

**HOME SEWAGE TREATMENT SYSTEMS (HSTS)  
INSTALLATION OR SEWER TAP-IN  
GENERAL SPECIFICATION PACKET  
FOR THE**

**SENECA COUNTY  
2020 HSTS  
REPAIR/REPLACEMENT and  
SEWER TAP-IN  
PROGRAM**

ADMINISTERED BY:  
SENECA REGIONAL PLANNING COMMISSION  
ON BEHALF OF Seneca County General Health District

OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA)  
FUNDED PROJECT

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## SECTION A

## BID FORMS

### SUMMARY OF DOCUMENT REQUIREMENTS

**Please take note of the paperwork needed under all three categories.**

#### BID SHALL CONTAIN

- A signed proposal, with the full name and title (if appropriate) of the person submitting the bid. If the signature is not legible, print the name under the signature of the person signing the proposal.
- In the case of corporations not chartered in Ohio, a proper certificate of the Secretary of State, certifying that such corporation is authorized to do business in Ohio.
- Non-Collusion Affidavit
- Contractor Equal Employment Opportunity Certification
- Certification Regarding Debarment, Suspension, and Other Responsibility Matters
- American Iron and Steel Acknowledgement
- Affidavit of Personal Property Tax Status
- Corporate Resolution, only if a corporation
- Bid Guarantee (Bond, or certified check, cashier's check or letter of credit)

#### LOWEST BEST BIDDER WILL BE REQUESTED TO PROVIDE THE FOLLOWING BEFORE A CONTRACT IS DEVELOPED

- Certificate of Insurance, listing Seneca County as an additional insured
- Certificate of Ohio Workers' Compensation
- Performance bond, certified check, letter of credit, or bid guarantee

#### CONTRACT/AGREEMENT SHALL CONTAIN

- Signed Contract
- Certificate of Insurance listing Seneca County General Health District as an additional insured with thirty (30) days cancellation & original signature
- Current Workers' Compensation Certificate
- Affidavit of Personal Property Tax Status
- Contractor Equal Employment Opportunity Certification
- Certification Regarding Debarment, Suspension, and Other Responsibility Matters
- American Iron and Steel Acknowledgement
- Payment and Performance Bond (if a Bid and Contract Bond was not provided)
- Request for Taxpayer Identification and Certification – Form W-9 (One time only request)

**Base Bid**

Property Address; 5496 N CR 31, Tiffin, OH 44883

Pricing for: Engineered Sand Mound

1. Permit	\$424.00
2. Soil Evaluation	\$450.00
3. Sewer Tap Fee	\$ _____
4. Required Electrical Upgrades	\$ _____
5. Required Plumbing Upgrades	\$ _____
6. System Installation or Tap-in	\$ _____
7. Other (list work) _____	\$ _____
_____	\$ _____
<b>Bid Grand Total</b>	<b>\$ _____</b>

Signature: \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Email: \_\_\_\_\_

Date: \_\_\_\_\_

**Base Bid**

Property Address; 7917 CR 59, Carey, OH 43316

Pricing for: Engineered Sand Mound

1. Permit	\$424.00
2. Soil Evaluation	\$450.00
3. Sewer Tap Fee	\$ _____
4. Required Electrical Upgrades	\$ _____
5. Required Plumbing Upgrades	\$ _____
6. System Installation or Tap-in	\$ _____
7. Other (list work) _____	\$ _____
_____	\$ _____
<b>Bid Grand Total</b>	<b>\$ _____</b>

Signature: \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Email: \_\_\_\_\_

Date: \_\_\_\_\_

**Base Bid**

Property Address; 4590 N CR 43, Tiffin, OH 44883

Pricing for: Engineered Sand Mound

1. Permit	\$424.00
2. Soil Evaluation	\$450.00
3. Sewer Tap Fee	\$ _____
4. Required Electrical Upgrades	\$ _____
5. Required Plumbing Upgrades	\$ _____
6. System Installation or Tap-in	\$ _____
7. Other (list work) _____	\$ _____
_____	\$ _____
<b>Bid Grand Total</b>	<b>\$ _____</b>

Signature: \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Email: \_\_\_\_\_

Date: \_\_\_\_\_

**NONCOLLUSION AFFIDAVIT**

State of \_\_\_\_\_

County/City of \_\_\_\_\_

BID Identification: \_\_\_\_\_

BUSINESS/AGENT \_\_\_\_\_, being first duly sworn, deposes and says that he is \_\_\_\_\_ (sole owner, a partner, president, secretary, etc.) of \_\_\_\_\_, the party making the foregoing BID; that such BID is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such BID is genuine and not collusive or sham; that said BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a false or sham BID, and has not directly or indirectly colluded, conspired, connived, or agreed with any BIDDER or anyone else to put in a sham BID, or that anyone shall refrain from bidding; that said BIDDER has not in any manner, directly or indirectly, sought by agreement, communications or conference with anyone to fix the BID price of said BIDDER or of any other BIDDER, or to fix any overhead, profit, or cost element of such BID price, or of that of any other BIDDER, or to secure any advantage against the OWNER awarding the contract or anyone interested in the proposed contract; that all statements contained in such BID are true; and, further, that said BIDDER has not, directly or indirectly, submitted his BID price or any breakdown thereof, or the contents thereof, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, BID depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said BIDDER in his general business.

Signed:

\_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Seal of Notary

\_\_\_\_\_

## Certification Regarding Debarment, Suspension, and Other Responsibility Matters

### INSTRUCTIONS

Under Executive Order 12549 an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program or a sub-agreement thereunder for \$25,000 or more.

Accordingly, each prospective recipient of an EPA grant, loan, or cooperative agreement and any contract or sub-agreement participant thereunder must complete the attached certification provide an explanation why they cannot. For further details, see 40 CFR 32.510, Participants' responsibilities, in the attached regulation.

Go to [www.epls.gov](http://www.epls.gov) to access the Excluded Parties List System (EPLS). The EPLS includes information regarding entities debarred, suspended, proposed for debarment, excluded or disqualified under the non-procurement common rule, or otherwise declared ineligible from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits. This information may include names, addresses, DUNS numbers, Social Security Numbers, Employer Identification Numbers or other Taxpayer Identification Numbers, if available and deemed appropriate and permissible to publish by the agency taking the action.

#### Where to Submit

The prospective EPA grant, loan, or cooperative agreement recipient must return the signed certification or explanation with its application to the appropriate EPA Headquarters, Regional office, or Ohio EPA, as required in the applications.

A prospective prime contractor must submit a complete certification or explanation to the individual or organization awarding the contract.

Each prospective subcontractor must submit a complete certification or explanation to the prime contractor for the project.

Applicants may reproduce these materials as needed and provide them to their prospective prime contractor, who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies / assistance may be requested from:

Ohio EPA

Division of Environmental and Financial Assistance

P.O. Box 1049

Columbus, Ohio 43216-1049

(614) 644-2798

[www.epa.state.oh.us/defa/](http://www.epa.state.oh.us/defa/)



**Certification Regarding Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three (3) year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (b) of this certification;
- (d) Have not within a three (3) year period preceding this application / proposal had one or more public transactions (Federal, State, or local) terminated for cause or default; and
- (e) Will not utilize a subcontractor or supplier who is unable to certify (a) through (d) above.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to ten thousand dollars (\$10,000) or imprisonment for up to five (5) years, or both.

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Type Name & Title of Authorized Representative

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Signature of Authorized Representative

I am unable to certify to the above statements. My explanation is attached.

**AFFIDAVIT OF CONTRACTOR OR SUPPLIER OF NON-DELINQUENCY OF  
PERSONAL PROPERTY TAXES  
O.R.C. 5719.042**

STATE OF OHIO:  
SS:  
TO: County of Seneca

The undersigned, being first duly sworn, having been awarded a contract by you for

**2020 Seneca HSTS Repair/Replacement and Tap-ins**

hereby states that we are not charged at the time the bid was submitted with any delinquent personal property taxes on the general tax list of personal property of any county in which you as a taxing district have territory and that we were not charged with delinquent personal property taxes on any such tax list.

In consideration of the award of the above contract, the above statement is incorporated in said contract as a covenant of the undersigned.

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Business/Agent Representative Signature

Sworn to before me and subscribed in my presence this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

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Notary Public Signature

## Contractor Equal Employment Opportunity Certification

During the performance of this contract, the undersigned agrees as follows:

1. The undersigned will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, military status, disability, age, genetic information or sexual orientation. The undersigned will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, military status, disability, age, genetic information or sexual orientation. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The undersigned agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this equal opportunity (federally assisted construction) clause.
2. The undersigned will, in all solicitations or advertisements for employees placed by or on behalf of the undersigned, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, military status, disability, age, genetic information or sexual orientation.
3. The undersigned will send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the undersigned's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The undersigned will comply with all provisions of Executive Order No. 11246 of September 24, 1965; and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The undersigned will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and relevant orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the undersigned's non-compliance with the equal opportunity (federally assisted construction) clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part, and the undersigned may be declared ineligible for further Government contracts of federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rules, regulations, or order of the Secretary of Labor, or as provided by law.
7. The undersigned will include this equal opportunity (federally assisted construction) clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, so that such provision will be binding upon each subcontract or vendor. The undersigned will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a sub-contractor or vendor, as a result of such direction by the administering agency the undersigned may request the United States to enter into such litigation to protect the interest of the United States.

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(Signature)

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(Date)

---

(Name and Title of Signer, please type)

---

(Firm Name)

## American Iron and Steel Acknowledgement

The Contractor acknowledges to and for the benefit of

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("Purchaser") and the State of Ohio (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

---

Signature

Date

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Name and Title of Authorized Signatory, Please Print or Type

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Bidder's Firm

Check here if the WPCLF or WSRLA applicant will be requesting an individual waiver for non- American made iron and steel products. Please note that the waiver box does not need to be marked for nationwide waivers.

SAMPLE

CORPORATE RESOLUTIONS

\_\_\_\_\_, Secretary of \_\_\_\_\_,  
an \_\_\_\_\_ corporation hereby certifies that the following is true and correct copy of a resolution  
duly adopted by the Board of Directors of \_\_\_\_\_  
on \_\_\_\_\_, 20\_\_\_\_, to wit:

“Resolved that of this Company, namely, \_\_\_\_\_  
Be hereby is authorized and directed to enter into any and all contracts, bid guaranty and performance  
bonds with the Board of Health District, Seneca County, Ohio for the purpose of furnishing labor and  
materials as to \_\_\_\_\_

\_\_\_\_\_ at such price and upon such terms and conditions, including any amendments or modifications thereto,  
as said \_\_\_\_\_ in his sole discretion shall deem best, and  
that said actions shall be binding upon the corporation.

Resolved, further, that said \_\_\_\_\_, and he further is hereby authorized  
and directed to execute and deliver unto said Board of Health District other instruments which in his  
discretion he shall deem necessary to carry out the foregoing resolution.”

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of said corporation at  
\_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ and I further certify that said  
resolution is still in full force and effect.

\_\_\_\_\_  
Secretary

{SEAL}

## **SECTION B**

## **INSTRUCTION TO BIDDERS**

### **1. BID PACKAGE**

Included in this package are the Instructions to Bidders, Construction Contract & Contract Forms, Equal Employment Opportunity, General Conditions for Seneca County 2020 HSTS Repair/Replacement and Tap-in Projects, and Basis of Payment.

### **2. INSPECTION OF SITE**

Each bidder shall visit the sites of the proposed work and fully acquaint himself with the existing conditions there relating to the project work, and should inform himself to the facilities involved, the difficulties and restrictions attending the performance of the contract. The bidder shall thoroughly examine and familiarize himself with the Technical Specifications for Sewer Tap-in or HSTS Repair/Replacement (which include approved Design) and all other contents of the Bid Package. The contractor, by the execution of the contract, shall, in no way, be relieved of any obligation by his failure to familiarize himself with the Bid Package or the Contractor's failure to visit the site and acquaint himself with the conditions there existing and the Seneca County Board of Health, Tiffin, Ohio, will be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof. A telephone number for the applicant or their representative is provided, and we request the courtesy of notification before visiting the site.

### **3. ESTIMATE OF COST**

The estimate of cost is included at the bottom of the Technical Specification page provided with the Letter requesting bids for each property.

### **4. COMMENCEMENT AND PROCEDURE**

The Contractor shall schedule and commence work upon receipt of the "Notice to Proceed" issued by the Seneca Regional Planning Commission on behalf of the Seneca County Board of Health.

### **5. COMPLETION DATE SCHEDULED**

The Contractor shall complete all work by the date listed in the Technical Specifications and Contract or earlier.

### **6. BIDS**

All Bids must be submitted on forms supplied by the Seneca County Board of Health, Tiffin, Ohio, and shall be subject to all requirements of the Specifications. All bids must be regular in every respect. The Seneca County Board of Health, Tiffin, Ohio, may consider as irregular any Bid Sheet on which there is an alteration for or departure from the original Bid Sheet and at its option may reject the same.

This requirement shall not operate to bar the bidder from filing with his proposal a separate statement of any desired effect, which statement will be considered by the Seneca County Board of Health, Tiffin, Ohio, on its merits.

If the contract is awarded, it will be awarded by the Seneca County Board of Health, Tiffin, Ohio, to a responsible bidder on the basis of the lowest best bid for all work and materials, as listed in the Bid Sheet and being the most favorable to the Seneca County Board of Health, Tiffin, Ohio. The contract will require the completion of work in accordance with the Specifications.

## **7. BONDING REQUIREMENTS**

Each bid must be accompanied by certified check, cashier's check, or letter of credit of the bidder, or a bid bond prepared on the form of bid bond meeting the requirements set in ORC 153.54/ORC 307.88, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of ten percent (10%) of the bid. Such certified check, cashier's check, letter of credit, or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within thirty (30) days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he/she has not been notified of the acceptance of his/her bid. Attorneys-in fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

In the case where a certified check, cashier's check, or letter of credit were submitted, Contractor shall furnish the Health District with a payment and performance bond in an amount at least equal to one hundred percent of the contract price pursuant to ORC §153.54.

## **8. NON-COLLUSION AFFIDAVIT**

Each bidder submitting a bid to the Seneca County General Health District shall execute a Non-Collusion Affidavit.

## **9. WAGES AND SALARIES**

These projects do NOT require Prevailing Wage.

## **10. EQUAL EMPLOYMENT OPPORTUNITY**

Attention of bidders is particularly called to the requirement ensuring that employees and applicants for employment are not discriminated against because of their race, color, national origin, sex, religion, military status, disability, age, genetic information or sexual orientation. Contractor is to sign the "Contractor Equal Employment Opportunity Certification" included in Section A of the bid documents.

## **11. LIST OF SUBCONTRACTORS**

Whenever applicable, the Bidder shall submit a list of subcontractors which will be involved in this project.

## **12. TERMS OF PAYMENT**

Terms of payment are provided in Section F of this General Specifications packet.

## **13. CONTRACT AWARD**

The Health District further declares that they will award the contract for this project based on the lowest and best base bid. No single factor will control the Board's decision to award, and the Board reserves the right to exercise its full discretion.

## **14. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS**

A requirement of the Ohio EPA is the acknowledgement and signing of the "Certification Regarding Debarment, Suspension, and Other Responsibility Matters" form included in Section A of these bid documents.

The Contractor is certifying that:

1. They are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transaction by any Federal department or agency.

2. They have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

3. They are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with the commission of any of the offenses enumerated in #2 above;

4. Have not within a three (3) year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for abuse or default; and

5. Will not utilize a subcontractor or supplier who is unable to certify 1 – 4 above.

#### **15. VIOLATING FACILITIES CLAUSES**

The Independent Contractor must agree to comply with all applicable standards, orders or requirements under Section 306 of the Clean Air Act, 42 USC 1857 (h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 32, which prohibits the use under non-exempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

#### **16. CHANGE ORDERS**

All Changes Orders under this contract, regardless of costs and funding source, must be submitted to the Seneca Regional Planning Commission under consultation with the Seneca County General Health District will determine the necessity of the change complete the Contract Change Order form which will be signed by the Contractor, the Board of Seneca County General Health District prior to being submitted to the Ohio EPA for approval. No work may commence on work that requires a Change Order until the completely executed form has been received by the Board of Health and/or Seneca Regional Planning Commission. The Change Order form and the Change Order Instructions are found in Section D.

#### **17. COMPLETION OF PROJECT**

Itemized Invoice for materials and labor matching the format submitted in the bid shall be submitted within ten (10) days of the project completion. Project completion includes the submission of as-built drawings to the Health District.

#### **18. EXECUTION OF CONTRACT WITHIN 10 DAYS**

Where the Seneca County General Health District accept a bid but the bidder fails or refuses to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material within ten (10) days after receipt or notification of award, the bidder and the surety on any bond shall, except as provided in Section 153.54(G), Ohio Revised Code, be liable for the amount of the difference between his bid and that of the next lowest bidder, but not in excess of the liability specified in Section 153.54(B)(1) or 153.54(C), Ohio Revised Code.

Entering into “a proper contract” means that within ten (10) days after receipt of notification of award, the successful bidder shall file with the Seneca Regional Planning Commission the following documents exactly in the manner specified:

1. Signed Contract, with Certified Corporate Resolution or notarized statement of Partnership or as Sole Owner.



2. A performance bond for the full amount of the Contract...if the bid guaranty was a certified check, or letter of credit.
3. Certificate of Insurance
4. Current Ohio Worker's Compensation Certificate
5. An affidavit in conformance with ORC Section 5719.042 stating the bidder had no delinquent personal property taxes at the time of the bid.
6. Request for Taxpayer Identification and Certification - Form W-9.

Upon failure to file the documents listed above, in the form and manner specified by the County, within said ten (10) days, the bidder and the surety on any bond shall be liable to the County in an amount not to exceed ten (10) percent of the bid and the Seneca County General Health District will award the contract to the next lowest bidder or re-advertise for same.

**DEFINITIONS**

The following may be used interchangeably in the specifications:

County/Seneca County/Seneca County General Health District/Health District/Owner/Bid/Proposal  
Project/Work

**RELATED LAWS, REGULATIONS**

It is expected that bidders on County construction are familiar with applicable local, State and Federal laws, ordinances and regulations. Consequently, only special State or Federal agency regulations, if any, are included in the specifications.

**OHIO SALES TAX**

The Health District is exempt from the payment of the Ohio Sales and Use Tax. Consequently, the cost of such is not to be included in the proposal.

**PERMITS, FEES**

The Contractor shall obtain and pay for all permits, fees and licenses necessary for the performance of his work on the project, and the cost of such may be included in the proposal.

**SUBCONTRACTORS**

Subcontractors at any tier are required to comply with the County's Insurance Specifications which, unless stated differently, are the same as those required of Prime Contractors.

**LIQUIDATED DAMAGES**

The County will suffer additional costs if the project is not substantially completed within the time specified. As a condition to the acceptance of the Contract, each contractor and its surety shall be liable for and pay the County liquidated damages in the amount of five hundred dollars (\$500.00) for each day the Project remains in an unfinished condition beyond the Time for Completion set forth in these Instructions to Bidders. Such amount may be deducted by the County from any payment due or to become due to said Contractor. Nothing under this section shall prohibit the County from recovery of damages for delay under other provisions of the Contract documents.

Punch list items must be completed within thirty (30) days after a substantial completion acceptance, signified by a written inspection report by the County's representative, to avoid imposing liquidated damaged penalties.

The said amount is fixed because of the impracticability and extreme difficulty of determining and fixing the actual additional costs the County would in such event sustain, and said amount is agreed to be the amount of damages which the County would sustain and shall not be treated as retainage.

Time is of the essence for each and every portion of the Project and of the Specifications wherein a definite and certain length of time is fixed for the performance of any act. Where an additional time is allowed for the completion of any Work, the new time fixed by such extension shall control.

The Contractor shall not be charged with liquidated damages when the County determines the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the County, providing the Contractor shall, within ten (10) days from the beginning of such delay, notify the County, in writing, of the causes of delay.

All such extensions of time shall be by fully executed Change Orders.

#### **UNIT PRICES**

When unit prices are requested, the following applies:

The unit prices specified in the unit price bid column will govern the award of the contract. The bidder shall make the calculations in the total amount bid column and also add up the total. However, the unit price specified together with the approximate quantities shall determine the total amount of the bid. If there is an error made in the extensions by the bidder, the total shall be changed as only the unit prices shall govern.

#### **ADDENDUM**

Any interpretation, correction or change in the plans and specifications will be made by addendum. When an addendum is required the Architect/Seneca County General Health District and Seneca Regional Planning Commission, or the County, will forward it to those who earlier obtained a complete set of plans and specifications, 1) by mail, 2) email, or 3) by personal delivery, obtaining a signed receipt for same. No addendum will be issued to bidders having incomplete sets of plans and specifications.

#### **PROPOSAL FORM**

The proposal form included in the Specifications shall be used by all bidders. All blanks on the form shall be stated in both words and figures, and in the event of any discrepancy between the two, the amount written in words shall govern. Any interlineations, alteration or erasure shall be initialed by the signer of the proposal.

#### **WITHDRAWAL OF BIDS**

Bids may be withdrawn at any time prior to the time for opening.

No bids may be withdrawn for sixty (60) days after the opening.

#### **LATE BIDS**

No bids, regardless of the circumstances, will be accepted if submitted after the advertised opening. Such bids will be returned unopened to the bidder.

#### **BID OPENING**

Date shall be as provided in the Request to Bid Letter. Usually, immediately after all bids are opened and read, the Watershed Specialist will refer them to the Seneca County General Health District for detailed tabulation, evaluation and recommendation, after which the award will be made.

#### **AWARD OF CONTRACT**

Contracts will be awarded by Resolution of the Seneca County General Health District within sixty (60) days of bid opening, or, if necessary, rejected, or extended as provided by statute. All bidders will receive a copy of such Resolution.

## **UNDERGROUND UTILITY FACILITIES (SECTION 153.64 ORC)**

The Prime Contractor(s), so identified in the Underground Utility Facilities section of the Specifications, shall, at least two working days, excluding Saturdays, Sundays, and legal holidays, prior to commencing construction operations in the project area which may involve underground utility facilities, cause notice to be given to the Registered Underground Utility Projection Services (“Services”) and the Owners of underground facilities shown on the plans and specifications who are not members of such Services, in writing, by telephone, or in person. Where notice is given in writing by certified mail, the return receipt, signed by any person to whom the notice is delivered, shall be conclusive proof of notice.

The Owner of the underground utility facility shall, within forty-eight (48) hours, excluding Saturdays, Sundays, and legal holidays, after notice is received, stake, mark, or otherwise designate the location of the underground utility facilities in the construction area in such manner as to indicate their course together with the approximate depth at which they were installed. The marking or locating shall be coordinated to stay approximately two (2) days ahead of the planned construction.

The Contractor shall immediately notify the occupants of nearby premises as to any emergency that he may create or discover at or near such premises. The Contractor shall report immediately to the Owner or operator of the underground facility any break or leak on its lines or any dent, gouge, groove, or other damage to such lines or to their coating of cathodic protection, made or discovered in the course of their excavation.

The Prime Contractor(s) so identified in the Specifications, regardless of his subcontractors at any tier, is solely responsible for complying with these requirements for underground utility facilities in the project area.

**SECTION C**  
**CONSTRUCTION CONTRACT AND CONTRACT FORMS**  
**CONTRACT SERVICE AGREEMENT**

This agreement made this \_\_\_\_\_ day of \_\_\_\_\_, 2020 by and between: **COMPANY NAME**, hereinafter designated as “Independent Contractor” and, the Seneca County General Health District, hereinafter designated as “Health District”;

In consideration of their mutual promises contained herein, and for other good and valuable consideration, it is hereby agreed as follows:

1. Independent Contractor agrees to perform the following services, to-wit: The Independent Contractor shall complete *the installation of a **TYPE OF INSTALLATION OR TAP-IN** following the emergency installation of a septic tank due to health and safety concerns, and complete abandonment of the former home and sewage treatment system (HSTS)* which shall include all supervision, technical personnel, labor, materials, machinery, tools, equipment and services, including utility and transportation services, obtain all required permits and perform and complete all work required for the service embraced in the project: **namely the property of CLIENT NAME, ADDRESS**. This project shall be called the **WPCLF HSTS Agreement #00-2020**.

2. The Health District shall pay the Independent Contractor a fee of \$AMOUNT IN NUMBERS (AMOUNT SPELLED OUT dollars and 00) for the above mentioned services – contract not to exceed \$TOTAL AMOUNT.

3. All work shall be completed within ninety (90) days from the date of the Notice to Proceed and within Seneca County General Health District regulations. Final bill and required documentation will be due to the administrator no later than ten (10) days following final approval by the Seneca County General Health District and completion of site work. The Health District agrees to pay the said assigned funds to the Independent Contractor in accordance with the following method:

- A. The contract(s) has been executed by all parties and a copy submitted to Ohio Environmental Protection Agency (EPA), and
- B. The installation of the HSTS has been inspected by the local Health District and a final inspection certification has been issued, and
- C. A payment request that documents the costs incurred for the individual home sewage treatment system (HSTS) improvements are submitted by the local government agency to Ohio EPA (the payment request must be accompanied by the local Health District final inspection certification), and
- D. The Ohio EPA reviews and approves the submissions and directs the Ohio Water Development Authority to disburse of approved amounts to the local government agency.

4. Independent Contractor shall perform said services in a professional manner to the satisfaction of the Board of Health and having passed a final inspection performed by the Seneca County General Health District, Division of Environmental Health.

5. It is further agreed by and between the parties hereto that the Independent Contractor shall indemnify and hold the Health District, its officials, employees, and staff harmless from any and all losses, damages, claims, suits, or contingent or direct liabilities that may arise as a result of any and all acts performed or that fail to be performed by the Independent Contractor during the term or arising out of this agreement.

6. *General Liability:* In addition to such fire and other physical damage insurance as the Independent Contractor elects to carry for his own protection, he shall also secure and maintain in the name of the Owner, the government agency sponsoring the Project, Subcontractors, the Consulting Engineer and any other parties having an interest in the Project, as named insured as their interest may appear; a general liability policy for fire, extended coverage, vandalism and malicious mischief in the amount of one hundred percent (100%) of the value of the complete parts of the Project and Materials in storage, except that such coverage shall not be required in connection with sewer, water main or paving construction. Pump or lift station construction shall not be considered sewer or water main construction for purposes of this paragraph.

7. *Workers' Compensation:* The Independent Contractor shall provide Workers' Compensation Insurance for all employees engaged in Work who may come within the protection of the workers' compensation law, and, where applicable, employer's General Liability Insurances for employees not so protected and shall require all Subcontractors to provide corresponding insurance.

The Independent Contractor shall indemnify the Owner and the Consulting Engineer against any and all liabilities, costs and expenses due to accidents or other occurrences covered by the workers' compensation law.

8. *Independent Contractor's Motor Vehicle Bodily Injury and Property Damage Liability Insurance:* Insurance to cover liability arising from the use and operation of motor vehicles in connection with the performance of the Contract (as customarily defined in liability insurance policies), whether they be owned, hired or non-owned by the Independent Contractor, as follows:

a. Bodily Injury Liability: \$500,000 for each person; limit of \$1,000,000 for each occurrence.

b. Property Damage Liability: \$500,000 for each occurrence.

9. *Independent Contractor's Public Liability and Property Damage Liability Insurance:* Independent Contractor's Public Liability Insurance providing a limit of not less than \$500,000 for all damages arising out of bodily injuries, including accidental death to one person, and a total limit of \$1,000,000 for all damages arising out of bodily injuries, including accidental death, to two or more

persons in any one occurrence. Independent Contractor's Property Damage Liability Insurance providing for a limit on not less than \$500,000 for all damages to or destruction of property.

Coverage under this policy shall include, to the limits indicated above, the collapse or damage to any structure, building or its contents, public or private utility, or pavement during construction and for two (2) years thereafter.

Whenever Work under the Contract is to be done in the vicinity of existing underground utilities or structures, coverage under the policy shall also include, to the limits indicated, all damages to said underground utilities or structures during construction and for a period of two (2) years thereafter. Whenever Work under the Contract is to be done by blasting, coverage under the policy shall also include, to the limits indicated above, all damages of any kind whatsoever caused by blasting.

*10. Independent Contractor's Protective Public Liability and Property Damage Liability Insurance:* Independent Contractor's Protective Public Liability and Property Damage Liability Insurance for operations performed by Subcontractors providing for coverage and limits corresponding to those described in subparagraph 9.

*11. Owner's Protective Public Liability and Property Damage Liability Insurance:* Regular Owner's Protective Public Liability and Property Damage Liability Insurance for operations performed by the Independent Contractor or any Sub-contractor providing for coverage and limits corresponding to those described in subparagraph 9.

This policy shall be written in the name of the Owner as a separate policy from those specified elsewhere herein.

*12. Railroad Protective Liability Insurance:* If any of the Work under this Contract is on railroad R/W, the Independent Contractor shall at its sole cost and expense, procure and provide, for and in behalf of each railroad company. Protective Liability Insurance (AARAASHO form) with minimum limits per occurrence of not less than \$2,000,000 for bodily injury, death and/or property damage, subject to an aggregate limit of \$6,000,000 per annum. The policy shall name each railroad company as the insured and be issued to the Independent Contractor. Each railroad company shall be provided with a copy of each policy of insurance prior to commencement of any work.

*13. Bid Security:* Each bid must be accompanied by performance bond, certified check, letter of credit, or bid guarantee prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of ten percent (10%) of the bid. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within thirty (30) days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he/she has not been notified of the acceptance of his/her bid. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

14. *Performance and Payment Bonds*: Simultaneously with his/her delivery of the executed contract, the Independent Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner. The bond shall be for one hundred percent (100%) of the contract price. A Payment Bond and Performance Bond are required. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney. Under certain conditions, and within the limits of State and local laws and regulations, the Owner may waive the requirement that the Payment and Performance Bond be underwritten by a surety company and may authorize in lieu thereof, a personal bond backed by a letter of credit from a local lending institution for the full value of the Contract.

15. Independent Contractor shall at his own cost provide hospitalization for himself and for the benefit of his employees and/or agents, and shall be liable for all state, local and federal income taxes and the reporting of same to the appropriate taxing agencies.

16. Independent Contractor and his agents or employees shall not be eligible for sick leave, vacation, hospitalization, or fringe benefits extended to regular employees of Seneca County.

17. Independent Contractor shall be responsible for all workers' compensation and unemployment compensation for its employees or agents. Independent Contractor shall provide, prior to beginning service, a certificate evidencing that workers' compensation and unemployment compensation are in effect. Independent Contractor shall maintain workers' compensation and unemployment compensation during the term of this contract.

18. Independent Contractor shall provide paid receipts to the Health District evidencing that all materials and supplies used in or provided by Independent Contractor have been paid, and Independent Contractor shall provide waivers of lien in an appropriate form at the conclusion of each job as requested by the Health District. The Health District is authorized to withhold from the Independent Contractor any and all funds necessary to satisfy any claims brought against the Health District by any materialmen or persons performing services under this contract.

19. The Independent Contractor agrees to comply with all applicable standards, orders or requirements under Section 306 of the Clean Air Act, 42 USC 1857 (h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 32, which prohibits the use under non-exempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

20. The signatories agree to ensure that the Director or its duly authorized agents shall have the right at all reasonable times to enter upon the Project Site(s) and Project Facilities, and to examine and inspect the same and to exercise the Director's rights pursuant to the WPCLF Assistance Agreement.

21. In the event of a conflict between the contract and the WPCLF Assistance Agreement, the provisions of the WPCLF Assistance Agreement shall prevail.

This contract may be terminated by the Health District at their discretion.

This is an agreement for services to be provided by an Independent Contractor. The Health District is not concerned with controlling method, manner and/or mode of the duties to be performed by Independent Contractor, but only the result of the Independent Contractor's work. The parties hereto further agree that this is a Personal Service Contract as set forth under Ohio Revised Code Section 145.012(A)(1) and Ohio Administrative Code 145-1-42; said Independent Contractor expressly waives for himself and his agents or employees any rights, claims, or demands that he or his agents or employees may have for any benefit under the Public Employees' Retirement System of the State of Ohio.

The executed document shall contain:

- a. This Agreement
- b. Contractor Equal Employment Opportunity Certification
- c. Certification regarding Debarment, Suspension, and Other Responsibility Matters
- d. Affidavit of Non-delinquency of personal property taxes.
- e. American Iron and Steel Acknowledgement

SENECA COUNTY  
GENERAL HEALTH DISTRICT

INDEPENDENT CONTRACTOR NAME  
COMPANY NAME

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Health Commissioner

Independent Contractor

Approved as to form:  
Seneca County Asst. Prosecutor

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**WORKERS' COMPENSATION**

The Contractor shall comply with the Ohio Workmen's Compensation Act for all of their employees engaged in work under this Contract.

**NOTICE REQUIREMENT**

All insurance policies and certificates shall include an endorsement providing thirty (30) days prior written notice to the County of cancellation, policy lapse, material change or reduction of coverage. The Contractor shall cease operations on the occurrence of any such cancellation, policy lapse, material change, or reduction, and shall not resume operations until new insurance is in force, and a new Certificate of Insurance is filed with and approved by the County, and he is again authorized to proceed.

Such cessation of operations shall not excuse the Contractor's obligation to complete his work within the time specified in this contract.

**INDEMNIFICATION CLAUSE**

The Independent Contractor agrees to indemnify and save the Health District, County, its officials, officers, agents, and employees harmless from any and all losses, claims, actions, costs, expenses, judgments, subrogation's, or other damages resulting from injury to any person (including injury resulting in death), or damage (including loss or destruction) to property of whatsoever nature of any person, firm, or corporation arising out of the errors, omissions or negligent acts of the Contractor in the performance of the terms of this Contract by the Contractor, including but not limited to the Contractor's employees, agents, subcontractors, sub-subcontractors, and others designated by the Contractor to perform work or services in, about, or attendant to, the work and services under the terms of this contract.

**CERTIFICATES OF INSURANCE**

The Contractor shall file a Certificate of Insurance for all coverage required in these Insurance Specifications on the ACORD 25 Form (preferred), and a copy of his current Workers' Compensation Certificate, with the County before starting work on the project, and shall keep such Certificates current and on file with the County for the life of this Contract.

**BID GUARANTEE**

The requirements for a bid guarantee (which can be a bond or a certified check, cashier's check, or letter of credit) are covered in the ORC 153.54/ORC 307.88

**PAYMENT AND PERFORMANCE BONDS**

The requirements for a Payment and Performance Bond are covered in ORC 153.54/ORC 307.89.

**NOTICE TO PROCEED**

The Contractor shall not commence work under this contract until he has obtained all the insurance required herein, has submitted appropriate Certificates of Insurance to and received approval of the County as evidenced by a Notice to Proceed issued on their behalf by the Seneca Regional Planning Commission

**SUBCONTRACTORS**

These Insurance Specifications apply equally to all subcontractors and sub-subcontractors at any tier during the period of their work on the project.

The Prime Contractor shall be solely responsible for his subcontractor's liability if he permits the Sub to work on the project without the Sub having been issued a Notice to Proceed by the Seneca Regional Planning Commission on behalf of the Health District.

State of Ohio  
 WATER POLLUTION CONTROL LOAN FUND (WPCLF/SRF) HSTS

**CONTRACT CHANGE ORDER**

RECIPIENT \_\_\_\_\_ CHANGE ORDER NBR \_\_\_\_\_

LOAN NUMBER \_\_\_\_\_ CONTRACT \_\_\_\_\_

OWDA PROJECT No. \_\_\_\_\_ DATE \_\_\_\_\_

Description of Change  
 (include address):

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 (Health District Representative)

ACCEPTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 (Contractor)

\_\_\_\_\_  
 (Company)

Original Contract Amt		
Previous Changes (+ / --)		
This Change (+ / --)		
Adjusted Contract Amt		

Ohio EPA Acceptance	
	Date

**CHANGE ORDER INSTRUCTIONS:**

All Change Orders for this work, regardless of costs, must be submitted to Ohio EPA for review.

*Changes Requiring Prior Approval*

Any change which substantially modifies the Project Facilities as specified in the Ohio EPA approved Facilities Plan and Final Permit to Install or Final Plan Approval (when applicable) or alters the direct or indirect impact of the Project Facilities upon the environment must be incorporated into a Change Order. One copy of the Change Order prior to execution is to be submitted to Ohio EPA for review and prior approval of the acceptability of the change. "Prior to execution" means before the Change Order is signed by the Owner.

Ohio EPA will review the Change Order and inform the Owner of the technical, environmental and operational acceptability of the change, and give the Owner permission to proceed with the proposed work.

*All Other Changes*

Change Orders not requiring prior approval as described above must be submitted to Ohio EPA within one

(1) month of the time at which they are approved by the Owner. Change Orders for WPCLF projects should be submitted to the Division of Environmental and Financial Assistance (DEFA).

*Change Order Approval Process*

After the Change Order is executed, one (1) copy of the Change Order, including the supporting documentation, is to be sent to Ohio EPA for final review. The HSTS Change Order form must have original signatures.

Health Departments should submit change orders electronically to the DEFA Engineer who reviewed and approved their project.

After the Change Order is accepted and eligible costs determined, Ohio EPA will return a signed copy of the HSTS Change Order form.

*Payments for Change Order Work*

The Owner is precluded from submitting to the OWDA payment requests for Eligible Project Costs associated with the Change Orders until the Ohio EPA's approval of the Change Orders has been obtained.

**NOTICE TO PROCEED**

To: \_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_

**PROJECT Description:**

You are hereby notified to commence WORK in accordance with the Agreement dated \_\_\_\_\_, 20\_\_, on or before \_\_\_\_\_, 20\_\_, and you are to complete the WORK no later than the date of completion set within the contract is therefore \_\_\_\_\_

\_\_\_\_\_  
Owner

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

On behalf of the Seneca County General Health District

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by \_\_\_\_\_ on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

## SECTION D

### EQUAL EMPLOYMENT OPPORTUNITY

**A. Activities and Contracts Not Subject to Executive Order 11246, as Amended**

(Applicable to Federally assisted construction contracts and related subcontracts \$10,000 and under)

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, military status, disability, age, genetic information or sexual orientation. The Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, military status, disability, age, genetic information or sexual orientation. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
2. **The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Owner setting forth the provisions of this non-discrimination clause.** The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. Contractors shall incorporate foregoing requirements in all subcontracts.

**B. Executive Order 11246 (Contracts/Subcontracts above \$10,000)**

1. Section 202 Equal Opportunity Clause

During the performance of this contract, the Contractor agrees as follows:

- (1)The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment, or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training, including apprenticeship. **The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Owner setting forth the provisions of this non discrimination clause.**
- (2)The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration without regard to race, color, religion, sex, or national origin.
- (3)The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contractor or understanding, a notice to be provided by the Owner advising the said labor union or workers' representatives of the contractor's commitment under this section, and shall post

copies of the notice in conspicuous places available to employees and applicants for employment.

- (4)The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (5)The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records, and accounts by the Ohio Department of Development's Office of Local Government Services (OLGS), the U.S. Department of Labor and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and others.
- (6)In the event of the contractor's non-compliance with the non-discrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rules, regulations or order of the Secretary of Labor, or as otherwise provided by law.
- (7)The contractor will include the provisions of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Department may direct as a means of enforcing such provisions, including sanctions for non-compliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

2. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246). (Applicable to contracts/subcontracts exceeding \$10,000)

- (1)The Offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
- (2)The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trace on all construction work in the covered area, are as follows:

Goals for Minority Participation	.....	Goals for Female Participation
10.0%		6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered areas. The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative

action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

(3)The Contractor shall provide written notification to the Manager of the Office of Local Government Services, Ohio Department of Development, P.O. Box 1001, Columbus, OH 43266-0101 within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

(4)As used in this Notice, and in the contract resulting from this solicitation, the "covered area" \_\_\_\_\_ county Ohio.

3. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

(1)As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer Identification Number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
  - (i) Black: all persons having origins in any of the Black African racial groups not of Hispanic origin;
  - (ii) Hispanic: all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race;
  - (iii) Asian and Pacific Islander: all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands; and
  - (iv) American Indian or Alaskan Native: all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.

(2)Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.



- (3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
- (4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonable be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
- (5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
- (6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to the training programs approved by the U.S. Department of Labor.
- (7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
  - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have

- employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source of community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
  - d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
  - e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b.
  - f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority & female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
  - g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
  - h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
  - i. Direct its recruitment efforts, both oral and written, to minority female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc. such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- q. Covered construction contractors performing contracts in geographical areas where they do not have a federal or federally assisted construction contract shall apply at the minority and female goals established for the geographical area where the contract is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting offices.

(8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through 7q). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7q of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation shall not be a defense for the Contractor's non-compliance.

(9) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially

desperate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

- (10)The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- (11)The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- (12)The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- (13)The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- (14)The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by OLGS and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
- (15)Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

## **SECTION E GENERAL CONDITIONS**

Local Health Department Regulations were distributed to each registered installer at time of registration.

