices are used to meet minimum erosion (T) levels in accordance with U.S. Soil Conservation service recommendations.
- For slopes of 12 percent or more, apply biosolids only when the site is maintained in grass vegetation with at least 80 percent ground cover. Do not apply more than two dry tons per acre per year.

## 9. Storm water runoff

- Do not place biosolids in a location where it is reasonably certain that pollutants will be transported into waters of the state during stormwater runoff.
- Subsurface inject the biosolids, incorporate after application, use soil conservation practices, adhere to slope restrictions, create buffer areas and follow other approved methods, as necessary.
- Soil conservation practices for application must be approved by the U.S. Soil Conservation Service or MU Extension.

## **10. Frozen, snow-covered or saturated soil conditions**

Do not apply biosolids when the ground is frozen, snow covered or when the soil is saturated, unless site restrictions or other controls are provided to prevent pollutants from being discharged during snowmelt or storm water runoff. If land application is necessary during inclement weather, use sites which meet the following:

- A maximum field slope of 6 percent and a minimum 300 feet grass buffer between the application site and waters of the state.
- A maximum field slope of 2 percent and 100 feet grass buffer between the application site and waters of the state.
- Other best management practices approved by the DNR.

## **11. Biosolids storage**

- Provide adequate sludge and biosolids storage as needed to match the application windows for crop planting, harvesting and inclement weather conditions. Operate storage basins so there is no discharge to waters of the state.
- Recommended biosolids storage for grassland sites ranges from 60 to 120 days as follows: 60 days south of Highway 60; 75 days between Highway 60 and Highway 50; 90 days between Highway 50 and Highway 36; and 120 days north of Highway 36.
- Storage should be increased for tilled cropland application sites depending on the crop rotations and ratio of tilled land to grassland. Recommended storage is 180 to 365 days if all sites are tilled crop land.
- Any storage area located off-site of the sludge or biosolids generating facility must have a separate individual permit for the storage site, except for temporary stockpiles.
- Use temporary stockpiles for solid or semi-solid materials (no free liquids) only. Limit the stockpile to two weeks per year at any one application field. Locate stockpiles at least 300 feet from drainage ways or they must have runoff collection berms at least 6 inches high around the pile.

## **12. Application rates**

Evenly spread the biosolids over the entire application site. Do not dump the material in batches or spread a pile using a blade, disc or similar equipment.

## **13. Application equipment**

Properly operate and maintain application equipment. Visually check the equipment each day during operation. Apply biosolids during daylight hours only, unless approval is obtained from the permitting authority.

## **14. Soil pH limitations**

Do not apply biosolids to sites with a soil pH less than 6.0 or greater than 7.5 (based on the salt solution test, which is preferred) or less than 6.5 or greater than 8.0 (based on the water solution test).

Application of biosolids to higher pH soils may be considered on a case-by-case basis. Submit a site-specific permit application and supporting document, addressing crop and groundwater protection, to DNR. Tracking of aluminum loading rates will be required. See Table 4 in MU publication WQ425, *Biosolids Standards for Metals and Other Trace Substances*.

### **15. Soil phosphorus limitations**

Do not apply biosolids to soils that contain more than 800 pounds of available phosphorus, based on the Bray P-1 test, unless approval is obtained from the permitting authority DNR.

### **16. Soil depth**

Do not apply biosolids to sites that have less than 5 feet of soil above bedrock or a groundwater aquifer, unless authorized in a site-specific permit for the application site.

### **17. Record keeping**

Sludge applicators must keep detailed records for at least five years on each location and amounts of biosolids applied.

Landowners are not required to keep records. However, it is highly recommended that biosolids application records be incorporated into your total nutrient management plan.

### **Related MU Extension publications**

- WQ425, *Biosolids Standards for Metals and Other Trace Substances*  
<http://extension.missouri.edu/p/WQ425>

Order publications online at <http://extension.missouri.edu/explore/shop/> or call toll-free 800-292-0969.



■ Issued in furtherance of the Cooperative Extension Work Acts of May 8 June 30, 1914, in cooperation with the United States Department of Agriculture, Director, Cooperative Extension, University of Missouri, Columbia, MO 65211  
■ an equal opportunity/ADA institution ■ 573-882-7216 ■ [extension.missouri.edu](http://extension.missouri.edu)



October 08, 2015

Mr. Chad Coleman  
South St. Joe Industrial Sewer  
1409 Lower Lake Road  
Saint Joseph, MO 64504

RE: Project: Volatile Solids Reduction  
Pace Project No.: 60203595

Dear Mr. Coleman:

Enclosed are the analytical results for sample(s) received by the laboratory on September 24, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Trudy Gipson  
trudy.gipson@pacelabs.com  
Project Manager

Enclosures



### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
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Pace Analytical Services, Inc.  
9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

## CERTIFICATIONS

Project: Volatile Solids Reduction  
Pace Project No.: 60203595

---

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
WY STR Certification #: 2456.01  
Arkansas Certification #: 15-016-0  
Illinois Certification #: 003097  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Nevada Certification #: KS000212008A  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

---

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9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

### SAMPLE SUMMARY

Project: Volatile Solids Reduction  
Pace Project No.: 60203595

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60203595001	RAW SLUDGE	Solid	09/24/15 10:00	09/24/15 15:30
60203595002	DIGESTED SLUDGE	Solid	09/24/15 10:15	09/24/15 15:30

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Lenexa, KS 66219  
(913)599-5665

### SAMPLE ANALYTE COUNT

Project: Volatile Solids Reduction  
Pace Project No.: 60203595

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60203595001	RAW SLUDGE	ASTM D2974	CRS	1	PASI-K
		EPA 160.4	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60203595002	DIGESTED SLUDGE	ASTM D2974	CRS	1	PASI-K
		EPA 160.4	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
			TJG	1	PASI-K

