Permit No. CP0001979

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

Mr. Kenneth Gross, Owner
Country Acres WWTF
21202 E. Saddle Rock Ln.
Aurora, CO 80016

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the Department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the Department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the Department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

June 7, 2018
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

June 6, 2020
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Wastewater treatment system modifications to existing three-cell lagoon system by addition of a polishing recirculating sand filter and disinfection facilities; construction consisting of: 19 linear feet of 6-inch PVC pipe; 13,948 gallon recirculation tank with four – 0.75 horsepower pumps designed for 40.7 gallons per minute at 45.4 feet of total dynamic head; 140 linear feet of 2-inch PVC pressure pipe; 2 – 32 feet by 44 feet polishing recirculating sand filter beds; 120 linear feet of 4-inch PVC pipe; one Norweco Model 2000 tablet chlorinator; 295 gallon chlorine contact volume; one Norweco Model 2000 tablet dechlorinator; effluent weir; and all the necessary appurtenances to make the facilities complete and usable. This wastewater treatment facility is to serve 50 mobile homes in Country Acres Residential Park. The design flow is 13,125 gallons per day with a population equivalent (PE) of 175.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

This permit is a reissue of CP0001536 that was issued 4/7/15.

II. COST ANALYSIS FOR COMPLIANCE

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

The Department is not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.

2. All construction shall be in accordance with the plans and specifications submitted by Gary Phillips, P.E. with a document date of 6/2/2014 and revisions of 3/15/2015 on sheets 2/4 and 4/4.

3. The Department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department's Kansas City Regional Office per 10 CSR 20-7.015(9)(E)2.

5. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

6. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See dnr.mo.gov/env/wpp/401/ for more information.

7. Upon completion of construction:

   A. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications; and

   B. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D).

   C. Submit a Form B, Application for an Operating Permit for Domestic or Municipal Wastewater. The application is for modification of the existing Operating Permit issued June 1, 2018. The modification fee has been paid; $150.00 received 9/16/15.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

To be in compliance with the An Abatement Order on Consent regarding compliance with effluent limitations, facility is proposing to upgrade system by adding a recirculating sand filter.

2. FACILITY DESCRIPTION

Facility is an existing three-cell lagoon with a design flow of 10,500 gpd. Proposed construction is to modify the lagoon and add a recirculating sand filter and disinfection following the lagoon, the new design flow will be 13,125 gpd.

The Country Acres Residential Park Wastewater Treatment Facility is located at 176 SE Y Hwy, in Johnson County. The outfall will be relocated. Legal Description of new outfall: SW1/4, NE1/4, Section 18, T45N, R25W, Johnson County; UTM Coordinates: Zone 15, X=437506, Y=4283276

3. COMPLIANCE PARAMETERS

Facility is under an Abatement Order on Consent to comply with Biochemical Oxygen Demand, and Total Suspended Solids effluent limitations as contained in Part "A" of the Missouri state operating permit. The monthly average permit limits are 30 mg/L for Biochemical Oxygen Demand and Total Suspended Solids. In accordance with the current Missouri State operating Permit issued 6-1-2018, *E. Coli* limits of 206 #/100 mL as a monthly average become effective 6-1-2020.

	6/1/2018 OP renewal	OP after upgrade
Design Flow, gpd	10,500	13,125
BOD, mg/l	45/30	45/30
TSS, mg/l	45/30	45/30
E. coli, colonies/100 ml	1030/206 (final 6/1/20)	1030/206
TRC, mg/l		.017/.008
Ammonia, Apr 1 – Sep 30 mg/l	3.6/1.4	3.0/1.1
Ammonia, Oct 1 – Mar 31 mg/l	7.5/2.9	6.0/2.3
pH, units	6.5 – 9.0	6.5 – 9.0

4. ANTIDEGRADATION

The Department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated October 28, 2014, due to increase in design flow.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The submittal proposes to use the existing three-cell lagoon as primary treatment before the proposed recirculating sand filter. The recirculation rate will be 4 to 1 (80% recirculated/ 20% discharge). The recirculating sand filter bed is designed to treat 4.66 gallons per square foot. The chlorine contact volume is designed to provide 15 minutes of contact time.

6. OPERATING PERMIT

Draft Missouri State Operating Permit MO-0114898, which reflects this proposed construction, was placed on public notice on December 26, 2014. A comment letter was received regarding disinfection of the effluent from the wastewater treatment system. A copy of the response letter was sent out with the previously issued construction permit, CP0001536.

Operating permit MO-0114898 will require a modification to reflect the construction activities. Upon construction completion, submit Form B - Application for an Operating Permit for Domestic or Municipal Wastewater (≤100,000 gallons per day). The modification fee has been paid with a previous application; $150.00 received 9/16/15.