Local regulations can also be viewed at

[https://www.senecahealthdept.org/sewage-systems?page\\_id=10](https://www.senecahealthdept.org/sewage-systems?page_id=10)

Technical specifications are referenced in the local regulations and state technical requirements can be viewed at the Ohio Department of Health website:

<https://www.odh.ohio.gov/odhprograms/eh/sewage/Law%20and%20Rule%20Page/sewrules.aspx>

Specifications for Sewer Tap-ins will be governed by the owner of the Sanitary Sewer of the specific location and will be provided to all bidders at the time of bidding.

## **SECTION F BASIS OF PAYMENT**

### **Payment Methods**

Contractors will be reimbursed for work performed only after:

- (1) The contract(s) has been executed by all parties and a copy submitted to Ohio EPA, and
- (2) the installation of the HSTS has been inspected by the local Health District and a final inspection certification has been issued, and
- (3) a payment request that documents costs incurred for the individual HSTS improvements is submitted by the local government agency to Ohio EPA (the request must be accompanied by the local Health District final inspection certification, and the signed contract page), and
- (4) the Ohio EPA reviews and approves the submissions and directs the Ohio Water Development Authority to disburse of approved amounts to the local government agency.

This process may take up to 4-6 weeks.

## TECHNICAL SPECIFICATIONS

### Technical Specifications for HSTS System Installations at

1. Marjorie Mears, 4590 CR 43, Tiffin Contact son Gary Mears at 419-443-5427

2. Lynn Gable, 5496 N CR 31, Tiffin 567-230-3631

3. Crystal Steinmetz, 7917 CR 59, Carey 419-957-1123

**BID DUE FEBRUARY 25, 2021 AT NOON**

The **ITEMIZED** bid for the installation of a HSTS system and will need to include all costs associated with:

1. Obtain on behalf of the homeowner purchase an installation permit which will require submitting both application and fee \*(\$250 tap in fee and a \$234 Water meter purchased from the city of Fostoria) \* If applicable. For NPDES systems; Septic Design Review of \$125, an EPA Permit of \$200 and the Permit to the Health Department of \$424. For Septic Tank Only, please see \$235 Alternation Permit Fee.
2. \*\* Labor, materials and equipment to install the HSTS system as designed and meeting current standards and requirements of the Seneca County General Health District, Ohio Department of Health and Ohio EPA
3. **List as an itemized price on the bid sheet**, any electrical or plumbing upgrades or alterations necessary to achieve a fully functional system as indicated in the approved design.
4. The closure of the existing system as indicated on the approved design or as indicated by the Seneca County General Health District.
5. For final approval, site must be graded and seeded upon completion. This contract is with the Seneca County General Health District and not with the homeowner so any deviation from this will require a change order following the guidance provided in the Specifications packet provided. The Seneca County General Health District and Ohio Environmental Protection Agency will have to approve the requested Change Order which can take as long as 3-4 weeks for approval. No invoices are accepted for any portion of payment until all Change Orders are fully approved.
6. Upon completion provide the required as-built drawings to the Seneca County General Health District.

Please note that all materials and/or equipment specified within the approved design can be installed as specified or with comparable materials/equipment as approved and acceptable by the Seneca County General Health District. Any questions relating to acceptable materials and/or equipment contact the Seneca County General Health District.

**Items not eligible** to be covered through this contract are as follows:

1. Abandonment of drinking water wells.
2. Administrative Costs
3. Annual Contractor permit fees
4. Insurance Costs
5. Operation and Maintenance permit fees
6. Performance and Payment Bond costs
7. Tax

Estimated cost of systems

7917 CR 59, Carey – \$18,000.00  
5496 N CR 31, Tiffin – \$25,000.00  
4590 N CR 43, Tiffin – \$18,000.00

Contract completion will be within sixty (60) days with the understanding these need to be completed as early as possible to ensure grant funds are expended.

Please submit bids by one of the following: mail to: Seneca Regional Planning Commission, 71 S Washington St, Suite 1104, Tiffin, OH 44883 or email to [cjwatkins@senecarpc.org](mailto:cjwatkins@senecarpc.org) Attn: Charlene Watkins

# GEOPHYTA

## Home Septic System Site Evaluation And Replacement System Design

For:

Seneca County WPCLF (Marjorie Mears)

4590 N. C.R. 43  
Tiffin, OH 44883

Property Location:

4590 N. C.R. 43  
Tiffin, OH 44883

Adams Township, Seneca County

SYSTEM TYPE:  
Engineered Sand Mound

By:

Nathan Wright (Soil Scientist)  
Seth V. Layne (Designer)

Geophyta, Inc.  
2685 C.R. 254  
Vickery, OH 43464

419-547-8538

January 15, 2021

**APPROVED**

By Matt Beckman at 11:51 am, Jan 20, 2021



### **To The Homeowner:**

A septic system is designed based on all the information you provide and Geophyta Inc collects at the site. It must be accurate. This information includes local soil limits and topography, plus existing and future locations of your home, number of bedrooms, out buildings, driveways, drinking water wells, ponds, septic systems, and property lines. Geophyta Inc. relies on this information to construct detailed design drawings that must meet local health department regulations before installation.

Any design changes required by the local health department to meet existing regulations are the responsibility of Geophyta Inc.

Any information changes made by you after the initial site inspection are your responsibility and will result in additional charges to you above the original quote for services. These charges may include additional site inspection work, system redesign, and resubmitted drawings.

### **To The Installer:**

The registered installer of this septic system design is responsible for preparing an “as-built” record, as stated in the Ohio Administrative Code Chapter 3701-29-09, Par. F (p.32) of the “Sewage Treatment System Rules,” Ohio Department of Health, January 1, 2015. Additionally, the installer is responsible for measuring and recording distal pressure head and float switch settings as baseline measures for future operation and maintenance of any pressure distribution system (3701-29-15, Appendix B, Par. VI(p.93) of above referenced rules.

If the installer requests “as-built” record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

Geophyta Inc. must assume that any registered installer has the knowledge, equipment, ability, and experience to properly layout, install, and create as-built drawings for any septic system design approved by a local board of health. This includes the ability to read detailed design prints with an associated bill of materials. For this reason, any Geophyta Inc project supervision prior to or during installation will be billed to the installer.

**Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.**

# HSTS Site/Soil Evaluation Information Sheet, Geophyta, Inc.

**Customer:**

Name:	GARY MEARS
Address:	4590 N. COUNTY RD 43
City, State:	TIFFIN, OH 44883
Home Phone:	419-443-5427
Cell Phone:	419-443-5427
Email:	GARYMEARS1@GMAIL.COM

**Property:**

Parcel #:	
Current Owner:	MARJORIE MEARS
Address:	4590 N. COUNTY RD 43
City, State, Zip:	TIFFIN, OH 44883
Lot Size:	
Right of Ways?	NONE
Easements?	NONE

**Existing or Proposed or Lot Split: (circle one)**

House Size: Rooms	4 bedrooms	electric:	overhead or <u>buried</u>
House Dim.w/Garage:	ft.xft.	phone:	<u>N/A</u> ; buried; n/a
Garage Size:	<u>N/A</u> ft.xft.	gas :	natural <u>propane</u> n/a
Water Source:	<u>well</u> ; public; cistern	garden/hot tub:	yes <u>no</u>
Water Softener:	no <u>yes</u>		
Outbuildings:	no <u>yes</u> , size:	geothermal heat/cooling system	<u>no</u> ; yes: (horizontal or vertical)
Pond:	<u>no</u> yes, size:		
System Type:	new or <u>replacement</u>	Sump pump:	no <u>yes</u>
Replacement Reason:	<u>failed</u> ; addition; n/a	Discharge where?	<u>GROUND SURFACE</u>

**Comments:**

I agree that the above information is accurate and can be used by Geophyta, Inc. to prepare a site/soil evaluation for septic system suitability. The site/soils report is for information purposes to be used by a designer and your local health department. This report does not guarantee build ability of a lot or approval of any septic system design. This is not a property boundary survey.

Marjorie R. Mears

Customer Signature

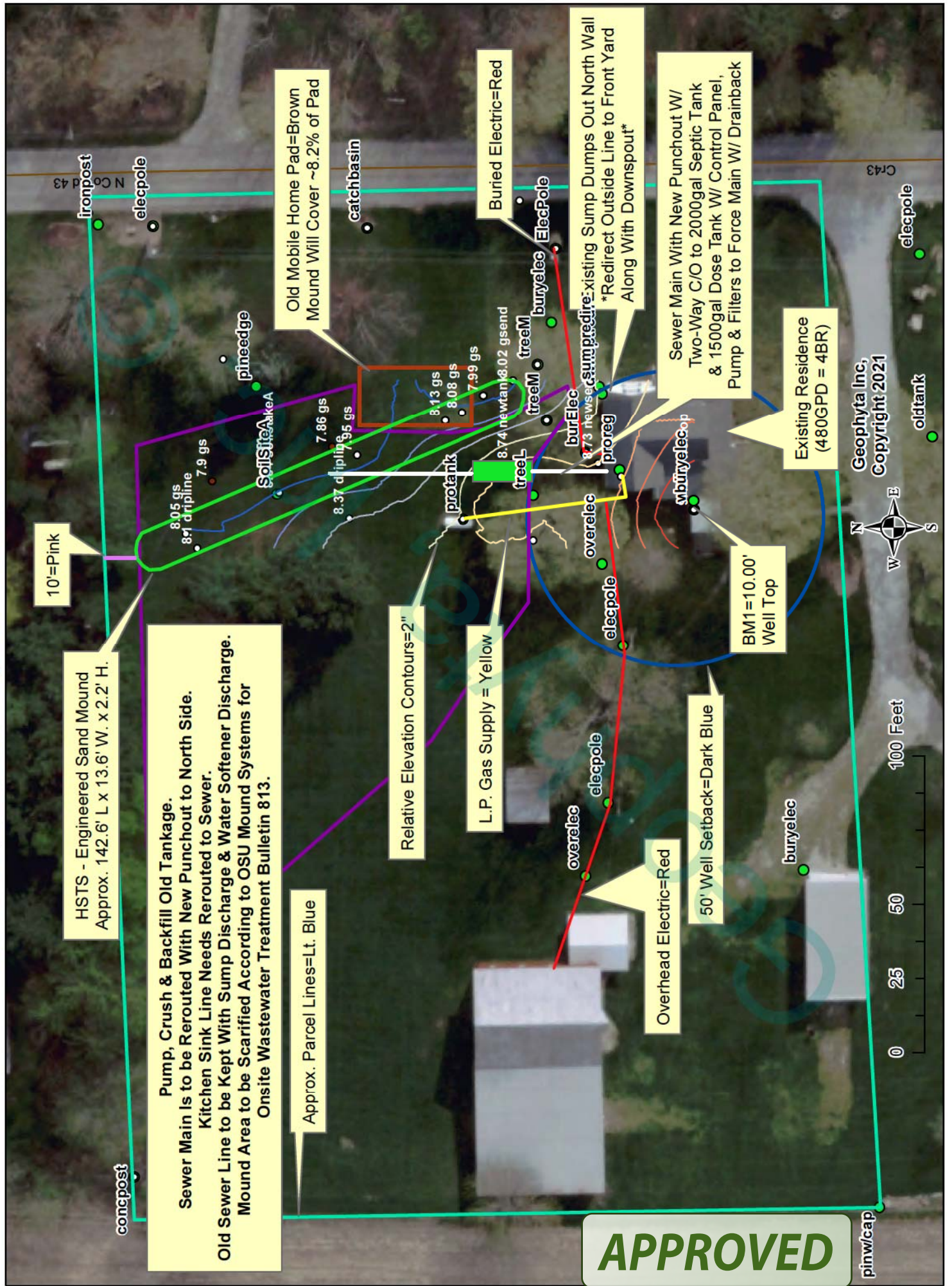
9-3-2020

Date

Copyright, 2020  
Geophyta, Inc.

APPROVED

# HSTS Replacement Layout - 4590 N. C.R. 43



**10' = Pink**  
 HSTS - Engineered Sand Mound  
 Approx. 142.6' L x 13.6' W. x 2.2' H.

**Pump, Crush & Backfill Old Tankage.**  
 Sewer Main Is to be Rerouted With New Punchout to North Side.  
 Kitchen Sink Line Needs Rerouted to Sewer.  
 Old Sewer Line to be Kept With Sump Discharge & Water Softener Discharge.  
 Mound Area to be Scarified According to OSU Mound Systems for  
 Onsite Wastewater Treatment Bulletin 813.

Approx. Parcel Lines=Lt. Blue

Relative Elevation Contours=2"

L.P. Gas Supply = Yellow

Overhead Electric=Red

50' Well Setback=Dark Blue

BM1=10.00'  
Well Top

Existing Residence  
(480GPD = 4BR)

Geophyta Inc,  
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**APPROVED**

Old Mobile Home Pad=Brown  
Mound Will Cover ~8.2% of Pad

Buried Electric=Red

existing Sump dumps Out North Wall  
\*Redirect Outside Line to Front Yard  
Along With Downspout\*

Sewer Main With New Punchout W/  
Two-Way C/O to 2000gal Septic Tank  
& 1500gal Dose Tank W/ Control Panel,  
Pump & Filters to Force Main W/ Drainback

10' = Pink

HSTS - Engineered Sand Mound  
Approx. 142.6' L x 13.6' W. x 2.2' H.

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50' Well Setback=Dark Blue

BM1=10.00'  
Well Top

Existing Residence  
(480GPD = 4BR)

Geophyta Inc,  
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**APPROVED**

# Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Seneca  
 Township / Sec.: Adams  
 Property Address: 4590 N. C.R. 43  
 OR Location: Tiffin  
 Applicant Name: Marjorie Mears  
 Address: 4590 N. C.R. 43  
Tiffin OH 44883  
 Phone #: 419-443-5427 - Gary Mears  
 Lot #: \_\_\_\_\_  
 Test Hole #: A  
 Latitude/Longitude: 83°3'14.27"W 41°11'34.309"N  
 Method: \_\_\_\_\_ Pit \_\_\_\_\_ Auger  Probe; 1 1/4" dia.

Land Use / Vegetation: Residential Turf  
 Landform: Glacial Till Plain  
 Position on Landform: Hillslope  
 Percent Slope: 2 - 3  
 Shape of Slope: Linear - Linear  
 Approximate Soil Type: Blount SiL  
 Date: 3-Sep-20  
 Evaluator: Nathan Wright  
Geophyta, Inc.  
2685 C.R. 254  
Vickery, OH 43464  
 Phone#: 419-547-8538



Certification #: \_\_\_\_\_  
  
 Signature: \_\_\_\_\_

Soil Profile		Estimating Soil Saturation				Estimating Soil Permeability					
		Munsell Color (hue, value, chroma)		Redoximorphic Features		Texture		Structure		Other Soil Features	
Horizon	Depth (inches)	Matrix Color	Concentrations	Depletions	Class	Approx. % Clay	Approx. % Fragments	Grade	Size		Type (shape)
<b>A</b>	<b>0.0 - 9.5</b>	<b>10YR 4/3</b>	<b>none</b>	<b>none</b>	<b>SiL</b>	<b>15</b>	<b>0</b>	<b>2 - mod</b>	<b>medium</b>	<b>gr</b>	<b>friable</b>
<b>Bt</b>	<b>9.5 - 25.0</b>	<b>10YR 4/6</b>	<b>none</b>	<b>20% 10YR 5/2</b>	<b>SiCL</b>	<b>30</b>	<b>0</b>	<b>2 - mod</b>	<b>medium</b>	<b>sbk</b>	<b>firm</b>
<b>C</b>	<b>25.0 - 48.0</b>	<b>10YR 4/4</b>	<b>none</b>	<b>20% 10YR 5/2</b>	<b>SiCL</b>	<b>35</b>	<b>5</b>	<b>1 - weak</b>	<b>fine</b>	<b>sbk</b>	<b>firm</b>
Limiting Conditions		Depth to (in.)		Remarks / Risk Factors: Values for Sand Mound							
Perched Seasonal Water Table		9.5		Tyler Table: A horizon (0.0 - 9.5) ILR: SiL, HLLR: SiL							
Apparent Water Table		>48		ILR(>30mg/L) = 0.6 gal/day/ft <sup>2</sup> , ILR(<30mg/L) = 0.8 gal/day/ft <sup>2</sup>							
Highly Permeable Material		>48		HLLR = 2.7 gal/day/ft							
Bedrock		>60		4 bedroom min. required absorption area = 800 sq.ft.							
Other Restrictive Layer		>48		5xW Soil Absorption Box: 23'W x 178'L							

Note : The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08.

Landforms
Upland*
Terrace
Flood Plain
Lake Plain
Beach Ridge
*Includes glacial till plain and end moraine

Position on Landform
Depression
Flat
Knoll
Crest
Hillslope
Footslope

Shape of Slope
Convex
Concave
Linear
Complex

Horizon Nomenclature		
Master Horizons	Horizon Suffixes	Horizon Modifiers
O Predominantly organic matter (litter & humus)	a Highly decomposed organic matter	Numerical Prefixes: Used to denote lithologic discontinuities.
A Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b Buried genetic horizon	
E Mineral, loss of Si, Fe, Al, clay, organic matter	d Densic layer (physically root restrictive)	Numerical Suffixes: Used to denote subdivisions within a master horizon.
B Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of CaCO <sub>3</sub> ; subsurface soil structure	e Moderately decomposed organic matter	
C Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g Strong gley	
R Hard bedrock	i Slightly decomposed organic matter	
	p Plow layer or artificial disturbance	
	r Weathered or soft bedrock	
	t Illuvial accumulation of silicate clay	
	w Weak color or structure within B	
	x Fragipan characteristics	

Soil Texture	
Texture Class Abbreviations	Textural Class Modifiers
Course Sand cos	Gravelly GR
Sand s	Fine Gravelly FGR
Fine Sand fs	Medium Gravelly MGR
Very Fine Sand vfs	Coarse Gravelly CGR
Loamy Coarse Sand lcos	Very Gravelly VGR
Loamy Sand ls	Extremely Gravelly XGR
Loamy Fine Sand lfs	Cobbly CB
Loamy Very Fine Sand lvfs	Very Cobbly VCB
Coarse Sandy Loam cosl	Extremely Cobbly XCB
Sandy Loam sl	Stony ST
Fine Sandy Loam fsl	Very Stony VST
Very Fine Sandy Loam vfsl	Extremely Stony XST
Loam l	Bouldery BY
Silt Loam sil	Very Bouldery VBY
Silt si	Extremely Bouldery XBY
Sandy Clay Loam scl	Channery CN
Clay Loam cl	Very Channery VCN
Silty Clay Loam sicl	Extremely Channery XCN
Sandy Clay sc	Flaggy FL
Silty Clay sic	Very Flaggy VFL
Clay c	Extremely Flaggy XFL

\*Estimate approximate clay percentage within 5 percent

Soil Structure					
Grade	Size	Type (Shape)			
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr. Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy	CDY
		Very Thick*	vk		

\* The sizes Very Thin, Thin, Thick, and Very Thick, are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Moist Consistence	
Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils" Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

Mound Calculations: Gravelless Chambers			
Owner: Mears: Site A	Design		
Residence W/ 4 BEDROOMS	Min. Design	Actual Design	Comment
Water Use (gal/day)(DFR)	480		
Limiting Condition	PSWT		
Depth To Limiting Condition (inches)	9.5		
Total Infiltration Depth (Soil+Sand) (in.)	15.5		
Sand Depth To Add (in.)	6.0		
Most Limiting Soil Texture	SiL		
Site Slope % (Perpendicular To Contour)	0.0		
Tyler Table Values			
Soil Infiltration Loading Rate (gal/day/sq. ft)(BLR)	0.6		> 30 mg/L
Soil Hydraulic Linear Loading Rate (gal/day/ft)(HLLR)	2.7		Using (8"-12") Infiltration
Sand Loading Rate (gal/day/sq. ft)(SLLR)	1.0		
Required Soil Absorption Area (sq. ft.) DFR/BLR	800.0		
Mound Design Requirements			
Sand Absorption Area Width (ft)(A)	2.7	3.75	Using (2) 2' W. Infiltrator Chambers
Sand Absorption Area Length (ft)(B)	177.8	128.0	28% Length Reduction
Sand Distribution Area for Laterals(sq. ft.)	480.0	480.0	
Min. Mound Basal Soil Width (ft)(I+A+J)(HLLR/BLR)	4.5	10.42	Needed For 3:1 Sand Edge Slope
Upslope Sand Depth (in)(b)	6.0		
Downslope Sand Depth (in)(E)	6.0		
Aggregate Depth (in)(F)	8.0		LP Chamber Dome Height
Edge Topsoil Cover (in)(G)	6.0		
Peak Topsoil Cover (in)(H)	12.0		
Mound Downslope Width at 3:1 (in)(I)	78.0		
Mound Upslope Width at 3:1 (in)(J)	78.0		
Mound End slope Width at 3:1 (in)(K)	78.0		
Mound Overall Length (ft)(L)	190.8	142.6	
Mound Overall Width (ft)(W)	13.0	13.6	
Mound Overall Height (ft)	2.2	2.2	

**APPROVED**

	A	B	C	D
1	<b>Mound Dosing Calculations: Gravelless Chambers</b>			
2				
3	<b>Owner: Mears: Site A</b>		<b>Design</b>	
4		<b>Target</b>	<b>Formula</b>	<b>Actual</b>
5	Sand Absorption Area Width (ft)(A)	3.75		
6	Sand Absorption Area Length (ft)(B)	128.0		
7	Sand Distribution Area for Laterals(sq. ft.)	480.0	B5*B6	
8				
9	Area Per Orifice (sq. ft.)	6.00		
10	Orifice Quantity (Dist. Area/Std)	80.0	B7/B9, Rnd to Even; Divide by 4	80.0
11	Total Laterals Length (ft)	256.0		
12	Number of Laterals C	4		
13	Each Lateral Length (ft.)(B/C)	64.0	B11/B12	
14	Orifice Separation (length/# orifices)(ft.)	3.2	B11/B10	3.2
15	Orifice Separation Less Than Or Equal To 4 ft.?	yes		
16	Orifice Size (in)(Otis, 1982)	0.125	1/8"	
17	Lateral Diameter (in) (Otis, 1982)	1.00	SCH40 PVC	
18	Target Head at Lateral End (ft)	5.0		
19	Flow Rate per Orifice (gpm)(Otis et al, 1978)	0.41		
20				
21	<b>Lateral Design:</b>			
22	Diameter (in)	1.00	SCH40 PVC	
23	Flow Rate per Lateral (gpm)	8.2	B10/B12*B19	
24	Flow Rate Total (gpm)	32.8	D10*B19	
25	Gal. per Foot of Pipe (Clemons, 1991)	0.045	SCH40 PVC	
26	Total Lateral Volume (gal)	11.5	B11*B25	
27				
28	<b>Manifold Design:</b> None - Main Direct To Laterals By Tee			
29	Diameter (in)	0.0		
30	Length (ft)	0.0		
31	Gal. per Foot of Pipe (Clemons, 1991)	0.0		
32	Total Manifold Volume (gal)	0.0	B30*B31	
33	# Std 90deg Elbows			
34	Std 90deg Elbow Pipe Length Equivalent (ft)			
35	# Std 45deg Elbows			
36	Std 45deg Elbow Pipe Length Equivalent (ft)			
37	# Std Tees			
38	Std Tee Pipe Length Equivalent (ft)			
39	# Quick Disconnects			
40	Quick Disconnect Pipe Length Equivalent (ft)			
41	# Check Valves			
42	Check Valves Pipe Length Equivalent (ft)			
43				
44	Total Length Equivalent (pipe&fittings) (ft)	0.0		
45	Head Loss per 100 ft.(ft.)(Otis et al, 1978)	0.0		
46	Total Manifold Head Loss (ft)	0.00		
47				
48	<b>Main Design:</b>			
49	Diameter (in)	2.00	SCH40 PVC	
50	Length (ft)	52	Includes All Drainback Piping	
51	Gal. per Foot of Pipe (Clemons, 1991)	0.174		
52	Total Main Volume (gal)	9.05	B50*B51	
53	# Std 90deg Elbows	4		
54	Std 90deg Elbow Pipe Length Equivalent (ft)	9.0		
55	# Std 45deg Elbows	0		
56	Std 45deg Elbow Pipe Length Equivalent (ft)	4.0		
57	# Std Tees	3		
58	Std Tee Pipe Length Equivalent (ft)	11.0		
59	# Quick Disconnects	1		

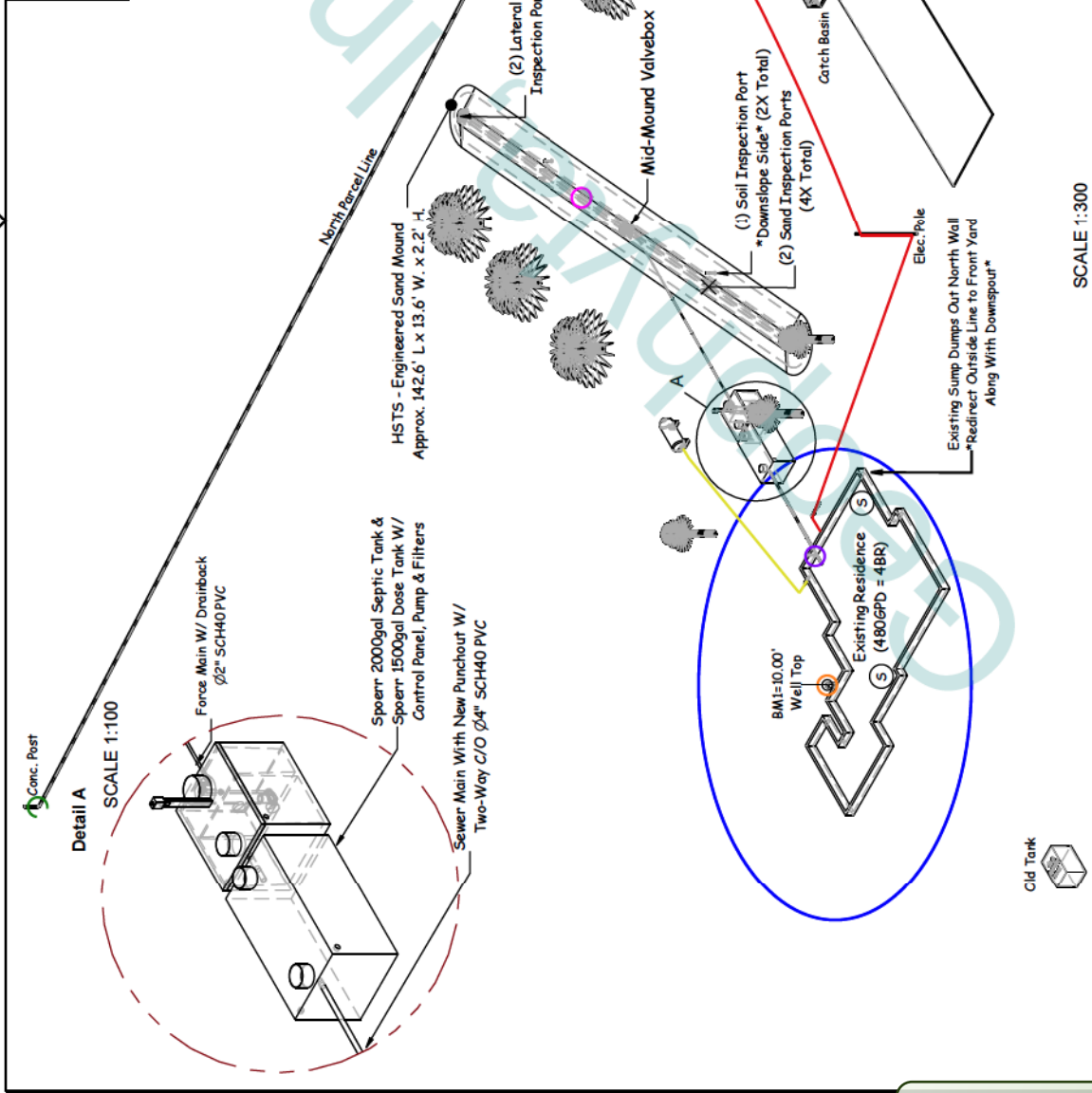


	A	B	C	D
1	<b>Mound Dosing Calculations: Gravelless Chambers</b>			
2				
3	Owner: Mears: Site A	Design		
4		Target	Formula	Actual
80	Quick Disconnect Pipe Length Equivalent (ft)	2.0		
81	# Full Flow Ball Valves	4	1.00" Dia. Valves	
82	Ball Valves Pipe Length Equivalent (ft)	0.9		
83				
84	Total Length Equivalent (pipe&fittings) (ft)	126.6	B50+(B53-62)	
85	Head Loss per 100 ft.(ft.)(Otis et al, 1978)(Zoellen)	2.06		
86	Total Main Head Loss (ft)	2.61	(B64/100)*B65	
87				
88	Dose Volume:			
89	Total Lateral Volume (gal)	11.52	B26	
70	Total Manifold Volume (gal)	0.00	B32	
71	Total Main Volume (gal)	9.05	B52	
72				
73	Drainback Volume: Main+Manifold+Lateral (gal)	20.6	B69+B70+B71	
74	Lateral Vol x 6.94444 (gal)	80.0	B69*5 (Minimum)	
75	TOTAL dose (gal)	100.6		
76				
77	Daily Design Flow (DFR)(120gal/day/bedroom)	480.0		
78	Is Lateral Dose <1/4 of Daily Design Flow?	yes		
79	Is Lateral Dose <1/8 of Daily Design Flow?	no		
80				
81	Total Dynamic Head:			
82	Static Lift - Lateral Ht. Above Surface (ft)	0.50	6.0 inch Sand	
83	Static Lift - Depth to Pump Off Below Surface (ft)	5.92	6.75 - .83	
84	Static Lift - Topo Difference (ft.)	-0.6	-	
85	Total Pipe & Fittings Headloss (ft)	2.6	B46+B66	
86	Network Loss (5ft head x 1.3) (ft)(includes laterals)	6.5	-	
87	Total Head Loss (ft)	14.9	sum(B81:B85)	
88				
89	Dose Tank Parameters			
90	Volume (gal)	1500	55.0	inches effluent
91	Gallons Per Inch in Tank	27.30		
92				
93	Timed Dose Settings:			
94	Total Gallons Per Pump Cycle W/drainback	100.6	3.68	inches drawdown
95	Total Pump Cycles Per 24 Hrs.	6.0		
96	Total Pump On Time - seconds	184		
97	Total Pump Off Time - hours	3.9		
98	Redundant Off Effluent Ht. from bottom (in)	10.0	( to prevent tank flotation)	
99	Timer Enable (low level cutout) Ht. From tank bottom (in)	13.7		
100	High Level Alarm Ht. from bottom (in.)	28.6	(provides 1 & 1/2 day reserve after alarm)	

APPROVED



REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	
DESIGNER: SETH V. LAYNE, GEOPHYTA INC.			13.JAN.21



**APPROVED**

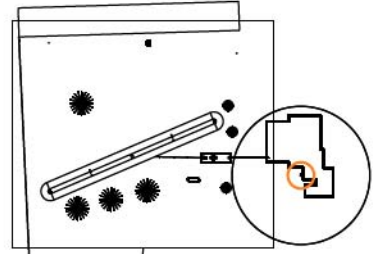
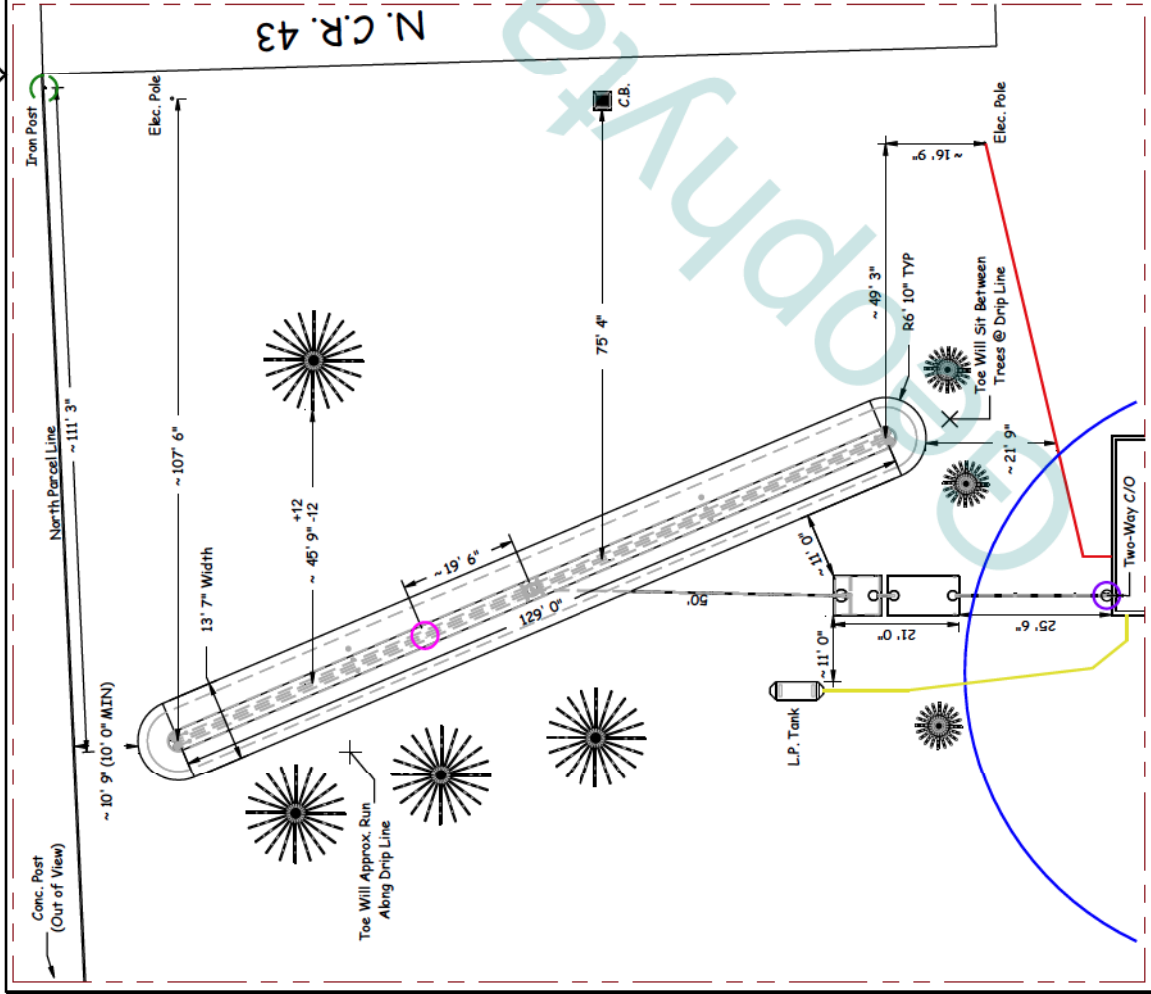
SIZE	FSCM NO.	DWG NO.	REV
B		Mears - HSTS_3D_Layout	
SCALE	1:1	SHEET	1 OF 1

SCALE 1:300

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 15.JAN.21

Detail A  
SCALE 1:250



SCALE 1:1082

NOTES  
 ▢ Mound Layout Needs to be 10' Min. From North Parcel Line (Can be String)

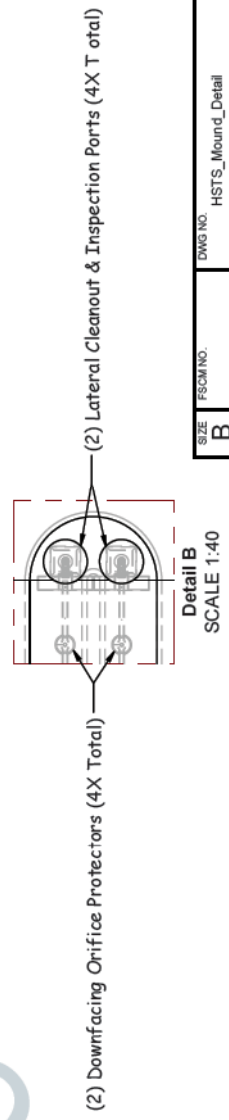
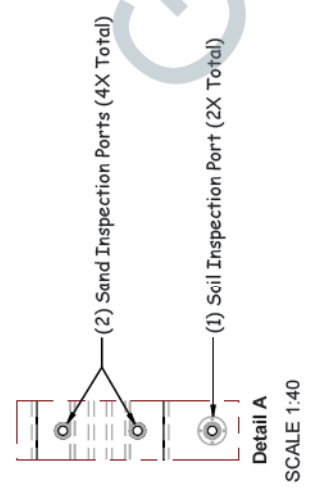
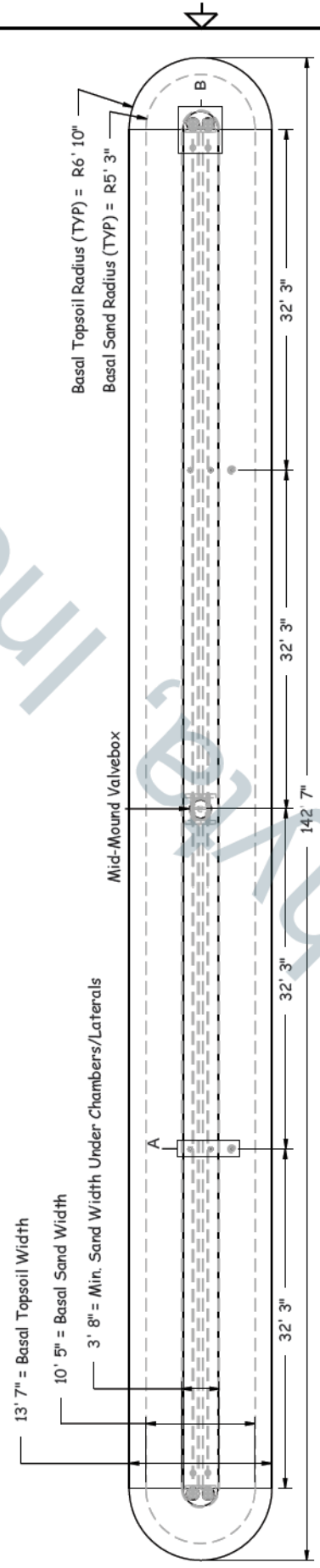
LEGEND	
	Sewer Main Exit
	Soil Stake (A)
	BMI
	Property Post Markers
	50' Well Setback
	Buried Electric
	L.P. Gas Line



SIZE	ESCM NO.	DWG NO.	Mears - HSTS_Top	REV
B				
SCALE	1:1	SHEET	1 OF 1	

**APPROVED**

REVISIONS		
ZONE	REV	DESCRIPTION
DESIGNER: SETH V. LAYNE, GEOPHYTA INC.		DATE: 15.OCT.20
		APPROVED

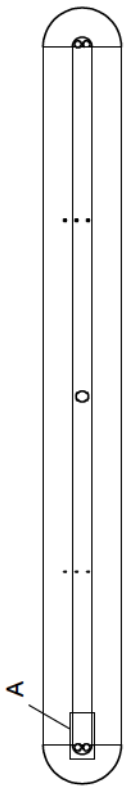


SCALE 1:120

SIZE	FSCM NO.	DWG NO.	HSTS_Mound_Detail	REV
B				
SCALE	1:1	SHEET	1 OF 1	

**APPROVED**

REVISIONS			
ZONE	REV	DESCRIPTION	DATE
		Drawn By Nathan Wright, Geophyta, Inc.	21-Sep-18
			APPROVED

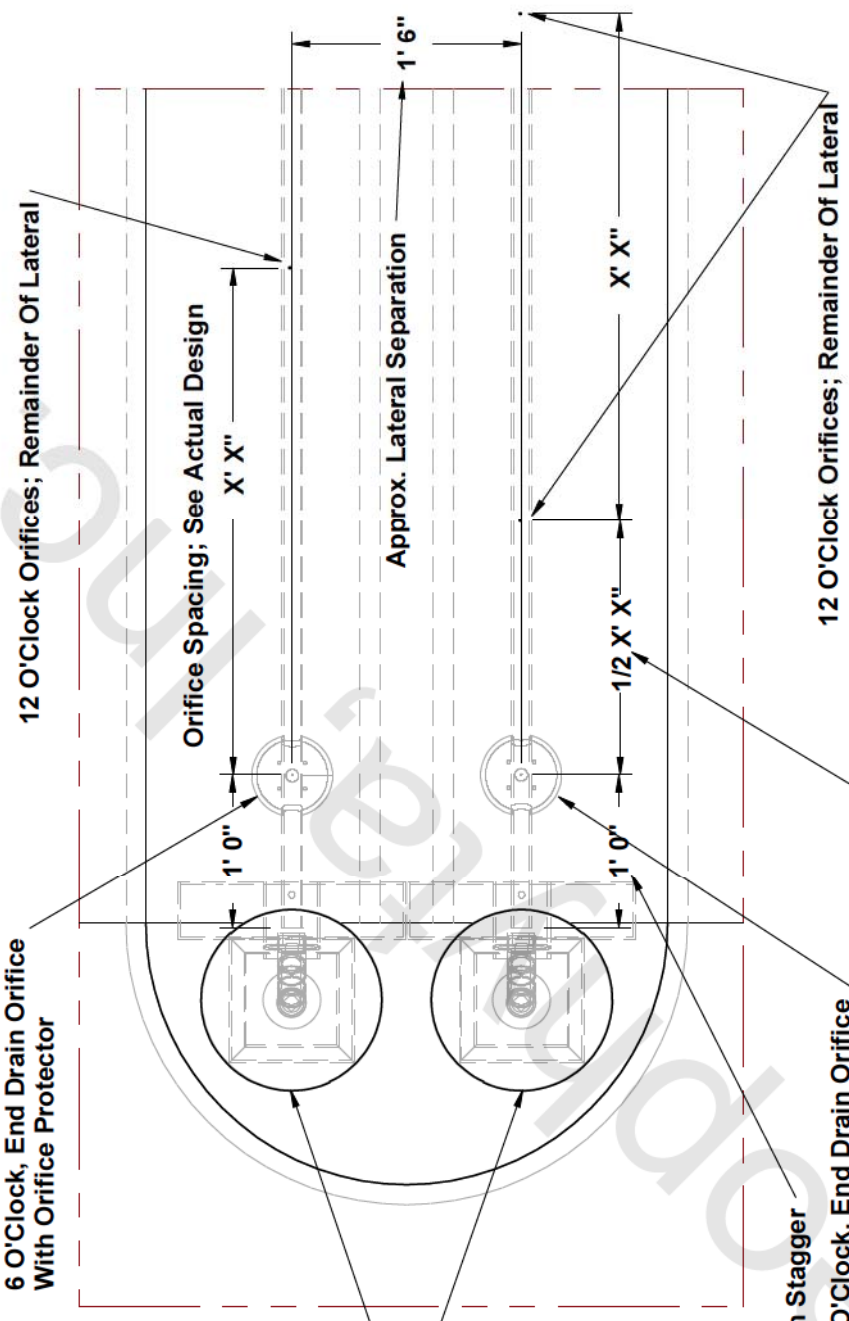


SCALE 1:400

Lateral Diameters Are Determined From Each Individual Design And Can Be Found In The Calculations Pages As Well As Bill Of Materials.