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**ANALYTICAL RESULTS**

Project: Volatile Solids Reduction  
 Pace Project No.: 60203595

Sample: **RAW SLUDGE** Lab ID: **60203595001** Collected: 09/24/15 10:00 Received: 09/24/15 15:30 Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Percent Moisture</b>	Analytical Method: ASTM D2974							
Percent Moisture	<b>98.5</b>	%	0.50	1		09/29/15 09:52		
<b>160.4 Total Volatile Solids</b>	Analytical Method: EPA 160.4							
Total Volatile Solids	<b>81.5</b>	% (w/w)	1.0	1		09/29/15 00:00		
<b>2540G Total Percent Solids</b>	Analytical Method: SM 2540G							
Total Solids	<b>1.5</b>	%	0.10	1		09/29/15 09:52		

**REPORT OF LABORATORY ANALYSIS**

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**ANALYTICAL RESULTS**

Project: Volatile Solids Reduction  
 Pace Project No.: 60203595

**Sample: DIGESTED SLUDGE**      **Lab ID: 60203595002**      Collected: 09/24/15 10:15      Received: 09/24/15 15:30      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Percent Moisture</b>		Analytical Method: ASTM D2974						
Percent Moisture	72.0	%	0.50	1		09/29/15 09:55		
<b>160.4 Total Volatile Solids</b>		Analytical Method: EPA 160.4						
Total Volatile Solids	69.5	% (w/w)	1.0	1		09/29/15 00:00		
<b>2540G Total Percent Solids</b>		Analytical Method: SM 2540G						
Total Solids	28.0	%	0.10	1		09/29/15 09:55		
<b>Volatile Solids Reduction</b>		Analytical Method:						
Volatile Solids Reduction	48.3%	%		1		10/07/15 00:00		

**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: Volatile Solids Reduction  
Pace Project No.: 60203595

---

QC Batch: PMST/11149                      Analysis Method: ASTM D2974  
QC Batch Method: ASTM D2974            Analysis Description: Dry Weight/Percent Moisture  
Associated Lab Samples: 60203595001, 60203595002

---

SAMPLE DUPLICATE: 1641033

Parameter	Units	60203595001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	98.5	98.5	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: Volatile Solids Reduction  
 Pace Project No.: 60203595

QC Batch: WET/57477 Analysis Method: EPA 160.4  
 QC Batch Method: EPA 160.4 Analysis Description: 160.4 Total Volatile Solids  
 Associated Lab Samples: 60203595001, 60203595002

METHOD BLANK: 1641030 Matrix: Solid  
 Associated Lab Samples: 60203595001, 60203595002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Volatile Solids	% (w/w)	ND	1.0	09/29/15 00:00	

SAMPLE DUPLICATE: 1641031

Parameter	Units	60203595001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Volatile Solids	% (w/w)	81.5	81.2	0	19	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY CONTROL DATA**

Project: Volatile Solids Reduction  
 Pace Project No.: 60203595

QC Batch: WET/57476 Analysis Method: SM 2540G  
 QC Batch Method: SM 2540G Analysis Description: 2540G Total Solids  
 Associated Lab Samples: 60203595001, 60203595002

METHOD BLANK: 1641027 Matrix: Solid  
 Associated Lab Samples: 60203595001, 60203595002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Solids	%	ND	0.10	09/29/15 10:00	

SAMPLE DUPLICATE: 1641032

Parameter	Units	60203595001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	1.5	1.5	2	8	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: Volatile Solids Reduction  
Pace Project No.: 60203595

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Volatile Solids Reduction  
Pace Project No.: 60203595

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60203595001	RAW SLUDGE	ASTM D2974	PMST/11149		
60203595002	DIGESTED SLUDGE	ASTM D2974	PMST/11149		
60203595001	RAW SLUDGE	EPA 160.4	WET/57477		
60203595002	DIGESTED SLUDGE	EPA 160.4	WET/57477		
60203595001	RAW SLUDGE	SM 2540G	WET/57476		
60203595002	DIGESTED SLUDGE	SM 2540G	WET/57476		
60203595002	DIGESTED SLUDGE		WET/57646		

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Sample Condition Upon Receipt

WO#: 60203595



Client Name: South St Joe

Optional
Proj Due Date:
Proj Name:

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Other  Client

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: CF +0.6 T-239 CF +0.6 T-262 Type of Ice: Wet Blue None  Samples received on ice, cooling process has begun.

Cooler Temperature: 4.2 (circle one)

Date and initials of person examining contents: JB a/24

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>GL</u>		13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: [Signature]

Date: 9-25-12

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



<b>Section A</b> Required Client Information: Company: South St Joe Industrial Sewer Address: 1409 Lower Lake Road St Joseph, MO 64504 Email To: <a href="mailto:ssjisc@stjoewireless.com">ssjisc@stjoewireless.com</a> Phone: 816-238-3959 Fax: 816-238-2750 Requested Due Date/TAT: STANDARD		<b>Section B</b> Required Project Information: Report To: Chad Coleman Copy To: Purchase Order No.: Project Name: Volatile Solids Reduction Project Number:		<b>Section C</b> Invoice Information: Attention: Chad Coleman Company Name: South St Joe Industrial Sewer Address: Pace Quote Reference: Pace Project Manager: Trudy Gipson 913-563-1405 Pace Profile #: 303 Line 11	
<b>REGULATORY AGENCY</b> <input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER		Site Location STATE: Missouri		Page: 1 of 1	

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WATER WW WASTE WATER WWT PACIFIC P SOLID/SOLID SL OIL OX WIPE WP AIR AR OTHER OT TISSUE TS	SAMPLE TYPE (G=GRAB T=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test ↑	Requested Analysis Filtered (Y/N)	Temp in °C	Received on Ice (Y/N)	Custody Sealed (Y/N)	Samples Intact (Y/N)
			COMPOSITE START	COMPOSITE END/GRAB									
1	RAW SLUDGE	SL	DATE	TIME		1	Unpreserved	Total Volatile Solids (TVS) X Total Solids (TS) X Volatile Solids Reduction X		4.2	Y	Y	Y
2	DIGESTED SLUDGE	SL	9/24/15 10:15 AM	9/24/15 11:00 AM		1	Unpreserved	Total Volatile Solids (TVS) X Total Solids (TS) X Volatile Solids Reduction X	0203595	4.2	Y	Y	Y
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