Andrew Appelbaum
Engineering Section
andy.appelbaum@dnr.mo.gov

MO-0114898

AP 29573
CP 0001979

RECEIVED
MAR 19 2018
Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER FACILITY

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED $1000.00	CHECK NO. 1592
DATE RECEIVED 3-19-18	SB

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This form has been developed in a modular format and consists of Part A and B. **All applicants must complete Part A.** Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. **Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.**

PART A – BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

1.1 Is this a Federal/State funded project? ☐ YES ☒ N/A Funding Agency: _____ Project #: _____

1.2 Is this an application for an agrichemical? ☐ YES (See instructions.) ☒ N/A

1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☒ YES Date of Approval: 1/15

1.4 Has the department approved the proposed project's facility plan*?
☒ YES Date of Approval: 1/15 ☐ NO ☐ N/A (If Not Applicable, complete No. 1.5.)

1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
☐ YES ☐ NO

1.6 Is a copy of the appropriate plans* and specifications* included with this application?
☐ YES Denote which form is submitted: ☒ Hard copy ☐ Electronic copy (See instructions.) ☐ NO

1.7 Is a summary of design* included with this application? ☒ YES ☐ NO

1.8 Is a general operating permit applicable?
☒ YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.
☐ NO Enclose the appropriate operating permit application and fee submittal. Denote which form: ☐ B ☐ B2

1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☐ NO

1.10 Is the appropriate fee included with this application? ☒ YES ☐ NO (See instructions for appropriate fee.)

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT: Country Acres Mobile Home Park

2.2 PROJECT DESCRIPTION: Recirculating sand filtration

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

2.4 DESIGN INFORMATION

A. Current population: 30 ; Design population: 105

B. Actual Flow: 3000 gpd; Design Average Flow: 10,500 gpd;
Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd;
Design Wet Weather Event: _____

2.5 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☐ YES ☐ NO

B. Is a process flow diagram attached? ☐ YES ☐ NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST

$ 175,000

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Country Acres Mobile Home Park	303 2171114	Spenrose9@msn.com

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
176 SE Y Highway	Warrensburg	MO	64093	Johnson

Wastewater Treatment Facility: Mo- (Outfall Of)

3.1 Legal Description: SW ¼, NE ¼, ¼, Sec. 18, T 45N, R 25W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): Northing (Y):
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams:

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Kenneth Gross	303 217-1114	Spenrose9@msn.com

ADDRESS	CITY	STATE	ZIP CODE
21202 E Saddle Rock Ln	Aurora	CO	80016

5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Owner		

ADDRESS	CITY	STATE	ZIP CODE

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☐ N/A

5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.

A. Is a copy of the certificate of convenience and necessity included with this application? ☐ YES ☐ NO

5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.

A. Is a copy of the as-filed restrictions and covenants included with this application? ☐ YES ☐ NO

B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? ☐ YES ☐ NO

C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? ☐ YES ☐ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
GARY V. PHILLIPS, PHILLIPS ENGINEERING LLC	660-351-1910	GPHILLIPS@WCIENG.COM

ADDRESS	CITY	STATE	ZIP CODE
2300 West Osage St.	Pacific	MO	63069

7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and 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 Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.

PROJECT OWNER SIGNATURE

PRINTED NAME	DATE
Kenneth Gross	3/14/18

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Owner	303-217-1114	Spenrose9@msn.com

Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.

PART B – LAND APPLICATION ONLY
(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: ☐ Domestic ☐ State/National Park ☐ Seasonal business
☐ Municipal ☐ Municipal with a pretreatment program or significant industrial users
☐ Other (explain)

8.2 Months when the business or enterprise will operate or generate wastewater:
☐ 12 months per year ☐ Part of the year (list months):

8.3 This system is designed for:
☐ No-discharge ☐ Subsurface
☐ Partial irrigation when feasible and discharge rest of time
☐ Irrigation during recreational season, April – October, and discharge during November – March
☐ Other (explain)

9.0 STORAGE BASINS

9.1 Number of storage basins: _____ (Use additional pages if greater than two basins.)

9.2 Type of basins: ☐ Steel ☐ Concrete ☐ Fiberglass ☐ Earthen ☐ Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.
Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.
Basin #1: _____ ft Basin #2: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: _____ ft Basin #2: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Type of land application: ☐ Fixed Head Sprinklers ☐ Center Pivot ☐ Traveling Gun ☐ Drip Dispersal
☐ Subsurface Low Pressure Pipe ☐ Other (describe) _____

10.2 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.3 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops
☐ Other (describe)