Lateral Cleanouts & Sand Inspection Ports. Entire Lateral Lengths Are Covered With Gravelless Chambers As Effluent Diffusers.

6 O'Clock, End Drain Orifice With Orifice Protector



Can Be Adjusted To Help With Stagger

6 O'Clock, End Drain Orifice With Orifice Protector

Stagger Orifices In Diamond Pattern Across Laterals, As Best As Possible. Number Of Orifices Per Lateral Takes Priority Over Exact Spacing.

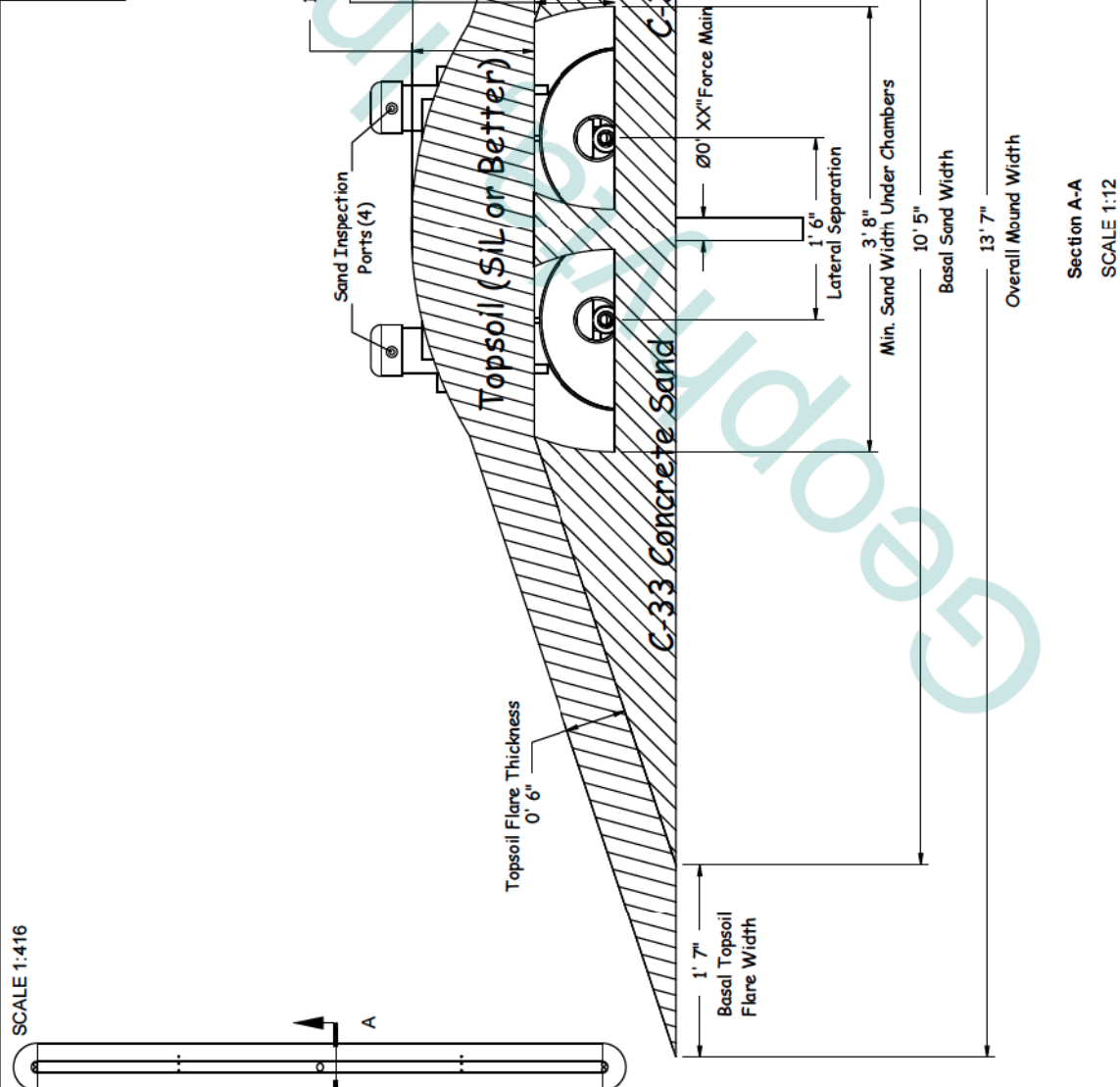
Detail A  
SCALE 1:15

SIZE <b>A</b>	FSCM NO.	DWG NO.	HSTS Mound Laterals Detail	REV
SCALE 1:1				
SHEET			1 OF 1	

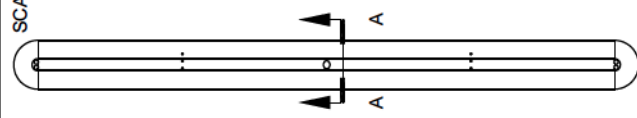
**APPROVED**

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 03.JUNE.20



SCALE 1:416



SIZE	ESCM NO.	DWG NO.	REV
B			
SCALE		HSTS_Mound Cross-Section	
1:1		SHEET 1 OF 1	

Section A-A  
SCALE 1:12

**APPROVED**

REVISIONS		
ZONE	REV	DATE
		15.JAN.21

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

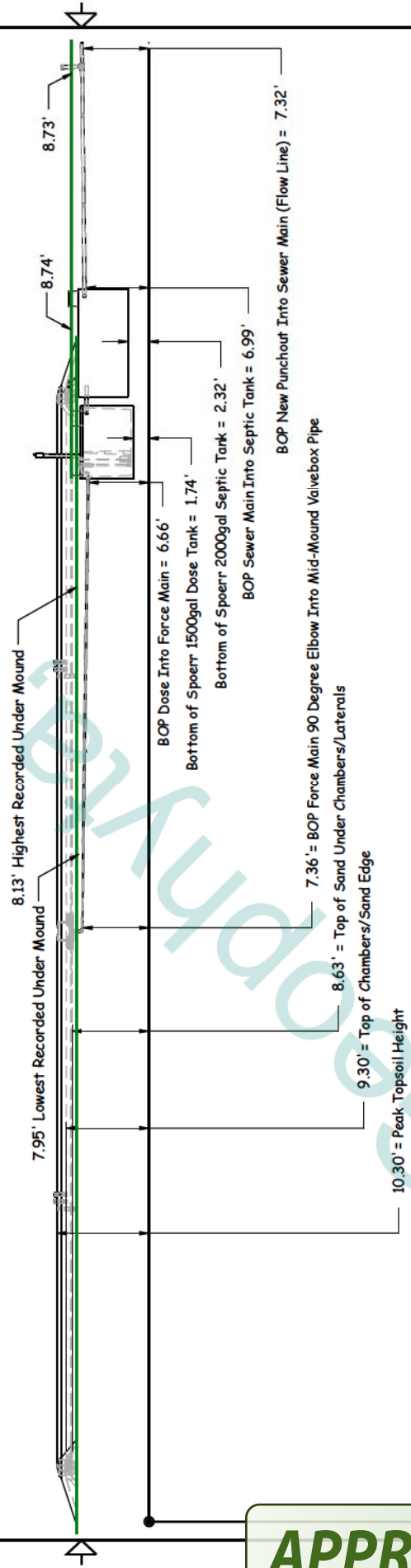
LEGEND
Native Soil Surface
Zero Elevation Reference



- NOTES**
- ▶ Sand Depths Under Chambers Due To Soil Unevenness:  
Avg. = 7.0"  
Range = 6.0" - 8.2"
  - ▶ Sewer Main to Have Min. Fall .125"/1'
  - ▶ Force Main Must Have Drainback With Suggested Fall on 1"/100'
  - ▶ Sewer Main Plumbing to be Replumbed Approx. 17' Below Grade (Relative to Invert of Pipe) @ Exit Location

All Elevation Values Pointing to Surface Are of Native Grade

\* All Inspection Ports/Risers to be Visible\*



SIZE	FSCM NO.	DWG NO.	REV
B		Mears - HSTS_Elevation	

SCALE 1:137

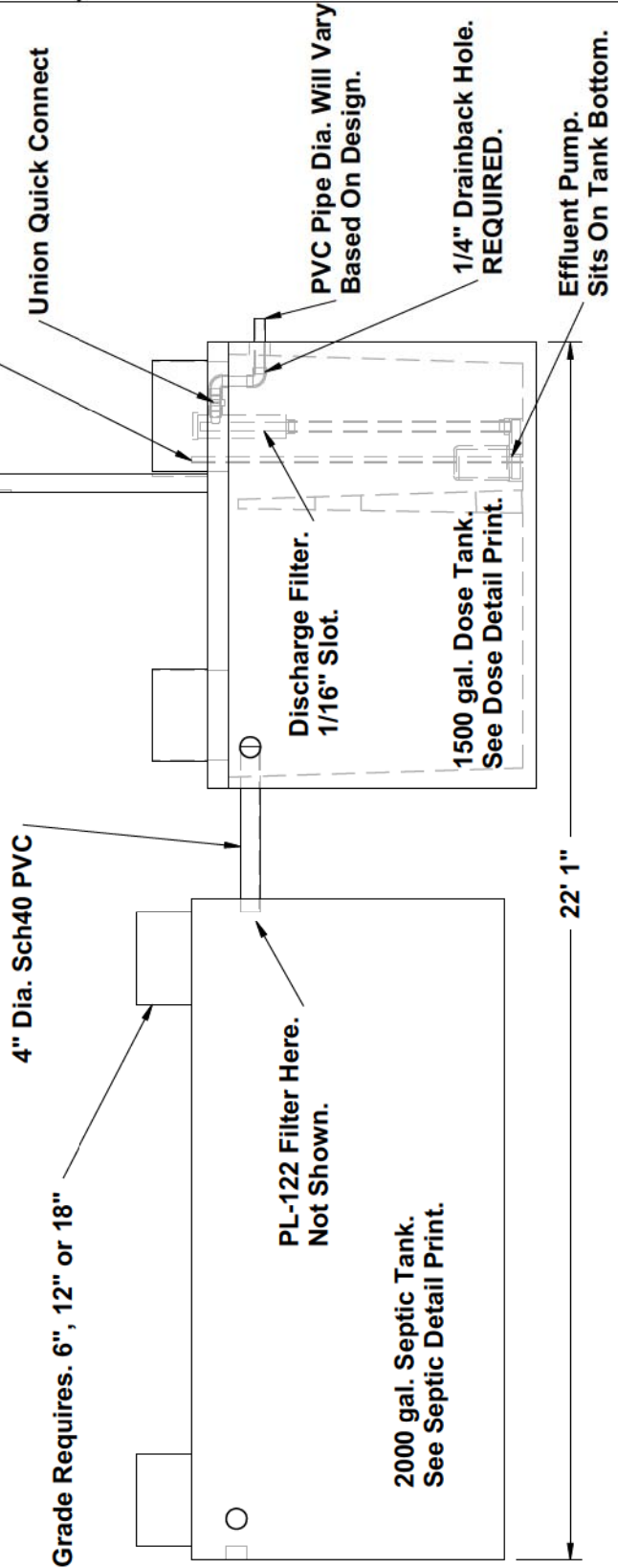
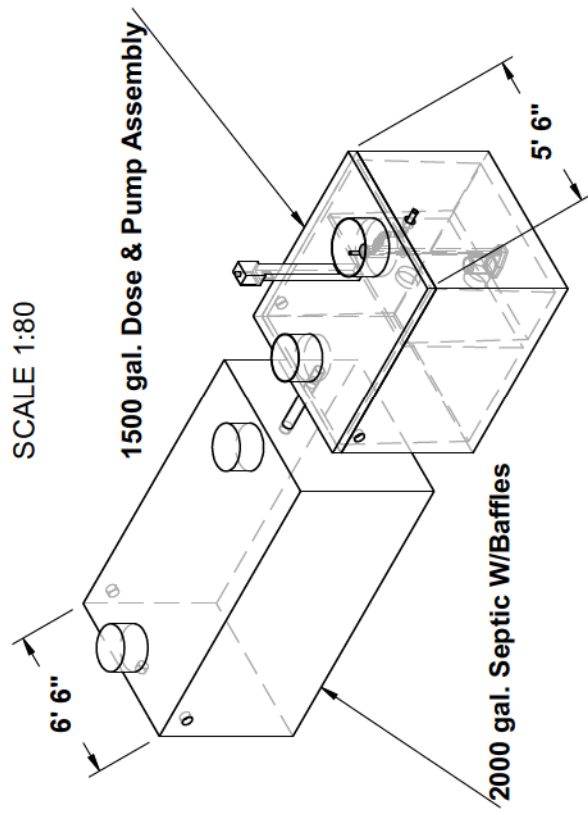
ZERO ELEVATION REFERENCE  
BM1=10.00' Well Top (See Layout Map)

**APPROVED**

REVISIONS		DESCRIPTION	DATE	APPROVED
ZONE	REV	Drawn By Nathan Wright, Geophyta Inc.	19-Apr-15	

Drawn By Nathan Wright, Geophyta Inc. 19-Apr-15

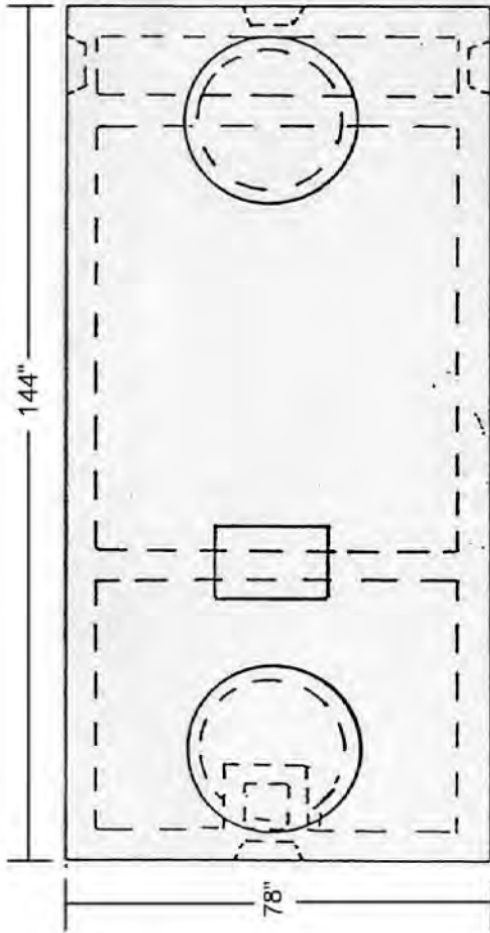
**See Bill of Materials  
For Detailed Specifications**



SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 2000 gal Septic & 1500 gal Dose	
SCALE various		SHEET	

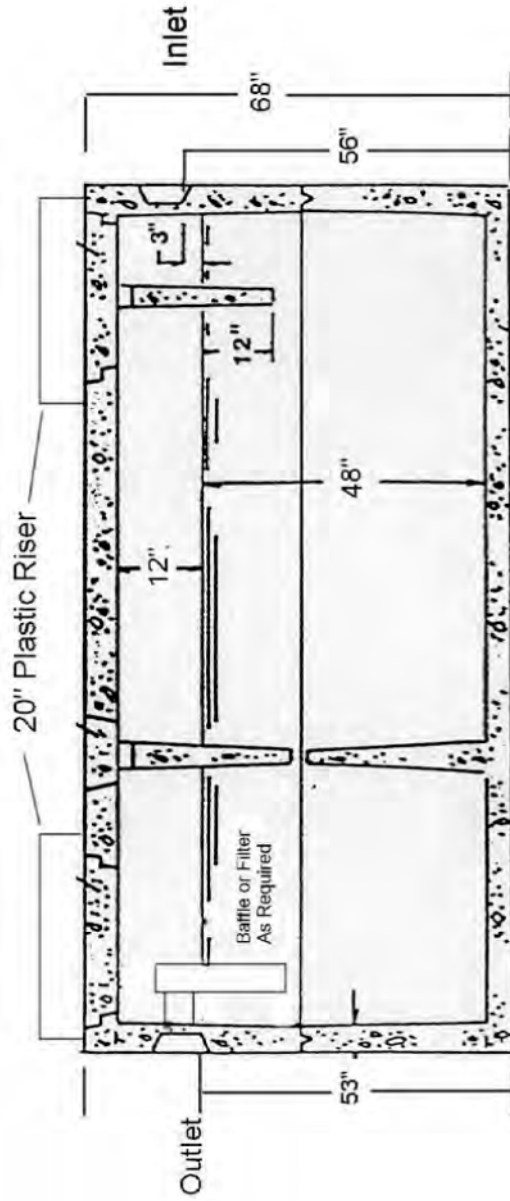
SCALE 1:40

**APPROVED**



**SPECIFICATIONS:**

1. PIPE PENETRATIONS - MEET OR EXCEED ATMC C-1644-06
2. JOINT SEALANT - BUTYL RUBBER BLEND - MEETS OR EXCEEDS ASTM C990
3. CONCRETE - 4500 psi @ 28 DAYS
4. RISERS - CAST INTO LID AT TIME OF PRODUCTION
5. WEIGHT 15,990 lbs



(A) SECTION VIEW (SIDE)

**APPROVED**

NOTES:

**SPORERR**  
PRECAST CONCRETE, INC.

2020 CALDWELL ST.  
SANDUSKY, OH 44870  
PHONE 1-800-252-5205

PROPRIETARY AND CONFIDENTIAL  
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SPORERR PRECAST CONCRETE, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SPORERR PRECAST CONCRETE, INC. IS PROHIBITED.

Excavation 7' 6" x 13'

2000 Gallon  
Septic Tank

DESIGNER	JHP	ENGINEER	GNM	SCALE	VARIES
REVISION		DRAWING #			1 OF 1



**PL-122 Filter**

The PL-122 was the original Polylok filter. It was the first filter on the market with an automatic shut-off ball installed with every filter. When the filter is removed for regular servicing, the ball will float up and prevent any solids from leaving the tank. Our patented design cannot be duplicated.

**Features:**

- Offers 122 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Has a flow control ball that shuts off the flow of effluent when the filter is removed for cleaning.
- Has its own gas deflector ball which deflects solids away.
- Installs easily in new tanks, or retrofits in existing systems.
- Comes complete with its own housing. No gluing of tees or pipe, no extra parts to buy.
- Has a modular design, allowing for increased filtration.

**PL-122 Installation:**

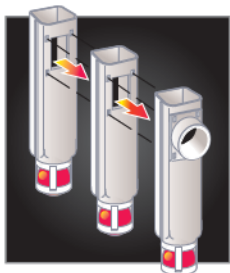
Ideal for residential waste flows up to 1,500 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-122 filter into tee.
5. Replace and secure the septic tank cover.

**PL-122 Maintenance:**

The PL-122 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-122 cartridge out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.



**Polylok offers the only filter on the market where you can get more GPD by simply snapping our filters together!**

- 1 Filter = 1500 GPD
- 2 Filters = 3000 GPD
- 3 Filters = 4500 GPD

Patent Numbers  
 6,015,488 & 5,871,640



**1/16" Filtration Slots**

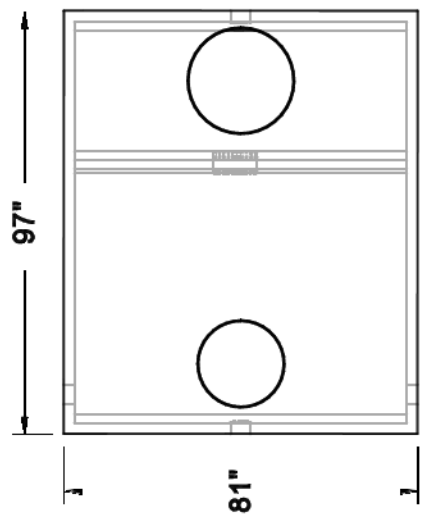
**1,500 GPD**



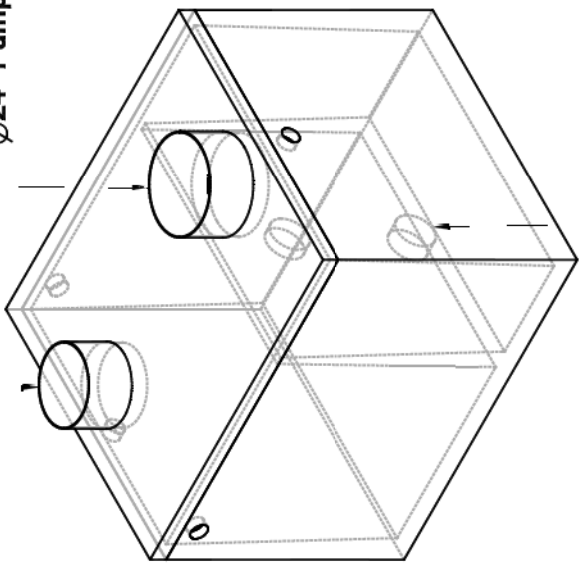


REVISIONS		
ZONE	REV	DESCRIPTION
		Drawn By Nathan Wright, Geophyta Inc.
		DATE 7-Jun-14
		APPROVED

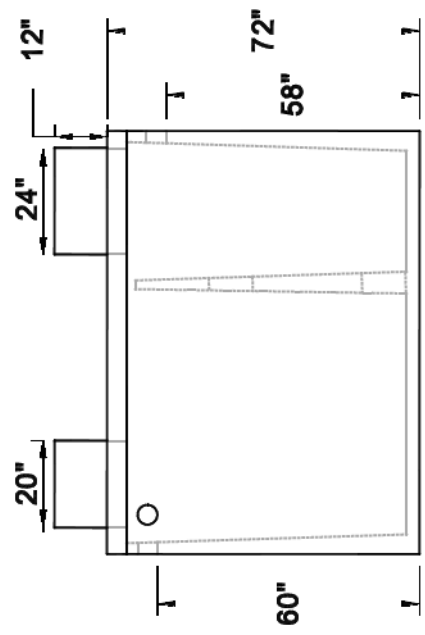
Drawn By Nathan Wright, Geophyta Inc. 7-Jun-14



Ø20" Cleanout Port



Support Baffle With Tank Bottom Effluent Passthrough



**APPROVED**

SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 1500 gal Dose Tank	
SCALE 1:44			SHEET



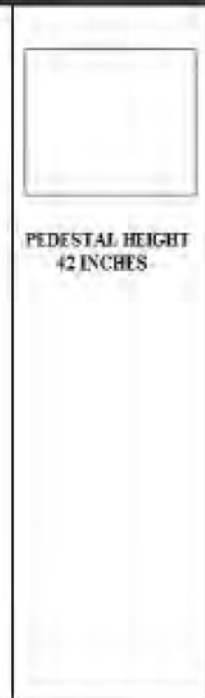
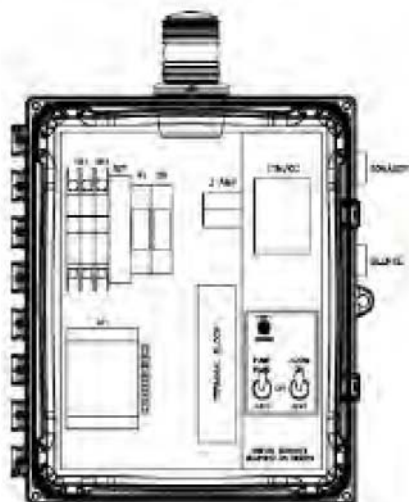


## Time Dose Control Panel

For single phase residential and commercial lift stations and holding tanks  
Float activated pump controllers for time dose applications

### Features

- Circuit breaker for each pump
- Audible alarm with silence
- 360 degree visual alarm
- 3 float operation: Off, Enable, High level
- Externally mounted silence switch
- UL Type 4X enclosure padlockable
- Separate power feed for Pump and Control
- Clearly labeled terminal blocks
- Easy to use timer
- Individually adjustable On and Off Times
- DP Rated contactor
- ETM and Cycle Center
- All components UL Listed



### Specifications

Voltage Input: 115VAC/230VAC 60Hz, single phase  
Pump ratings: 115VAC/230V – 2HP at 20FLA,  
single phase  
Enclosure: UL Type 4X rated, polycarbonate  
1 year limited warranty

## ECP-TD-11

Every pump tested in water to ensure pump meets performance curve.



### FEATURES/BENEFITS

#### PERFORMANCE

- Heads up to 65' TDH
- Flows up to 86 GPM

#### MOTOR

- High efficient, 115v or 230v, oil filled, permanent split capacitor motor with upper and lower ball bearings and thermal overload protection
- Constant bearing lubrication
  - Maximum motor cooling
  - Runs cooler and lasts longer
  - Internal overload protection
  - Quiet operation
  - Fasteners and shaft made from rugged, corrosion resistant stainless steel

#### SEAL DESIGN

- Type 21 inboard seal design with secondary exclusion seal
- Rotating components of seal are in the motor housing, being lubricated by the motor oil preventing foreign matter from wrapping around the seal components
  - Seal will last longer if the pump runs dry
  - Secondary exclusion seal keeps debris from entering the seal cavity

#### IMPELLER DESIGN

- Non-clog style, cast-iron vortex impeller (CPEH Thermoplastic Vortex)
- Designed to help reduce clogging by foreign material

#### POWER CORD

- Sealed entry quick disconnect power cords
- Prevents water from entering the motor housing through a cut cord
  - Easy to replace in the field
  - Available in lengths up to 100'

#### SWITCH

- Piggy-back switch design
- Defective switches can be diagnosed over the phone
  - Pump can be operated manually or supplied with other piggy-back switches
  - Switch can be replaced without having to replace the pump

### APPLICATIONS

Dewatering, septic systems, residential and commercial developments, elevator pits and STEP systems

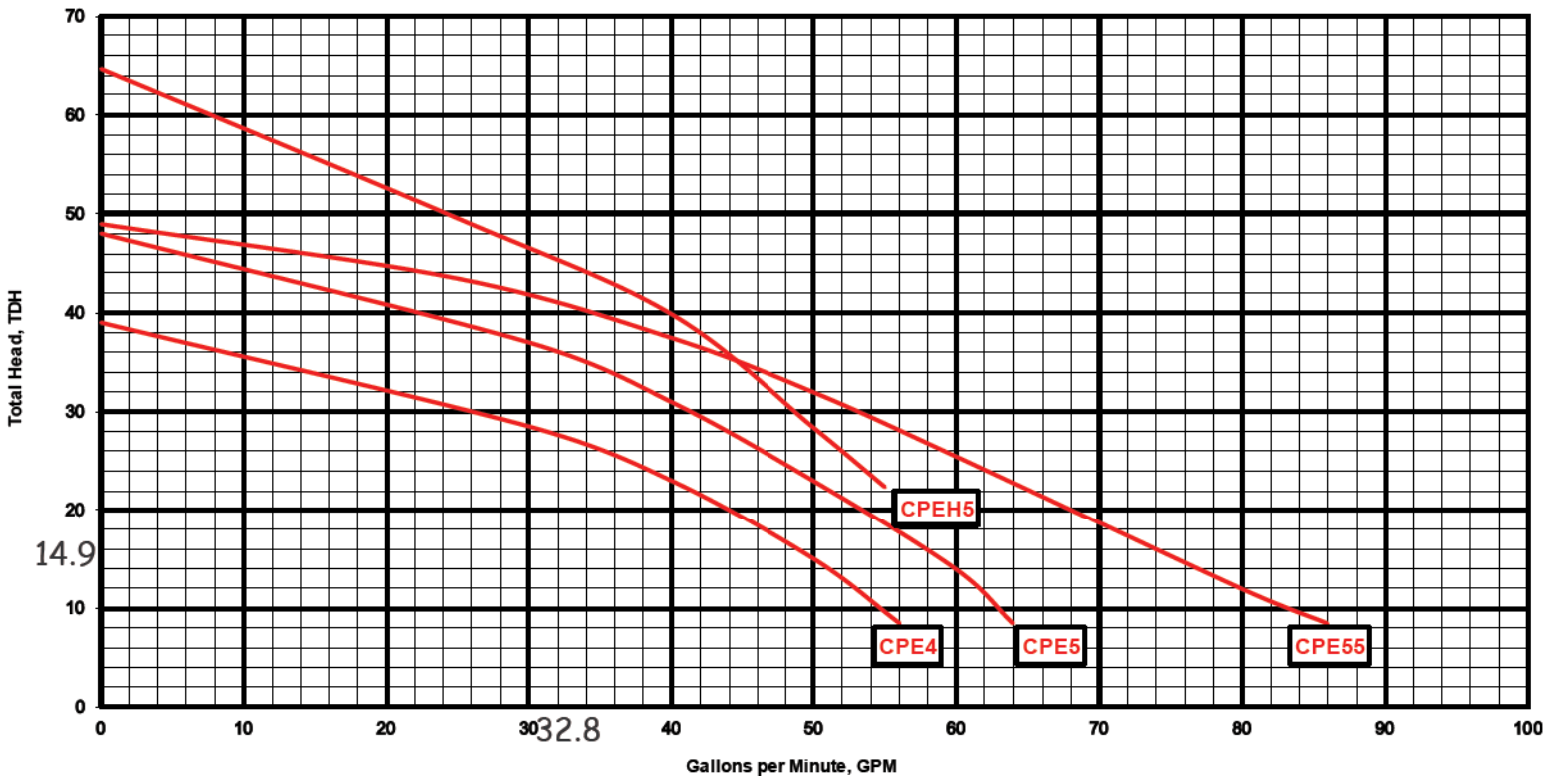


Vertical Float

Wide-Angle Float

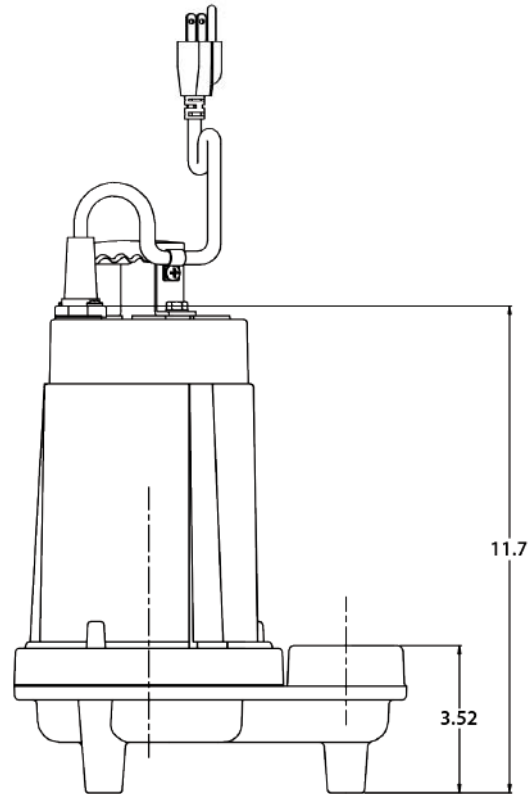
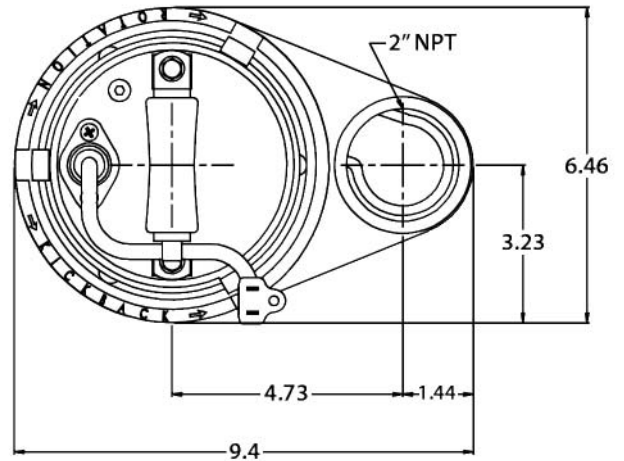
4/10-1/2 HP submersible pumps that handle up to 3/4" solids with 2" discharge

### PERFORMANCE CURVE



# TECHNICAL DATA

<b>DISCHARGE</b>	2" NPT. vertical standard
<b>LIQUID TEMPERATURE</b>	140 Degrees F. (Intermittent)
<b>MOTOR HOUSING</b>	Cast Iron
<b>VOLUTE</b>	Cast Iron
<b>SEAL PLATE</b>	Cast Iron
<b>IMPELLER</b>	Cast Iron / Vortex (CPEH thermoplastic vortex)
<b>SOLIDS HANDLING</b>	3/4"
<b>SHAFT</b>	Stainless Steel
<b>SHAFT SEAL (SINGLE SEAL)</b>	Inboard mechanical with secondary exclusion V-Seal, carbon rotating face, ceramic stationary face, Buna-N elastomer, 300 series stainless steel hardware
<b>BEARINGS (UPPER &amp; LOWER)</b>	Single row, ball, oil lubricated
<b>HARDWARE</b>	300 Series stainless steel
<b>O-RINGS</b>	Buna-N
<b>CORD</b>	20' Length standard. Up to 100' available. (UL/CUL) Listed 16 AWG, Type SJTW
<b>MOTOR (SINGLE PHASE)</b>	4/10-1/2 HP 3450 RPM, 60 Hz, NEMA L Includes Overload Protection in the motor, oil filled, class B permanent split capacitor
<b>WEIGHT</b>	37 lbs. (Manual)



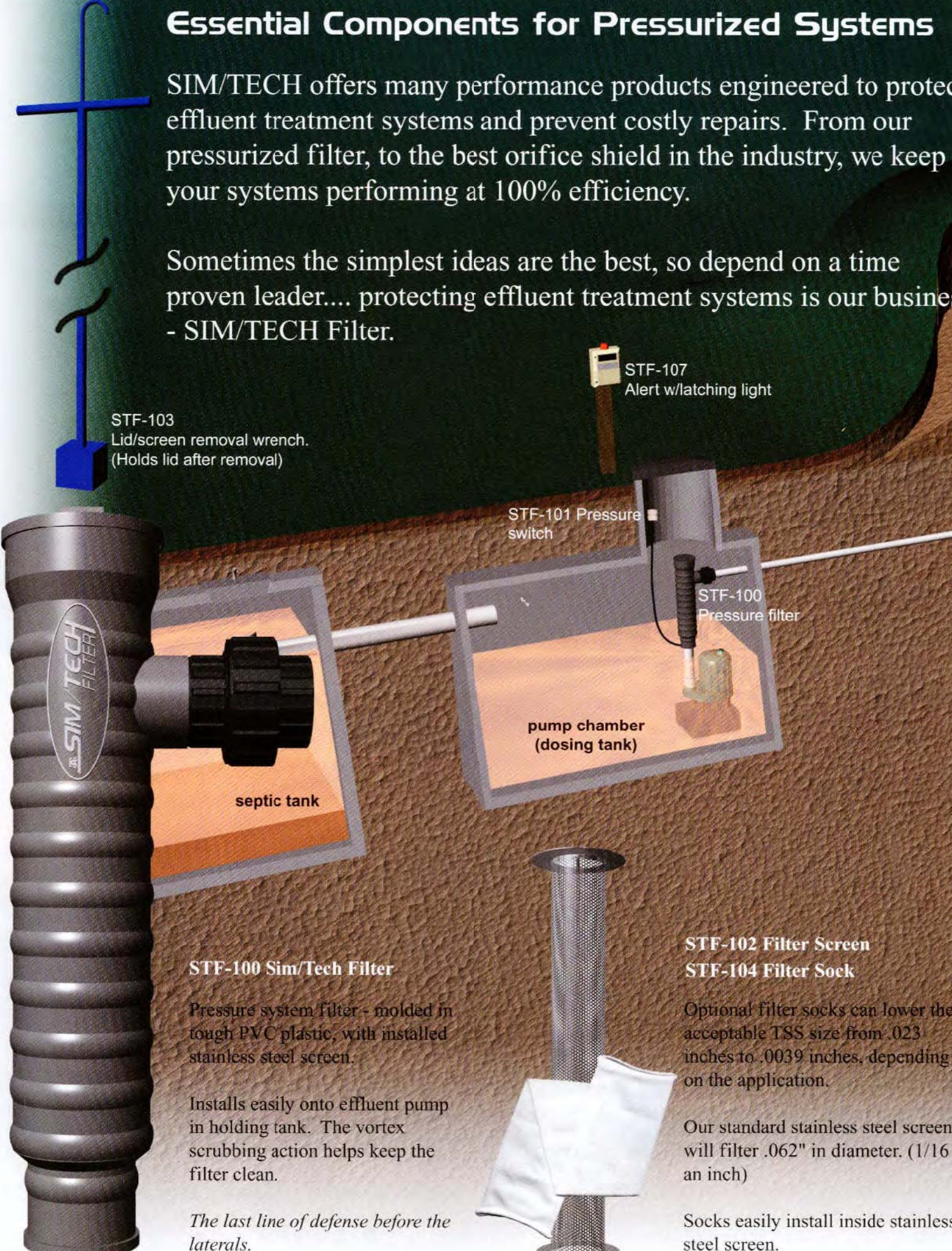
# MODEL(S) INFORMATION

MODEL	HP	VOLTS	PHASE	AMPS	CORD LENGTH	SWITCH
CPE4-12 / CPE5-12 / CPE55-12 / CPEH5-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Manual
CPE4-13 / CPE5-13 / CPE55-13 / CPEH5-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Manual
CPE4-15 / CPE5-15 / CPE55-15 / CPEH5-15	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	50'	Manual
CPE4A-12 / CPE5A-12 / CPE55A-12 / CPEH5A-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Wide-Angle Float
CPE4A-13 / CPE5A-13 / CPE55A-13 / CPEH5A-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Wide-Angle Float
CPE4V-12 / CPE5V-12 / CPE55V-12 / CPEH5V-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Vertical Float
CPE4V-13 / CPE5V-13 / CPE55V-13 / CPEH5V-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Vertical Float
CPE4-22 / CPE5-22 / CPE55-22 / CPEH5-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Manual
CPE4A-22 / CPE5A-22 / CPE55A-22 / CPEH5A-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Wide-Angle Float
CPE4V-22 / CPE5V-22 / CPE55V-22 / CPEH5V-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Vertical Float

# Essential Components for Pressurized Systems

SIM/TECH offers many performance products engineered to protect effluent treatment systems and prevent costly repairs. From our pressurized filter, to the best orifice shield in the industry, we keep your systems performing at 100% efficiency.

Sometimes the simplest ideas are the best, so depend on a time proven leader.... protecting effluent treatment systems is our business - SIM/TECH Filter.