<b>ADDITIONAL COMMENTS</b> Relinquished by / Affiliation: [Signature] / [Affiliation] Date: 9/24/15 11:00 AM Time: 11:00 AM		<b>ACCEPTED BY / AFFILIATION</b> [Signature] / [Affiliation] Date: 9/24/15 Time: 15:00		<b>SAMPLE CONDITIONS</b> Received on Ice (Y/N): Y Custody Sealed (Y/N): Y Samples Intact (Y/N): Y	
<b>SAMPLER NAME AND SIGNATURE</b> PRINT Name of SAMPLER: Chad Coleman SIGNATURE of SAMPLER: [Signature] DATE Signed (MM/DD/YYYY): 9/24/15					



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(913)599-5665

October 13, 2015

Mr. Chad Coleman  
South St. Joe Industrial Sewer  
1409 Lower Lake Road  
Saint Joseph, MO 64504

RE: Project: Sludge Testing  
Pace Project No.: 60204251

Dear Mr. Coleman:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Trudy Gipson  
trudy.gipson@pacelabs.com  
Project Manager

Enclosures



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## CERTIFICATIONS

Project: Sludge Testing  
Pace Project No.: 60204251

---

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
WY STR Certification #: 2456.01  
Arkansas Certification #: 15-016-0  
Illinois Certification #: 003097  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Nevada Certification #: KS000212008A  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

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### Southeast Kansas Certification IDs

808 West McKay, Frontenac, KS 66763  
Arkansas Certification #: 13-012-0  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116  
Louisiana Certification #: 03055

Oklahoma Certification #: 2012-051  
Texas Certification #: T104704407-13-4  
Utah Certification #: KS000212013-3  
Minnesota Certification #: 495004

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### SAMPLE SUMMARY

Project: Sludge Testing  
Pace Project No.: 60204251

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60204251001	SX 1	Solid	10/05/15 10:05	10/06/15 08:00
60204251002	SX 2	Solid	10/05/15 10:10	10/06/15 08:00
60204251003	SX 3	Solid	10/05/15 10:15	10/06/15 08:00
60204251004	SX 4	Solid	10/05/15 10:20	10/06/15 08:00
60204251005	SX 5	Solid	10/05/15 10:25	10/06/15 08:00
60204251006	SX 6	Solid	10/05/15 10:30	10/06/15 08:00
60204251007	SX 7	Solid	10/05/15 10:35	10/06/15 08:00

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**SAMPLE ANALYTE COUNT**

Project: Sludge Testing  
 Pace Project No.: 60204251

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60204251001	SX 1	SM 9222D	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60204251002	SX 2	SM 9222D	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60204251003	SX 3	SM 9222D	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60204251004	SX 4	SM 9222D	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60204251005	SX 5	SM 9222D	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60204251006	SX 6	SM 9222D	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
60204251007	SX 7	SM 9222D	MEB	1	PASI-SE
		SM 2710B	MEB	1	PASI-SE
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K

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### ANALYTICAL RESULTS

Project: Sludge Testing  
 Pace Project No.: 60204251

Sample: **SX 1** Lab ID: **60204251001** Collected: 10/05/15 10:05 Received: 10/06/15 08:00 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b> Analytical Method: SM 9222D Preparation Method: SM 9222D								
Fecal Coliforms	<105	CFU/g	1.1	1	10/06/15 10:00	10/07/15 11:00		H3,R5, u3
<b>Percent Moisture</b> Analytical Method: ASTM D2974								
Percent Moisture	5.1	%	0.50	1		10/09/15 16:01		
<b>2540G Total Percent Solids</b> Analytical Method: SM 2540G								
Total Solids	94.9	%	0.10	1		10/09/15 16:01		

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**ANALYTICAL RESULTS**

Project: Sludge Testing  
 Pace Project No.: 60204251

**Sample: SX 2**      **Lab ID: 60204251002**      Collected: 10/05/15 10:10      Received: 10/06/15 08:00      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b> Analytical Method: SM 9222D      Preparation Method: SM 9222D								
Fecal Coliforms	<258	CFU/g	2.6	1	10/06/15 10:00	10/07/15 11:00		H3,R5, u3
<b>Percent Moisture</b> Analytical Method: ASTM D2974								
Percent Moisture	61.3	%	0.50	1		10/09/15 16:04		
<b>2540G Total Percent Solids</b> Analytical Method: SM 2540G								
Total Solids	38.7	%	0.10	1		10/09/15 16:04		

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**ANALYTICAL RESULTS**

Project: Sludge Testing  
 Pace Project No.: 60204251

**Sample: SX 3**      **Lab ID: 60204251003**      Collected: 10/05/15 10:15      Received: 10/06/15 08:00      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b>								
Analytical Method: SM 9222D      Preparation Method: SM 9222D								
Fecal Coliforms	<298	CFU/g	3.0	1	10/06/15 10:00	10/07/15 11:00		H3,R5, u3
<b>Percent Moisture</b>								
Analytical Method: ASTM D2974								
Percent Moisture	66.4	%	0.50	1		10/09/15 16:08		
<b>2540G Total Percent Solids</b>								
Analytical Method: SM 2540G								
Total Solids	33.6	%	0.10	1		10/09/15 16:08		

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**ANALYTICAL RESULTS**

Project: Sludge Testing  
 Pace Project No.: 60204251

Sample: **SX 4** Lab ID: **60204251004** Collected: 10/05/15 10:20 Received: 10/06/15 08:00 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b>								
Analytical Method: SM 9222D Preparation Method: SM 9222D								
Fecal Coliforms	<b>333</b>	CFU/g	3.3	1	10/06/15 10:00	10/07/15 11:00		H3,R5, u3
<b>Percent Moisture</b>								
Analytical Method: ASTM D2974								
Percent Moisture	<b>70.0</b>	%	0.50	1		10/09/15 16:12		
<b>2540G Total Percent Solids</b>								
Analytical Method: SM 2540G								
Total Solids	<b>30.0</b>	%	0.10	1		10/09/15 16:12		