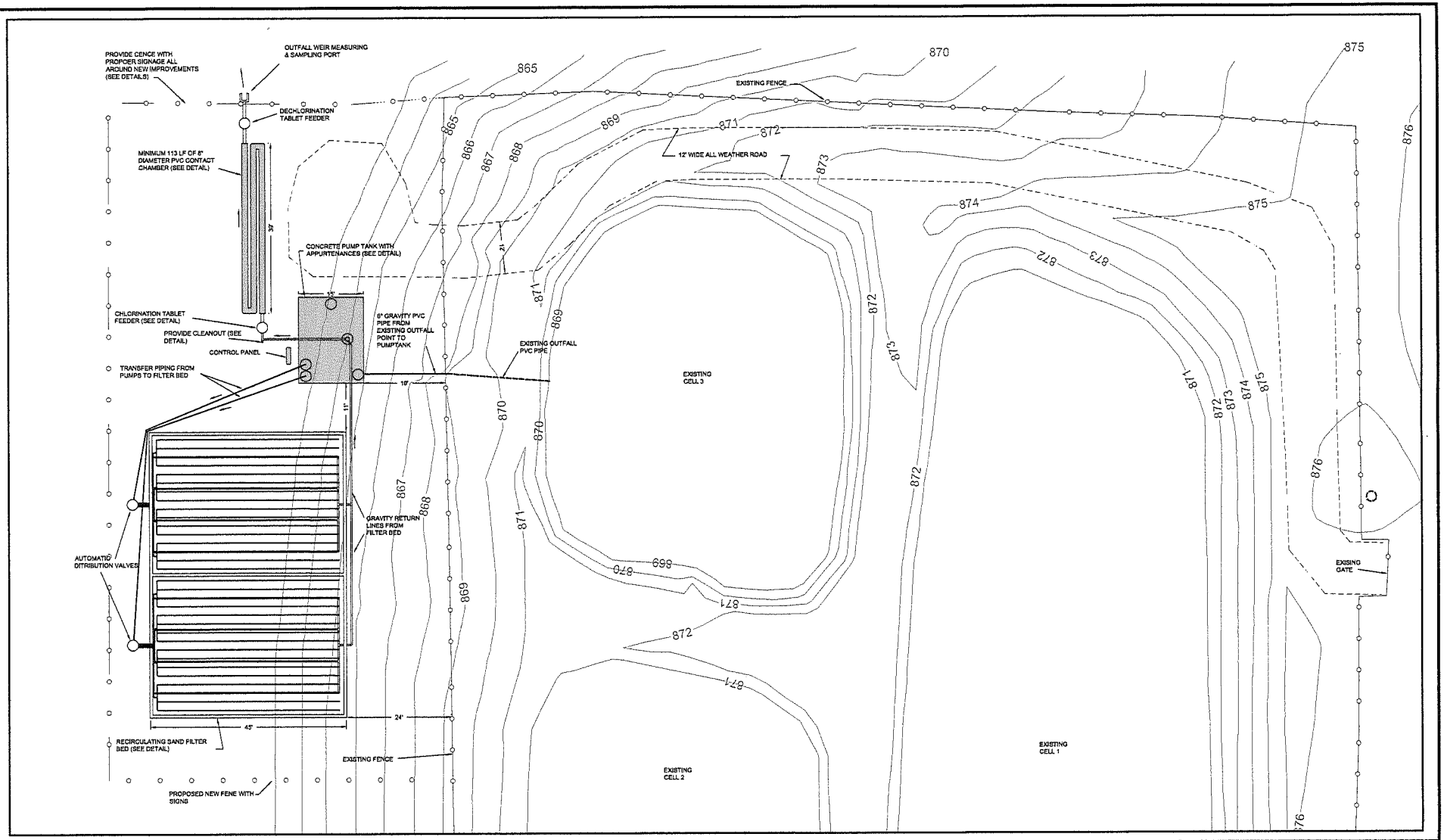
10.4 Wastewater flow (dry weather) gallons per day: Average annual _____
Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):
Design: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

10.7 Actual months used for irrigation (check all that apply):
☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

10.8 Land application rate is based on:
☐ Hydraulic Loading ☐ Other (describe) _____
☐ Nutrient Management Plan (N and P) If N and P is selected, is the plan included? ☐ YES ☐ NO



NOTE:

FINAL ELEVATIONS OF COMPONENTS OF THIS TREATMENT SYSTEM MAY VARY TO MEET EXISTING FIELD CONDITIONS. ELECTRICAL POWER SHALL BE PROVIDED BY THE OWNER TO THE CONTROL PANEL AREA. ALL BUILDING CODES SHALL BE OBSERVED AND ADHERED TO ON THIS PROJECT. EQUIPMENT DETAILS SHOWN ON THE DETAIL SHEETS ARE FOR REFERENCE AND MAY BE SUBSTITUTED BY EQUIPMENT OF EQUAL QUALITY AND PERFORMANCE IF APPROVED BY THE DESIGN ENGINEER.

ALL FINAL GRADED SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL. ALL DISTURBED AREAS THAT ARE NOT TO BE GRAVELED OR PAVED SHALL BE STABILIZED WITH TURF SEEDING AS SOON AS POSSIBLE AFTER CONSTRUCTION ACTIVITIES HAVE ENDED.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