STF-103  
Lid/screen removal wrench.  
(Holds lid after removal)

STF-107  
Alert w/latching light

STF-101 Pressure  
switch

STF-100  
Pressure filter

pump chamber  
(dosing tank)

septic tank

## STF-100 Sim/Tech Filter

Pressure system filter - molded in tough PVC plastic, with installed stainless steel screen.

Installs easily onto effluent pump in holding tank. The vortex scrubbing action helps keep the filter clean.

*The last line of defense before the laterals.*

## STF-102 Filter Screen STF-104 Filter Sock

Optional filter socks can lower the acceptable TSS size from .023 inches to .0039 inches, depending on the application.

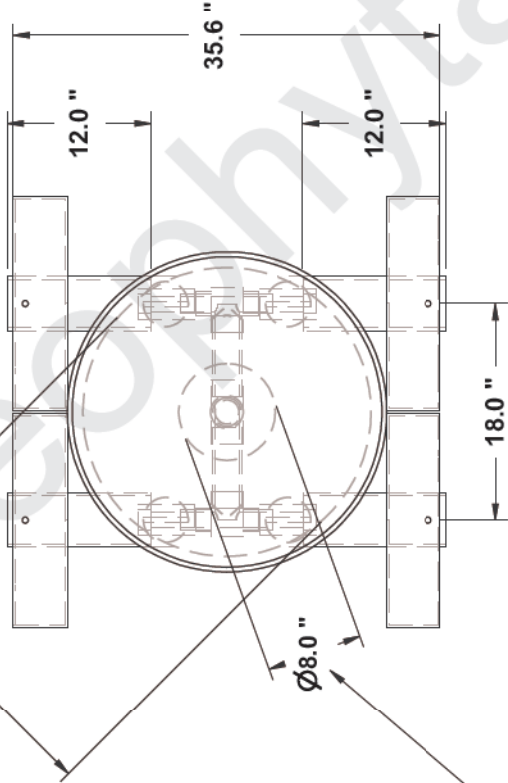
Our standard stainless steel screen will filter .062" in diameter. (1/16 of an inch)

Socks easily install inside stainless steel screen.

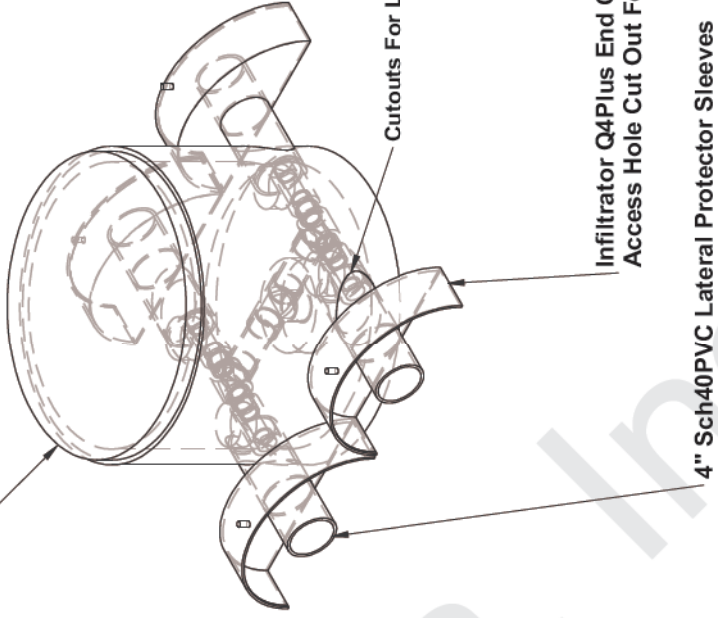
REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	3-Oct-13	

PolyLok 24 inch Dia. Riser/Insulated Lid/Concrete Base



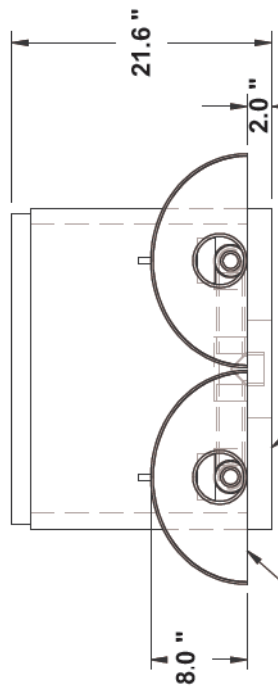
Force Main Access Through Concrete Base



Cutouts For Lateral Access

Infiltrator Q4Plus End Caps, Access Hole Cut Out For 4" Dia PVC

4" Sch40PVC Lateral Protector Sleeves



Valvebox Bottom, 2" Below Sand Surface

Sand Level

SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 24" Dia. 4 - Valve Box	
SCALE	1:15	SHEET	

**APPROVED**



**INTEGRATOR**  
water technologies



# The Quick4® Plus Equalizer 36 Low Profile (LP) Chamber

## Quick4 Plus™ Series

The Quick4 Plus Equalizer 36 Low Profile (LP) offers maximum strength through its two center structural columns. This chamber can be installed in a 24-inch-wide trench. It is 4 inches shorter in height than other Equalizer 36 model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™, which permits turns up to 15°, right or left. The Quick4 Plus All-in-One 8 and Quick4 Plus Endcaps provide increased flexibility in system design and configurations.



**Maximum Strength**

### Quick4 Plus Equalizer 36 LP Chamber Specifications

**Size**

22"W x 53"L x 8"H  
(559 mm x 1346 mm x 203 mm)

**Effective Length**

48" (1219 mm)

**Louver Height**

6.3" (160 mm)

**Storage Capacity**

20 gal (76 L)

**Invert Height**

3.3" (84 mm), 9.6" (244 mm)



### Quick4 Plus Equalizer 36 Low Profile (LP) Chamber Benefits:

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Two center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12" of cover

### Quick4 Plus All-in-One Periscope Benefits:

- Allows for raised invert installations
- 180° directional inletting
- 12" raised invert is ideal for serial applications



### Quick4 Plus All-in-One 8 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe

### Quick4 Plus Endcap Benefits:

- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe

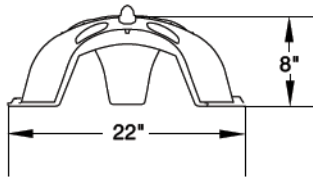


Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)

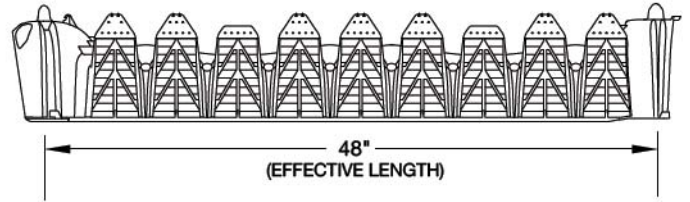
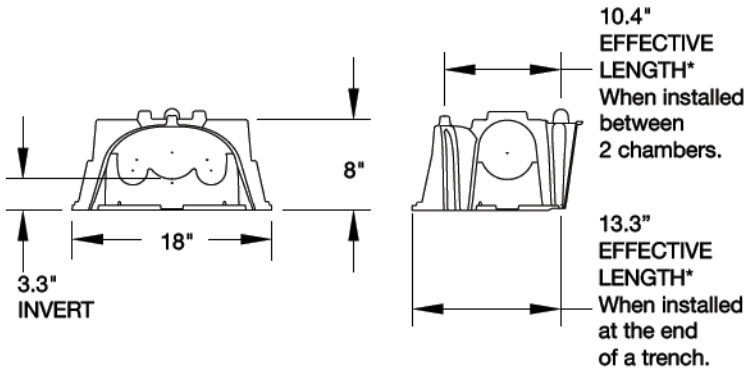




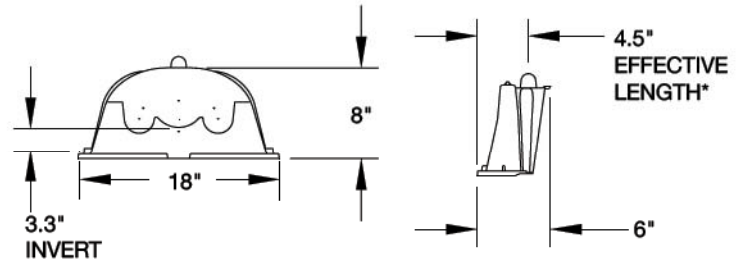
**Quick4 Plus Equalizer 36 Low Profile Chamber**



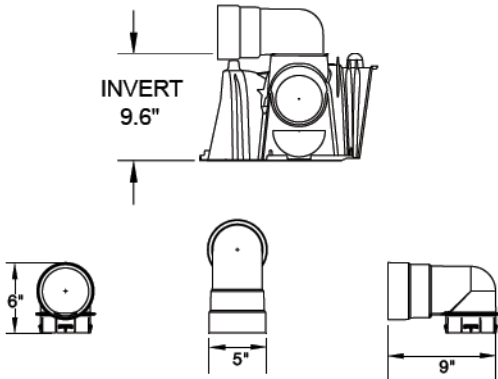
**Quick4 Plus All-in-One 8 Endcap**



**Quick4 Plus Endcap**



**Quick4 Plus All-in-One Periscope**



**INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY**

- (a) The structural integrity of each chamber, endcap and other accessory manufactured by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.
- (b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE
- (c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.
- (d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



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info@infiltratorwater.com

U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,116; 5,401,459; 5,511,903; 5,716,163; 5,588,778; 5,839,844 Canadian Patents: 1,329,959; 2,004,564 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickCut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, Inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.

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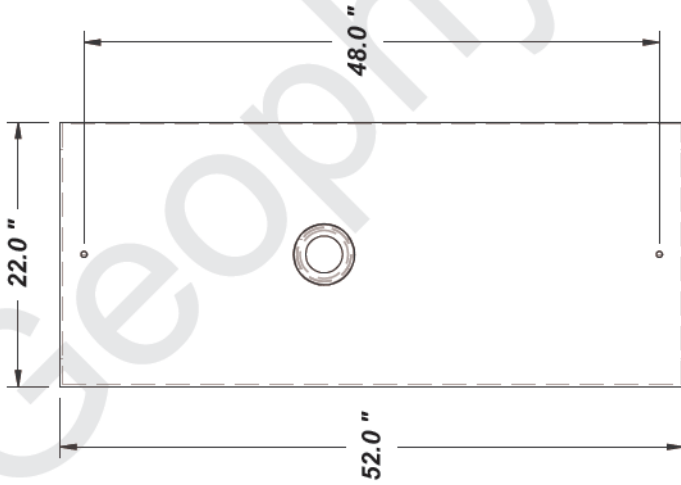
PLUS06 0713

**Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436**

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	22-Oct-13	

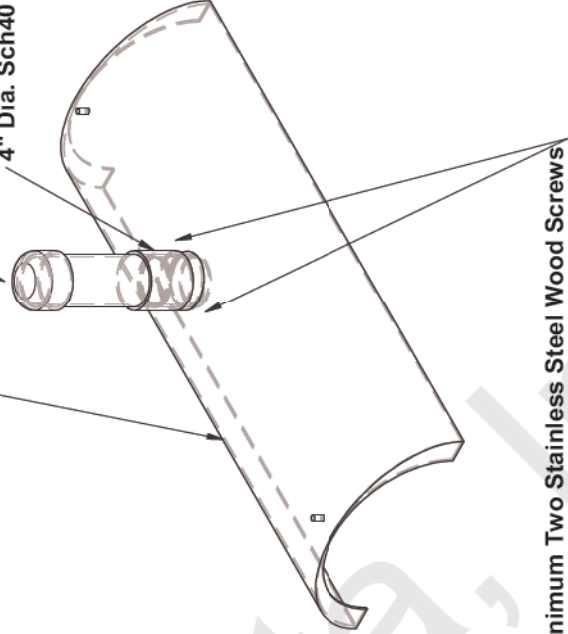
Drawn By Nathan Wright, Geophyta Inc. 22-Oct-13



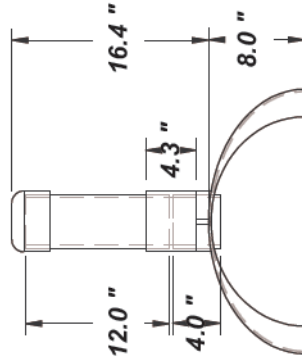
Infiltrator Quick4 Plus  
Equalizer 36 Low Profile Chamber

4" Dia. Sch40 Friction Cap,  
Or Optional Threaded Cap Assembly

4" Dia. Sch40 Coupler



Minimum Two Stainless Steel Wood Screws  
Needed To Secure 4" Sch40 PVC To Dome



SIZE	FSCM NO.	DWG NO.	REV
A			

Sand Inspection Port For Dome Chamber Mounds

SCALE	SHEET
1:15	

**APPROVED**

# Orifice Shields



## Why Use Orifice Shields?

Sim/Tech Filter orifice shields are designed to protect the discharge holes in pressurized systems from the outside. Most of these systems are designed with specific flow-rates, pressure heads, etc. to obtain “even distribution” in the drain field and thus allow for proper treatment. Much like our pressure filter prevents debris from obstructing the discharge holes from the inside, our orifice shields prevent blockage on the outside. As shown in the top picture to the left, drain media can block the small discharge holes, throwing the whole design and operation of a system out of whack. The bottom picture to the left shows our standard orifice shield installed on the lateral piping of a system. The orifice shield creates a protective void between the drain media and the discharge hole. The design allows the discharge hole to spray effluent into the shield where the much larger open area of the shield keeps the hole discharging at its designed flow rate.

## Why Use Sim/Tech Filter Orifice Shields?

They have a large open area, 9 inches of gripping surface and a simple, but very effective design. The large open area of the interior of the shield prevents it from becoming easily blocked if you are not using a Sim/Tech pressure filter on your system. There is also a large open area for allowing effluent to drain from the shield. There are various slots depending upon the configuration you desire and both ends of the shield also have open area for drainage.

### Styles and Sizes Available

Sim/Tech Filter currently offers two orifice shield designs. The STF-106D is designed for systems that have discharge holes that point down. The STF-106TDS is designed for systems that have discharge holes that point up. Both versions of the Sim/Tech Filter orifice shield are available in four different sizes to fit the pipe sizes 3/4”, 1”, 1-1/4” & 1-1/2” and 2”. A 3” size is also available as a special custom order.

US Patent 6,167,914



STF-106D



STF-106TDS

*Solutions*

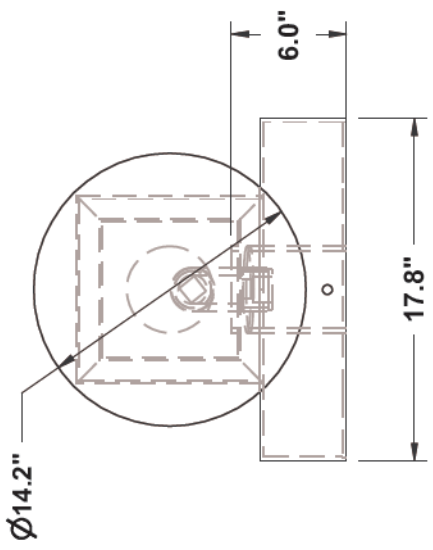
We offer free CAD detail drawings in DXF format to cover our complete product line.

For the protection and performance of wastewater systems by



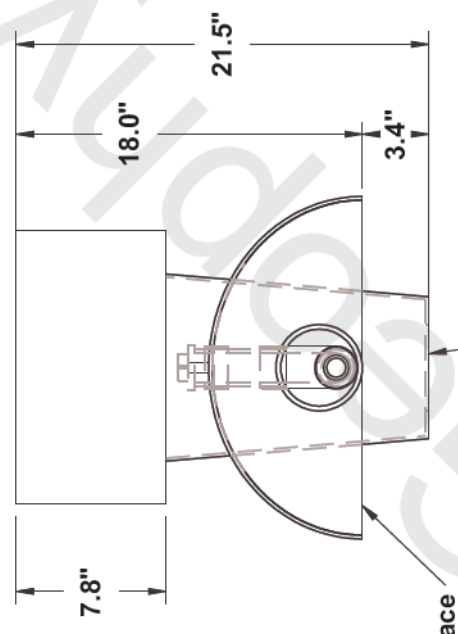
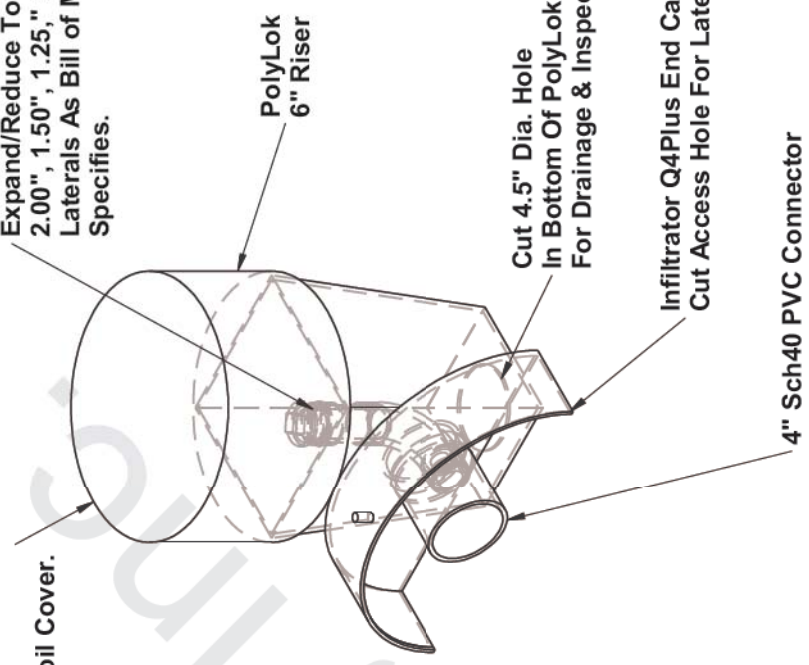
REVISIONS			
ZONE	REV	DESCRIPTION	DATE
		Drawn By Nathan Wright, Geophyta Inc.	19-Jan-15

All Pipe & Fittings  
Sch 40 PVC, 1 1/4".



Removable PolyLok  
Lid - Insulated.  
Level With Mound Soil Cover.

Expand/Reduce To  
2.00", 1.50", 1.25," Or 1.00"  
Laterals As Bill of Materials  
Specifies.



Sand Surface

Bottom Of PolyLok Box, 3.4" Into Sand

SIZE	FSCM NO.	DWG NO.	REV
A		12" PolyLok Cleanup Port For Chambers	

SCALE 1:10

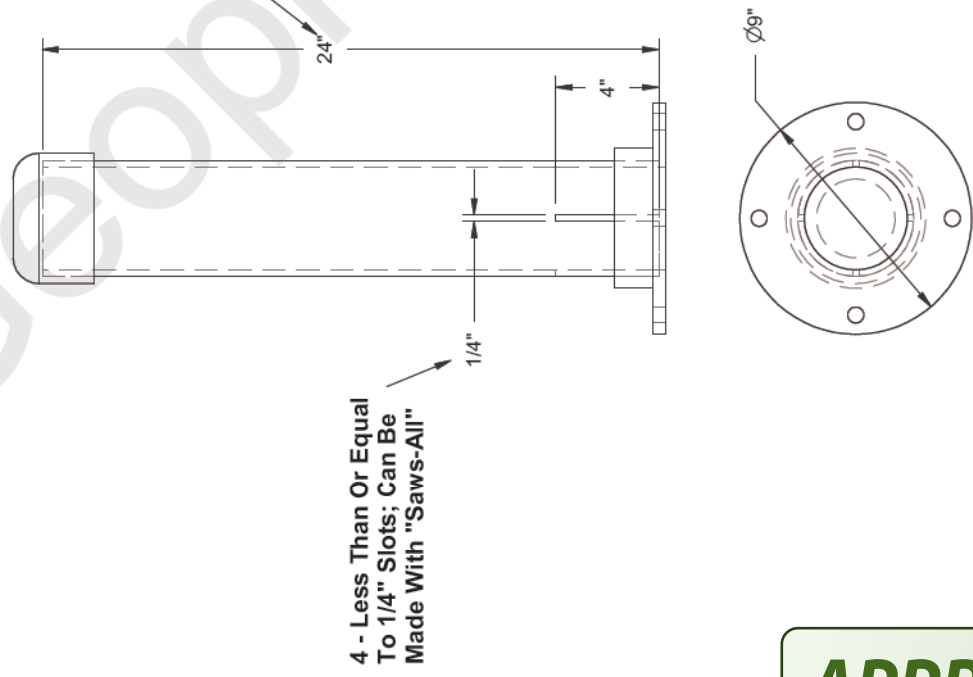
SHEET

**APPROVED**



REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	25-Jan-2010	



Standard Sch40 PVC 4" Cap  
Above Soil Surface, Friction  
Fit Only. No Glue.  
Alternate Is Threaded  
Cleanout Fitting Glued  
To Pipe

Standard Sch40 PVC 4" dia.

4 - Less Than Or Equal To 1/4" Slots  
4" Minimum Length  
For Effluent Seepage

Standard Sch40 PVC  
Toilet Flange, Glued  
To Pipe

Length Will Vary  
Based On Location  
And Purpose.  
20 - 36" Length.  
See Actual in BOM.

4 - Less Than Or Equal  
To 1/4" Slots; Can Be  
Made With "Saws-All"

Open Bottom For  
Sand/Soil Observation.  
SOME SCH40 PVC FLANGES  
HAVE PLASTIC KNOCKOUT  
THAT MUST BE REMOVED

**APPROVED**

SIZE <b>A</b>	FSCM NO.	DWG NO.	REV Sand/Soil Observation Tube 20-36inch
SCALE <b>1:7</b>	SHEET		

Bill of Materials - 4590 N. C.R. 43, HSTS Replacement - Engineered Sand Mound			
Quantity	Part Name	Section	Comment
1	SCH40PVC4inchTwoWayCleanoutTeeSxSxS	Sewer Main Replumbed to North Side	Two-Way Cleanout (Tee)
1	SCH40PVC4inchpipe2ft.		Two-Way Cleanout (Tee to Cap)
1	SCH40PVC4inchCap		Two-Way Cleanout (Cap)
2	SCH40PVC4inchCoupler		See Design
1	SCH40PVC4inchpipe8ft.		
2	SCH40PVC4inchpipe10ft.		
1	Septic Tank	Septic Tank	Spoerr 2000gal Septic Tank or Equiv. W/ 12" Risers Polylok PL-122 or Equiv. (See Detail Print)
1	Septic Tank Filter	Septic To Dose	Length May Vary
1	SCH40PVC4inchpipe3ft.	Dose Tank	Spoerr 1500gal Dose Tank or Equiv. W/ 12" Riser Ohio Electric ECP-TD-11 (See Detail Print)
1	SCH40PVC4inchCoupler		
1	Dose Tank	Control Panel	Pump Circuit: Standalone Breaker
1	Control Panel For Pump Float Control, Timer & Alarms	Dose Pump Assembly	Alarm Circuit, Added To House Lighting Breaker
~40 ft.	2 conductor w/ground, 14 gauge U6 wire		Pump & Alarm Circuit
~40 ft.	2 conductor w/ground, 14 gauge U6 wire		Champion CPE4-12
~40 ft.	Plastic conduit, to contain 6-14ga		Simtech Pressure Filter (See Detail Print)
1	Effluent Pump 2inch NPT 0.4HP		1/4 inch Drainback Hole Required
1	Pressure Filter		See Tank Assembly Print
1	SCH40PVC2inchpipe1ft. W/ 1/4" Weephole		
2	SCH40PVC2inch90DegreeEl		
1	SCH40PVC2inchpipe47inch		
1	SCH40PVC1inchpipe6.0ft. L. Float Tree		Force Main
1	SCH40PVC2inchAdapter MNPT to Soc		
1	SCH40PVC2inchUnion SxS		
2	SCH40PVC2inchpipe3inch		
1	SCH40PVC2inchpipe6.5inch		
5	SCH40PVC2inchCoupler		
1	SCH40PVC2inch90DegreeEl		
5	SCH40PVC2inchpipe10ft.		
1	SCH40PVC2inchpipe1ft.		
4	SCH40PVC1inchFullFlowBall Valve SxS	Force Main to Mid-Mound Valvebox	
2	SCH40PVC1inchx1inchx2inchTee SxSxS	Mid-Mound Valvebox	See Valvebox Print
4	SCH40PVC4inchpipe1ft.		
4	Infiltrator Quick4 Plus End Cap Modified For Mound		
1	PolyLok 24" Dia. Riser &Pan Plus Concrete Base Valvebox 20" Dia. W/ Insulated Lid		
1	SCH40PVC2inchTee SxSxS		
4	SCH40PVC1inchpipe2.5inch		
2	SCH40PVC2inchpipe6.6inch		
-	Sand Section 3.7 ft. W. x 129 ft. L. x 6.0 inch H. Basal 10.42 ft. W.	Engineered Sand Mound	~36.0 yd.^3 @ 63.0 Tons (ASTM C-33 Sand)
-	Topsoil Cap 142.6 ft. L. x 13.6 ft. W. x 2.2 ft. H.		~38.0 yd.^3 @ 66.5 Tons (Silt Loam Or Better)
64	Infiltrator Quick4 Plus Equalizer 36 Low Profile Chambers		Infiltrator 4 ft. L 2 ft. W 8 inch H LP Chambers

Orifice Protectors		Laterals	STF - 106D (See Detail Print) See Mound Laterals Details Print		
Quantity	Description				
4	SCH40PVC1inchPipe 64' L. 0.125" Orifices 3.2' Spacing W/ Cleanout End Drain	Sand Inspection Port	See Sand Inspection Port Print		
4	SCH40PVC4inchCap				
4	SCH40PVC4inchCoupler				
4	SCH40PVC4inchpipe1ft.				
4	SCH40PVC4inchpipe4inch				
4	SCH40PVC4inchpipe6inch				
2	SCH40PVC4inchToiletFlangeSoc	Soil Inspection Port	See Soil Inspection Port Print		
2	SCH40PVC4inchSandObservationTube 24inch W/ Slots				
4	SCH40PVC4inchpipe6inch	Lateral Cleanout & Inspection Ports	See Detailed Print		
8	SCH40PVC1.25inchpipe3.75inch				
4	Infiltrator Quick4 Plus End Cap Modified For Mound				
4	SCH40PVC1.25inchx1inchRedCouplerSpX5				
4	SCH40PVC1.25inchFiptCoupler				
8	SCH40PVC1.25inchDegree45El				
4	PolyLok 12" Dia. D-Box W/ (1) Riser W/ Insulated Lid Adapted For Mound				
4	SCH40PVC1.25inchMipt Plug				
<b>Additional Notes</b>					
Pump, Crush & Backfill Old Tankage					
Sewer Main Is to be Rerouted With New Punchout to North Side. Kitchen Sink Line Needs Rerouted to Sewer.					
Old Sewer Line to be Kept With Sump Discharge & Water Softener Discharge.					
Mound Area to be Scarified According to OSU Mound Systems for Onsite Wastewater Treatment Bulletin 813.					
-	Grass Seed	2 lbs./1000 ft.^2 K. Bluegrass	~2000 ft.^2 @ 4.0 lbs.		
-	Straw Mulch For Grass Establishment	Homeowner's Choice	~2000 ft.^2		
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft.^2	~2000 ft.^2 @ 20.0 lbs.		
<small>***Call OUPS before you dig.***</small>					
Installer substitution of materials not specified in this Bill Of Materials may void Health Dept. approval of this design and will result in a re-design fee and is the sole responsibility of the installer.					
Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.					

# Operation and Maintenance Procedures

## Home Septic Treatment Systems With Effluent Distribution Through A Sand Mound

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems utilize processing, storage, and pumping tanks. A sand/soil absorption component, the mound, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

**Improper operation and/or maintenance of your home septic treatment system will result in its failure.**

**Geophyta, Inc. strongly recommends that a homeowner hire a professional service provider to inspect and maintain your system. Your county health department has a list of registered service providers. Make sure that your service provider has “mound system” experience.**

### 1) Homeowner Responsibility:

- a) The system owner is responsible for the continuous operation and maintenance of this home septic treatment system
- b) Your county health department may require third-party inspection and maintenance of your home septic treatment system.
- c) Home Interior Design & Appliance Selection:
  - i) Install water conserving fixtures such as low flow shower heads, low flow toilets, and front loading washers.
  - ii) Space out water use throughout the day and week. Avoid doing all laundry in one day.
  - iii) Repair all water leaking fixtures.
  - iv) Eliminate garbage disposals, or limit their use. Collect food scraps with sink strainers for disposal as trash or for composting; this includes coffee grounds.
  - v) DO NOT pipe sump pump output into your sewer line.
- d) Home Landscaping Limitations:
  - i) Do not pipe roof downspouts or any other rainwater drainage into the septic or dose tanks.
  - ii) Divert all downspouts or other rainwater drainage away from your entire septic system.
  - iii) Divert all downspouts or other rainwater drainage away from the sand/soil mound area.
  - iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and sand/soil mounds.



- v) Do not add additional soil fill on or near the sand/soil mound. This will limit air movement into the mound for effluent treatment and may cause system failure.
  - vi) Limit lawnmower traffic on the mound when soil is excessively wet.
  - vii) Do not plant any deep rooted plants on top of or near your mound sand/soil absorption area.
- e) Home Resident Responsibilities:
- i) Only flush or drain bio-degradable human waste, toilet paper, laundry and dish and personal care soaps, and water into your home septic treatment system.
  - ii) Severely limit disposal of food fats, oils, and greases. These will clog your system.
  - iii) Do not flush or drain undiluted bleach, cleansers, or drain cleaners.
  - iv) Do not flush any non-biodegradable items. For example, plastic items.
  - v) Do not flush or drain motor oils, greases, anti-freezes, cleaners, etc.
  - vi) Do not flush cat litter.
  - vii) Do not flush paper towels, facial tissue, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms.
  - viii) Do not flush prescription or over-the-counter drugs. Antibiotics and cancer treatment drugs are very harmful to your home septic treatment system.
  - ix) Do not dump solvents like dry cleaning fluid, pesticides, photographic chemicals, paint thinner down the drain.
  - x) Don't use septic tank additives.
  - xi) Don't drain a hot tub or large amounts of water into your septic system.
- f) Home Improvement/Expansion:
- i) Contact your county sanitarian before adding new driveways, decks, patios, pools, and outbuildings not identified on your original layout plan to make sure all setback distances from your septic system tanks and mound are met.
  - ii) Contact your county sanitarian before adding bedrooms and/or increasing your home occupancy. This may overload your septic system. Septic system expansion may be required to prevent failure.
- g) Homeowner Cautions:
- i) **DO NOT ENTER TANKS WITHOUT PROPER SAFETY EQUIPMENT.** Septic and dose tanks contain noxious and deadly gases.
  - ii) Pump or dose tanks and control boxes contain electrical components. **ELECTRICAL SHOCK HAZARD CAN EXIST WITH IMPROPERLY WIRED OR FAILING COMPONENTS.**
  - iii) Always keep tank fall guards in place, except for the time needed to replace components when safety equipment is present.
  - iv) Always replace and secure septic and dose tank lids after completing any inspection.
  - v) Any disconnection or removal of filters, screens, floats, alarms, and/or control panels will result in system failure.
  - vi) Contact your county sanitarian for allowed homeowner maintenance and repair of your septic system.

## 2) Inspection & Maintenance Requirements:

- a) Perform inspection & maintenance every six months.
- b) Review Baseline Operation and Maintenance Data:
  - i) The installer of your system set and recorded all float/liquid level heights, pump down times, cycles per day, and distal head pressures required in the design specifications.
  - ii) Review all previous six month inspection data.
- c) Identify any house additions, patios, pools, ponds, driveways, outbuildings, etc. added since the last inspection that may impact the home septic treatment system. Draw a sketch of these differences.
- d) Inspect bottom of house sewer main two-way cleanout tee
  - i) Check for clogging.
  - ii) Check for continuous clear water flows from the home.
- e) Evaluate Septic Tank & Pump Tank:
  - i) Measure sludge and scum depths; pump tank when cumulative thickness is 1/3 of the tank depth.
  - ii) Look for signs of clogging and tank damage.
  - iii) Look for signs of tank and riser leakage.
  - iv) Clean & inspect septic tank outlet filter.
  - v) Make sure lids are securely attached to risers.
- f) Evaluate Pump/Dose Tank & Pumping Equipment:
  - i) Measure sludge and scum depths; pump tank when septic tank is pumped.
  - ii) Look for signs of clogging and tank damage.
  - iii) Look for signs of tank and riser leakage.
  - iv) Inspect and assure proper functioning of floats or other liquid level controls.
  - v) Clean and inspect dose pump outlet filter. May not be present in some designs.
  - vi) Inspect and assure proper condition and functioning of the effluent pump.
  - vii) Make sure lids are securely attached to risers.
- g) Evaluate Drain Fields:
  - i) Inspect all soil and sand inspection tubes plus maintenance ports for surface condition, surface color, and depth of ponded effluent, if present.
  - ii) Look for surfacing effluent.
  - iii) Look for excessively moist soil at mound sides and toe slopes.
  - iv) Identify appropriate vegetative cover.
  - v) Look for surface disturbances, compaction, abnormal settling, and erosion.
  - vi) Identify any deep rooted vegetation recently planted near the mound area.
- h) Evaluate Laterals:
  - i) Flush all distribution laterals, one at a time. Monitor flush output.
  - ii) Record new distal head pressures for all laterals.
  - iii) Perform additional lateral and orifice cleaning if lateral distal head pressures are not equal.
  - iv) Adjust lateral distal head pressures if needed after additional cleaning.
- i) Measure Pump Run Time and/or Drawdown:
  - i) For demand dosed systems, verify original design effluent drawdown depth.

- ii) For time dosed systems, verify original design pump run time.
- iii) For systems with a cycle counter or run time meter, record the current values.
- j) Test Alarms:
  - i) Evaluate proper function of low liquid level alarm.
  - ii) Evaluate proper function of high liquid level alarm and warning light.

**3) Findings & Repairs:**

- a) All findings during inspection and maintenance must be recorded. See attached "Mound System Inspection and Maintenance Record".
- b) Any system adjustments must be recorded.
- c) Any system deficiencies, worn out components, and/or damage must be repaired to return your septic system to a properly functioning state.
- d) All repairs must be recorded.

## Mound System Inspection and Maintenance Record

System Owner: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
 System Address: \_\_\_\_\_ Inspector Name: \_\_\_\_\_  
 System Address: \_\_\_\_\_ Inspector Phone Number: \_\_\_\_\_

<b>Septic Tank Condition:</b>	Scum depth: Sludge depth: Filter cleaned?
<b>Dose Tank Condition:</b>	Sludge present?
<b>Dose Pump Condition:</b>	
<b>Controls Condition:</b>	Level controls functional? Alarm functional? Control box functional?

**Mound Area Evaluation:**

Landscape Changed?		Signs of Surface Ponding?		Mound Damaged?		New Construction Area?	
yes	no	yes	no	yes	no	yes	no

**Soil Inspection Tubes:**

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

**Sand Inspection Tubes:**

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

**Cleanout Ports:**

	Port 1		Port 2		Port 3		Port 4	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

	Port 5		Port 6		Port 7		Port 8	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

Comments/Sketches:

# GEOPHYTA

## Home Septic System Site Evaluation And Replacement System Design

For:

Seneca County WPCLF (Lynn Gabel)

5496 N. C.R. 31  
Tiffin, OH 44883

Property Location:

5496 N. C.R. 31  
Tiffin, OH 44883

Liberty Township, Seneca County

Engineered Sand Mound

By:

Nathan Wright (Soil Scientist)  
Seth V. Layne (Designer)

Geophyta, Inc.  
2685 C.R. 254  
Vickery, OH 43464

419-547-8538

September 18, 2020

**APPROVED**

By Matt Beckman at 9:08 am, Oct 01, 2020

### **To The Homeowner:**

A septic system is designed based on all the information you provide and Geophyta Inc collects at the site. It must be accurate. This information includes local soil limits and topography, plus existing and future locations of your home, number of bedrooms, out buildings, driveways, drinking water wells, ponds, septic systems, and property lines. Geophyta Inc. relies on this information to construct detailed design drawings that must meet local health department regulations before installation.

Any design changes required by the local health department to meet existing regulations are the responsibility of Geophyta Inc.

Any information changes made by you after the initial site inspection are your responsibility and will result in additional charges to you above the original quote for services. These charges may include additional site inspection work, system redesign, and resubmitted drawings.

### **To The Installer:**

The registered installer of this septic system design is responsible for preparing an “as-built” record, as stated in the Ohio Administrative Code Chapter 3701-29-09, Par. F (p.32) of the “Sewage Treatment System Rules,” Ohio Department of Health, January 1, 2015. Additionally, the installer is responsible for measuring and recording distal pressure head and float switch settings as baseline measures for future operation and maintenance of any pressure distribution system (3701-29-15, Appendix B, Par. VI(p.93) of above referenced rules.

If the installer requests “as-built” record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

Geophyta Inc. must assume that any registered installer has the knowledge, equipment, ability, and experience to properly layout, install, and create as-built drawings for any septic system design approved by a local board of health. This includes the ability to read detailed design prints with an associated bill of materials. For this reason, any Geophyta Inc project supervision prior to or during installation will be billed to the installer.

**Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.**

# HSTS Site/Soil Evaluation Information Sheet, Geophyta, Inc.

**Customer:**

Name:	Lynn GABEL
Address:	5496 N. CR. 31
City, State:	Tiffin Ohio
Home Phone:	
Cell Phone:	567-230-3631
Email:	bccct5@yahoo.com

**Property:**

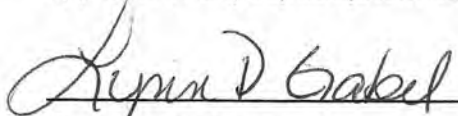
Parcel #:	
Current Owner:	SAME AS ABOVE
Address:	
City, State, Zip:	
Lot Size:	
Right of Ways?	ELECTRIC ALONG DRIVE
Easements?	NONE

**Existing or Proposed or Lot Split: (circle one)**

House Size: Rooms	4 bedrooms	electric:	overhead or buried
House Dim.w/Garage:	ft.xft.	phone:	overhead; buried; n/a
Garage Size:	cars, ft.xft.	gas :	natural propane n/a
Water Source:	well; public; cistern	garden/hot tub:	yes (no)
Water Softener:	no (yes) WILL REDIRECT TIE	geothermal heat/cooling system	(no;) yes: (horizontal or vertical)
Outbuildings:	no (yes, size: EXISTING)		
Pond:	(no) yes, size:		
System Type:	new or replacement	Sump pump:	(no) yes
Replacement Reason:	(failed); addition; n/a	Discharge where?	

**Comments:**

I agree that the above information is accurate and can be used by Geophyta, Inc. to prepare a site/soil evaluation for septic system suitability. The site/soils report is for information purposes to be used by a designer and your local health department. This report does not guarantee build ability of a lot or approval of any septic system design. This is not a property boundary survey.