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**ANALYTICAL RESULTS**

Project: Sludge Testing  
 Pace Project No.: 60204251

Sample: **SX 5** Lab ID: **60204251005** Collected: 10/05/15 10:25 Received: 10/06/15 08:00 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b>		Analytical Method: SM 9222D Preparation Method: SM 9222D						
Fecal Coliforms	<b>239</b>	CFU/g	2.4	1	10/06/15 10:00	10/07/15 11:00		H3,R5, u3
<b>Percent Moisture</b>		Analytical Method: ASTM D2974						
Percent Moisture	<b>58.1</b>	%	0.50	1		10/09/15 16:16		
<b>2540G Total Percent Solids</b>		Analytical Method: SM 2540G						
Total Solids	<b>41.9</b>	%	0.10	1		10/09/15 16:16		

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**ANALYTICAL RESULTS**

Project: Sludge Testing  
 Pace Project No.: 60204251

**Sample: SX 6**      **Lab ID: 60204251006**      Collected: 10/05/15 10:30      Received: 10/06/15 08:00      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b>								
Analytical Method: SM 9222D Preparation Method: SM 9222D								
Fecal Coliforms	<215	CFU/g	2.2	1	10/06/15 10:00	10/07/15 11:00		H3,R5, u3
<b>Percent Moisture</b>								
Analytical Method: ASTM D2974								
Percent Moisture	53.5	%	0.50	1		10/09/15 16:19		
<b>2540G Total Percent Solids</b>								
Analytical Method: SM 2540G								
Total Solids	46.5	%	0.10	1		10/09/15 16:19		

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**ANALYTICAL RESULTS**

Project: Sludge Testing  
 Pace Project No.: 60204251

Sample: SX 7 Lab ID: 60204251007 Collected: 10/05/15 10:35 Received: 10/06/15 08:00 Matrix: Solid  
 Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MBIO 9222DS Fecal Coliform</b>	Analytical Method: SM 9222D Preparation Method: SM 9222D							
Fecal Coliforms	<b>4000</b>	CFU/g	1.8	1	10/06/15 10:00	10/07/15 11:00		H3,u3
<b>Geometric Mean</b>	Analytical Method: SM 2710B							
Fecal Coliforms	<b>683</b>	CFU/g	1.8	1		10/07/15 11:00		
<b>Percent Moisture</b>	Analytical Method: ASTM D2974							
Percent Moisture	<b>45.0</b>	%	0.50	1		10/09/15 16:23		
<b>2540G Total Percent Solids</b>	Analytical Method: SM 2540G							
Total Solids	<b>55.0</b>	%	0.10	1		10/12/15 13:49		

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**QUALITY CONTROL DATA**

Project: Sludge Testing  
 Pace Project No.: 60204251

QC Batch: MBIO/15268 Analysis Method: SM 9222D  
 QC Batch Method: SM 9222D Analysis Description: 9222DS MBIO Fecal Coliform  
 Associated Lab Samples: 60204251001, 60204251002, 60204251003, 60204251004, 60204251005, 60204251006, 60204251007

METHOD BLANK: 1649362 Matrix: Water  
 Associated Lab Samples: 60204251001, 60204251002, 60204251003, 60204251004, 60204251005, 60204251006, 60204251007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fecal Coliforms	CFU/g	<1	1.0	10/07/15 11:00	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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**QUALITY CONTROL DATA**

Project: Sludge Testing  
 Pace Project No.: 60204251

QC Batch: WET/57681 Analysis Method: SM 2540G  
 QC Batch Method: SM 2540G Analysis Description: 2540G Total Solids  
 Associated Lab Samples: 60204251001, 60204251002, 60204251003, 60204251004, 60204251005, 60204251006, 60204251007

METHOD BLANK: 1647159 Matrix: Solid  
 Associated Lab Samples: 60204251001, 60204251002, 60204251003, 60204251004, 60204251005, 60204251006, 60204251007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Solids	%	ND	0.10	10/09/15 16:58	

SAMPLE DUPLICATE: 1647160

Parameter	Units	60204346001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	23.4	23.3	0	8	

SAMPLE DUPLICATE: 1647161

Parameter	Units	60204401001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	1.0	1.0	0	8	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: Sludge Testing  
Pace Project No.: 60204251

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City  
PASI-SE Pace Analytical Services - SE Kansas

### ANALYTE QUALIFIERS

H3 Sample was received or analysis requested beyond the recognized method holding time.  
R5 Result is estimated due to the number of colonies observed being outside method SM9222D recommended range.  
u3 Analysis initiated more than 8 hours but less than 24 hours after sample collection.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: Sludge Testing  
 Pace Project No.: 60204251

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60204251001	SX 1	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251002	SX 2	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251003	SX 3	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251004	SX 4	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251005	SX 5	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251006	SX 6	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251007	SX 7	SM 9222D	MBIO/15268	SM 9222D	MBIO/15269
60204251007	SX 7	SM 2710B	MBIO/15270		
60204251001	SX 1	ASTM D2974	PMST/11178		
60204251002	SX 2	ASTM D2974	PMST/11178		
60204251003	SX 3	ASTM D2974	PMST/11178		
60204251004	SX 4	ASTM D2974	PMST/11178		
60204251005	SX 5	ASTM D2974	PMST/11178		
60204251006	SX 6	ASTM D2974	PMST/11178		
60204251007	SX 7	ASTM D2974	PMST/11178		
60204251001	SX 1	SM 2540G	WET/57681		
60204251002	SX 2	SM 2540G	WET/57681		
60204251003	SX 3	SM 2540G	WET/57681		
60204251004	SX 4	SM 2540G	WET/57681		
60204251005	SX 5	SM 2540G	WET/57681		
60204251006	SX 6	SM 2540G	WET/57681		
60204251007	SX 7	SM 2540G	WET/57681		

**REPORT OF LABORATORY ANALYSIS**

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Sample Condition Upon Receipt

WO#: 60204251



60204251

1 of 2

Client Name: South St. Joe

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Other  Client

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-239 <sup>CF +0.6</sup> T-262 <sup>CF +0.6</sup> Type of Ice: Wet Blue  None  Samples received on ice, cooling process has begun.

Cooler Temperature: 20

Date and initials of person examining contents: 10/5/15 PV/10/5/15

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>fecal</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>SL</u>		13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, <u>Coliform</u> , O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client?  /  /  Field Data Required? Y / I / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: [Signature]

Date: 10-5-15





Sample Condition Upon Receipt

WO#: 60204251  
60204251  
# 2 of 2

Client Name: S. ST Joe

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Other  Client

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-243 Type of Ice: Wet Blue None  Samples received on ice, cooling process has begun.