1 Inch = 10ft.

SITE PLAN

COUNTRY ACRES IMPROVEMENTS

178 SE Y HIGHWAY

WARRENSBURG, MO 64093

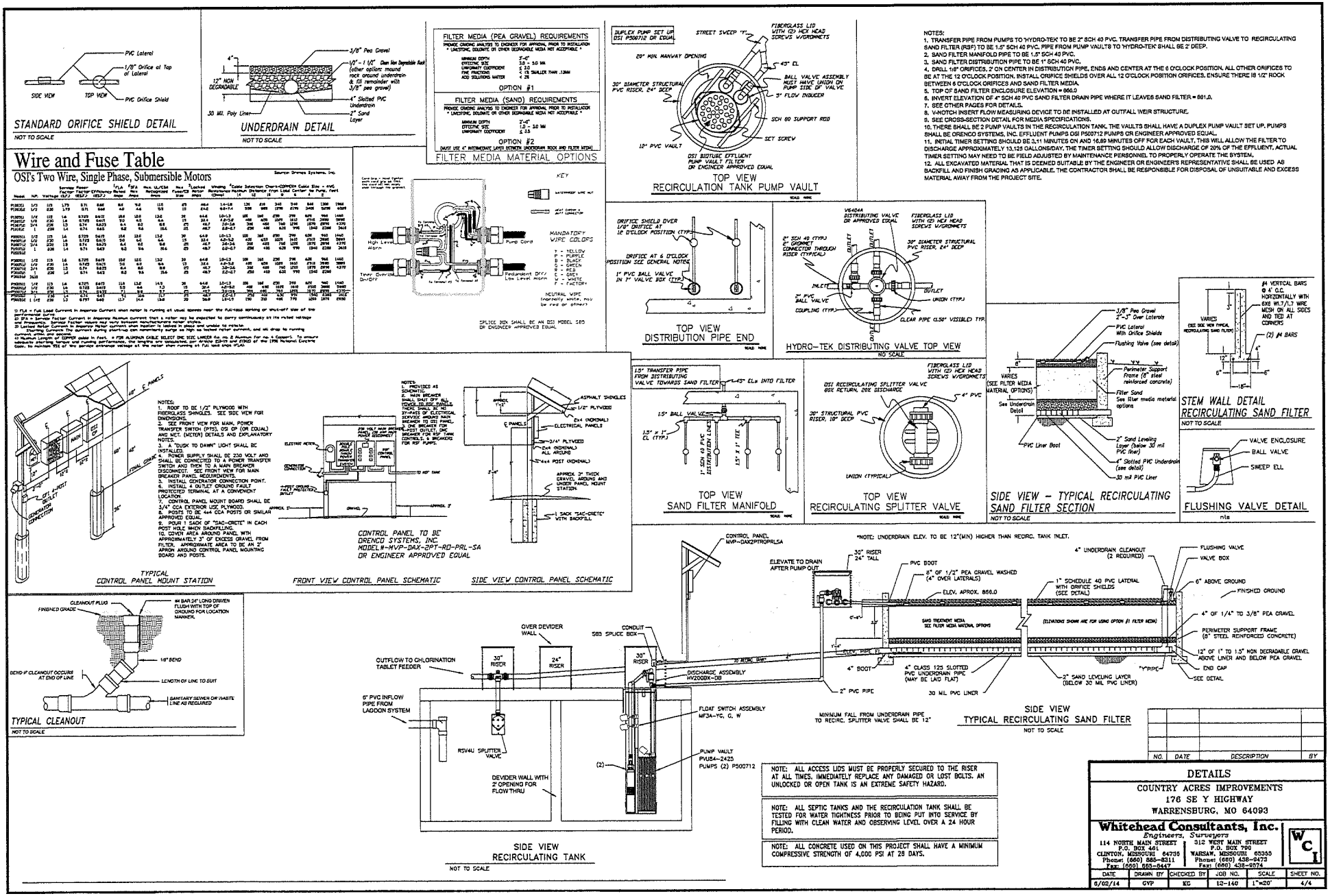
Whitehead Consultants, Inc.

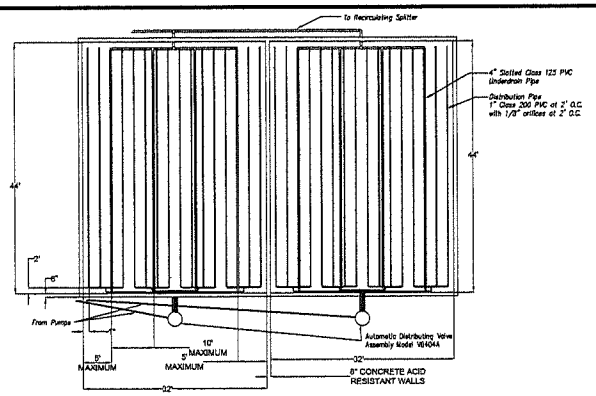
Engineers, Surveyors

114 NORTH MAIN STREET
P.O. BOX 461
CLINTON, MISSOURI 64735
Phone: (660) 885-8311
Fax: (660) 885-8447

312 WEST MAIN STREET
P.O. BOX 790
WARSAW, MISSOURI 65355
Phone: (660) 438-6472
Fax: (660) 438-6574

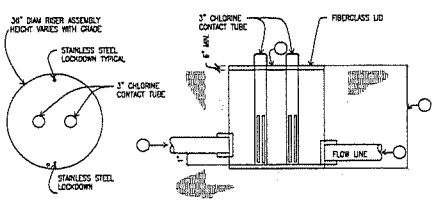
DATE	DRAWN BY	CHECKED BY	JOB NO.	SCALE	SHEET NO.
6/02/14	GVP	KC	13-140	1"=20'	2/4