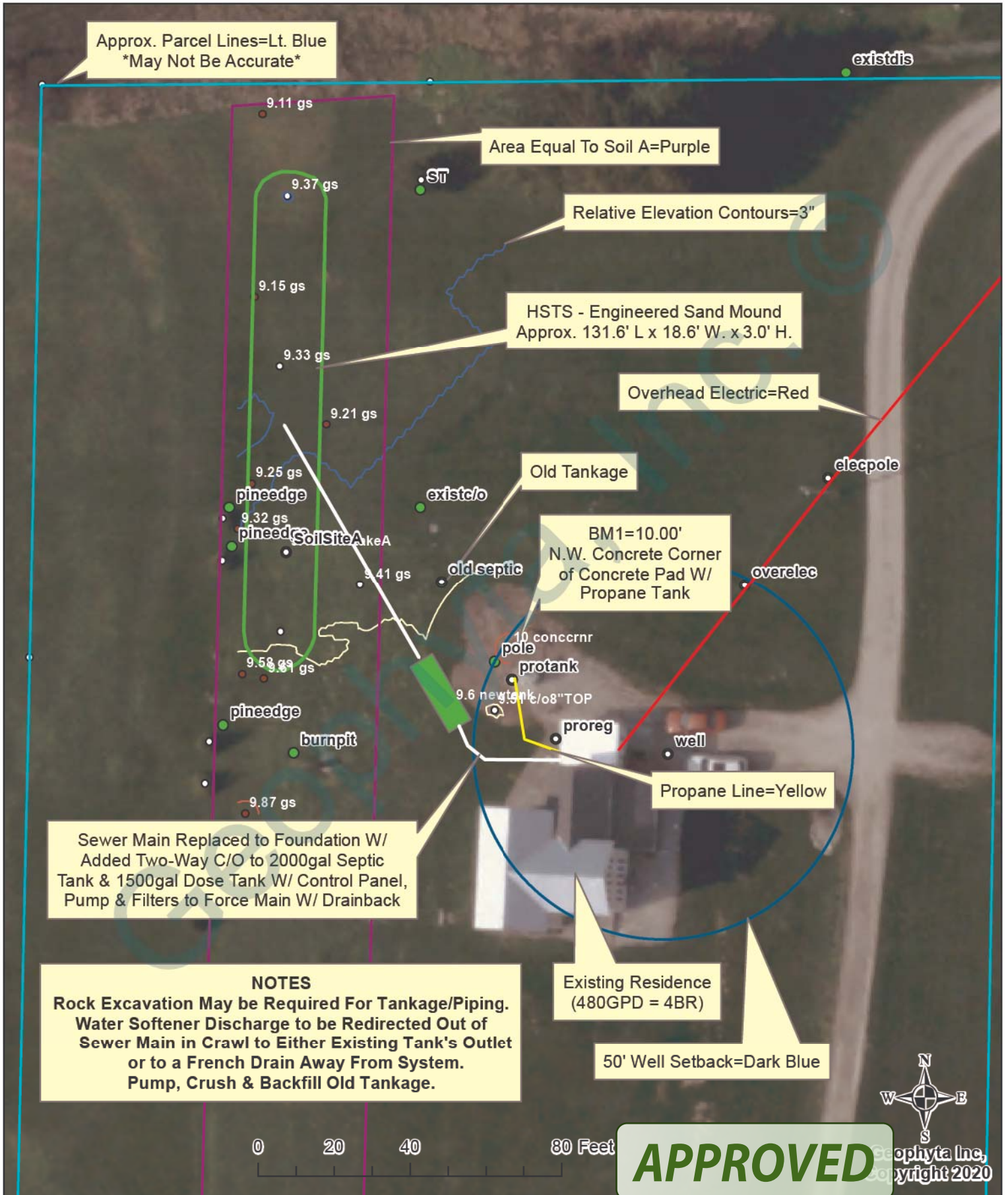


Customer Signature

9.3.2020

Date

# HSTS Replacement Layout - 5496 N. C.R. 31







19395

## Site and Soil Evaluation for Sewage Treatment and Dispersal

County: <u>Seneca</u>	Control #: <u>20- SEN - 27A - 257</u>
Township / Sec.: <u>Liberty</u>	Land Use / Vegetation: <u>Residential Turf</u>
Property Address: <u>5496 N. C.R. 31</u>	Landform: <u>Glacial Till Plain</u>
OR Location: <u>Tiffin</u>	Position on Landform: <u>Flat</u>
Applicant Name: <u>Lynn Gabel</u>	Percent Slope: <u>0 - 1</u>
Address: <u>5496 N. C.R. 31</u>	Shape of Slope: <u>Linear - Linear</u>
	Approximate Soil Type: <u>Channahon SIL</u>
Phone #: <u>567-230-3631</u>	Date: <u>3-Sep-20</u>
Lot #: _____	Evaluator: <u>Nathan Wright</u>
Test Hole #: <u>A</u>	<u>Geophyta, Inc.</u>
Latitude/Longitude: <u>83°13'53.524"W 41°12'9.923"N</u>	<u>2685 C.R. 254</u>
Method: _____ Pit _____ Auger _____ <input checked="" type="checkbox"/> 1 1/4" dia.	<u>Vickery, OH 43464</u>
	Phone#: <u>419-547-8538</u>
	Certification #: _____
	Signature:

Soil Profile	Estimating Soil Saturation				Estimating Soil Permeability				
	Horizon	Depth (inches)	Munsell Color (hue, value, chroma)		Class	Texture		Other Soil Features	
			Matrix Color	Redoximorphic Features		Approx. % Clay	Approx. % Fragments		
A	0.0 - 20.0	10YR 2/1	none	none	SiL	15	5	3 - strong medium friable	fractured limestone
R	20.0 +	-	-	-	-	-	-	-	-
Limiting Conditions	Depth to (in.)				Remarks / Risk Factors: Values for Sand Mound				
Perched Seasonal Water Table	none				Tyler Table: A horizon (0.0 - 20.0) ILR: SiL, HLLR: SiL				
Apparent Water Table	none				ILR(>30mg/L) = 0.6 gal/day/ft <sup>2</sup> , ILR(<30mg/L) = 0.8 gal/day/ft <sup>2</sup>				
Highly Permeable Material	none				HLLR = 3.0 gal/day/ft				
Bedrock	20.0				4 bedroom min. required absorption area = 800 sq.ft.				
Other Restrictive Layer	none				5xW Soil Absorption Box: 25'W x 160'L				

Note : The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08.

Landforms
Upland*
Terrace
Flood Plain
Lake Plain
Beach Ridge
*Includes glacial till plain and end moraine

Position on Landform
Depression
Flat
Knoll
Crest
Hillslope
Footslope

Shape of Slope
Convex
Concave
Linear
Complex

Horizon Nomenclature		
Master Horizons	Horizon Suffixes	Horizon Modifiers
O Predominantly organic matter (litter & humus)	a Highly decomposed organic matter	Numerical Prefixes: Used to denote lithologic discontinuities.
A Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b Buried genetic horizon	
E Mineral, loss of Si, Fe, Al, clay, organic matter	d Densic layer (physically root restrictive)	Numerical Suffixes: Used to denote subdivisions within a master horizon.
B Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of CaCO <sub>3</sub> ; subsurface soil structure	e Moderately decomposed organic matter	
C Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g Strong gley	
R Hard bedrock	i Slightly decomposed organic matter	
	p Plow layer or artificial disturbance	
	r Weathered or soft bedrock	
	t Illuvial accumulation of silicate clay	
	w Weak color or structure within B	
	x Fragipan characteristics	

Soil Texture	
Texture Class Abbreviations	Textural Class Modifiers
Course Sand cos	Gravelly GR
Sand s	Fine Gravelly FGR
Fine Sand fs	Medium Gravelly MGR
Very Fine Sand vfs	Coarse Gravelly CGR
Loamy Coarse Sand lcos	Very Gravelly VGR
Loamy Sand ls	Extremely Gravelly XGR
Loamy Fine Sand lfs	Cobbly CB
Loamy Very Fine Sand lvfs	Very Cobbly VCB
Coarse Sandy Loam cosl	Extremely Cobbly XCB
Sandy Loam sl	Stony ST
Fine Sandy Loam fsl	Very Stony VST
Very Fine Sandy Loam vfsl	Extremely Stony XST
Loam l	Bouldery BY
Silt Loam sil	Very Bouldery VBY
Silt si	Extremely Bouldery XBY
Sandy Clay Loam scl	Channery CN
Clay Loam cl	Very Channery VCN
Silty Clay Loam sicl	Extremely Channery XCN
Sandy Clay sc	Flaggy FL
Silty Clay sic	Very Flaggy VFL
Clay c	Extremely Flaggy XFL

\*Estimate approximate clay percentage within 5 percent

Soil Structure					
Grade	Size	Type (Shape)			
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr. Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy	CDY
		Very Thick*	vk		

\* The sizes Very Thin, Thin, Thick, and Very Thick, are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Moist Consistence	
Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils" Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

Mound Calculations: Gravelless Chambers			
Owner: Gabel: Site A	Design		
Residence W/ 4 bedrooms	Min. Design	Actual Design	Comment
Water Use (gal/day)(DFR)	480		
Limiting Condition	Bedrock		Fractured Limestone
Depth To Limiting Condition (inches)	20.0		
Total Infiltration Depth (Soil+Sand) (in.)	36.0		
Sand Depth To Add (in.)	16.0		
Most Limiting Soil Texture	SiL		
Site Slope % (Perpendicular To Contour)	0.0		
Tyler Table Values			
Soil Infiltration Loading Rate (gal/day/sq. ft)(BLR)	0.6		
Soil Hydraulic Linear Loading Rate (gal/day/ft)(HLLR)	3.0		
Sand Loading Rate (gal/day/sq. ft)(SLLR)	1.0		
Required Soil Absorption Area (sq. ft.) DFR/BLR	800.0		
Mound Design Requirements			Basal Width Increases Under Chamber to at least 4.30' from 3.7' Diffuser Width Due to 45 Degree Drainage Capability
Sand Absorption Area Width (ft)(A)	3.0	4.30	
Sand Absorption Area Length (ft)(B)	160.0	112.0	30% Length Reduction
Sand Distribution Area for Laterals(sq. ft.)	480.0	481.6	
Min. Mound Basal Soil Width (ft)(I+A+J)(HLLR/BLR)	5.0	15.42	Needed For 3:1 Sand Edge Slope
Upslope Sand Depth (in)(b)	16.0		
Downslope Sand Depth (in)(E)	16.0		
Aggregate Depth (in)(F)	8.0		LP Chamber Dome Height
Edge Topsoil Cover (in)(G)	6.0		
Peak Topsoil Cover (in)(H)	12.0		
Mound Downslope Width at 3:1 (in)(I)	108.0		
Mound Upslope Width at 3:1 (in)(J)	108.0		
Mound Endslope Width at 3:1 (in)(K)	108.0		
Mound Overall Length (ft)(L)	178.0	131.6	
Mound Overall Width (ft)(W)	18.0	18.6	
Mound Overall Height (ft)	3.0	3.0	

**APPROVED**

	A	B	C	D
1	<b>Mound Dosing Calculations: Gravelless Chambers</b>			
2				
3	Owner: Gabel: Site A	Design		
4		Target	Formula	Actual
5	Sand Absorption Area Width (ft)(A)	4.30		
6	Sand Absorption Area Length (ft)(B)	112.0		
7	Sand Distribution Area for Laterals(sq. ft.)	481.6	B5*B6	
8				
9	Area Per Orifice (sq. ft.)	6.00		
10	Orifice Quantity (Dist. Area/Std)	80.3	B7/B9, Rnd to Even; Divide by 4	80.0
11	Total Laterals Length (ft)	224.0		
12	Number of Laterals C	4		
13	Each Lateral Length (ft.)(B/C)	56.0	B11/B12	
14	Orifice Separation (length/# orifices)(ft.)	2.8	B11/B10	2.8
15	Orifice Separation Less Than Or Equal To 4 ft.?	yes		
16	Orifice Size (in)(Otis, 1982)	0.125	1/8"	
17	Lateral Diameter (in) (Otis, 1982)	1.00	SCH40 PVC	
18	Target Head at Lateral End (ft)	5.0		
19	Flow Rate per Orifice (gpm)(Otis et al, 1978)	0.41		
20				
21	Lateral Design:			
22	Diameter (in)	1.00	SCH40 PVC	
23	Flow Rate per Lateral (gpm)	8.2	B10/B12*B19	
24	Flow Rate Total (gpm)	32.8	D10*B19	
25	Gal. per Foot of Pipe (Clemons, 1991)	0.045	SCH40 PVC	
26	Total Lateral Volume (gal)	10.1	B11*B25	
27				
28	Manifold Design:	None - Main Direct To Laterals By Tee		
29	Diameter (in)	0.0		
30	Length (ft)	0.0		
31	Gal. per Foot of Pipe (Clemons, 1991)	0.0		
32	Total Manifold Volume (gal)	0.0	B30*B31	
33	# Std 90deg Elbows			
34	Std 90deg Elbow Pipe Length Equivalent (ft)			
35	# Std 45deg Elbows			
36	Std 45deg Elbow Pipe Length Equivalent (ft)			
37	# Std Tees			
38	Std Tee Pipe Length Equivalent (ft)			
39	# Quick Disconnects			
40	Quick Disconnect Pipe Length Equivalent (ft)			
41	# Check Valves			
42	Check Valves Pipe Length Equivalent (ft)			
43				
44	Total Length Equivalent (pipe&fittings) (ft)	0.0		
45	Head Loss per 100 ft.(ft.)(Otis et al, 1978)	0.0		
46	Total Manifold Head Loss (ft)	0.00		
47				
48	Main Design:			
49	Diameter (in)	2.00	SCH40 PVC	
50	Length (ft)	72	Includes All Drainback Piping	
51	Gal. per Foot of Pipe (Clemons, 1991)	0.174		
52	Total Main Volume (gal)	12.53	B50*B51	
53	# Std 90deg Elbows	3		
54	Std 90deg Elbow Pipe Length Equivalent (ft)	9.0		
55	# Std 45deg Elbows	0		
56	Std 45deg Elbow Pipe Length Equivalent (ft)	4.0		
57	# Std Tees	3		
58	Std Tee Pipe Length Equivalent (ft)	11.0		
59	# Quick Disconnects	1		



	A	B	C	D
1	<b>Mound Dosing Calculations: Gravelless Chambers</b>			
2				
3	Owner: Gabel: Site A	Design		
4		Target	Formula	Actual
80	Quick Disconnect Pipe Length Equivalent (ft)	2.0		
81	# Full Flow Ball Valves	4	1.00" Dia. Valves	
82	Ball Valves Pipe Length Equivalent (ft)	0.9		
83				
84	Total Length Equivalent (pipe&fittings) (ft)	137.6	B50+(B53-62)	
85	Head Loss per 100 ft.(ft.)(Otis et al, 1978)(Zoellen)	2.06		
86	Total Main Head Loss (ft)	2.83	(B64/100)*B65	
87				
88	Dose Volume:			
89	Total Lateral Volume (gal)	10.08	B26	
70	Total Manifold Volume (gal)	0.00	B32	
71	Total Main Volume (gal)	12.53	B52	
72				
73	Drainback Volume: Main+Manifold+Lateral (gal)	22.6	B69+B70+B71	
74	Lateral Vol x 7.94 (gal)	80.0	B69*5 (Minimum)	
75	TOTAL dose (gal)	102.6		
76				
77	Daily Design Flow (DFR)(120gal/day/bedroom)	480.0		
78	Is Lateral Dose <1/4 of Daily Design Flow?	yes		
79	Is Lateral Dose <1/8 of Daily Design Flow?	no		
80				
81	Total Dynamic Head:			
82	Static Lift - Lateral Ht. Above Surface (ft)	1.33	16.0 inch Sand	
83	Static Lift - Depth to Pump Off Below Surface (ft)	5.67	6.50 - .83	
84	Static Lift - Topo Difference (ft.)	-0.1	-	
85	Total Pipe & Fittings Headloss (ft)	2.8	B46+B66	
86	Network Loss (5ft head x 1.3) (ft)(includes laterals)	6.5	-	
87	Total Head Loss (ft)	16.2	sum(B81:B85)	
88				
89	Dose Tank Parameters			
90	Volume (gal)	1500	55.0	inches effluent
91	Gallons Per Inch in Tank	27.30		
92				
93	Timed Dose Settings:			
94	Total Gallons Per Pump Cycle W/drainback	102.6	3.76	inches drawdown
95	Total Pump Cycles Per 24 Hrs.	6.0		
96	Total Pump On Time - seconds	188		
97	Total Pump Off Time - hours	3.9		
98	Redundant Off Effluent Ht. from bottom (in)	10.0	( to prevent tank flotation)	
99	Timer Enable (low level cutout) Ht. From tank bottom (in)	13.8		
100	High Level Alarm Ht. from bottom (in.)	28.6	(provides 1 & 1/2 day reserve after alarm)	

APPROVED

REVISIONS		
ZONE	REV	DESCRIPTION

DATE

APPROVED

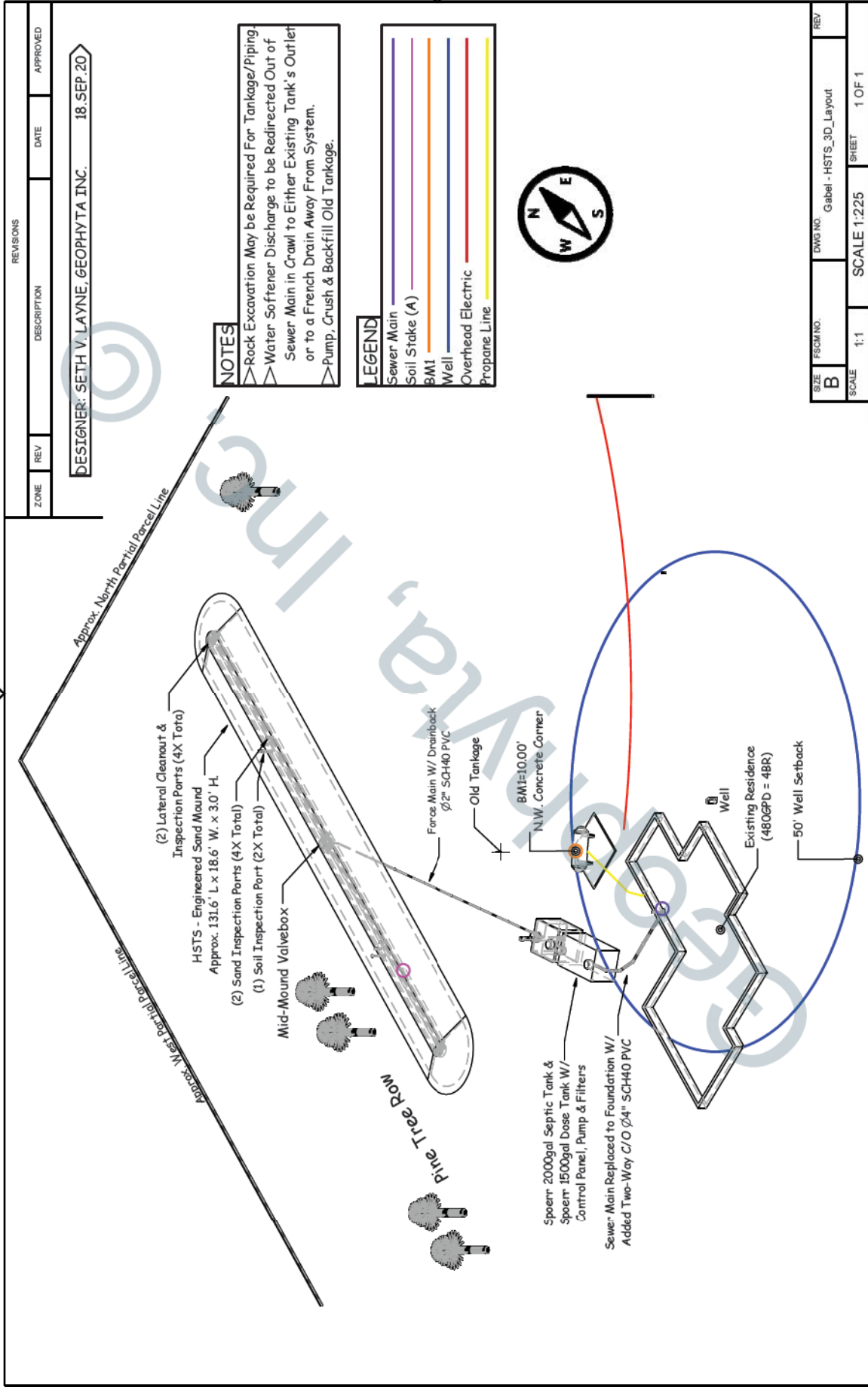
DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 18 SEP. 20

**NOTES**

- > Rock Excavation May be Required For Tankage/Piping.
- > Water Softener Discharge to be Redirected Out of Sewer Main in Crawl to Either Existing Tank's Outlet or to a French Drain Away From System.
- > Pump, Crush & Backfill Old Tankage.

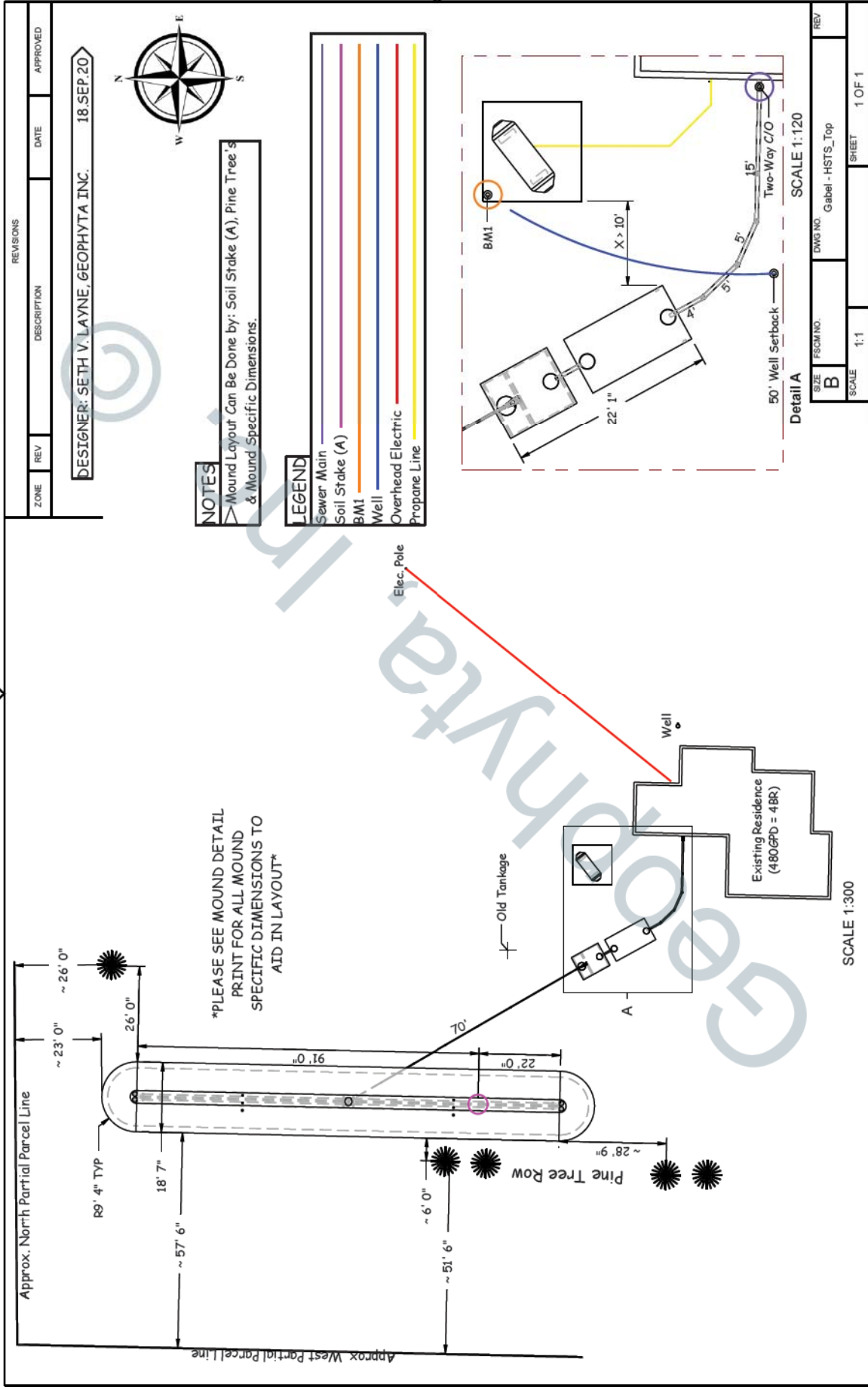
**LEGEND**

- Sewer Main
- Soil Stake (A)
- BM1
- Well
- Overhead Electric
- Propane Line



SIZE	FSCM NO.	DWG NO.	REV
B		Gabel - HSTS_3D_Layout	
SCALE 1:1		SCALE 1:225	SHEET 1 OF 1

**APPROVED**



REVISIONS		
ZONE	REV	DESCRIPTION

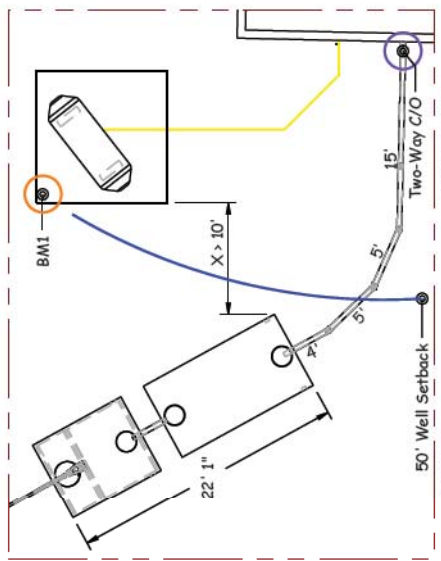
DATE: 18.SEP.20  
 APPROVED: [Signature]

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.



**NOTES**  
 > Mound Layout Can Be Done by: Soil Stake (A), Pine Tree's & Mound Specific Dimensions.

- LEGEND**
- Sewer Main
  - Soil Stake (A)
  - BM1
  - Well
  - Overhead Electric
  - Propane Line



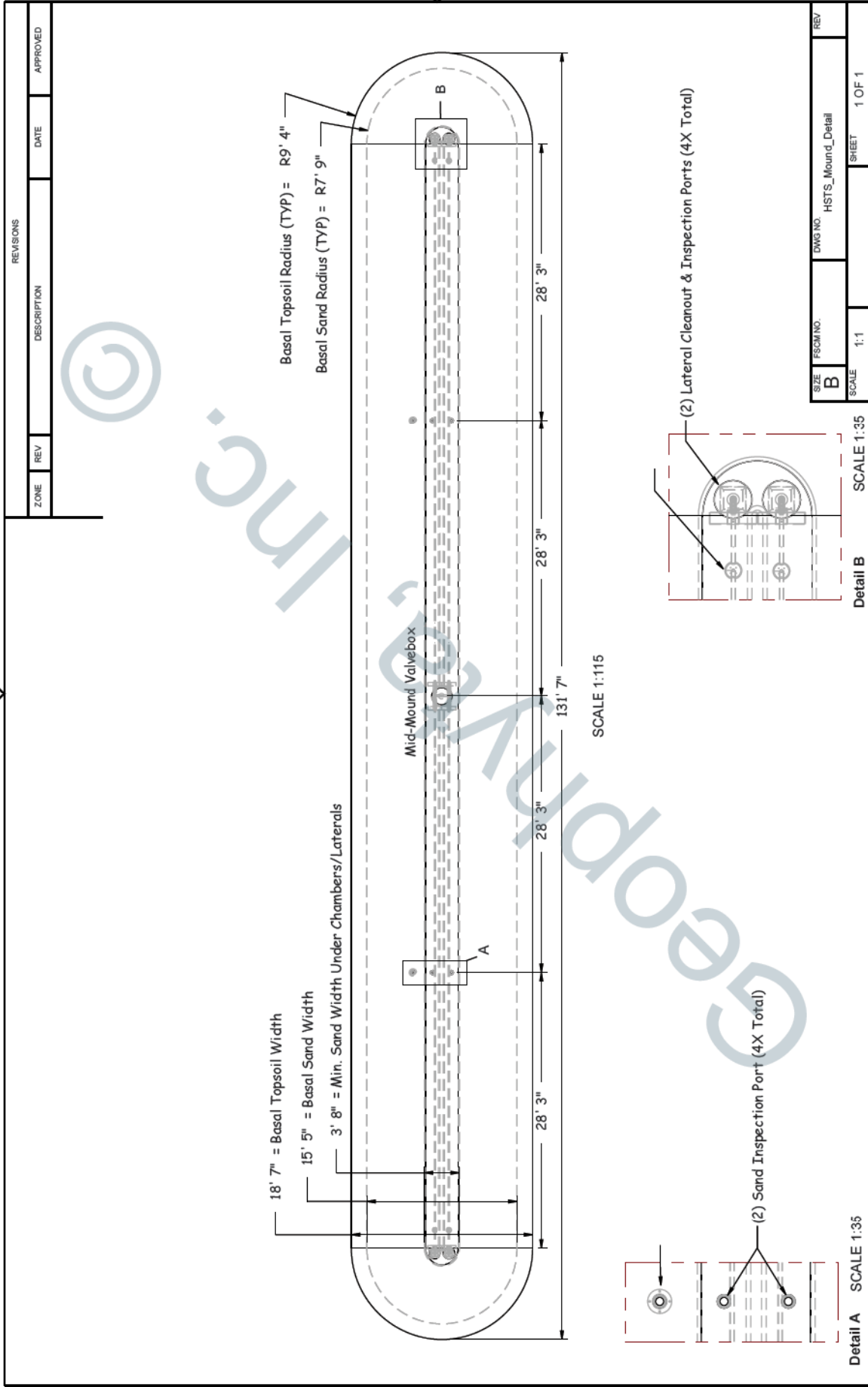
\*PLEASE SEE MOUND DETAIL PRINT FOR ALL MOUND SPECIFIC DIMENSIONS TO AID IN LAYOUT\*

SCALE 1:300

SCALE 1:120

SIZE	FSCM NO.	DWG NO.	REV
B		Gabel - HSTS_Top	
SCALE	1:1	SHEET	1 OF 1

**APPROVED**



REVISIONS			
ZONE	REV	DESCRIPTION	DATE

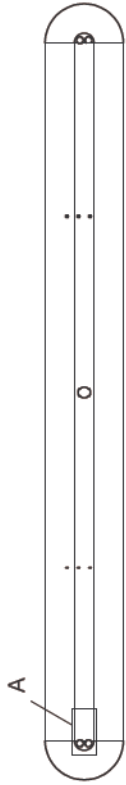
APPROVED	
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SIZE	FSCM NO.	DWG NO.	HSTS_Mound_Detail	REV
B				
SCALE	1:1	SHEET	1 OF 1	

**APPROVED**



REVISIONS			
ZONE	REV	DESCRIPTION	DATE
		Drawn By Nathan Wright, Geophyta, Inc.	21-Sep-18
			APPROVED

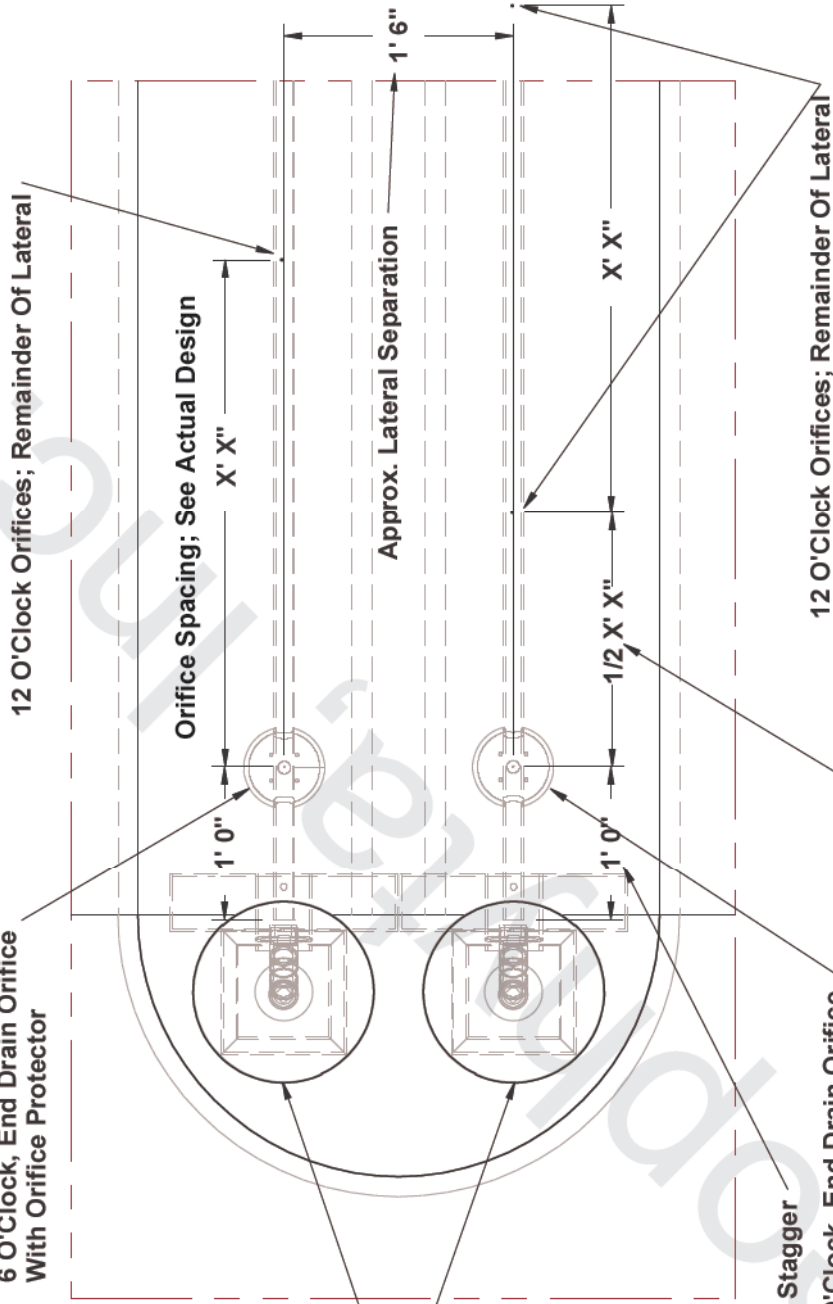


SCALE 1:400

Lateral Diameters Are Determined From Each Individual Design And Can Be Found In The Calculations Pages As Well As Bill Of Materials.

Lateral Cleanouts & Sand Inspection Ports. Entire Lateral Lengths Are Covered With Gravelless Chambers As Effluent Diffusers.

6 O'Clock, End Drain Orifice With Orifice Protector



Can Be Adjusted To Help With Stagger

6 O'Clock, End Drain Orifice With Orifice Protector

Stagger Orifices In Diamond Pattern Across Laterals, As Best As Possible. Number Of Orifices Per Lateral Takes Priority Over Exact Spacing.

12 O'Clock Orifices; Remainder Of Lateral

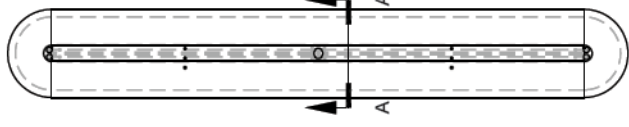
Detail A  
SCALE 1:15

SIZE	FSCM NO.	DWG NO.	HSTS Mound Laterals Detail	REV
A				
SCALE	1:1	SHEET	1 OF 1	

**APPROVED**

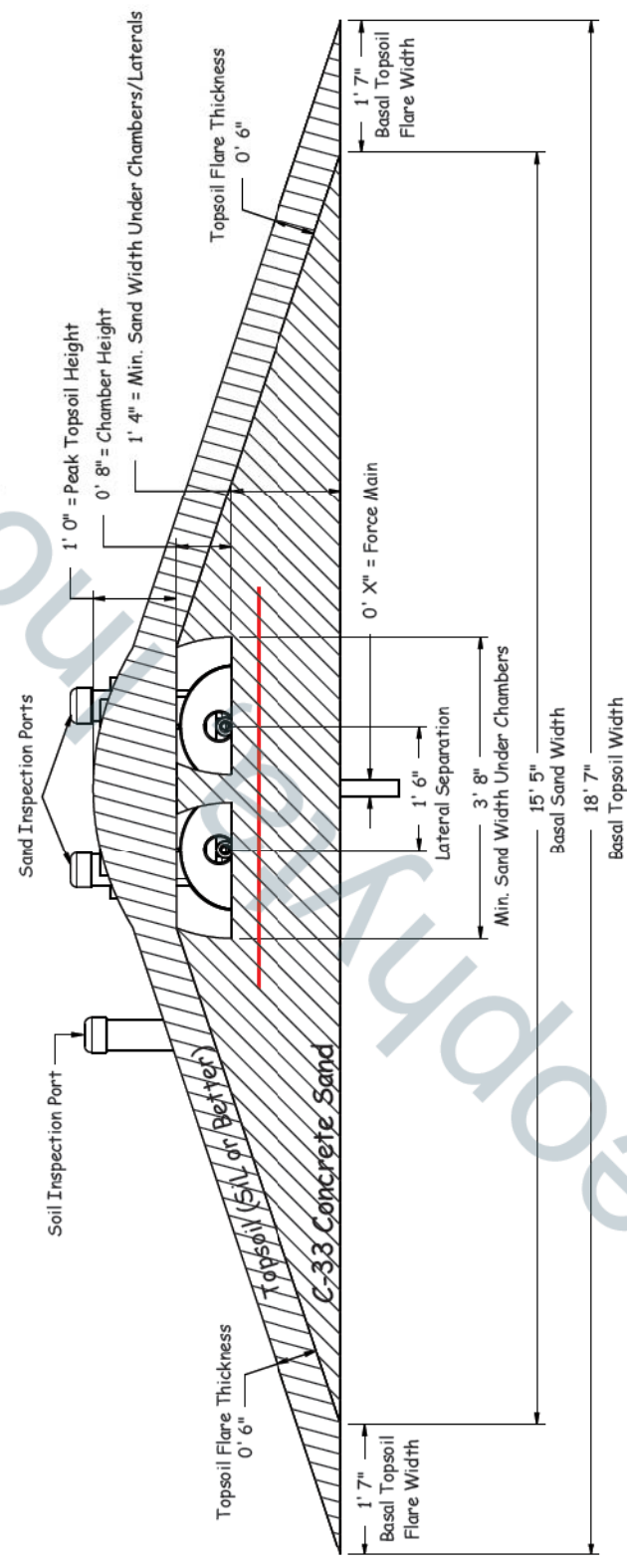
REVISIONS		
ZONE	REV	DESCRIPTION
		DATE
		APPROVED

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 18.SEP.20



SCALE 1:316

EFFECTIVE SAND WIDTH OF 4' 4"



SIZE	B	FSCM NO.	DWG NO.	HSTS_Mound Cross-Section	REV
SCALE	1:1				
				SHEET	1 OF 1

Section A-A  
SCALE 1:18

**APPROVED**

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 18. SEP. 20

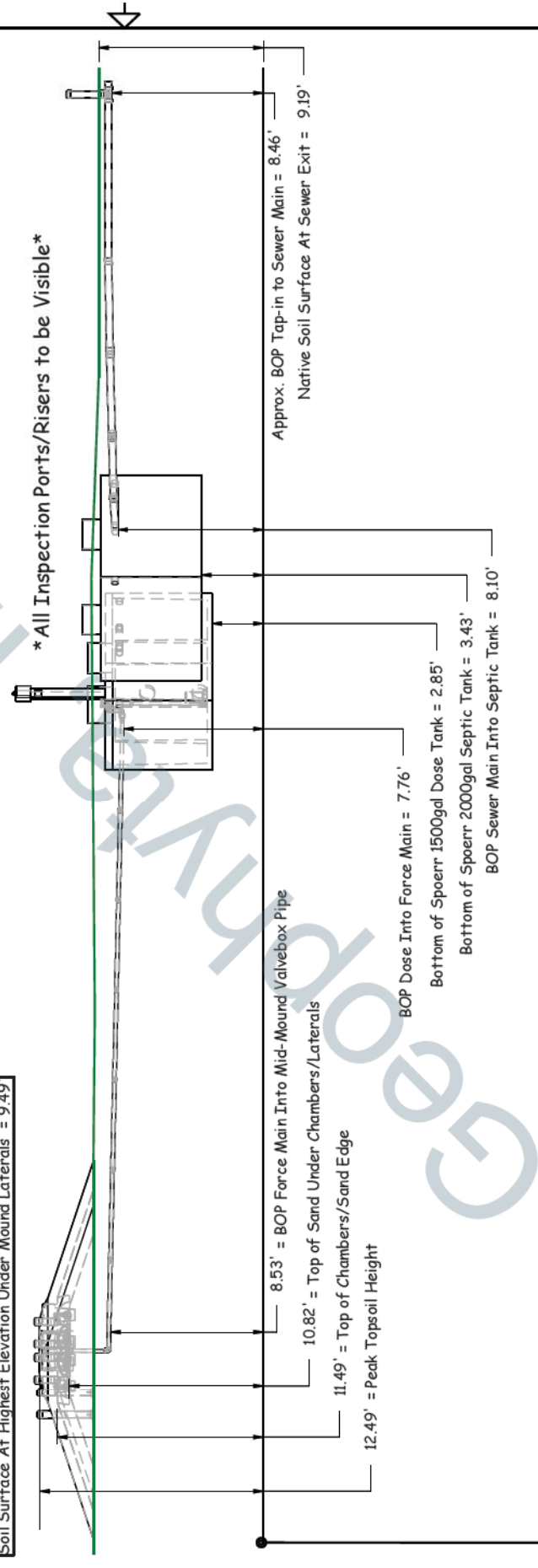
LEGEND	
Native Soil Surface	—
Zero Elevation Reference	—

**NOTES**

- > Sand Depths Under Chambers Due To Soil Unevenness:  
Avg. = 16.8"  
Range = 16.0" - 17.9"
- > Sewer Main To Have Suggested Fall or .125"/1'
- > Force Main Must Have Drainback With Suggested Fall or 1" /100'
- > Rock Excavation Will be Required For Tankage & Possibly Piping.