Cooler Temperature: 1.2

Date and initials of person examining contents: 10/6/15 MB  
0800

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Includes date/time/ID/analyses	Matrix: <u>M310/0115</u> <u>WTF SC</u>	13.
All containers needing preservation have been checked	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
All containers needing preservation are found to be in compliance with EPA recommendation	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>8mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



Page: 1 of 2

**Section A**  
 Client Information:  
 Company: South St Joe Industrial Sewer  
 Address: 1409 Lower Lake Road  
 City: St Joseph, MO 64504  
 Phone: 816-238-3959 Fax: 816-238-2750  
 Email To: ssjsid@stjoelive.com  
 Requested Due Date/TAT: \_\_\_\_\_

**Section B**  
 Required Project Information:  
 Report To: Chad Coleman  
 Copy To: \_\_\_\_\_  
 Purchase Order No.: \_\_\_\_\_  
 Project Name: Sludge Testing  
 Project Number: \_\_\_\_\_

**Section C**  
 Invoice Information  
 Attention: Chad Coleman  
 Company Name: South St Joe Industrial Sewer  
 Address: \_\_\_\_\_  
 Pace Quote Reference: \_\_\_\_\_  
 Pace Project Manager: Trudy Gipson 913-563-1405  
 Pace Profile #: 303 Line 5

**REGULATORY AGENCY**  
 NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  OTHER \_\_\_\_\_  
 Site Location: \_\_\_\_\_  
 STATE: Missouri

ITEM #	Valid Matrix Codes MATRIX DRINKING WATER DW WATER WT WASTE WATER WW PRODUCT P SOLID S OIL OL WIPE WIP OTHER OK TISSE TIS	Section D Required Client Information <b>SAMPLE ID</b> (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	Matrix Code (see valid codes to left)	Sample Type (G=GRAB C=COMP)	Collected		# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)				Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB				FECAL COLIFORM	TOTAL SOLIDS	PERCENT MOISTURE	GEOMETRIC MEAN		
1		SX 1	SL	G	DATE: 10/5/15 TIME: 10:56	DATE: 10/5/15 TIME: 10:08	1	Unpreserved H <sub>2</sub> O <sub>2</sub> HNO <sub>3</sub> HCl NaOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> Methanol Other	Analysis Test ↑	X	X	X	X	X	1585T 01
2		SX 2	SL	G	DATE: 10/5/15 TIME: 10:10	DATE: 10/5/15 TIME: 10:10	1			X	X	X	X	X	02
3		SX 3	SL	G	DATE: 10/5/15 TIME: 10:15	DATE: 10/5/15 TIME: 10:15	1			X	X	X	X	X	03
4		SX 4	SL	G	DATE: 10/5/15 TIME: 10:20	DATE: 10/5/15 TIME: 10:20	1			X	X	X	X	X	04
5		SX 5	SL	G	DATE: 10/5/15 TIME: 10:25	DATE: 10/5/15 TIME: 10:25	1			X	X	X	X	X	05
6		SX 6	SL	G	DATE: 10/5/15 TIME: 10:30	DATE: 10/5/15 TIME: 10:30	1			X	X	X	X	X	06
7		SX 7	SL	G	DATE: 10/5/15 TIME: 10:35	DATE: 10/5/15 TIME: 10:35	1			X	X	X	X	X	07
8															
9															
10															
11															
12															

**ADDITIONAL COMMENTS**  
 DO NOT COLLECT ON THURSDAY/FRIDAY.  
 DO NOT COLLECT BEFORE 10 AM

RELINQUISHED BY / AFFILIATION: T. Henry Edson DATE: 10-5-15 TIME: 11 AM  
 ACCEPTED BY / AFFILIATION: Chad Coleman DATE: 10/5/15 TIME: 1320  
 RELEASING SIGNATURE: T. Henry Edson DATE SIGNED (MM/DD/YYYY): 10-5-15  
 RECEIVING SIGNATURE: Chad Coleman DATE SIGNED (MM/DD/YYYY): 10-5-15

Temp in °C: \_\_\_\_\_  
 Received on Ice (Y/N): \_\_\_\_\_  
 Custody Sealed (Y/N): \_\_\_\_\_  
 Amples Intact (Y/N): \_\_\_\_\_



Pace Analytical Services, Inc.  
9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

October 07, 2015

Mr. Chad Coleman  
South St. Joe Industrial Sewer  
1409 Lower Lake Road  
Saint Joseph, MO 64504

RE: Project: Land Applied Sludge  
Pace Project No.: 60203596

Dear Mr. Coleman:

Enclosed are the analytical results for sample(s) received by the laboratory on September 24, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Trudy Gipson  
trudy.gipson@pacelabs.com  
Project Manager

Enclosures



#### REPORT OF LABORATORY ANALYSIS

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### CERTIFICATIONS

Project: Land Applied Sludge  
Pace Project No.: 60203596

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#### Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268  
Illinois Certification #: 200074  
Indiana Certification #: C-49-06  
Kansas Certification #: E-10177  
Kentucky UST Certification #: 0042  
Kentucky WW Certification #: 98019  
Louisiana Certification #: 04076

Ohio VAP Certification #: CL-0065  
Oklahoma Certification #: 2014-148  
Texas Certification #: T104704355-15-9  
West Virginia Certification #: 330  
Wisconsin Certification #: 999788130  
USDA Soil Permit #: P330-10-00128

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#### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
WY STR Certification #: 2456.01  
Arkansas Certification #: 15-016-0  
Illinois Certification #: 003097  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Nevada Certification #: KS000212008A  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407  
Utah Certification #: KS00021

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#### Dallas Certification IDs:

400 West Bethany Dr Suite 190, Allen, TX 75013  
EPA# TX00074  
Texas Certification #: T104704232-14-8  
Kansas Certification #: E-10388

Arkansas Certification #: 88-0647  
Oklahoma Certification #: 2014-055  
Louisiana Certification #: 02007

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### SAMPLE SUMMARY

Project: Land Applied Sludge  
Pace Project No.: 60203596

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60203596001	SLUDGE TO BE LAND APPLIED	Solid	09/24/15 10:15	09/24/15 15:30