STANDARD ORIFICE SHIELD DETAIL
NOT TO SCALE
UNDERDRAIN DETAIL
NOT TO SCALE
FILTER MEDIA (PEA GRAVEL) REQUIREMENTS
OPTION #1
FILTER MEDIA (SAND) REQUIREMENTS
OPTION #2
FILTER MEDIA MATERIAL OPTIONS
TOP VIEW
RECIRCULATION TANK PUMP VAULT
NOTES:
1. TRANSFER PIPE FROM PUMPS TO 'HYDRO-TEK' TO BE 2" SCH 40 PVC. TRANSFER PIPE FROM DISTRIBUTING VALVE TO RECIRCULATING SAND FILTER (RSF) TO BE 1.5" SCH 40 PVC. PIPE FROM PUMP VAULT 8 TO 'HYDRO-TEK' SHALL BE 2' DEEP.
2. SAND FILTER MANIFOLD PIPE TO BE 1.5" SCH 40 PVC.
3. SAND FILTER DISTRIBUTION PIPE TO BE 1" SCH 40 PVC.
4. DRILL 1/8" ORIFICES, 2" ON CENTER IN DISTRIBUTION PIPE, ENDS AND CENTER AT THE 6 O'CLOCK POSITION. ALL OTHER ORIFICES TO BE AT THE 12 O'CLOCK POSITION. INSTALL ORIFICE SHIELDS OVER ALL 12 O'CLOCK POSITION ORIFICES. ENSURE THERE IS 1/2" ROCK BETWEEN 6 O'CLOCK ORIFICES AND SAND FILTER MEDIA.
5. TOP OF SAND FILTER ENCLOSURE ELEVATION = 866.0
6. INVERT ELEVATION OF 4" SCH 40 PVC SAND FILTER DRAIN PIPE WHERE IT LEAVES SAND FILTER = 861.0.
7. SEE OTHER PAGES FOR DETAILS.
8. V-NOTCH INSERT FLOW MEASURING DEVICE TO BE INSTALLED AT OUTFALL WEIR STRUCTURE.
9. SEE CROSS-SECTION DETAIL FOR MEDIA SPECIFICATIONS.
10. THERE SHALL BE 2 PUMP VAULTS IN THE RECIRCULATION TANK. THE VAULTS SHALL HAVE A DUPLEX PUMP VAULT SET UP. PUMPS SHALL BE ORENCO SYSTEMS, INC. EFFLUENT PUMPS OSI P500712 PUMPS OR ENGINEER APPROVED EQUAL.
11. INITIAL TIMER SETTING SHOULD BE 3.11 MINUTES ON AND 16.89 MINUTES OFF FOR EACH VAULT. THIS WILL ALLOW THE FILTER TO DISCHARGE APPROXIMATELY 13.125 GALLONS/DAY. THE TIMER SETTING SHOULD ALLOW DISCHARGE OF 20% OF THE EFFLUENT. ACTUAL TIMER SETTING MAY NEED TO BE FIELD ADJUSTED BY MAINTENANCE PERSONNEL TO PROPERLY OPERATE THE SYSTEM.
12. ALL EXCAVATED MATERIAL THAT IS DEEMED SUITABLE BY THE ENGINEER OR ENGINEER'S REPRESENTATIVE SHALL BE USED AS BACKFILL AND FINISH GRADING AS APPLICABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF UNSUITABLE AND EXCESS MATERIAL AWAY FROM THE PROJECT SITE.
Wire and Fuse Table
OSI's Two Wire, Single Phase, Submersible Motors
KEY
MANDATORY WIRE COLORS
SPLICE BOX SHALL BE AN OSI MODEL SB5 OR ENGINEER APPROVED EQUAL
TOP VIEW
DISTRIBUTION PIPE END
HYDRO-TEK DISTRIBUTING VALVE TOP VIEW
NO SCALE
STEM WALL DETAIL
RECIRCULATING SAND FILTER
NOT TO SCALE
TOP VIEW
SAND FILTER MANIFOLD
TOP VIEW
RECIRCULATING SPLITTER VALVE
SIDE VIEW - TYPICAL RECIRCULATING
SAND FILTER SECTION
NOT TO SCALE
FLUSHING VALVE DETAIL
n.t.s.
TYPICAL
CONTROL PANEL MOUNT STATION
CONTROL PANEL TO BE
ORENCO SYSTEMS, INC.
MODEL #-MVP-DAX-2PT-RD-PRL-SA
OR ENGINEER APPROVED EQUAL
FRONT VIEW CONTROL PANEL SCHEMATIC
SIDE VIEW CONTROL PANEL SCHEMATIC
TYPICAL CLEANOUT
NOT TO SCALE
SIDE VIEW
RECIRCULATING TANK
NOT TO SCALE
SIDE VIEW
TYPICAL RECIRCULATING SAND FILTER
NOT TO SCALE
NOTE: ALL ACCESS LIDS MUST BE PROPERLY SECURED TO THE RISER AT ALL TIMES. IMMEDIATELY REPLACE ANY DAMAGED OR LOST BOLTS. AN UNLOCKED OR OPEN TANK IS AN EXTREME SAFETY HAZARD.
NOTE: ALL SEPTIC TANKS AND THE RECIRCULATION TANK SHALL BE TESTED FOR WATER TIGHTNESS PRIOR TO BEING PUT INTO SERVICE BY FILLING WITH CLEAN WATER AND OBSERVING LEVEL OVER A 24 HOUR PERIOD.
NOTE: ALL CONCRETE USED ON THIS PROJECT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
NO. DATE DESCRIPTION BY
DETAILS
COUNTRY ACRES IMPROVEMENTS
176 SE Y HIGHWAY
WARRENSBURG, MO 64093
Whitehead Consultants, Inc.
Engineers, Surveyors
114 NORTH MAIN STREET P.O. BOX 461 CLINTON, MISSOURI 64735 Phone: (660) 885-8311 Fax: (660) 885-8447
312 WEST MAIN STREET P.O. BOX 790 WARSAW, MISSOURI 65355 Phone: (660) 438-8473 Fax: (660) 438-8574
DATE 6/02/14 | DRAWN BY GVP | CHECKED BY KC | JOB NO. 12-140 | SCALE 1"=20' | SHEET NO. 4/4