**VIEWPOINT**  
ELEVATION VIEW - SOUTH TO NORTH  
EAST →

Soil Surface At Lowest Elevation Under Mound Laterals = 9.33'  
Soil Surface At Highest Elevation Under Mound Laterals = 9.49'



SIZE	FSCM NO.	DWG NO.	REV
B		Gabel - HSTS_Elevation	
SCALE	1:1	SCALE 1:70	SHEET 1 OF 1

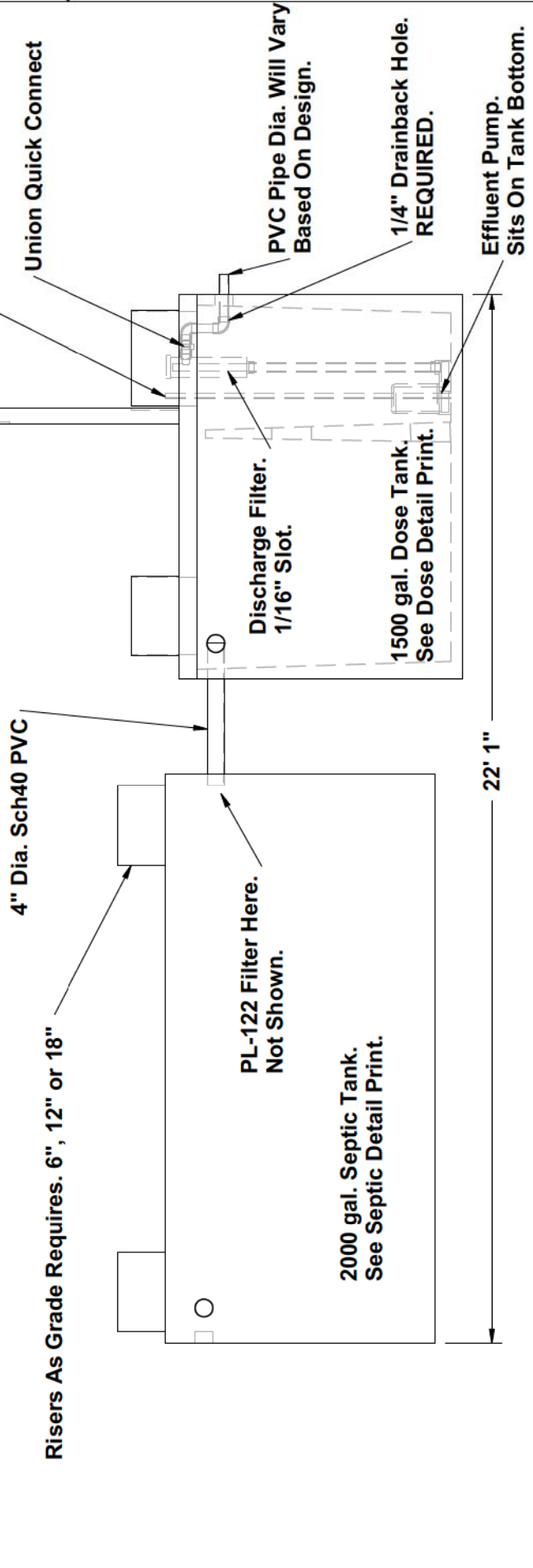
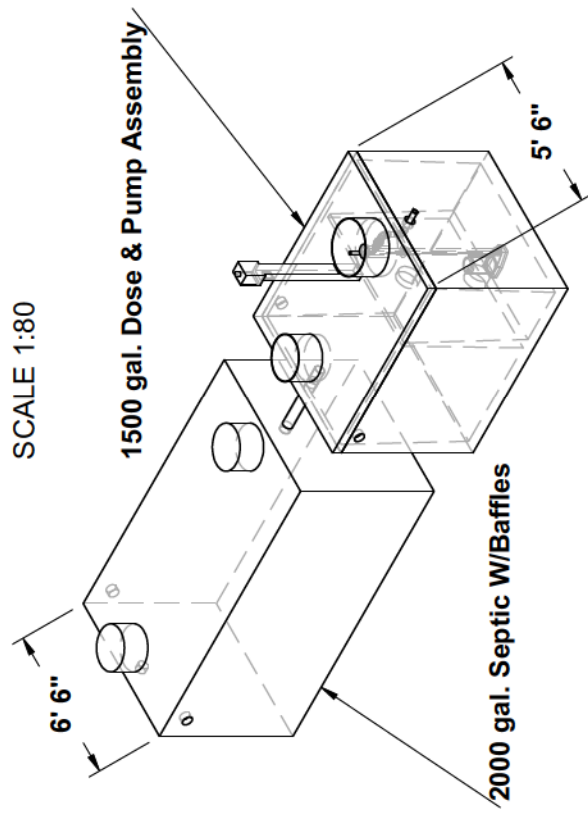
ZERO ELEVATION REFERENCE BMI=10.00' N.W. CONCRETE CORNER OF CONCRETE PAD W/ PROPANE TANK

**APPROVED**

REVISIONS		DESCRIPTION	DATE	APPROVED
ZONE	REV	Drawn By Nathan Wright, Geophyta Inc.	19-Apr-15	

Drawn By Nathan Wright, Geophyta Inc. 19-Apr-15

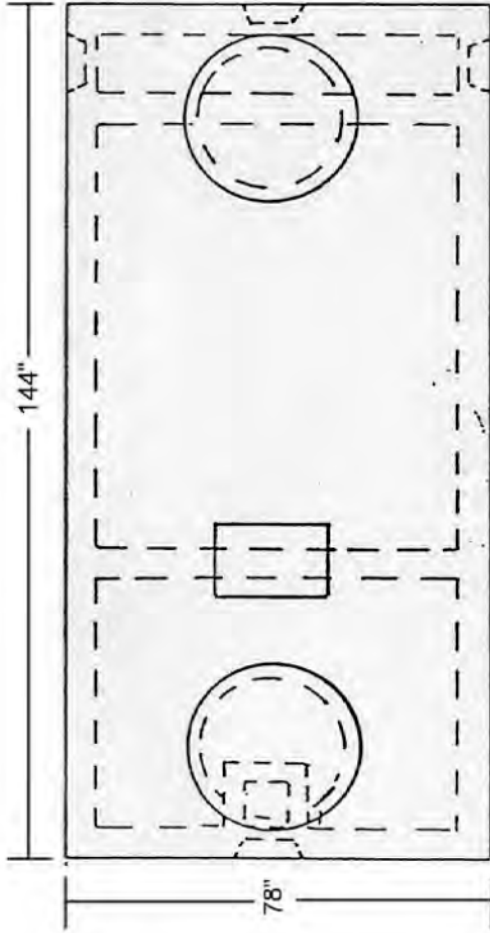
**See Bill of Materials  
For Detailed Specifications**



SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 2000 gal Septic & 1500 gal Dose	
SCALE various		SHEET	

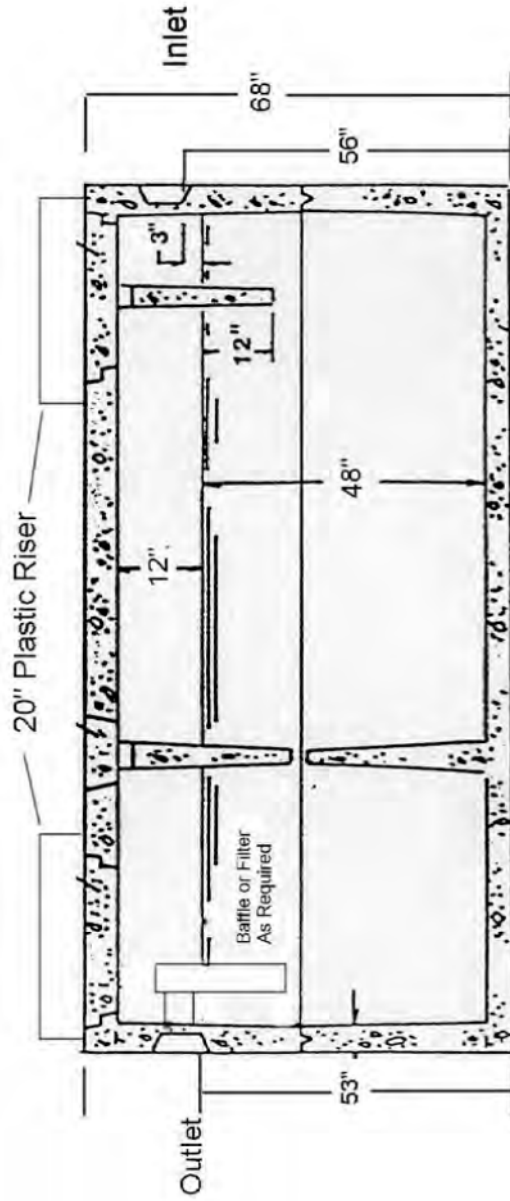
SCALE 1:40

**APPROVED**



**SPECIFICATIONS:**

1. PIPE PENETRATIONS - MEET OR EXCEED ATMC C-1644-06
2. JOINT SEALANT - BUTYL RUBBER BLEND - MEETS OR EXCEEDS ASTM C990
3. CONCRETE - 4500 psi @ 28 DAYS
4. RISERS - CAST INTO LID AT TIME OF PRODUCTION
5. WEIGHT 15,990 lbs



(A) SECTION VIEW (SIDE)

NOTES:

**SPORERR**  
PRECAST CONCRETE, INC.

2020 CALDWELL ST.  
SANDUSKY, OH 44870  
PHONE 1-800-252-5205

PROPRIETARY AND CONFIDENTIAL  
THE INFORMATION CONTAINED IN THIS  
DRAWING IS THE SOLE PROPERTY OF  
SPORERR PRECAST CONCRETE, INC.  
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CONCRETE, INC. IS PROHIBITED.

Excavation 7' 6" x 13'

2000 Gallon  
Septic Tank

DESIGNER	JHP	SCALE	VARIES
ENGINEER	GRM	DRAWING #	1 OF 1
REVISION			

**PL-122 Filter**

The PL-122 was the original Polylok filter. It was the first filter on the market with an automatic shut-off ball installed with every filter. When the filter is removed for regular servicing, the ball will float up and prevent any solids from leaving the tank. Our patented design cannot be duplicated.

**Features:**

- Offers 122 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Has a flow control ball that shuts off the flow of effluent when the filter is removed for cleaning.
- Has its own gas deflector ball which deflects solids away.
- Installs easily in new tanks, or retrofits in existing systems.
- Comes complete with its own housing. No gluing of tees or pipe, no extra parts to buy.
- Has a modular design, allowing for increased filtration.

**PL-122 Installation:**

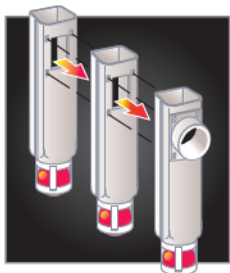
Ideal for residential waste flows up to 1,500 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-122 filter into tee.
5. Replace and secure the septic tank cover.

**PL-122 Maintenance:**

The PL-122 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-122 cartridge out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.



**Polylok offers the only filter on the market where you can get more GPD by simply snapping our filters together!**

- 1 Filter = 1500 GPD
- 2 Filters = 3000 GPD
- 3 Filters = 4500 GPD

Patent Numbers  
 6,015,488 & 5,871,640



**1/16" Filtration Slots**

**1,500 GPD**





REVISIONS

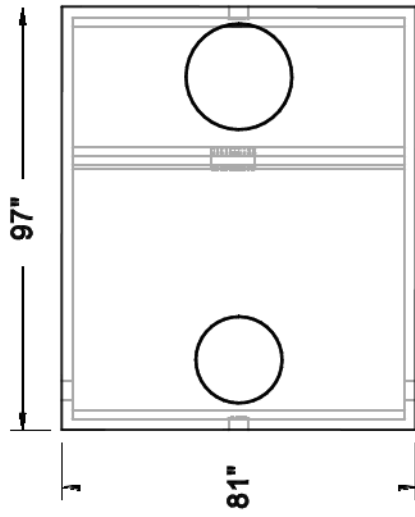
ZONE REV

DESCRIPTION

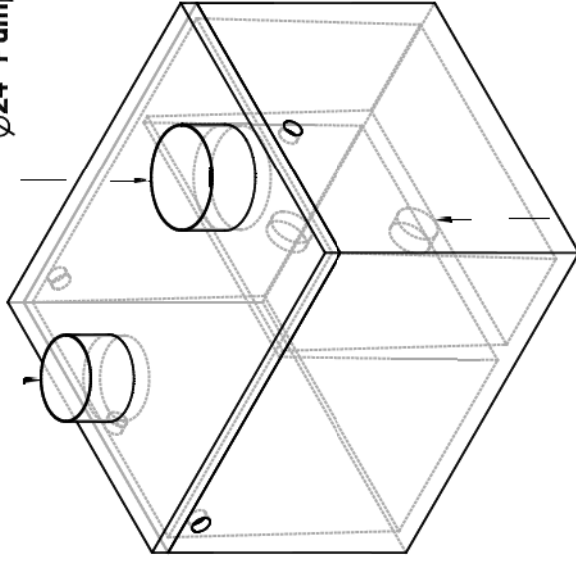
DATE

APPROVED

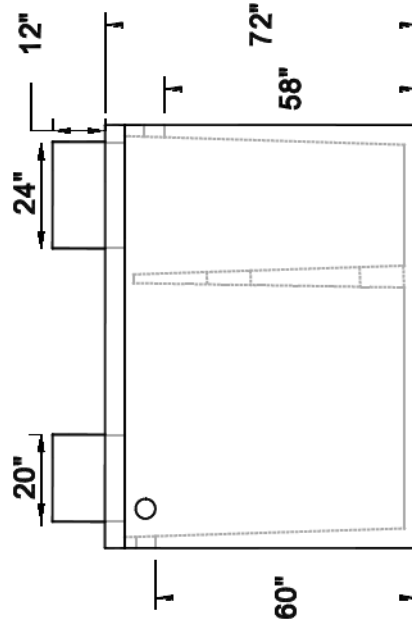
Drawn By Nathan Wright, Geophyta Inc. 7-Jun-14



Ø20" Cleanout Port



Support Baffle With Tank Bottom Effluent Passthrough



SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 1500 gal Dose Tank	

SCALE 1:44 SHEET



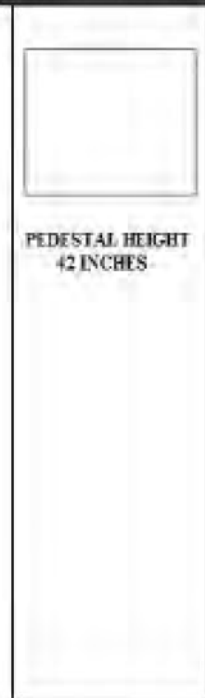
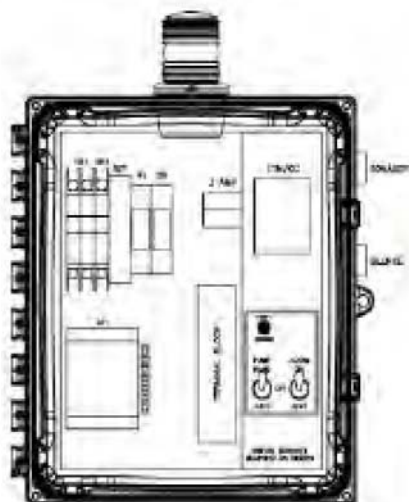


## Time Dose Control Panel

For single phase residential and commercial lift stations and holding tanks  
Float activated pump controllers for time dose applications

### Features

- Circuit breaker for each pump
- Audible alarm with silence
- 360 degree visual alarm
- 3 float operation: Off, Enable, High level
- Externally mounted silence switch
- UL Type 4X enclosure padlockable
- Separate power feed for Pump and Control
- Clearly labeled terminal blocks
- Easy to use timer
- Individually adjustable On and Off Times
- DP Rated contactor
- ETM and Cycle Center
- All components UL Listed



### Specifications

Voltage Input: 115VAC/230VAC 60Hz, single phase  
Pump ratings: 115VAC/230V – 2HP at 20FLA,  
single phase  
Enclosure: UL Type 4X rated, polycarbonate  
1 year limited warranty

# ECP-TD-11



Every pump tested in water to ensure pump meets performance curve.



### FEATURES/BENEFITS

#### PERFORMANCE

- Heads up to 65' TDH
- Flows up to 86 GPM

#### MOTOR

- High efficient, 115v or 230v, oil filled, permanent split capacitor motor with upper and lower ball bearings and thermal overload protection
- Constant bearing lubrication
  - Maximum motor cooling
  - Runs cooler and lasts longer
  - Internal overload protection
  - Quiet operation
  - Fasteners and shaft made from rugged, corrosion resistant stainless steel

#### SEAL DESIGN

- Type 21 inboard seal design with secondary exclusion seal
- Rotating components of seal are in the motor housing, being lubricated by the motor oil preventing foreign matter from wrapping around the seal components
  - Seal will last longer if the pump runs dry
  - Secondary exclusion seal keeps debris from entering the seal cavity

#### IMPELLER DESIGN

- Non-clog style, cast-iron vortex impeller (CPEH Thermoplastic Vortex)
- Designed to help reduce clogging by foreign material

#### POWER CORD

- Sealed entry quick disconnect power cords
- Prevents water from entering the motor housing through a cut cord
  - Easy to replace in the field
  - Available in lengths up to 100'

#### SWITCH

- Piggy-back switch design
- Defective switches can be diagnosed over the phone
  - Pump can be operated manually or supplied with other piggy-back switches
  - Switch can be replaced without having to replace the pump

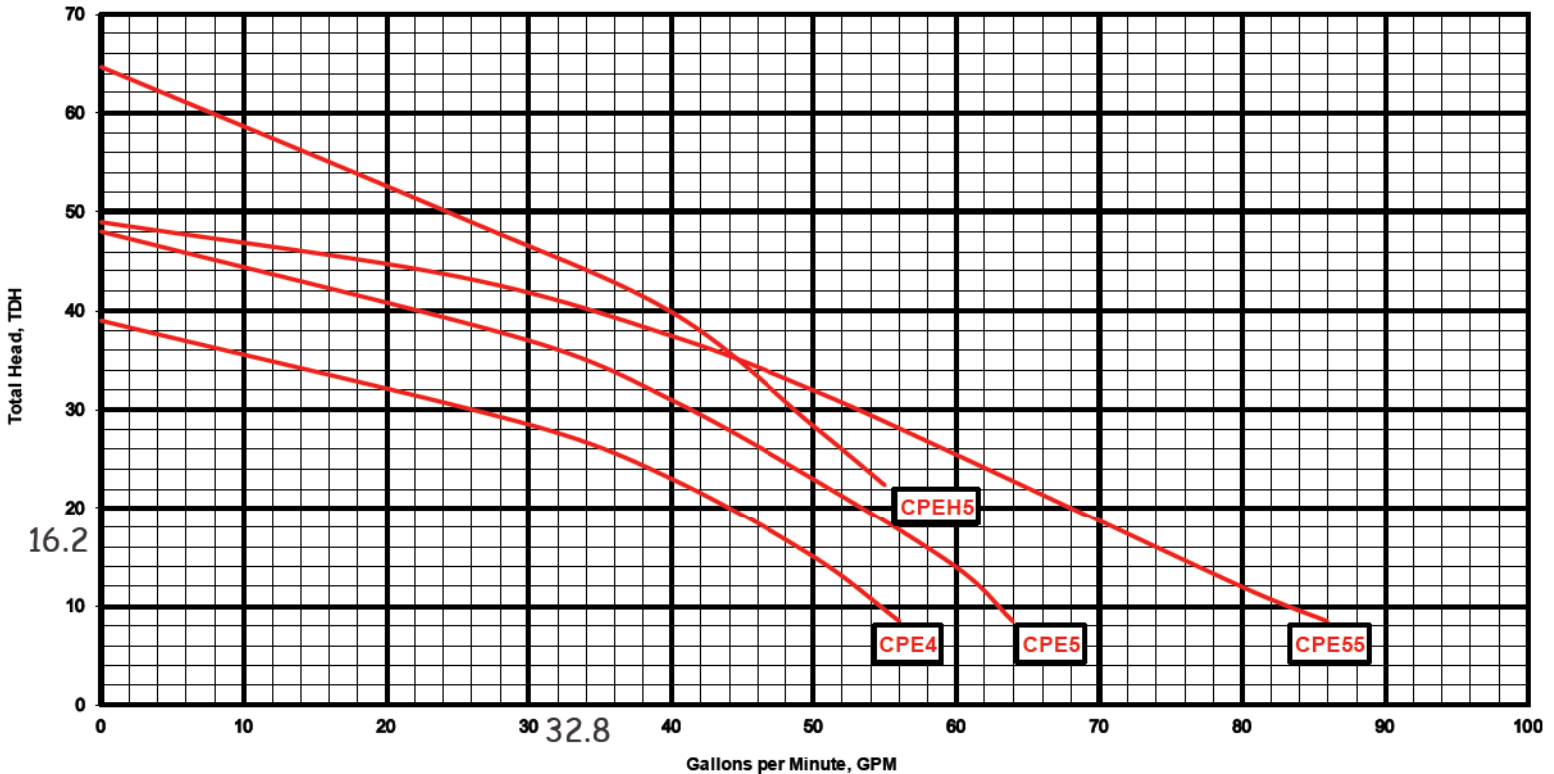
### APPLICATIONS

Dewatering, septic systems, residential and commercial developments, elevator pits and STEP systems



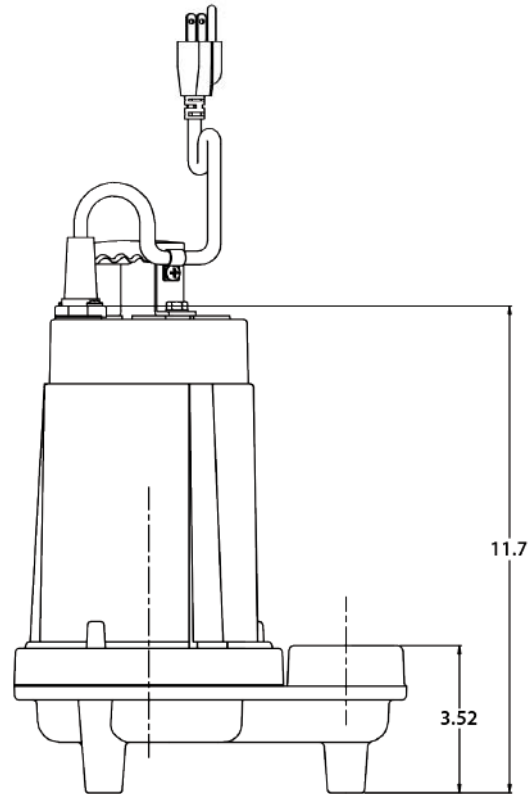
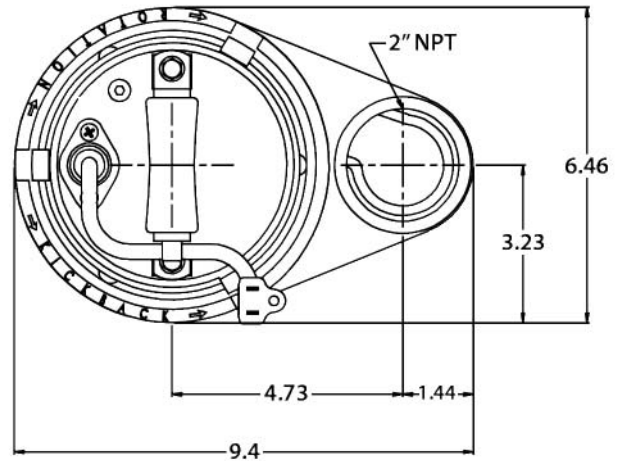
4/10-1/2 HP submersible pumps that handle up to 3/4" solids with 2" discharge

### PERFORMANCE CURVE



# TECHNICAL DATA

<b>DISCHARGE</b>	2" NPT. vertical standard
<b>LIQUID TEMPERATURE</b>	140 Degrees F. (Intermittent)
<b>MOTOR HOUSING</b>	Cast Iron
<b>VOLUTE</b>	Cast Iron
<b>SEAL PLATE</b>	Cast Iron
<b>IMPELLER</b>	Cast Iron / Vortex (CPEH thermoplastic vortex)
<b>SOLIDS HANDLING</b>	3/4"
<b>SHAFT</b>	Stainless Steel
<b>SHAFT SEAL (SINGLE SEAL)</b>	Inboard mechanical with secondary exclusion V-Seal, carbon rotating face, ceramic stationary face, Buna-N elastomer, 300 series stainless steel hardware
<b>BEARINGS (UPPER &amp; LOWER)</b>	Single row, ball, oil lubricated
<b>HARDWARE</b>	300 Series stainless steel
<b>O-RINGS</b>	Buna-N
<b>CORD</b>	20' Length standard. Up to 100' available. (UL/CUL) Listed 16 AWG, Type SJTW
<b>MOTOR (SINGLE PHASE)</b>	4/10-1/2 HP 3450 RPM, 60 Hz, NEMA L Includes Overload Protection in the motor, oil filled, class B permanent split capacitor
<b>WEIGHT</b>	37 lbs. (Manual)




# MODEL(S) INFORMATION

MODEL	HP	VOLTS	PHASE	AMPS	CORD LENGTH	SWITCH
CPE4-12 / CPE5-12 / CPE55-12 / CPEH5-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Manual
CPE4-13 / CPE5-13 / CPE55-13 / CPEH5-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Manual
CPE4-15 / CPE5-15 / CPE55-15 / CPEH5-15	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	50'	Manual
CPE4A-12 / CPE5A-12 / CPE55A-12 / CPEH5A-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Wide-Angle Float
CPE4A-13 / CPE5A-13 / CPE55A-13 / CPEH5A-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Wide-Angle Float
CPE4V-12 / CPE5V-12 / CPE55V-12 / CPEH5V-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Vertical Float
CPE4V-13 / CPE5V-13 / CPE55V-13 / CPEH5V-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Vertical Float
CPE4-22 / CPE5-22 / CPE55-22 / CPEH5-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Manual
CPE4A-22 / CPE5A-22 / CPE55A-22 / CPEH5A-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Wide-Angle Float
CPE4V-22 / CPE5V-22 / CPE55V-22 / CPEH5V-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Vertical Float

# Essential Components for Pressurized Systems

SIM/TECH offers many performance products engineered to protect effluent treatment systems and prevent costly repairs. From our pressurized filter, to the best orifice shield in the industry, we keep your systems performing at 100% efficiency.

Sometimes the simplest ideas are the best, so depend on a time proven leader.... protecting effluent treatment systems is our business - SIM/TECH Filter.



STF-103  
Lid/screen removal wrench.  
(Holds lid after removal)

STF-107  
Alert w/latching light

STF-101 Pressure  
switch

STF-100  
Pressure filter

pump chamber  
(dosing tank)

septic tank

## STF-100 Sim/Tech Filter

Pressure system filter - molded in tough PVC plastic, with installed stainless steel screen.

Installs easily onto effluent pump in holding tank. The vortex scrubbing action helps keep the filter clean.

*The last line of defense before the laterals.*

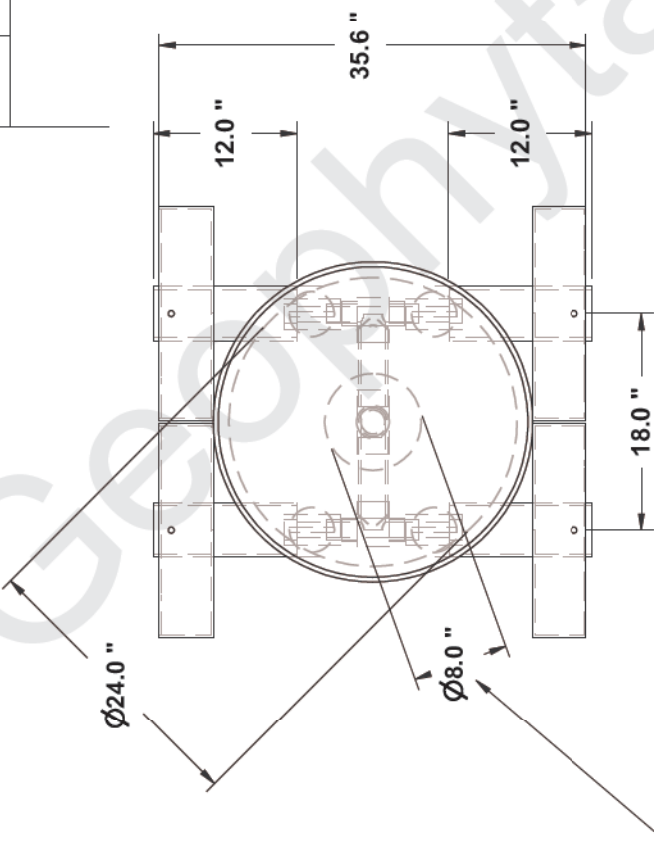
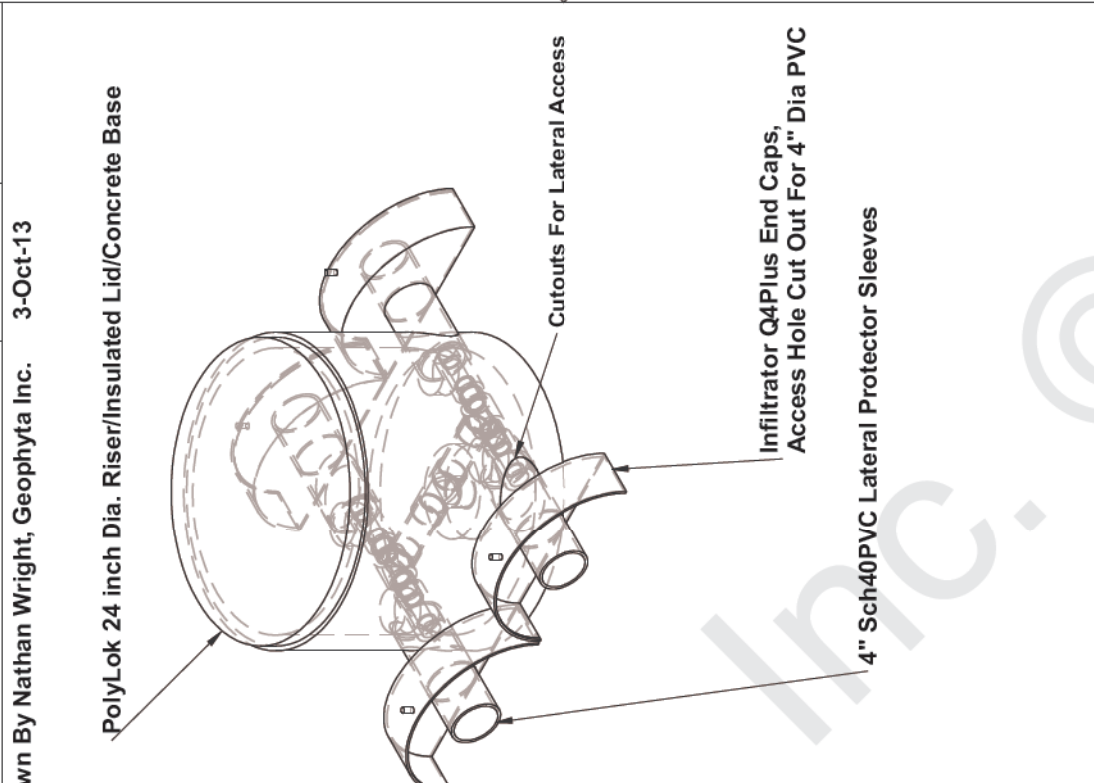
## STF-102 Filter Screen STF-104 Filter Sock

Optional filter socks can lower the acceptable TSS size from .023 inches to .0039 inches, depending on the application.

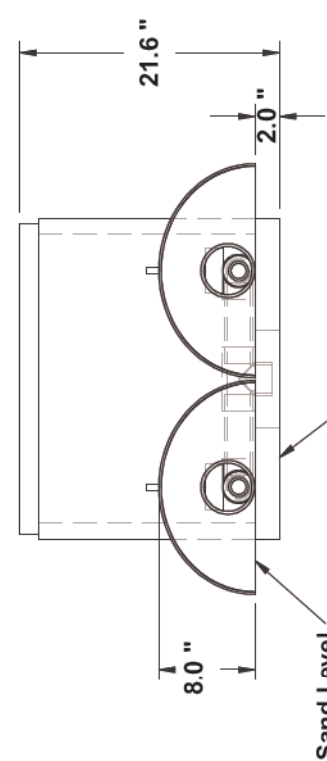
Our standard stainless steel screen will filter .062" in diameter. (1/16 of an inch)

Socks easily install inside stainless steel screen.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	3-Oct-13	



Force Main Access Through Concrete Base



SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 24" Dia. 4 - Valve Box	
SCALE	1:15		SHEET



**INTEGRATOR**  
water technologies

**Quick4<sup>PLUS</sup>**  
CHAMBER SYSTEMS

# The Quick4<sup>®</sup> Plus Equalizer 36 Low Profile (LP) Chamber

## Quick4 Plus<sup>™</sup> Series

The Quick4 Plus Equalizer 36 Low Profile (LP) offers maximum strength through its two center structural columns. This chamber can be installed in a 24-inch-wide trench. It is 4 inches shorter in height than other Equalizer 36 model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection<sup>™</sup>, which permits turns up to 15°, right or left. The Quick4 Plus All-in-One 8 and Quick4 Plus Endcaps provide increased flexibility in system design and configurations.



**Maximum Strength**

### Quick4 Plus Equalizer 36 LP Chamber Specifications

**Size**

22"W x 53"L x 8"H  
(559 mm x 1346 mm x 203 mm)

**Effective Length**

48" (1219 mm)

**Louver Height**

6.3" (160 mm)

**Storage Capacity**

20 gal (76 L)

**Invert Height**

3.3" (84 mm), 9.6" (244 mm)



### Quick4 Plus Equalizer 36 Low Profile (LP) Chamber Benefits:

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Two center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12" of cover

### Quick4 Plus All-in-One Periscope Benefits:

- Allows for raised invert installations
- 180° directional inletting
- 12" raised invert is ideal for serial applications



### Quick4 Plus All-in-One 8 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe

### Quick4 Plus Endcap Benefits:

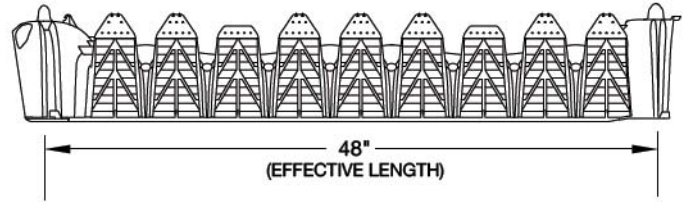
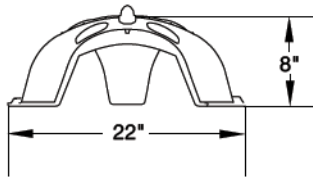
- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe



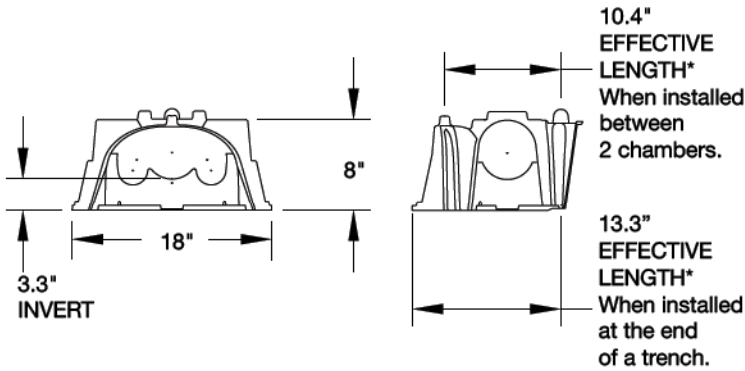
Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)



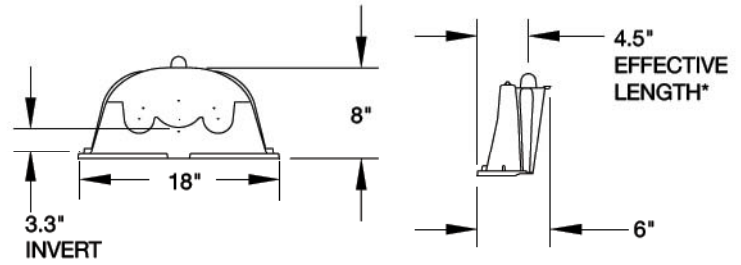
**Quick4 Plus Equalizer 36 Low Profile Chamber**



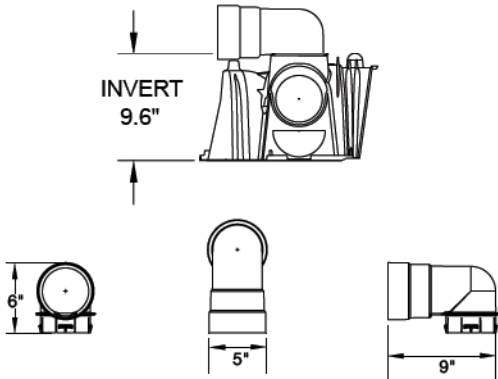
**Quick4 Plus All-in-One 8 Endcap**



**Quick4 Plus Endcap**



**Quick4 Plus All-in-One Periscope**



**INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY**

(a) The structural integrity of each chamber, endcap and other accessory manufactured by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



**INFILTRATOR**  
water technologies

4 Business Park Road  
P.O. Box 768  
Old Saybrook, CT 06475  
860-577-7000 • Fax 860-577-7001  
1-800-221-4436  
www.infiltratorwater.com  
info@infiltratorwater.com

U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,116; 5,401,459; 5,511,903; 5,716,163; 5,588,778; 5,839,844 Canadian Patents: 1,329,959; 2,004,564 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickCut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, Inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.

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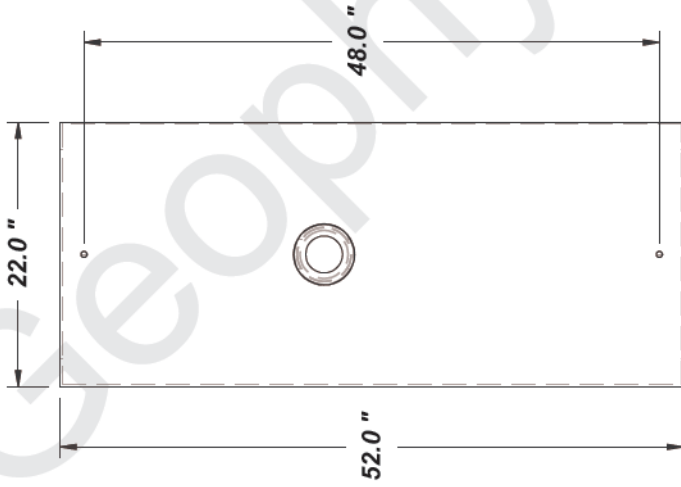
PLUS06 0713

**Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436**

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	22-Oct-13	

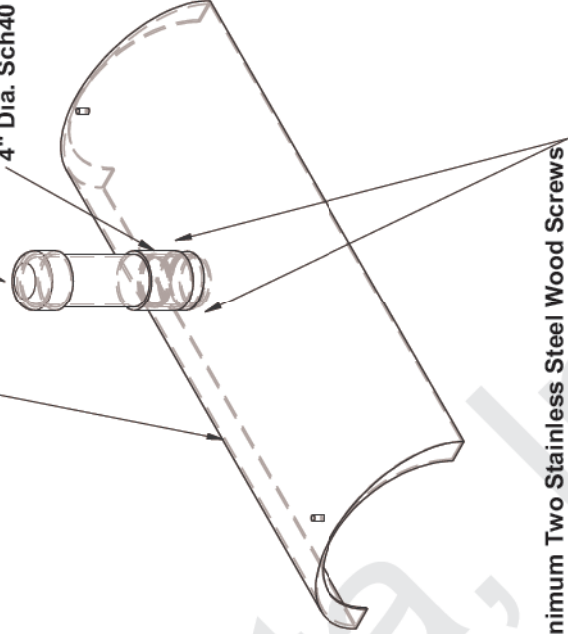
Drawn By Nathan Wright, Geophyta Inc. 22-Oct-13



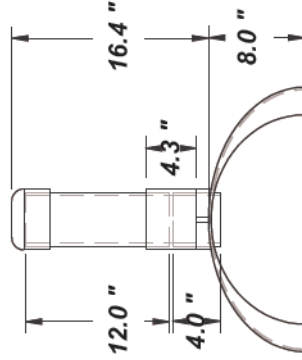
Infiltrator Quick4 Plus  
Equalizer 36 Low Profile Chamber

4" Dia. Sch40 Friction Cap,  
Or Optional Threaded Cap Assembly

4" Dia. Sch40 Coupler



Minimum Two Stainless Steel Wood Screws  
Needed To Secure 4" Sch40 PVC To Dome



SIZE	FSCM NO.	DWG NO.	REV
A			

Sand Inspection Port For Dome Chamber Mounds

SCALE	SHEET
1:15	

# Orifice Shields



## Why Use Orifice Shields?

Sim/Tech Filter orifice shields are designed to protect the discharge holes in pressurized systems from the outside. Most of these systems are designed with specific flow-rates, pressure heads, etc. to obtain “even distribution” in the drain field and thus allow for proper treatment. Much like our pressure filter prevents debris from obstructing the discharge holes from the inside, our orifice shields prevent blockage on the outside. As shown in the top picture to the left, drain media can block the small discharge holes, throwing the whole design and operation of a system out of whack. The bottom picture to the left shows our standard orifice shield installed on the lateral piping of a system. The orifice shield creates a protective void between the drain media and the discharge hole. The design allows the discharge hole to spray effluent into the shield where the much larger open area of the shield keeps the hole discharging at its designed flow rate.