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**SAMPLE ANALYTE COUNT**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60203596001	SLUDGE TO BE LAND APPLIED	EPA 6010	JGP	8	PASI-K
		EPA 7471	SSL	1	PASI-D
		ASTM D2974	CRS	1	PASI-K
		SM 2540G	CRS	1	PASI-K
		EPA 7196A	TPD	1	PASI-I
		EPA 9045	LJS	1	PASI-K
		Trivalent Chromium Calculation	JMC1	1	PASI-K
		EPA 350.1	RAB	1	PASI-K
		EPA 351.2	OL	1	PASI-K
		EPA 365.4	RAB	1	PASI-K
EPA 9056	AJM	1	PASI-K		

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### ANALYTICAL RESULTS

Project: Land Applied Sludge  
 Pace Project No.: 60203596

**Sample: SLUDGE TO BE LAND APPLIED**      **Lab ID: 60203596001**      Collected: 09/24/15 10:15      Received: 09/24/15 15:30      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP Red. Interference</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050						
Arsenic	ND	mg/kg	2.9	1	10/02/15 11:25	10/06/15 11:29	7440-38-2	
Cadmium	ND	mg/kg	1.4	1	10/02/15 11:25	10/06/15 11:29	7440-43-9	
Chromium	19.1	mg/kg	1.4	1	10/02/15 11:25	10/06/15 11:29	7440-47-3	
Iron	6370	mg/kg	14.4	1	10/02/15 11:25	10/06/15 11:29	7439-89-6	
Lead	14.4	mg/kg	2.9	1	10/02/15 11:25	10/06/15 11:29	7439-92-1	
Nickel	59.7	mg/kg	1.4	1	10/02/15 11:25	10/06/15 11:29	7440-02-0	
Potassium	894	mg/kg	144	1	10/02/15 11:25	10/06/15 11:29	7440-09-7	
Selenium	ND	mg/kg	4.3	1	10/02/15 11:25	10/06/15 11:29	7782-49-2	
<b>7471 Mercury</b>		Analytical Method: EPA 7471 Preparation Method: EPA 7471						
Mercury	0.26	mg/kg	0.12	1	09/30/15 08:50	09/30/15 11:49	7439-97-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974						
Percent Moisture	71.9	%	0.50	1		09/29/15 09:58		
<b>2540G Total Percent Solids</b>		Analytical Method: SM 2540G						
Total Solids	28.1	%	0.10	1		09/29/15 09:58		
<b>7196 Chromium, Hexavalent</b>		Analytical Method: EPA 7196A Preparation Method: EPA 3060A						
Chromium, Hexavalent	ND	mg/kg	14.1	2	10/05/15 07:23	10/06/15 11:45	18540-29-9	D3
<b>9045 pH Soil</b>		Analytical Method: EPA 9045						
pH at 25 Degrees C	7.3	Std. Units	0.10	1		09/28/15 13:15		
<b>Trivalent Chromium Calculation</b>		Analytical Method: Trivalent Chromium Calculation						
Chromium, Trivalent	19.1	mg/kg		1		10/07/15 13:30	16065-83-1	
<b>350.1 Ammonia</b>		Analytical Method: EPA 350.1						
Nitrogen, Ammonia	122	mg/kg	3.6	1		09/28/15 15:12	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b>		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	21700	mg/kg	1120	5		10/04/15 09:59	7727-37-9	
<b>365.4 Total Phosphorus</b>		Analytical Method: EPA 365.4 Preparation Method: EPA 365.4						
Phosphorus	9060	mg/kg	356	10	09/28/15 07:36	09/30/15 10:40	7723-14-0	D6
<b>9056 IC Anions</b>		Analytical Method: EPA 9056 Preparation Method: EPA 9056						
Nitrate as N	44.4	mg/kg	35.6	10	09/29/15 08:30	09/29/15 17:25	14797-55-8	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: MERP/2329 Analysis Method: EPA 7471  
 QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury  
 Associated Lab Samples: 60203596001

METHOD BLANK: 167429 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.035	09/30/15 11:36	

LABORATORY CONTROL SAMPLE: 167430

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.05	0.048	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 167431 167432

Parameter	Units	60203735018		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	Result	% Rec	% Rec					
Mercury	mg/kg	ND	.046	.046	0.051	0.050	89	86	70-130	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: MPRP/33376 Analysis Method: EPA 6010  
 QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1643030 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	10/06/15 11:08	
Cadmium	mg/kg	ND	0.50	10/06/15 11:08	
Chromium	mg/kg	ND	0.50	10/06/15 11:08	
Iron	mg/kg	ND	5.0	10/06/15 11:08	
Lead	mg/kg	ND	1.0	10/06/15 11:08	
Nickel	mg/kg	ND	0.50	10/06/15 11:08	
Potassium	mg/kg	ND	50.0	10/06/15 11:08	
Selenium	mg/kg	ND	1.5	10/06/15 11:08	

LABORATORY CONTROL SAMPLE: 1643031

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	100	92.0	92	80-120	
Cadmium	mg/kg	100	94.0	94	80-120	
Chromium	mg/kg	100	99.9	100	80-120	
Iron	mg/kg	1000	1010	101	80-120	
Lead	mg/kg	100	99.3	99	80-120	
Nickel	mg/kg	100	99.9	100	80-120	
Potassium	mg/kg	1000	907	91	80-120	
Selenium	mg/kg	100	90.6	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1643032 1643033

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		60203840001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Arsenic	mg/kg	ND	341	357	317	339	93	95	75-125	7	20	
Cadmium	mg/kg	2.9	341	357	332	353	96	98	75-125	6	20	
Chromium	mg/kg	13800	341	357	13400	13500	-114	-99	75-125	0	20	M1
Iron	mg/kg	121000	3410	3570	107000	113000	-400	-236	75-125	5	20	M1
Lead	mg/kg	4.9	341	357	321	340	92	94	75-125	6	20	
Nickel	mg/kg	76.4	341	357	382	408	90	93	75-125	7	20	
Potassium	mg/kg	279	3410	3570	3570	3760	96	97	75-125	5	20	
Selenium	mg/kg	ND	341	357	232	223	68	62	75-125	4	20	M1