Recirculating Filter System – 13,125 gpd Design

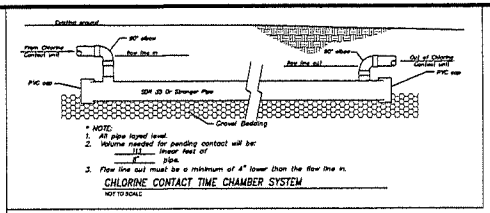
NOT TO SCALE Loading Rate: 4.5 gpd/ft



DETAIL NOTES:

- FLOW LINE IN SHALL BE AS SHOWN ON FEEDER DETAIL. PIPE SIZE: 4" SCH. 40 PVC.
- FLOW LINE OUT MUST BE A MINIMUM OF 1" LOWER THAN FLOW LINE IN. PIPE SIZE: 4" SCH. 40 PVC.
- UNIT IS A "NORWECO" MODEL XT 2000 SYSTEM WITH A FLOW RATE UP TO 69 GPM OR APPROVED EQUAL.
- PROVIDE RISER EXTENSION TO MATCH GRADE ELEVATION.

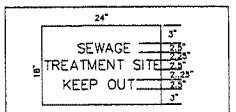
CHLORINATOR \ DECHLORINATOR



* NOTE:
1. All pipe layed level.
2. Volume needed for pending contact will be:
   ___ linear feet of
   ___ pipe.
3. Flow line out must be a minimum of 4" lower than the flow line in.

CHLORINE CONTACT TIME CHAMBER SYSTEM

NOT TO SCALE



NOTE: TO BE PLACED ON ALL FOUR SIDES OF ENCLOSURE

SEWAGE TREATMENT SIGN

NTS

FOUNDATION NOTES:

A. BEARING SURFACES AT THE BOTTOM OF EXCAVATIONS SHOULD BE PROTECTED FROM EITHER INUNDATIONS OR DRYING OUT DURING THE EXCAVATION PROCESS. PROVIDING GOOD SURFACE DRAINAGE DURING CONSTRUCTION WILL PREVENT MANY PROBLEMS.

B. ALL LOOSE SOILS OR SOILS SOFTENED DUE TO MOISTURE COLLECTION IN THE TRENCH AFTER EXCAVATION SHOULD BE REMOVED PRIOR TO CONCRETE PLACEMENT.

C. CAREFUL INSPECTION OF FOOTING EXCAVATIONS SHOULD BE PERFORMED DURING CONSTRUCTION TO DETECT ANY UNANTICIPATED CONDITIONS WHICH MAY AFFECT STRUCTURE PERFORMANCE. IF SUCH CONDITIONS ARE DETECTED, THEY SHOULD BE REPORTED TO THE PROJECT ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.

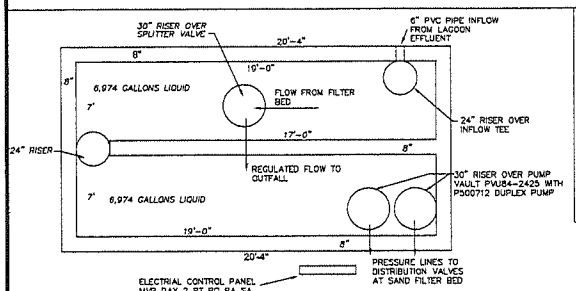
D. EXTREME CARE SHOULD BE TAKEN DURING EXCAVATION TO AVOID UNDERMINING OR JEOPARDIZING THE STRUCTURAL INTEGRITY OF EXISTING FOUNDATIONS.

E. IF WORKMAN AND EQUIPMENT IN THE EXCAVATION ARE ANTICIPATED TO CAUSE EXCESSIVE DISTURBANCE OF FOUNDATION BEARING SOILS, PLACEMENT OF A THIN CONCRETE MUD SLAB IS CONSIDERED PERMISSIBLE PRIOR TO MAT OR FOOTING CONCRETE PLACEMENT.

F. LEVEL OUT BOTTOM OF EXCAVATIONS FOR STRUCTURES. DO NOT LEAVE HIGH HARD SPOTS. EXCAVATIONS MUST HAVE 12" CLEARANCE OR MORE AROUND TANKS.