## Why Use Sim/Tech Filter Orifice Shields?

They have a large open area, 9 inches of gripping surface and a simple, but very effective design. The large open area of the interior of the shield prevents it from becoming easily blocked if you are not using a Sim/Tech pressure filter on your system. There is also a large open area for allowing effluent to drain from the shield. There are various slots depending upon the configuration you desire and both ends of the shield also have open area for drainage.

### Styles and Sizes Available

Sim/Tech Filter currently offers two orifice shield designs. The STF-106D is designed for systems that have discharge holes that point down. The STF-106TDS is designed for systems that have discharge holes that point up. Both versions of the Sim/Tech Filter orifice shield are available in four different sizes to fit the pipe sizes 3/4”, 1”, 1-1/4” & 1-1/2” and 2”. A 3” size is also available as a special custom order.

US Patent 6,167,914



STF-106D



STF-106TDS

*Solutions*

We offer free CAD detail drawings in DXF format to cover our complete product line.

For the protection and performance of wastewater systems by



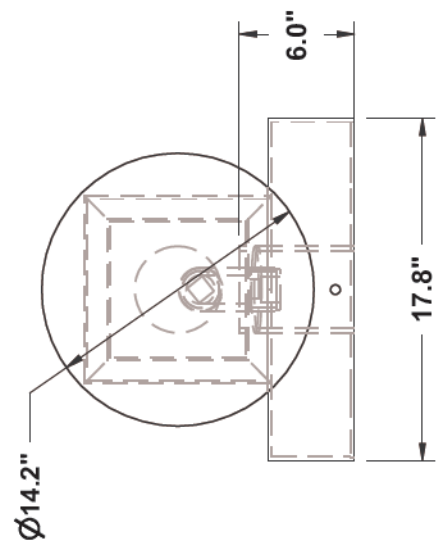


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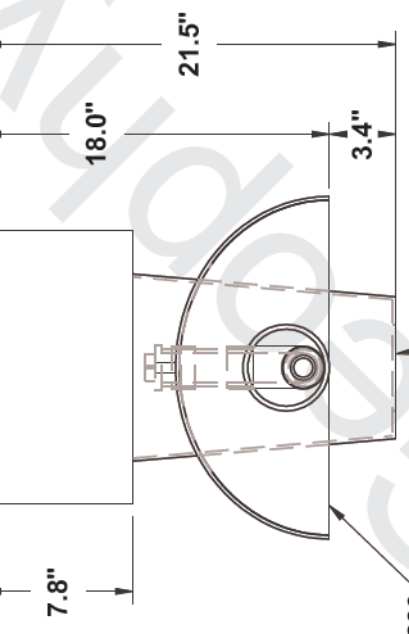
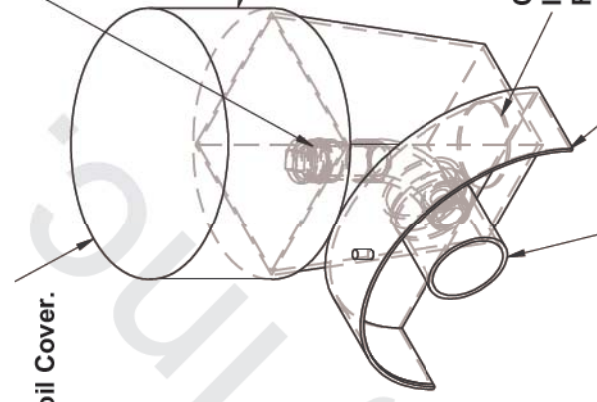
All Pipe & Fittings  
Sch 40 PVC, 1 1/4".

Expand/Reduce To  
2.00", 1.50", 1.25", Or 1.00"  
Laterals As Bill of Materials  
Specifies.

Removable PolyLok  
Lid - Insulated.  
Level With Mound Soil Cover.



PolyLok  
6" Riser



Cut 4.5" Dia. Hole  
In Bottom Of PolyLok D-Box  
For Drainage & Inspection.

Infiltrator Q4Plus End Cap,  
Cut Access Hole For Laterals.

4" Sch40 PVC Connector

Sand Surface

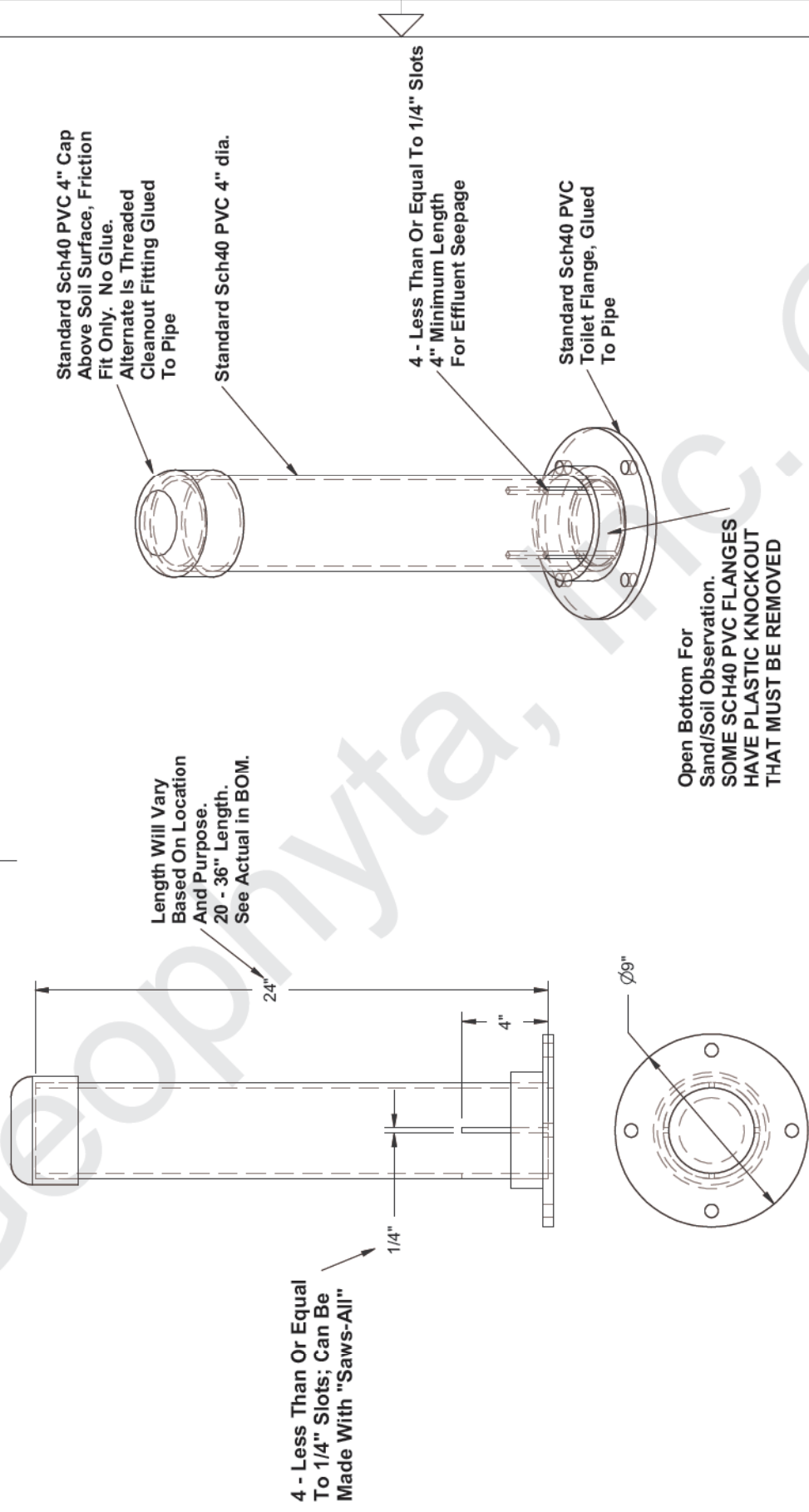
Bottom Of PolyLok Box, 3.4" Into Sand

SIZE	FSCM NO.	DWG NO.	REV
A		12" PolyLok Cleanup Port For Chambers	
SCALE	1:10	SHEET	



REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	25-Jan-2010	



SIZE	FSCM NO.	DWG NO.	REV
A			

SCALE	SHEET
1:7	

Bill of Materials - 5496 N. C.R. 31, HSTS Replacement - Engineered Sand Mound

Quantity	Part Name	Section	Comment
1	SCH40PVC4inchTwoWayCleanoutTeeSxSxS	Sewer Main Replaced to Foundation	Two-Way Cleanout (Tee)
1	SCH40PVC4inchpipe2ft.		Two-Way Cleanout (Tee to Cap)
1	SCH40PVC4inchCap		Two-Way Cleanout (Cap)
1	SCH40PVC4inchCoupler		See Design
1	SCH40PVC4inch11.25DegreeEl		
2	SCH40PVC4inch22.5DegreeEl		
1	SCH40PVC4inchpipe4ft.		
3	SCH40PVC4inchpipe5ft.		
1	SCH40PVC4inchpipe10ft.		
1	Septic Tank		Septic Tank
1	Septic Tank Filter	Septic To Dose	Length May Vary
1	SCH40PVC4inchpipe3ft.	Dose Tank	Spoerr 1500gal Dose Tank or Equiv. W/ 12" Riser
1	SCH40PVC4inchCoupler		
1	Dose Tank	Control Panel	Ohio Electric ECP-TD-11 (See Detail Print)
1	Control Panel For Pump Float Control, Timer & Alarms	Dose Pump Assembly	Pump Circuit: Standalone Breaker
~40 ft.	2 conductor w/ground, 14 gauge UG wire		Alarm Circuit, Added To House Lighting Breaker
~40 ft.	2 conductor w/ground, 14 gauge UG wire		Pump & Alarm Circuit
~40 ft.	Plastic conduit, to contain 6-14ga		Champion CPE4-12
1	Effluent Pump 2inch NPT 0.4HP		Polylok or Simtech Filter (See Detail Print)
1	Pressure Filter		1/4 inch Drainback Hole Required
1	SCH40PVC2inchpipe1ft. W/ 1/4" Weephole		See Tank Assembly Print
2	SCH40PVC2inch90DegreeEl		
1	SCH40PVC2inchpipe47inch		
1	SCH40PVC1inchpipe6.0ft. L. Float Tree		
1	SCH40PVC2inchAdapter MNPT to Soc		
1	SCH40PVC2inchUnion SxS		
2	SCH40PVC2inchpipe3inch	Force Main	
1	SCH40PVC2inchpipe6.5inch		
7	SCH40PVC2inchCoupler		
1	SCH40PVC2inch90DegreeEl		
7	SCH40PVC2inchpipe10ft.		
1	SCH40PVC2inchpipe2ft.		
4	SCH40PVC1inchFullFlowBall Valve SxS		Force Main to Mid-Mound Valvebox
2	SCH40PVC1inchx1inchx2inchTee SxSxS	Mid-Mound Valvebox	
4	SCH40PVC4inchpipe1ft.		
4	Infiltrator Quick4 Plus End Cap Modified For Mound		
1	PolyLok 24" Dia. Riser &Pan Plus Concrete Base Valvebox 20" Dia. W/ Insulated Lid		
1	SCH40PVC2inchTee SxSxS		
4	SCH40PVC1inchpipe2.5inch		
	SCH40PVC2inchpipe6.6inch		
2	SCH40PVC2inchpipe6.6inch		

-	Sand Section 3.7 ft. W. x 113 ft. L. x 16.0 inch H. Basal 15.42 ft. W.	Sand Mound	~75.0 yd.^3 @ 131.25 Tons (ASTM C-33 Sand)		
-	Topsoil Cap 131.6 ft. L. x 18.6 ft. W. x 3.0 ft. H.				
56	Infiltrator Quick4 Plus Equalizer 36 Low Profile Chambers	Laterals	~47.0 yd.^3 @ 82.25 Tons (Silt Loam Or Better) Infiltrator 4 ft. L 2 ft. W 8 inch H LP Chambers		
4	Orifice Protectors				
4	SCH40PVC1inchPipe 56' L. 0.125" Orifices 2.8' Spacing W/ Cleanout End Drain	Sand Inspection Port	STF -106D (See Detail Print) See Mound Laterals Details Print		
4	SCH40PVC4inchCap				
4	SCH40PVC4inchCoupler				
4	SCH40PVC4inchpipe1ft.				
4	SCH40PVC4inchpipe4inch				
2	SCH40PVC4inchCap				
2	SCH40PVC4inchToiletFlangeSoc				
2	SCH40PVC4inchSandObservationTube 36inch W/ Slots				
4	SCH40PVC4inchpipe6inch				
8	SCH40PVC1.5inchpipe3.75inch				
4	Infiltrator Quick4 Plus End Cap Modified For Mound	Soil Inspection Port	See Soil Inspection Port Print		
4	SCH40PVC1.5inchx1inchRedCouplerSpxS				
4	SCH40PVC1.5inchFiptCoupler				
8	SCH40PVC1.5inchDegree45Ell				
4	PolyLok 12" Dia. D-Box W/ (1) Riser W/ Insulated Lid Adapted For Mound				
4	SCH40PVC1.5inchMipt Plug				
Additional Notes					
Rock Excavation May be Required For Tankage/Piping.					
Water Softener Discharge to be Redirected Out of Sewer Main in Crawl to Either Existing Tank's Outlet or to a French Drain Away From System.					
Pump, Crush & Backfill Old Tankage					
-	Grass Seed	2 lbs./1000 ft.^2 K. Bluegrass	~2500 ft.^2 @ 5.0 lbs.		
-	Straw Mulch For Grass Establishment	Homeowner's Choice	~2500 ft.^2		
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft.^2	~2500 ft.^2 @ 25.0 lbs.		
***Call OUPS before you dig.***					
Installer substitution of materials not specified in this Bill Of Materials may void Health Dept. approval of this design and will result in a re-design fee and is the sole responsibility of the installer.					
Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.					

# Operation and Maintenance Procedures

## Home Septic Treatment Systems With Effluent Distribution Through A Sand Mound

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems utilize processing, storage, and pumping tanks. A sand/soil absorption component, the mound, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

**Improper operation and/or maintenance of your home septic treatment system will result in its failure.**

**Geophyta, Inc. strongly recommends that a homeowner hire a professional service provider to inspect and maintain your system. Your county health department has a list of registered service providers. Make sure that your service provider has “mound system” experience.**

### 1) Homeowner Responsibility:

- a) The system owner is responsible for the continuous operation and maintenance of this home septic treatment system
- b) Your county health department may require third-party inspection and maintenance of your home septic treatment system.
- c) Home Interior Design & Appliance Selection:
  - i) Install water conserving fixtures such as low flow shower heads, low flow toilets, and front loading washers.
  - ii) Space out water use throughout the day and week. Avoid doing all laundry in one day.
  - iii) Repair all water leaking fixtures.
  - iv) Eliminate garbage disposals, or limit their use. Collect food scraps with sink strainers for disposal as trash or for composting; this includes coffee grounds.
  - v) DO NOT pipe sump pump output into your sewer line.
- d) Home Landscaping Limitations:
  - i) Do not pipe roof downspouts or any other rainwater drainage into the septic or dose tanks.
  - ii) Divert all downspouts or other rainwater drainage away from your entire septic system.
  - iii) Divert all downspouts or other rainwater drainage away from the sand/soil mound area.
  - iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and sand/soil mounds.

- v) Do not add additional soil fill on or near the sand/soil mound. This will limit air movement into the mound for effluent treatment and may cause system failure.
  - vi) Limit lawnmower traffic on the mound when soil is excessively wet.
  - vii) Do not plant any deep rooted plants on top of or near your mound sand/soil absorption area.
- e) Home Resident Responsibilities:
- i) Only flush or drain bio-degradable human waste, toilet paper, laundry and dish and personal care soaps, and water into your home septic treatment system.
  - ii) Severely limit disposal of food fats, oils, and greases. These will clog your system.
  - iii) Do not flush or drain undiluted bleach, cleansers, or drain cleaners.
  - iv) Do not flush any non-biodegradable items. For example, plastic items.
  - v) Do not flush or drain motor oils, greases, anti-freezes, cleaners, etc.
  - vi) Do not flush cat litter.
  - vii) Do not flush paper towels, facial tissue, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms.
  - viii) Do not flush prescription or over-the-counter drugs. Antibiotics and cancer treatment drugs are very harmful to your home septic treatment system.
  - ix) Do not dump solvents like dry cleaning fluid, pesticides, photographic chemicals, paint thinner down the drain.
  - x) Don't use septic tank additives.
  - xi) Don't drain a hot tub or large amounts of water into your septic system.
- f) Home Improvement/Expansion:
- i) Contact your county sanitarian before adding new driveways, decks, patios, pools, and outbuildings not identified on your original layout plan to make sure all setback distances from your septic system tanks and mound are met.
  - ii) Contact your county sanitarian before adding bedrooms and/or increasing your home occupancy. This may overload your septic system. Septic system expansion may be required to prevent failure.
- g) Homeowner Cautions:
- i) **DO NOT ENTER TANKS WITHOUT PROPER SAFETY EQUIPMENT.** Septic and dose tanks contain noxious and deadly gases.
  - ii) Pump or dose tanks and control boxes contain electrical components. **ELECTRICAL SHOCK HAZARD CAN EXIST WITH IMPROPERLY WIRED OR FAILING COMPONENTS.**
  - iii) Always keep tank fall guards in place, except for the time needed to replace components when safety equipment is present.
  - iv) Always replace and secure septic and dose tank lids after completing any inspection.
  - v) Any disconnection or removal of filters, screens, floats, alarms, and/or control panels will result in system failure.
  - vi) Contact your county sanitarian for allowed homeowner maintenance and repair of your septic system.

## 2) Inspection & Maintenance Requirements:

- a) Perform inspection & maintenance every six months.
- b) Review Baseline Operation and Maintenance Data:
  - i) The installer of your system set and recorded all float/liquid level heights, pump down times, cycles per day, and distal head pressures required in the design specifications.
  - ii) Review all previous six month inspection data.
- c) Identify any house additions, patios, pools, ponds, driveways, outbuildings, etc. added since the last inspection that may impact the home septic treatment system. Draw a sketch of these differences.
- d) Inspect bottom of house sewer main two-way cleanout tee
  - i) Check for clogging.
  - ii) Check for continuous clear water flows from the home.
- e) Evaluate Septic Tank & Pump Tank:
  - i) Measure sludge and scum depths; pump tank when cumulative thickness is 1/3 of the tank depth.
  - ii) Look for signs of clogging and tank damage.
  - iii) Look for signs of tank and riser leakage.
  - iv) Clean & inspect septic tank outlet filter.
  - v) Make sure lids are securely attached to risers.
- f) Evaluate Pump/Dose Tank & Pumping Equipment:
  - i) Measure sludge and scum depths; pump tank when septic tank is pumped.
  - ii) Look for signs of clogging and tank damage.
  - iii) Look for signs of tank and riser leakage.
  - iv) Inspect and assure proper functioning of floats or other liquid level controls.
  - v) Clean and inspect dose pump outlet filter. May not be present in some designs.
  - vi) Inspect and assure proper condition and functioning of the effluent pump.
  - vii) Make sure lids are securely attached to risers.
- g) Evaluate Drain Fields:
  - i) Inspect all soil and sand inspection tubes plus maintenance ports for surface condition, surface color, and depth of ponded effluent, if present.
  - ii) Look for surfacing effluent.
  - iii) Look for excessively moist soil at mound sides and toe slopes.
  - iv) Identify appropriate vegetative cover.
  - v) Look for surface disturbances, compaction, abnormal settling, and erosion.
  - vi) Identify any deep rooted vegetation recently planted near the mound area.
- h) Evaluate Laterals:
  - i) Flush all distribution laterals, one at a time. Monitor flush output.
  - ii) Record new distal head pressures for all laterals.
  - iii) Perform additional lateral and orifice cleaning if lateral distal head pressures are not equal.
  - iv) Adjust lateral distal head pressures if needed after additional cleaning.
- i) Measure Pump Run Time and/or Drawdown:
  - i) For demand dosed systems, verify original design effluent drawdown depth.

- ii) For time dosed systems, verify original design pump run time.
- iii) For systems with a cycle counter or run time meter, record the current values.
- j) Test Alarms:
  - i) Evaluate proper function of low liquid level alarm.
  - ii) Evaluate proper function of high liquid level alarm and warning light.

**3) Findings & Repairs:**

- a) All findings during inspection and maintenance must be recorded. See attached "Mound System Inspection and Maintenance Record".
- b) Any system adjustments must be recorded.
- c) Any system deficiencies, worn out components, and/or damage must be repaired to return your septic system to a properly functioning state.
- d) All repairs must be recorded.



## Mound System Inspection and Maintenance Record

System Owner: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
 System Address: \_\_\_\_\_ Inspector Name: \_\_\_\_\_  
 System Address: \_\_\_\_\_ Inspector Phone Number: \_\_\_\_\_

Septic Tank Condition:	Scum depth: Sludge depth: Filter cleaned?
Dose Tank Condition:	Sludge present?
Dose Pump Condition:	
Controls Condition:	Level controls functional? Alarm functional? Control box functional?

**Mound Area Evaluation:**

Landscape Changed?		Signs of Surface Ponding?		Mound Damaged?		New Construction Area?	
yes	no	yes	no	yes	no	yes	no

**Soil Inspection Tubes:**

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

**Sand Inspection Tubes:**

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

**Cleanout Ports:**

	Port 1		Port 2		Port 3		Port 4	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

	Port 5		Port 6		Port 7		Port 8	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

Comments/Sketches:

# **GEOPHYTA**

## **Home Septic System Site Evaluation And Replacement System Design**

**For:**

**Seneca County WPCLF (Crystal Steinmetz)**

**7917 C.R. 59  
Carey, OH 43316**

**Property Location:**

**7917 C.R. 59  
Carey, OH 43316**

**Big Spring Township, Seneca County**

**Engineered Sand Mound**

**By:**

**Nathan Wright (Soil Scientist)  
Seth V. Layne (Designer)**

**Geophyta, Inc.  
2685 C.R. 254  
Vickery, OH 43464**

**419-547-8538**

**September 24, 2020**

### **To The Homeowner:**

A septic system is designed based on all the information you provide and Geophyta Inc collects at the site. It must be accurate. This information includes local soil limits and topography, plus existing and future locations of your home, number of bedrooms, out buildings, driveways, drinking water wells, ponds, septic systems, and property lines. Geophyta Inc. relies on this information to construct detailed design drawings that must meet local health department regulations before installation.

Any design changes required by the local health department to meet existing regulations are the responsibility of Geophyta Inc.

Any information changes made by you after the initial site inspection are your responsibility and will result in additional charges to you above the original quote for services. These charges may include additional site inspection work, system redesign, and resubmitted drawings.

### **To The Installer:**

The registered installer of this septic system design is responsible for preparing an “as-built” record, as stated in the Ohio Administrative Code Chapter 3701-29-09, Par. F (p.32) of the “Sewage Treatment System Rules,” Ohio Department of Health, January 1, 2015. Additionally, the installer is responsible for measuring and recording distal pressure head and float switch settings as baseline measures for future operation and maintenance of any pressure distribution system (3701-29-15, Appendix B, Par. VI(p.93) of above referenced rules.

If the installer requests “as-built” record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

Geophyta Inc. must assume that any registered installer has the knowledge, equipment, ability, and experience to properly layout, install, and create as-built drawings for any septic system design approved by a local board of health. This includes the ability to read detailed design prints with an associated bill of materials. For this reason, any Geophyta Inc project supervision prior to or during installation will be billed to the installer.

**Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.**

# HSTS Site/Soil Evaluation Information Sheet, Geophyta, Inc.

**Customer:**

Name:	Crystal Steinmetz
Address:	7917 CR 59
City, State:	Carey OH 43316
Home Phone:	419 957-1123
Cell Phone:	419 957-1123
Email:	CrystalSteinmetz@icloud.com

**Property:**

Parcel #:	
Current Owner:	
Address:	
City, State, Zip:	
Lot Size:	
Right of Ways?	
Easements?	storm drain

**Existing or Proposed or Lot Split: (circle one)**

House Size: Rooms	4 bedrooms	electric:	overhead or buried
House Dim.w/Garage:	ft.xft.	phone:	overhead; buried; n/a
Garage Size:	2 cars, ft.xft.	gas :	natural propane n/a
Water Source:	well, public; cistern	garden/hot tub:	yes no
Water Softener:	no yes		
Outbuildings:	no yes, size:	geothermal heat/cooling system	no: yes: (horizontal or vertical)
Pond:	no yes, size:		
System Type:	new or replacement	Sump pump:	no yes
Replacement Reason:	failed; addition; n/a	Discharge where?	

**Comments:**

I agree that the above information is accurate and can be used by Geophyta, Inc. to prepare a site/soil evaluation for septic system suitability. The site/soils report is for information purposes to be used by a designer and your local health department. This report does not guarantee build ability of a lot or approval of any septic system design. This is not a property boundary survey.

Crystal Steinmetz  
Customer Signature

9/3/2020  
Date

# HSTS Replacement Layout - 7917 C.R. 59

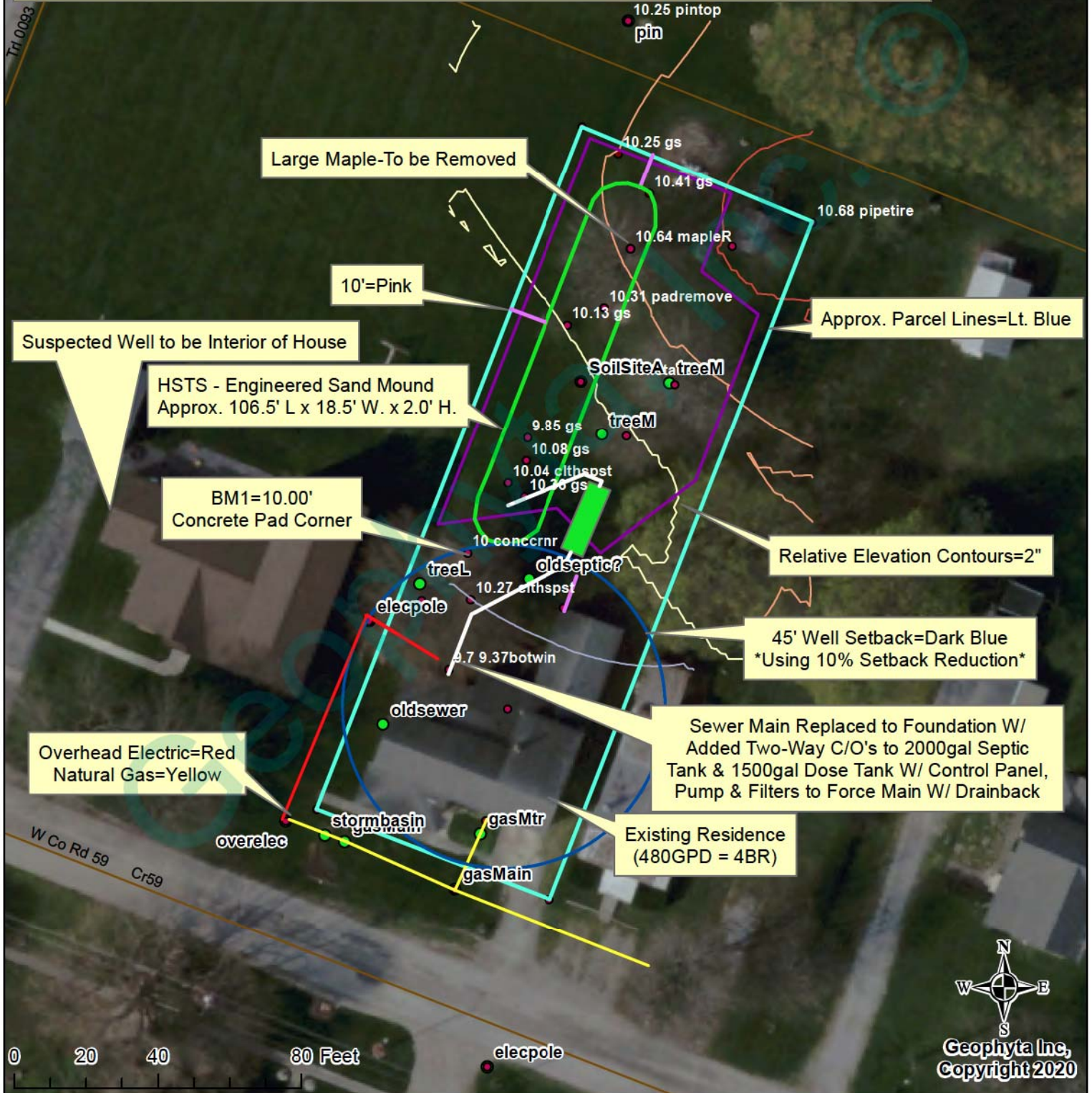
Large Maple Tree Removal Required in Mound Area, Installer to Flush Cut With Ground Surface And Suggested to Grind Stump Slightly to Reduce Depression Created Once Stump Deteriorates. Remove Small Chunk of Concrete in Mound Area During Install.

Remove Clothes Post in Mound Area During Install.

Internal Plumbing: Redirect Any Plumbing on West Sewer Main to Main Sewer Exit

Water Softener Recharge & Sump Discharge to be Redirected Out of Sewer Main in Basement to Either Existing Catch Basin at Road or to a French Drain Away From System.

Pump, Crush & Backfill Old Tankage.



# Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Seneca  
 Township / Sec.: Big Spring  
 Property Address: 7917 C.R. 59  
 OR Location: Carey  
 Applicant Name: Crystal Steinmetz  
 Address: 7917 C.R. 59  
Carey OH 43316  
 Phone #: 419-957-1123  
 Lot #: \_\_\_\_\_  
 Test Hole #: A  
 Latitude/Longitude: 83°19'21.032"W 41°0'5.953"N  
 Method: \_\_\_\_\_ Pit  Auger  Probe; 1 1/4" dia.

Land Use / Vegetation: Residential Turf  
 Landform: Glacial Till Plain  
 Position on Landform: Flat  
 Percent Slope: 1 - 2  
 Shape of Slope: Linear - Linear  
 Approximate Soil Type: Digby L

Date: 3-Sep-20  
 Evaluator: Nathan Wright  
Geophyta, Inc.  
2685 C.R. 254  
Vickery, OH 43464  
 Phone#: 419-547-8538



Certification #: 19395

*Nathan Wright*  
 Signature: \_\_\_\_\_

Soil Profile		Estimating Soil Saturation				Estimating Soil Permeability				Other Soil Features	
		Munsell Color (hue, value, chroma)		Redoximorphic Features		Texture		Structure			
Horizon	Depth (inches)	Matrix Color	Concentrations	Depletions	Class	Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)	Consistence
<b>A</b>	<b>0.0 - 18.5</b>	10YR 2/2	none	none	L	15	0	3 - strong	medium	gr	v. friable
<b>Bt</b>	<b>18.5 - 27.0</b>	10YR 3/6	none	none	L	25	5	2 - mod	fine	sbk	friable
<b>C1</b>	<b>27.0 - 30.0</b>	10YR 3/6	none	none	L	25	10	2 - mod	medium	sbk	friable
<b>C2</b>	<b>30.0 - 48.0</b>	10YR 4/4	none	15% 10YR 5/2	SCL	30	10	2 - mod	medium	sbk	friable
<b>Limiting Conditions</b>		<b>Depth to (in.)</b>	<b>Descriptive Notes</b>								
Perched Seasonal Water Table		30.0	Restricted in C2								
Apparent Water Table		>48									
Highly Permeable Material		>48									
Bedrock		>60	By Tile Probe								
Other Restrictive Layer		>48									
<b>Remarks / Risk Factors: Values for Sand Mound</b> Tyler Table: A - C1 horizon (0.0 - 30.0) ILR: L, HLLR: L ILR(>30mg/L) = 0.6 gal/day/ft <sup>2</sup> , ILR(<30mg/L) = 0.8 gal/day/ft <sup>2</sup> HLLR = 4.3 gal/day/ft 4 bedroom min. required absorption area = 800 sq.ft. 5xW Soil Absorption Box: 36"W x 112"L											

Note : The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08.

Landforms
Upland*
Terrace
Flood Plain
Lake Pain
Beach Ridge
*Includes glacial till plain and end moraine

Position on Landform
Depression
Flat
Knoll
Crest
Hillslope
Footslope

Shape of Slope
Convex
Concave
Linear
Complex

Horizon Nomenclature		
Master Horizons	Horizon Suffixes	Horizon Modifiers
O Predominantly organic matter (litter & humus)	a Highly decomposed organic matter	Numerical Prefixes: Used to denote lithologic discontinuities.
A Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b Buried genetic horizon	
E Mineral, loss of Si, Fe, Al, clay, organic matter	d Densic layer (physically root restrictive)	Numerical Suffixes: Used to denote subdivisions within a master horizon.
B Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of CaCO <sub>3</sub> ; subsurface soil structure	e Moderately decomposed organic matter	
C Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g Strong gley	
R Hard bedrock	i Slightly decomposed organic matter	
	p Plow layer or artificial disturbance	
	r Weathered or soft bedrock	
	t Illuvial accumulation of silicate clay	
	w Weak color or structure within B	
	x Fragipan characteristics	

Soil Texture	
Texture Class Abbreviations	Textural Class Modifiers
Course Sand cos	Gravelly GR
Sand s	Fine Gravelly FGR
Fine Sand fs	Medium Gravelly MGR
Very Fine Sand vfs	Coarse Gravelly CGR
Loamy Coarse Sand lcos	Very Gravelly VGR
Loamy Sand ls	Extremely Gravelly XGR
Loamy Fine Sand lfs	Cobbly CB
Loamy Very Fine Sand lvfs	Very Cobbly VCB
Coarse Sandy Loam cosl	Extremely Cobbly XCB
Sandy Loam sl	Stony ST
Fine Sandy Loam fsl	Very Stony VST
Very Fine Sandy Loam vfsl	Extremely Stony XST
Loam l	Bouldery BY
Silt Loam sil	Very Bouldery VBY
Silt si	Extremely Bouldery XBY
Sandy Clay Loam scl	Channery CN
Clay Loam cl	Very Channery VCN
Silty Clay Loam sicl	Extremely Channery XCN
Sandy Clay sc	Flaggy FL
Silty Clay sic	Very Flaggy VFL
Clay c	Extremely Flaggy XFL

\*Estimate approximate clay percentage within 5 percent

Soil Structure					
Grade	Size	Type (Shape)			
Structureless 0	Very Fine vf	Granular	gr		
Weak 1	Fine f	Angular Blocky	abk		
Moderate 2	Medium m	Subangular Blocky	sbk		
Strong 3	Coarse co	Platy	pl		
	Very Coarse vc	Prismatic	pr		
	Extr. Coarse ec	Columnar	cpr		
	Very Thin* vn	Single Grain	sg		
	Thin* tn	Massive	m		
	Thick* tk	Cloddy	CDY		
	Very Thick* vk				

\* The sizes Very Thin, Thin, Thick, and Very Thick, are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Moist Consistence	
Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils" Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

Mound Calculations: Gravelless Chambers			
Owner: Steinmetz: Site A	Design		
Residence W/ 4 bedrooms	Min. Design	Actual Design	Comment
Water Use (gal/day)(DFR)	480		
Limiting Condition	PSWT		
Depth To Limiting Condition (inches)	30.0		
Total Infiltration Depth (Soil+Sand) (in.)	36.0		
Sand Depth To Add (in.)	6.0		
Most Limiting Soil Texture	L		
Site Slope % (Perpendicular To Contour)	0.0		
Tyler Table Values			
Soil Infiltration Loading Rate (gal/day/sq. ft)(BLR)	0.6		
Soil Hydraulic Linear Loading Rate (gal/day/ft)(HLLR)	4.3		
Sand Loading Rate (gal/day/sq. ft)(SLLR)	1.0		
Required Soil Absorption Area (sq. ft.) DFR/BLR	800.0		
Mound Design Requirements			
Sand Absorption Area Width (ft)(A)	4.3	5.50	Using (3) 2' W. Infiltrator Chambers
Sand Absorption Area Length (ft)(B)	111.6	88.0	21.2% Length Reduction
Sand Distribution Area for Laterals(sq. ft.)	480.0	484.0	
Min. Mound Basal Soil Width (ft)(I+A+J)(HLLR/BLR)	7.2	14.42	Needed For 3:1 Sand Edge Slope
Upslope Sand Depth (in)(D)	6.0		
Downslope Sand Depth (in)(E)	6.0		
Aggregate Depth (in)(F)	8.0		LP Chamber Dome Height
Edge Topsoil Cover (in)(G)	6.0		
Peak Topsoil Cover (in)(H)	12.0		
Mound Downslope Width at 3:1 (in)(I)	78.0		
Mound Upslope Width at 3:1 (in)(J)	78.0		
Mound Endslope Width at 3:1 (in)(K)	78.0		
Mound Overall Length (ft)(L)	124.6	106.5	
Mound Overall Width (ft)(W)	13.0	18.5	
Mound Overall Height (ft)	2.2	2.2	