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

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QC Batch: PMST/11149                      Analysis Method: ASTM D2974  
 QC Batch Method: ASTM D2974            Analysis Description: Dry Weight/Percent Moisture  
 Associated Lab Samples: 60203596001

---

SAMPLE DUPLICATE: 1641033

Parameter	Units	60203595001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	98.5	98.5	0	20	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: WET/57476 Analysis Method: SM 2540G  
 QC Batch Method: SM 2540G Analysis Description: 2540G Total Solids  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1641027 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Solids	%	ND	0.10	09/29/15 10:00	

SAMPLE DUPLICATE: 1641032

Parameter	Units	60203595001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	1.5	1.5	2	8	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: WET/24684 Analysis Method: EPA 7196A  
 QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1392591 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	10/06/15 10:39	

LABORATORY CONTROL SAMPLE: 1392592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1010	931	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1392593 1392594

Parameter	Units	50128363007		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec		RPD	RPD	
Chromium, Hexavalent	mg/kg	1850	1260	1260	3040	3100	95	99	75-125	2	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1392595 1392596

Parameter	Units	50128363007		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec		RPD	RPD	
Chromium, Hexavalent	mg/kg	1850	51.1	51.1	1750	1810	-203	-70	75-125	4	20 M3		

SAMPLE DUPLICATE: 1392597

Parameter	Units	50128447013 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	0.92J	1.4J		20	

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### QUALITY CONTROL DATA

Project: Land Applied Sludge  
Pace Project No.: 60203596

QC Batch: WET/57442      Analysis Method: EPA 9045  
QC Batch Method: EPA 9045      Analysis Description: 9045 pH  
Associated Lab Samples: 60203596001

SAMPLE DUPLICATE: 1640413

Parameter	Units	60202852001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.8	1	3	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: WETA/36098 Analysis Method: EPA 350.1  
 QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1640459 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/kg	ND	1.0	09/28/15 15:00	

LABORATORY CONTROL SAMPLE: 1640460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/kg	20	20.2	101	90-110	

MATRIX SPIKE SAMPLE: 1640461

Parameter	Units	60203278001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/kg	ND	12100	13900	115	80-120	

SAMPLE DUPLICATE: 1640462

Parameter	Units	60203453008 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/kg	14700	15200	3	20	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: WETA/36132 Analysis Method: EPA 351.2  
 QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1641372 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/kg	ND	50.0	10/04/15 08:58	

LABORATORY CONTROL SAMPLE: 1641373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/kg	1000	987	99	90-110	

MATRIX SPIKE SAMPLE: 1641374

Parameter	Units	60203453008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/kg	58600	20200	70900	61	90-110	M1

SAMPLE DUPLICATE: 1641375

Parameter	Units	60203596001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Kjeldahl, Total	mg/kg	21700	21200	2	10	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: WETA/36094 Analysis Method: EPA 365.4  
 QC Batch Method: EPA 365.4 Analysis Description: 365.4 Total Phosphorus  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1640404 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/kg	ND	10.0	09/30/15 09:22	

LABORATORY CONTROL SAMPLE: 1640405

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/kg	200	205	103	90-110	

MATRIX SPIKE SAMPLE: 1640406

Parameter	Units	60203466008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/kg	9170	11100	19700	94	90-110	

SAMPLE DUPLICATE: 1640407

Parameter	Units	60203596001 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/kg	9060	11400	23	10 D6	

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**QUALITY CONTROL DATA**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

QC Batch: WETA/36118 Analysis Method: EPA 9056  
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions  
 Associated Lab Samples: 60203596001

METHOD BLANK: 1640907 Matrix: Solid  
 Associated Lab Samples: 60203596001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/kg	ND	10.0	09/29/15 15:08	

LABORATORY CONTROL SAMPLE: 1640908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/kg	250	250	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1640909 1640910

Parameter	Units	60203307001		60203307001		60203307001		% Rec Limits	Max RPD		Qual	
		MS Result	MS Spike Conc.	MSD Result	MSD Spike Conc.	MS Result	MSD Result		MSD % Rec	MSD % Rec		RPD
Nitrate as N	mg/kg	ND	1200	1200	1000	988	84	82	80-120	1	15	

SAMPLE DUPLICATE: 1640911

Parameter	Units	60203481001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrate as N	mg/kg	ND	ND		15	

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## QUALIFIERS

Project: Land Applied Sludge  
Pace Project No.: 60203596

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-D Pace Analytical Services - Dallas  
PASI-I Pace Analytical Services - Indianapolis  
PASI-K Pace Analytical Services - Kansas City

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.  
D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.  
M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.  
M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: Land Applied Sludge  
 Pace Project No.: 60203596

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60203596001	SLUDGE TO BE LAND APPLIED	EPA 3050	MPPRP/33376	EPA 6010	ICP/24599
60203596001	SLUDGE TO BE LAND APPLIED	EPA 7471	MERP/2329	EPA 7471	MERC/2304
60203596001	SLUDGE TO BE LAND APPLIED	ASTM D2974	PMST/11149		
60203596001	SLUDGE TO BE LAND APPLIED	SM 2540G	WET/57476		
60203596001	SLUDGE TO BE LAND APPLIED	EPA 3060A	WET/24684	EPA 7196A	WET/24782
60203596001	SLUDGE TO BE LAND APPLIED	EPA 9045	WET/57442		
60203596001	SLUDGE TO BE LAND APPLIED	Trivalent Chromium Calculation	WET/57637		
60203596001	SLUDGE TO BE LAND APPLIED	EPA 350.1	WETA/36098		
60203596001	SLUDGE TO BE LAND APPLIED	EPA 351.2	WETA/36132		
60203596001	SLUDGE TO BE LAND APPLIED	EPA 365.4	WETA/36094	EPA 365.4	WETA/36095
60203596001	SLUDGE TO BE LAND APPLIED	EPA 9056	WETA/36118	EPA 9056	WETA/36119

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Sample Condition Upon Receipt

WO#: 60203596



Client Name: Samm St Joe

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Other  Client

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-239 <sup>CF +0.8</sup> T-262 <sup>CF +0.8</sup> Type of Ice: Wet Blue None  Samples received on ice, cooling process has begun.