WEIR GRADATION CHART

IN	(GPM)	(GPD)
1	0.75	1,091
2	2.14	3,085
3	3.94	5,667
4	6.06	8,724
5	8.47	12,193
6	11.13	16,028
7	14.03	20,197
8	17.14	24,676



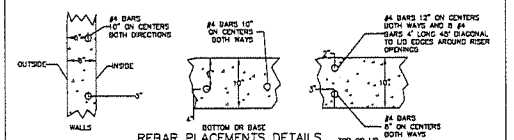
* NOTES:
1. TANK IS 8'-0" DEEP INSIDE DIMENSION
2. 10" THICK BOTTOM
3. 10" THICK TOP
4. 8" THICK WALLS

Recirculating Tank

NOT TO SCALE

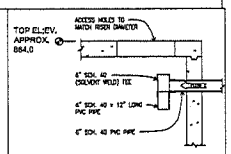
PLAN VIEW – REBAR LAYOUT

NOTE: TOP AND BOTTOM OF TANK IS 10" THICK WITH #4 BARS 10" ON CENTERS IN BOTTOM AND 8" ON CENTERS IN TOP BOTH WAYS WITH 24" BENT REBAR EXTENDING DOWN AND TIED TO #4 BARS IN WALLS.



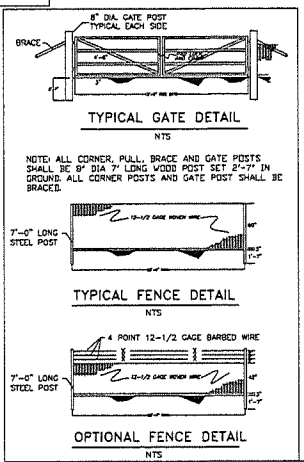
REBAR PLACEMENTS DETAILS

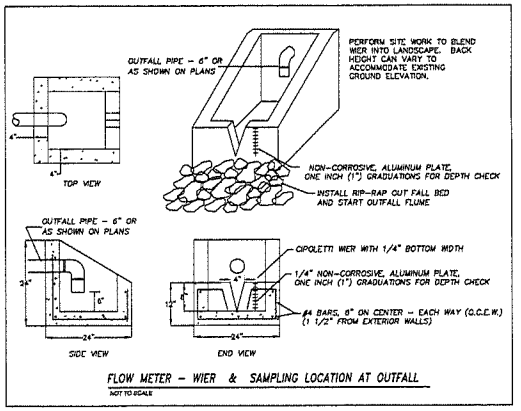
NOT TO SCALE



INLET BAFFLE

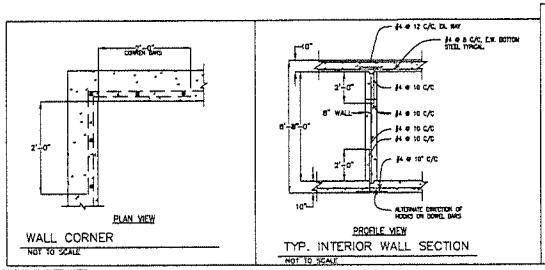
NOT TO SCALE

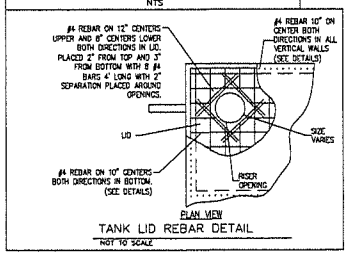




FLOW METER – WIER & SAMPLING LOCATION AT OUTFALL

NOT TO SCALE





GENERAL CONCRETE NOTES:

A. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO PERFORMING ANY WORK.

B. CONCRETE SHALL NOT BE PLACED UNTIL ALL PIPING AND ELECTRICAL CONDUITS ARE INSTALLED.

C. HORIZONTAL CONSTRUCTION JOINTS FOR WALLS OR PIERS WILL NOT BE PERMITTED UNLESS NOTED ON PLANS AND DRAWINGS.

D. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE'S "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318 – LATEST EDITION) AND "SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301 – LATEST EDITION).

E. ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 PSI.

F. REINFORCEMENT SHALL CONFORM TO ASTM "SPECIFICATION FOR DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT" – A615 GRADE 60, MINIMUM YIELD STRENGTH OF 60,000 PSI.

G. MINIMUM COVER FOR REINFORCEMENT IN SITE-CAST CONCRETE SHALL BE AS FOLLOWS:

CONCRETE CAST AGAINST EARTH	3"
CONCRETE EXPOSED TO WEATHER OR EARTH (FORMED): #6 BAR & LARGER	2"
#5 BAR & SMALLER	1 1/2"
CONCRETE NOT EXPOSED TO WEATHER OR EARTH (FORMED): SLABS & WALLS	3/4"
BEAMS & COLUMNS	1 1/2"

H. ALL VERTICAL SURFACES OF FOUNDATIONS, INCLUDING FOOTINGS, SHALL BE FORMED (WOOD AND/OR METAL) UNLESS PRIOR APPROVAL IS RECEIVED IN WRITING FROM ENGINEER.