Cooler Temperature: 3.2 (circle one)

Date and initials of person examining contents: J B 9/24

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>SL</u>		13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y /  N Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: [Signature] Date: 9.25.12





**Sample Condition Upon Receipt**



Client Name: Pace - KS Project # 5028732

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 650881590980

Custody Seal on Cooler/Box Present:  Yes  no Seals intact:  yes  no

Date/Time 5035A kits placed in freezer

Packing Material:  Bubble Wrap  Bubble Bags  None  Other Ziploc

Thermometer 23456 ABCDEF

Type of Ice: Wet Blue None  Samples on ice, cooling process has begun

Cooler Temperature 3.4  
(Corrected, if applicable)

Ice Visible in Sample Containers:  yes  no

Temp should be above freezing to 6°C

Comments:

Date and initials of person examining contents: H.S. 9-29-15

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	5.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
-Includes date/time/ID/Analysis		
All containers needing acid/base pres. have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	9. (Circle) HNO3 H2SO4 NaOH NaOH/ZnAc
exceptions: VOA, colform, TOC, O&G		
All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted.		
Residual Chlorine Check (SVOC 625 Pest/PCB 608)		10. Present Absent
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Headspace TCLP Volatiles	<input type="checkbox"/> Yes <input type="checkbox"/> No	12.
Headspace Wisconsin Sulfide / Acidity	<input type="checkbox"/> Yes <input type="checkbox"/> No	13.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Project Manager Review:</b>		
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Project Manager Review: Regina N. Boyd Date: 9/29/15



# Chain of Custody

WO#: 7531423



7531423



Workorder: 60203596    Workorder Name: Land Applied Sludge    Owner Received Date: 9/24/2015    Results Requested By: 10/7/2015

Report To		Subcontract To		Requested Analysis	
Trudy Gipson Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665 Fax (913)599-1759		Pace Analytical Dallas 400 West Bethany Drive Suite 190 Allen, TX 75013 Phone (972)727-1123			

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY
						Unpres	7471 Mercury	
1	SLUDGE TO BE LAND APPLIED	PS	9/24/2015 10:15	60203596001	Solid	1	X	001
2								
3								
4								
5								

Transfers		Released By		Received By		Date/Time		Comments	
1		<i>[Signature]</i>		<i>[Signature]</i>		9/24/15 17:00	9/24/15 08:47	Dry Weight will be done in Kansas	
2									
3									
Cooler Temperature on Receipt		1.8 °C		Custody Seal		Received on Ice		Samples Intact	
								Yor	

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.



**Sample Condition Upon Receipt  
Dallas**

Client Name: Pace Kansas Project Work order: 7531423

Courier: FedEX  UPS  USPS  Client  Courier  LSO  PACE  Other: \_\_\_\_\_  
 Tracking#: 6508 8159 1005

Custody Seal on Cooler/Box: Yes  No  Seals Intact: Yes  No  NA   
 Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other   
 Thermometer Used: IR-01 Type of Ice: Wet  Blue  None  Sample Received on ice, cooling process has begun   
 Cooler Temp: 1.80C (Temp should be above freezing to 6°C)

Chain of Custody Present	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	1
Chain of Custody filled out	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	2
Chain of Custody relinquished	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	3
Sampler name & signature on COC	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/>	4
Sample received within HT	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	5
Short HT analyses (<72 hrs)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/>	6
Rush TAT requested	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/>	7
Sufficient Volume received	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	8
Correct Container used	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	9
Pace Container used	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/>	
Container Intact	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	10
Unpreserved 5035A soil frozen within 48 hrs	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	11
Filtered volume received for Dissolved tests	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	12
Sample labels match COC	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	13
Include date/time/ID/analyses	Matrix: <u>Solid</u>	
All containers needing preservation have been checked	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	14a. Lot# of pH strip: _____ pH checked Yes <input type="checkbox"/> No <input type="checkbox"/> pH<2 <input type="checkbox"/> pH>9 <input type="checkbox"/> pH>12 <input type="checkbox"/> Lot# of Iodine strip: _____ Lot# of Lead Acetate strip: _____
Do containers require preservation at the lab	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	14b. Preservation: _____ Lot#: _____
All containers needing preservation are found to be in Compliance with EPA recommendation	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	14c. _____
Exception: VOA, coliform, O&G	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Are soil samples (volatiles) received in	Bulk <input type="checkbox"/> Terracore <input type="checkbox"/> EnCore <input type="checkbox"/> NA <input checked="" type="checkbox"/>	15.
Trip Blank present	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	16.
Trip Blank Custody Seals Intact	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	
Pace Trip Blank Lot# (if purchased):		
Headspace in VOA (>6mm)	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	17.
Project sampled in USDA Regulated Area:	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>	18. List State _____

Client Notification/Resolution/Comments:

Person Contacted: \_\_\_\_\_ Date: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Person Examining Contents: Klu Date: 9/29/15

Pace Analytical Services - Dallas  
Sample Container Count-

COC PAGE 1 of         
COC ID#       

Pace Project # 7531423

Sample Line Item	AG1S	AG1U	AG3S	BG1S	BP1U	BP2N	BP2S	BP2U	BP20	SP5T	VG9H	DG9M	VG9U	VG9W	WGFU	WGKU	BP3C	GN	WG2U	BP3S	
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Container Codes

Container Code	Description	BP1A	BP1N	BP1S	BP1U	BP1Z	BP2A	BP2N	BP2O	BP2S	BP2U	DG9T	DG9U	GN	JGFU	Other
AF	Air Filter															
AG1H	1L HCL Amber Glass															
AG1S	1L H2SO4 Amber Glass															
AG1T	1L Sodium Thiosulfate Amber															
AG1U	1L Unpreserved Amber Glass															
AG2N	500mL HNO3 amber glass															
AG2S	500mL H2SO4 amber glass															
AG2U	500mL unpreserved amber glass															
AG3S	250mL H2SO4 glass amber															
AG3U	250mL unpreserved amber glass															
BG1H	1 liter HCL clear glass															
BG1S	1 liter H2SO4 clear glass															
BG1T	1 liter Na Thiosulfate clear glass															
BG1U	1 liter unpreserved glass															