I. ALL EXPOSED CORNERS SHALL HAVE 3/4" CHAMFER UNLESS OTHERWISE NOTED ON PLAN.

J. DETAILING OF REINFORCEMENT SHALL BE PERFORMED USING STANDARD END HOOKS AND WITH LAP SPLICE AND EMBEDMENT LENGTHS ONLY AS INDICATED ON DRAWINGS.

FOUNDATION NOTES:

A. BEARING SURFACES AT THE BOTTOM OF EXCAVATIONS SHOULD BE PROTECTED FROM EITHER INUNDATIONS OR DRYING OUT DURING THE EXCAVATION PROCESS. PROVIDING GOOD SURFACE DRAINAGE DURING CONSTRUCTION WILL PREVENT MANY PROBLEMS.

B. ALL LOOSE SOILS OR SOILS SOFTENED DUE TO MOISTURE COLLECTION IN THE TRENCH AFTER EXCAVATION SHOULD BE REMOVED PRIOR TO CONCRETE PLACEMENT.

C. CAREFUL INSPECTION OF FOOTING EXCAVATIONS SHOULD BE PERFORMED DURING CONSTRUCTION TO DETECT ANY UNANTICIPATED CONDITIONS WHICH MAY AFFECT STRUCTURE PERFORMANCE. IF SUCH CONDITIONS ARE DETECTED, THEY SHOULD BE REPORTED TO THE PROJECT ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.

D. EXTREME CARE SHOULD BE TAKEN DURING EXCAVATION TO AVOID UNDERMINING OR JEOPARDIZING THE STRUCTURAL INTEGRITY OF EXISTING FOUNDATIONS.

E. IF WORKMAN AND EQUIPMENT IN THE EXCAVATION ARE ANTICIPATED TO CAUSE EXCESSIVE DISTURBANCE OF FOUNDATION BEARING SOILS, PLACEMENT OF A THIN CONCRETE MUD SLAB IS CONSIDERED PERMISSIBLE PRIOR TO MAT OR FOOTING CONCRETE PLACEMENT.

F. LEVEL OUT BOTTOM OF EXCAVATIONS FOR STRUCTURES. DO NOT LEAVE HIGH HARD SPOTS. EXCAVATIONS MUST HAVE 12" CLEARANCE OR MORE AROUND TANKS.

NO	DATE	DESCRIPTION	BY

SITE PLAN

COUNTRY ACRES IMPROVEMENTS
176 SE Y HIGHWAY
WARRENSBURG, MO 64093

Whitehead Consultants, Inc.
Engineers, Surveyors
114 NORTH MAIN STREET
P.O. BOX 401
CLINTON, MISSOURI 64735
Phone: (660) 885-8311
Fax: (660) 885-8447

312 WEST MAIN STREET
P.O. BOX 790
WARSAW, MISSOURI 65355
Phone: (660) 438-9473
Fax: (660) 438-9574

DATE	DRAWN BY	CHECKED BY	JOB NO.	SCALE	SHEET NO.
6/02/14	GVP	KC	12-140	1"=20'	3/4

WHITEHEAD CONSULTANTS, INC.
Engineers Surveyors

October 01, 2014

Mass Loading Balance Computations for Country Acres Mobile Home Park
Wastewater Treatment Facility Improvements MO-0114898, Johnson County

The existing August 30, 2008 permit organic loading is 30 mg/l BOD and 30 mg/l TSS with 1.4 mg/l NH_4. The new treated organic load will be 10 mg/l or less for the BOD and TSS and 0.90 for Ammonia NH_4.

The proposed new treatment flow is 13,125 gpd and the existing permit flow is 10,500 gpd.

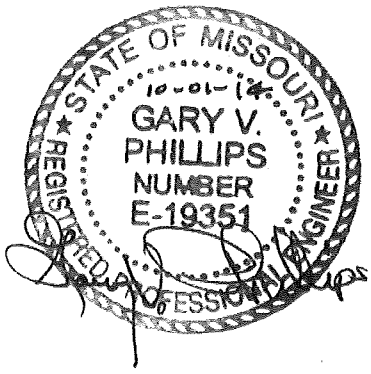
The computed new discharge load verses existing discharge load for both BOD and TSS is [(13,125 gpd) * (10 mg/l)] / [(10,500 gpd)*(30 mg/l)] = 0.4167 or 58.33% reduction.

The computed new discharge load verses existing discharge load for Ammonia NH_4 is [(13,125 gpd * 0.9 mg/l)] / [(10,500 gpd * 1.4 mg/l)] = 0.8036 or 19.64% reduction.

There will be no residual chlorine due to a dechlorination tablet feeder installation and there will be no significant bacteria due to a disinfection chlorination tablet feeder installation.

This is being presented as a mass loading supplement to the Antidegradation Review Summary For Public Notice Attachment B: Tier 2 - Minimal Degradation.

Gary V. Phillips, PE, PLS



114 North Main Street
P.O. Box 461
Clinton, MO 64735
Ph 660 885 8311
Fx 660 885 8447
gphillips@wcieng.com
(C) 660-351-1910