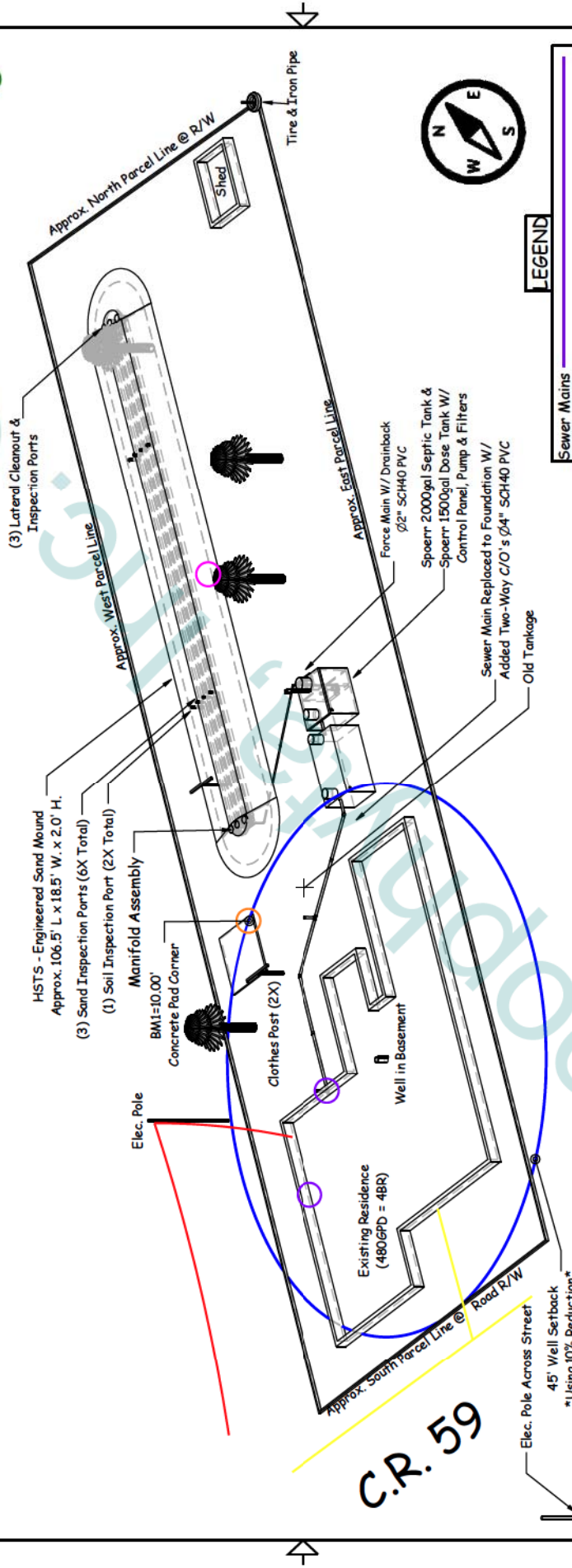


	A	B	C	D
1	<b>Mound Dosing Calculations: Gravelless Chambers</b>			
2				
3	Owner: Steinmetz: Site A	Design		
4		Target	Formula	Actual
5	Sand Absorption Area Width (ft)(A)	5.50		
6	Sand Absorption Area Length (ft)(B)	88.0		
7	Sand Distribution Area for Laterals(sq. ft.)	484.0	B5*B6	
8				
9	Area Per Orifice (sq. ft.)	6.00		
10	Orifice Quantity (Dist. Area/Std)	80.7	B7/B9, Rnd to Even; Divide by 3	78.0
11	Total Laterals Length (ft)	264.0		
12	Number of Laterals C	3		
13	Each Lateral Length (ft.)(B/C)	88.0	B11/B12	
14	Orifice Separation (length/# orifices)(ft.)	3.3	B11/B10	3.4
15	Orifice Separation Less Than Or Equal To 4 ft.?	yes		
16	Orifice Size (in)(Otis, 1982)	0.125	1/8"	
17	Lateral Diameter (in) (Otis, 1982)	1.25	SCH40 PVC	
18	Target Head at Lateral End (ft)	5.0		
19	Flow Rate per Orifice (gpm)(Otis et al, 1978)	0.41		
20				
21	Lateral Design:			
22	Diameter (in)	1.25	SCH40 PVC	
23	Flow Rate per Lateral (gpm)	11.0	B10/B12*B19	
24	Flow Rate Total (gpm)	32.0	D10*B19	
25	Gal. per Foot of Pipe (Clemons, 1991)	0.078	SCH40 PVC	
26	Total Lateral Volume (gal)	20.6	B11*B25	
27				
28	Manifold Design:			
29	Diameter (in)	2.0		
30	Length (ft)	6.5		
31	Gal. per Foot of Pipe (Clemons, 1991)	0.174		
32	Total Manifold Volume (gal)	1.13	B30*B31	
33	# Std 90deg Elbows	2.0		
34	Std 90deg Elbow Pipe Length Equivalent (ft)	9.0		
35	# Std 45deg Elbows	0		
36	Std 45deg Elbow Pipe Length Equivalent (ft)	4		
37	# Std Tees	2		
38	Std Tee Pipe Length Equivalent (ft)	11		
39	# Quick Disconnects	0		
40	Quick Disconnect Pipe Length Equivalent (ft)	2		
41	# Check Valves	3	1.25" SCH40	
42	Check Valves Pipe Length Equivalent (ft)	0.9		
43				
44	Total Length Equivalent (pipe&fittings) (ft)	49.2		
45	Head Loss per 100 ft.(ft.)(Otis et al, 1978)	2.06		
46	Total Manifold Head Loss (ft)	1.01		
47				
48	Main Design:			
49	Diameter (in)	2.00	SCH40 PVC	
50	Length (ft)	29	Includes All Main Drainback Piping	
51	Gal. per Foot of Pipe (Clemons, 1991)	0.174		
52	Total Main Volume (gal)	5.05	B50*B51	
53	# Std 90deg Elbows	4		
54	Std 90deg Elbow Pipe Length Equivalent (ft)	9.0		
55	# Std 45deg Elbows	1		
56	Std 45deg Elbow Pipe Length Equivalent (ft)	4.0		
57	# Std Tees	0		
58	Std Tee Pipe Length Equivalent (ft)	11.0		
59	# Quick Disconnects	1		

	A	B	C	D
1	<b>Mound Dosing Calculations: Gravelless Chambers</b>			
2				
3	Owner: Steinmetz: Site A	Design		
4		Target	Formula	Actual
80	Quick Disconnect Pipe Length Equivalent (ft)	2.0		
81	# Full Flow Ball Valves	0		
82	Ball Valves Pipe Length Equivalent (ft)	1.4		
83				
84	Total Length Equivalent (pipe&fittings) (ft)	71.0	B50+(B53-62)	
85	Head Loss per 100 ft.(ft.)(Otis et al, 1978)(Zoellen)	2.06		
86	Total Main Head Loss (ft)	1.46	(B64/100)*B65	
87				
88	Dose Volume:			
89	Total Lateral Volume (gal)	20.59	B26	
70	Total Manifold Volume (gal)	1.13	B32	
71	Total Main Volume (gal)	5.05	B52	
72				
73	Drainback Volume: Main+Manifold+Lateral (gal)	26.8	B69+B70+B71	
74	Lateral Vol x 5 (gal)	103.0	B69*5 (Minimum)	
75	TOTAL dose (gal)	129.7		
76				
77	Daily Design Flow (DFR)(120gal/day/bedroom)	480.0		
78	Is Lateral Dose <1/4 of Daily Design Flow?	yes		
79	Is Lateral Dose <1/8 of Daily Design Flow?	no		
80				
81	Total Dynamic Head:			
82	Static Lift - Lateral Ht. Above Surface (ft)	0.50	6.0 inch Sand	
83	Static Lift - Depth to Pump Off Below Surface (ft)	7.07	7.90 - .83	
84	Static Lift - Topo Difference (ft.)	-0.14	-	
85	Total Pipe & Fittings Headloss (ft)	2.5	B46+B66	
86	Network Loss (5ft head x 1.3) (ft)(includes laterals)	6.5	-	
87	Total Head Loss (ft)	16.4	sum(B81:B85)	
88				
89	Dose Tank Parameters			
90	Volume (gal)	1500	55.0	inches effluent
91	Gallons Per Inch in Tank	27.30		
92				
93	Timed Dose Settings:			
94	Total Gallons Per Pump Cycle W/drainback	129.7	4.75	inches drawdown
95	Total Pump Cycles Per 24 Hrs.	4.7		
96	Total Pump On Time - seconds	243		
97	Total Pump Off Time - hours	5.1		
98	Redundant Off Effluent Ht. from bottom (in)	10.0	( to prevent tank flotation)	
99	Timer Enable (low level cutout) Ht. From tank bottom (in)	14.8		
100	High Level Alarm Ht. from bottom (in.)	28.6	(provides 1 & 1/2 day reserve after alarm)	

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 24.SEP.20



**LEGEND**

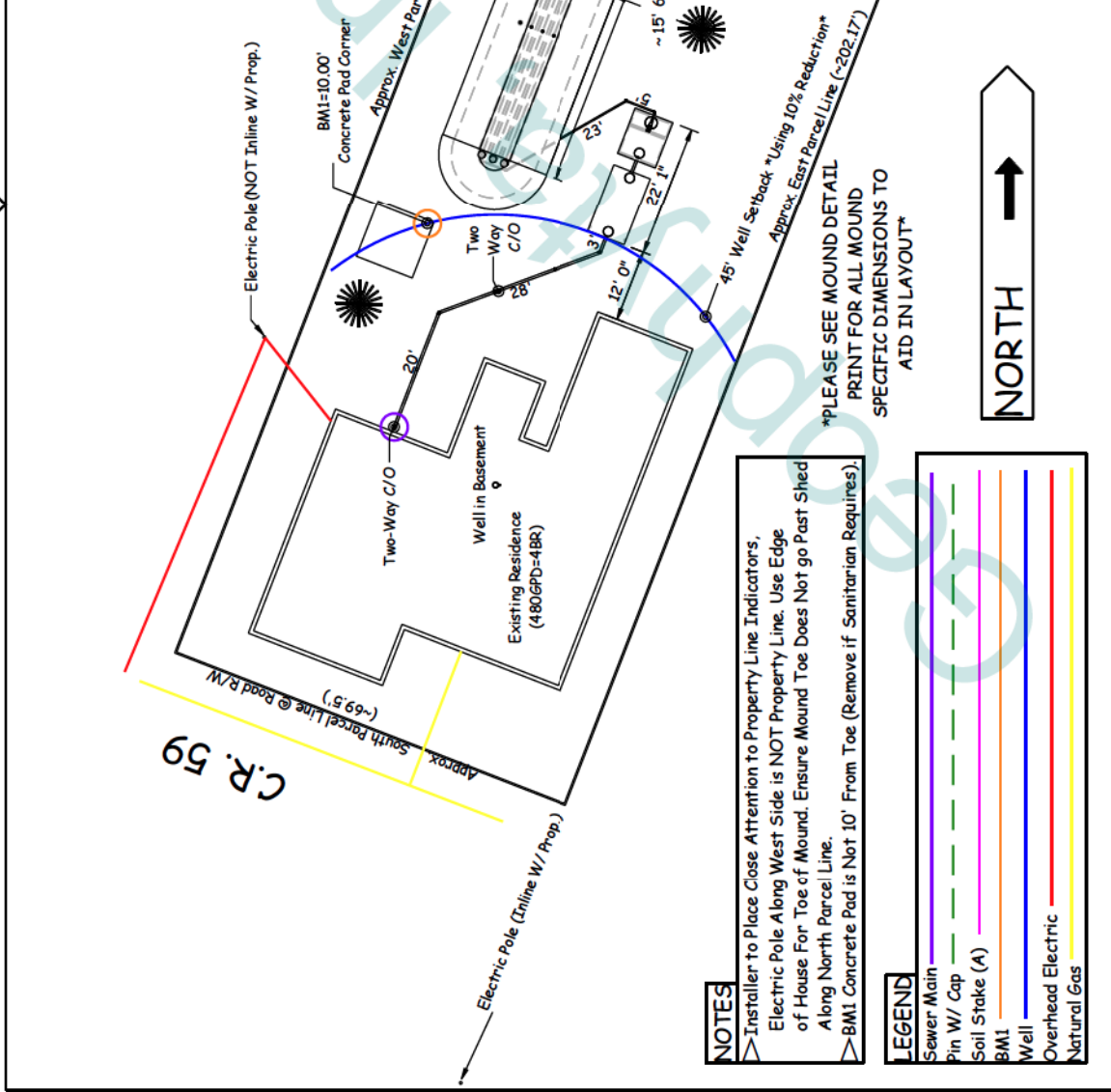
Sewer Mains	—
Pin W/ Cap	- - -
Soil Stake (A)	—
BM1	—
Well	—
Overhead Electric	—
Natural Gas	—

SIZE	ESCM NO.	DWG NO.	DATE	SCALE	SHEET
B		Steinmetz - HSTS_3D_Layout		1:1	1 OF 1

- NOTES**
- △ Large Maple Tree Removal Required in Mound Area, Installer to Flush Cut With Ground Surface And Suggested to Grind Stump Slightly to Reduce Depression Created Once Stump Deteriorates.
  - △ Water Softener Recharge & Sump Discharge to be Redirected Out of Sewer Main in Basement to Either Existing Catch Basin at Road or to a French Drain Away From System.
  - △ Remove Small Chunk of Concrete in Mound Area During Install.
  - △ Remove Clothes Post in Mound Area During Install.
  - △ Internal Plumbing: Redirect Any Plumbing on West Sewer Main to Main Sewer Exit
  - △ Pump, Crush & Backfill Old Tankage.

\*Using 10% Reduction\*

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	
DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 24.SEP.20			



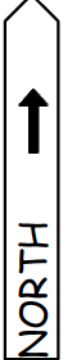
**NOTES**

- Installers to Place Close Attention to Property Line Indicators, Electric Pole Along West Side is NOT Property Line. Use Edge of House For Toe of Mound. Ensure Mound Toe Does Not go Past Shed Along North Parcel Line.
- BM1 Concrete Pad is Not 10' From Toe (Remove if Sanitarian Requires).

**LEGEND**

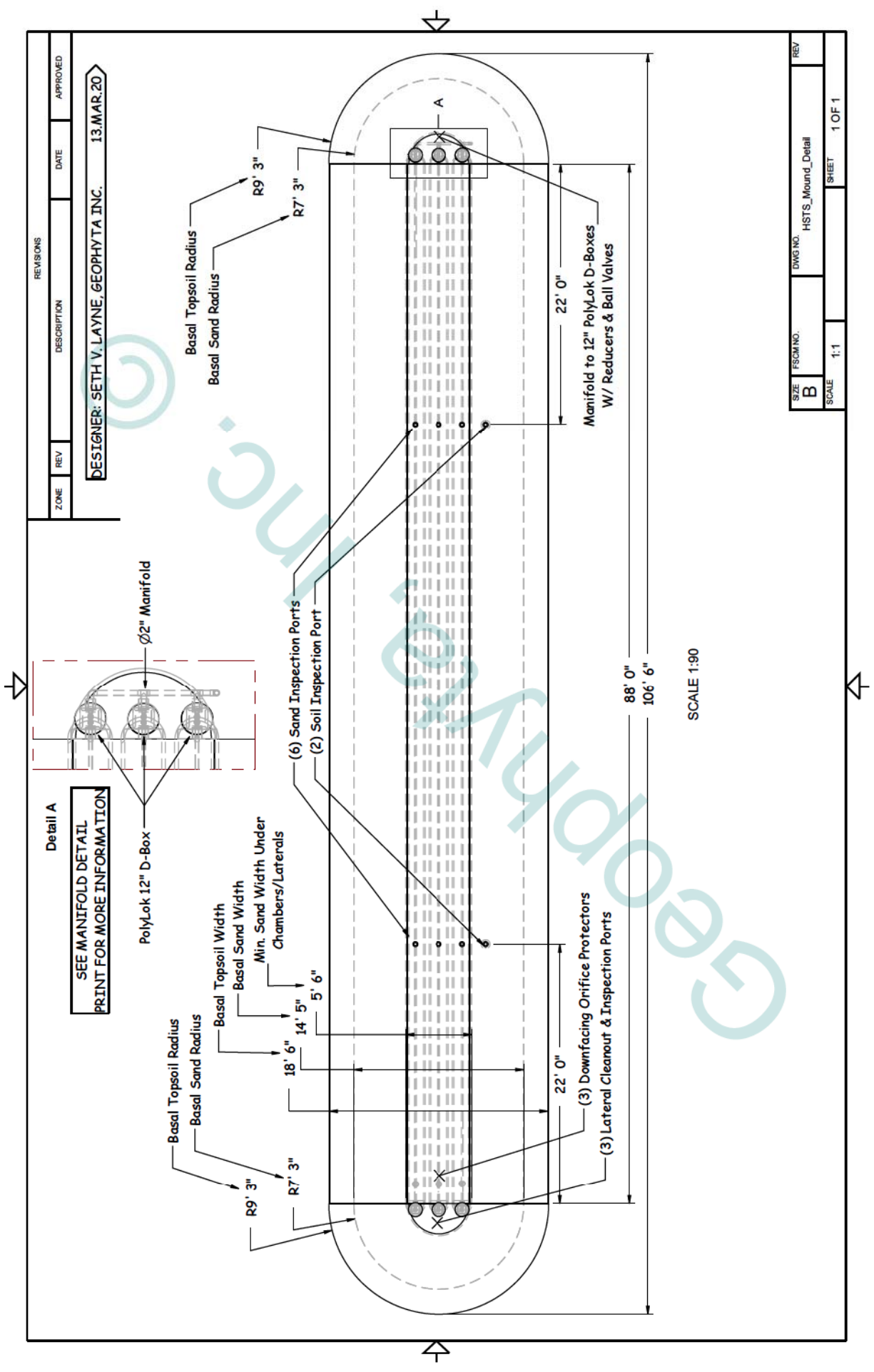
Sewer Main	—
Pin W/ Cap	- - -
Soil Stake (A)	—
BM1	—
Well	—
Overhead Electric	—
Natural Gas	—

\*PLEASE SEE MOUND DETAIL PRINT FOR ALL MOUND SPECIFIC DIMENSIONS TO AID IN LAYOUT\*



SIZE	ESCM NO.	DWG NO.	REV
B		Steinmetz - HSTS_Top	
SCALE	1:1	SCALE 1:240	SHEET 1 OF 1

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	
DESIGNER: SETH V. LAYNE, GEOPHYTA INC.			13.MAR.20



SEE MANIFOLD DETAIL  
PRINT FOR MORE INFORMATION

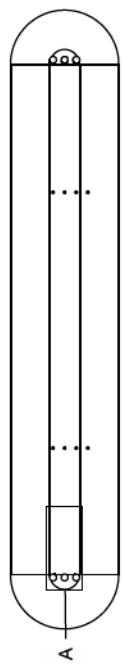
Detail A

SCALE 1:90

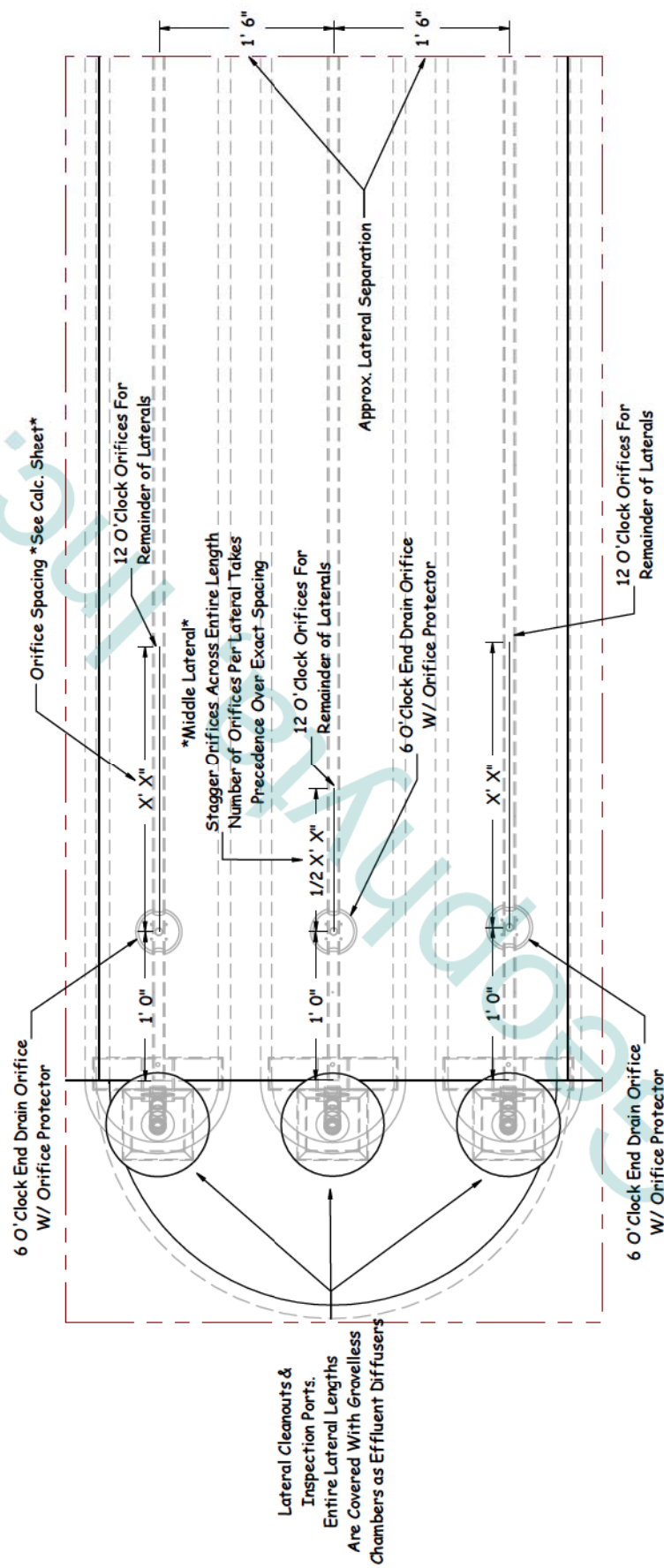
SIZE	ESCM NO.	DWG NO.	REV
B		HSTS_Mound_Detail	
SCALE	1:1	SHEET	1 OF 1

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	
DESIGNER: SETH V. LAYNE, GEOPHYTA INC.			13.MAR.20

ALL OTHER INFORMATION REGARDING LATERAL DIAMETER, LENGTH, ORIFICE SPACING & QUANTITY CAN BE FOUND ON THE CALC. SHEET AND BOM



SCALE 1:257

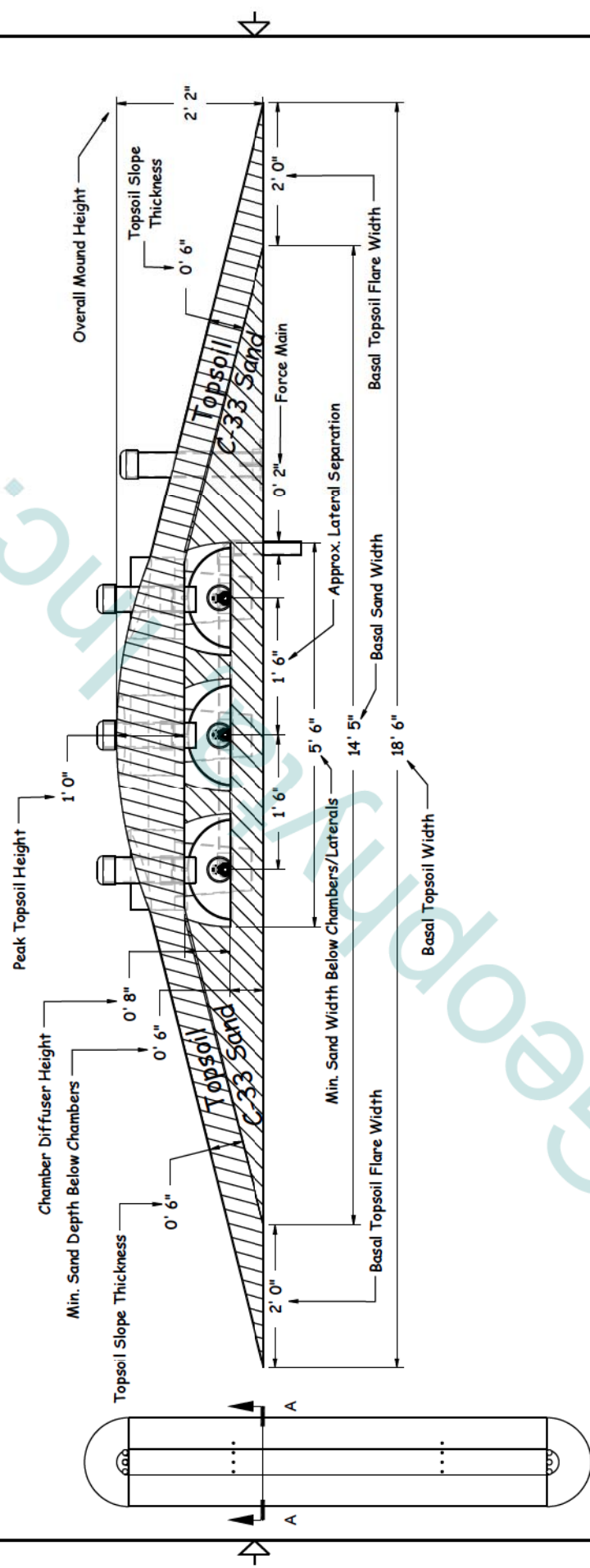


Lateral Cleanouts & Inspection Ports. Entire Lateral Lengths Are Covered With Gravelless Chambers as Effluent Diffusers

SIZE	FSCM NO.	DWG NO.	REV
B		HSTS_Mound_Laterals_Detail	
SCALE	1:1	SHEET	1 OF 1

Detail A  
SCALE 1:15

REVISIONS		
ZONE	REV	DESCRIPTION
		DATE
		APPROVED
DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 13.MAR.20		



Section A-A  
SCALE 1:18

SCALE 1:257

SIZE	FSCM NO.	DWG NO.	REV
B		HSTS_Mound_Cross-Section	
SCALE	1:1	SHEET	1 OF 1

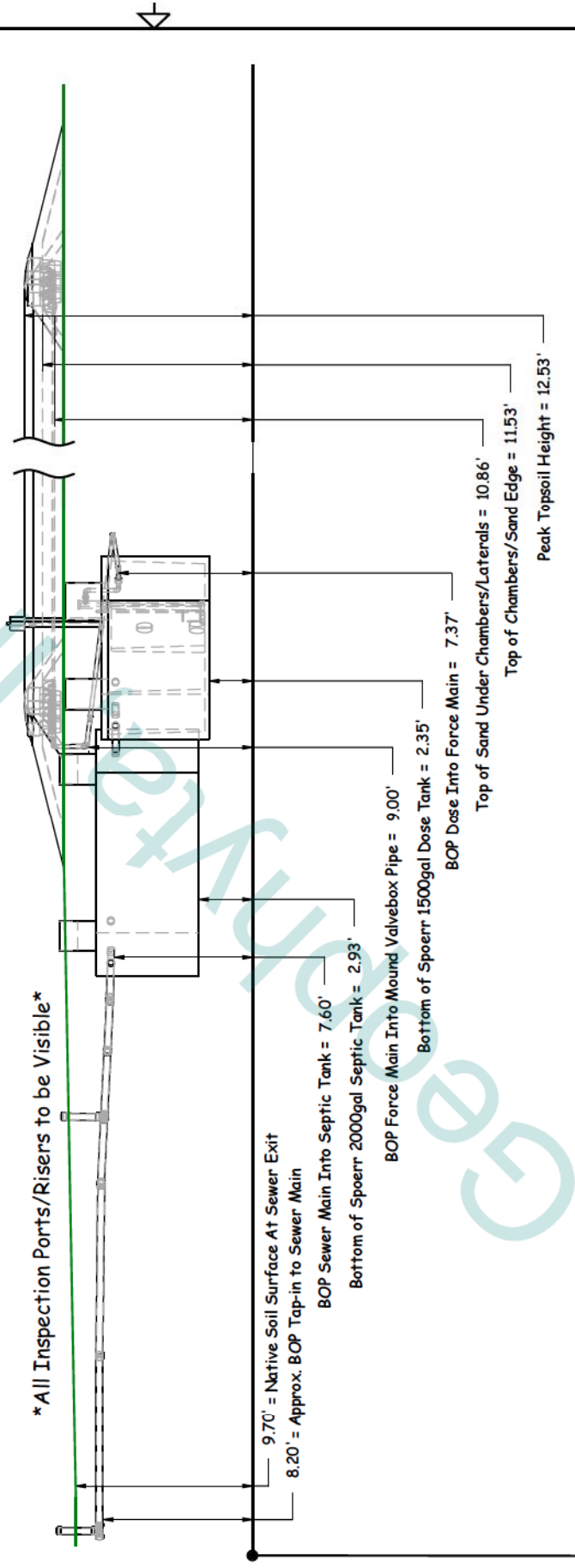
REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	
		DESIGNER: SETH V. LAYNE, GEOPHYTA INC.	24.SEP.20

LEGEND	
Native Soil Surface	—
Zero Elevation Reference	—

- NOTES**
- > Sand Depths Under Chambers Due To Soil Unevenness:  
Avg. = 8.9" Range = 6.0" - 12.1"
  - > Sewer Main to Have Suggested Fall or .125"/1'
  - > Force Main Must Have Drainback With Suggested Fall or 1"/100'
  - > Tankage Will Require 24" Risers.

**VIEWPOINT**  
**ELEVATION VIEW - EAST TO WEST**  
 NORTH →

Soil Surface At Lowest Elevation Under Mound Laterals = 9.85'  
 Soil Surface At Highest Elevation Under Mound Laterals = 10.36' (Excluding Big Maple)

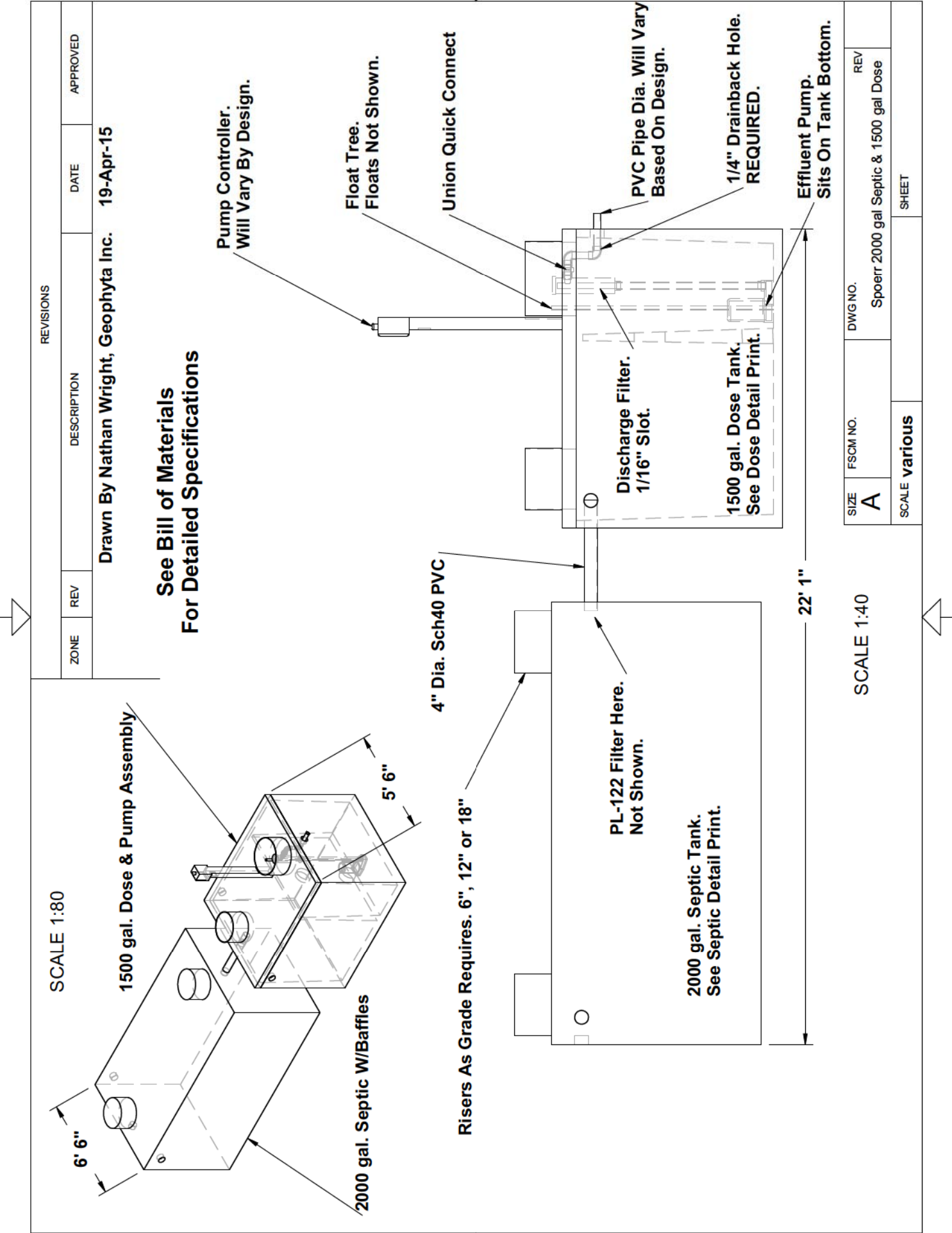


\* All Inspection Ports/Risers to be Visible\*

SIZE	ESCM NO.	DWG NO.	STEINMETZ - HSTS_Elevation	REV
B				
SCALE	1:1	SCALE	1:70	SHEET
				1 OF 1

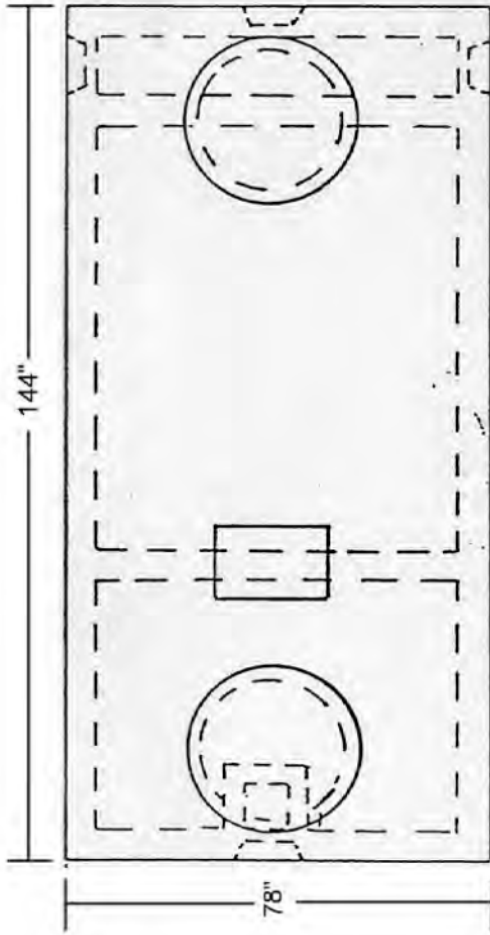
ZERO ELEVATION REFERENCE BM=10.00' Concrete Pad Corner (See Layout Map)





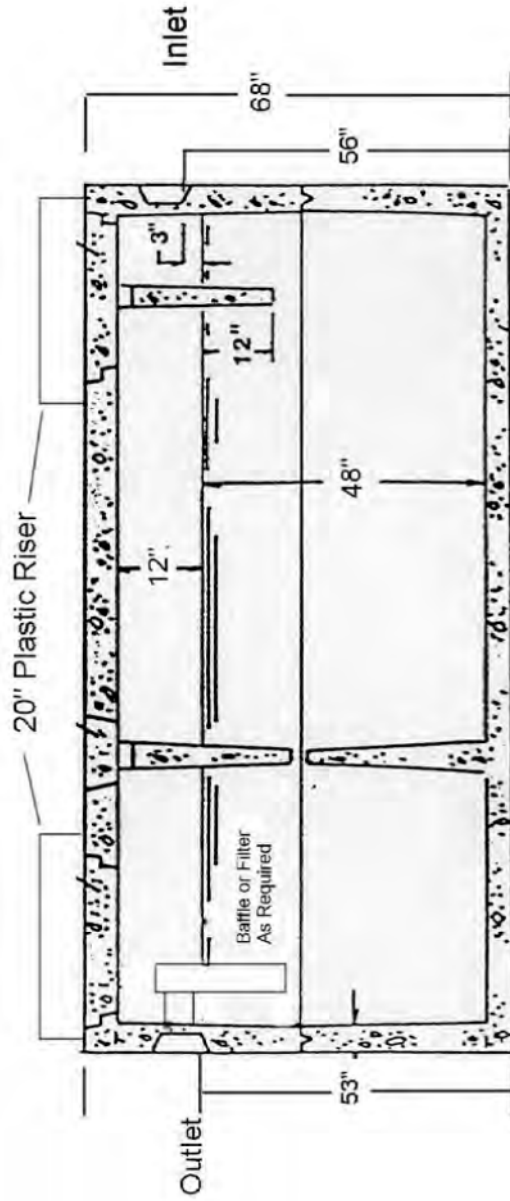
REVISIONS		DESCRIPTION	DATE	APPROVED
ZONE	REV	Drawn By Nathan Wright, Geophyta Inc.	19-Apr-15	

SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 2000 gal Septic & 1500 gal Dose	
SCALE	various		SHEET



**SPECIFICATIONS:**

1. PIPE PENETRATIONS - MEET OR EXCEED ATMC C-1644-06
2. JOINT SEALANT - BUTYL RUBBER BLEND - MEETS OR EXCEEDS ASTM C990
3. CONCRETE - 4500 psi @ 28 DAYS
4. RISERS - CAST INTO LID AT TIME OF PRODUCTION
5. WEIGHT 15,990 lbs



**(A) SECTION VIEW (SIDE)**



2020 CALDWELL ST.  
 SANDUSKY, OH 44870  
 PHONE 1-800-252-5205

**NOTES:**

PROPRIETARY AND CONFIDENTIAL  
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 ANY REPRODUCTION IN PART OR AS  
 A WHOLE WITHOUT THE WRITTEN  
 PERMISSION OF SPOERRA PRECAST  
 CONCRETE, INC. IS PROHIBITED

Excavation 7' 6" x 13'

2000 Gallon  
 Septic Tank

DESIGNER	JHP	SCALE	VARIABLE
ENGINEER	GRM	DRAWING #	1 OF 1
REVISION			

**PL-122 Filter**

The PL-122 was the original Polylok filter. It was the first filter on the market with an automatic shut-off ball installed with every filter. When the filter is removed for regular servicing, the ball will float up and prevent any solids from leaving the tank. Our patented design cannot be duplicated.

**Features:**

- Offers 122 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Has a flow control ball that shuts off the flow of effluent when the filter is removed for cleaning.
- Has its own gas deflector ball which deflects solids away.
- Installs easily in new tanks, or retrofits in existing systems.
- Comes complete with its own housing. No gluing of tees or pipe, no extra parts to buy.
- Has a modular design, allowing for increased filtration.

**PL-122 Installation:**

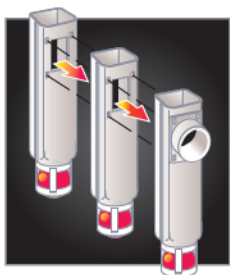
Ideal for residential waste flows up to 1,500 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-122 filter into tee.
5. Replace and secure the septic tank cover.

**PL-122 Maintenance:**

The PL-122 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-122 cartridge out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.



**Polylok offers the only filter on the market where you can get more GPD by simply snapping our filters together!**

- 1 Filter = 1500 GPD
- 2 Filters = 3000 GPD
- 3 Filters = 4500 GPD

Patent Numbers  
 6,015,488 & 5,871,640



Filter Ready Adapter  
 Connects to Septic Tank Wall

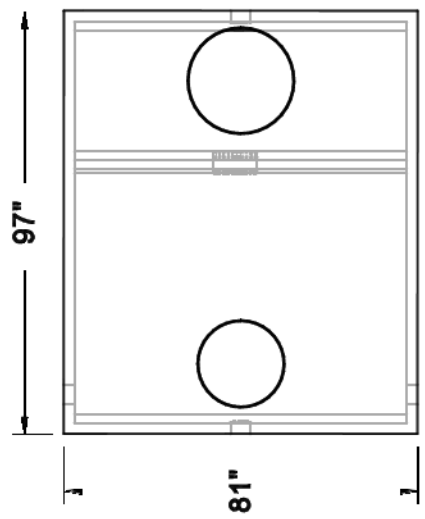


**Outdoor SmartFilter® Alarm**  
 Polylok, Zabel & Best filters accept the SmartFilter® switch and alarm.

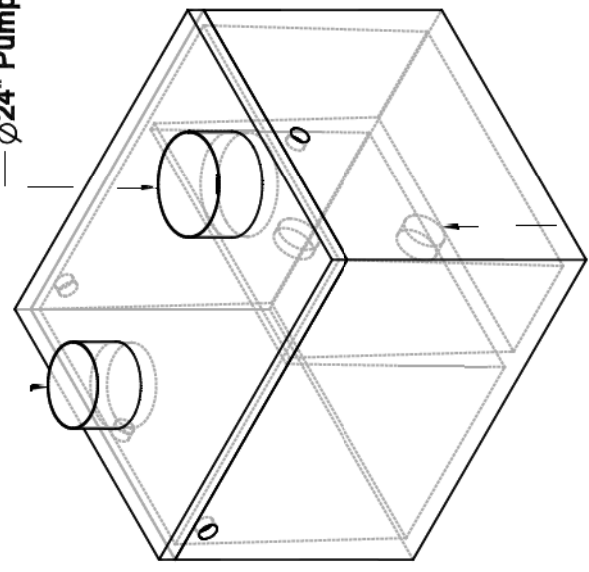


REVISIONS		
ZONE	REV	DESCRIPTION
		Drawn By Nathan Wright, Geophyta Inc.
		DATE 7-Jun-14
		APPROVED

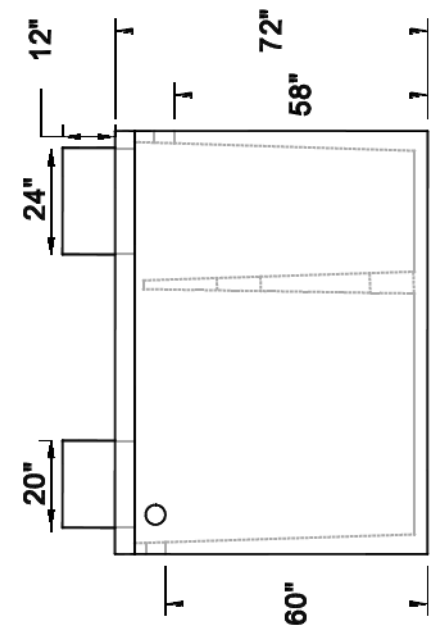
Drawn By Nathan Wright, Geophyta Inc. 7-Jun-14



Ø20" Cleanout Port



Support Baffle With Tank Bottom Effluent Passthrough



SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 1500 gal Dose Tank	
SCALE 1:44			SHEET



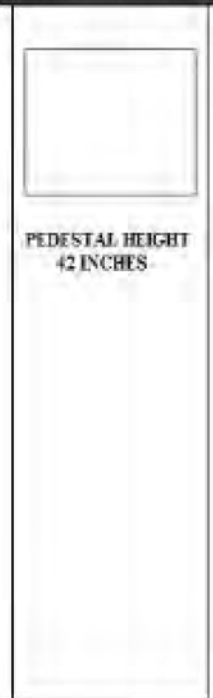
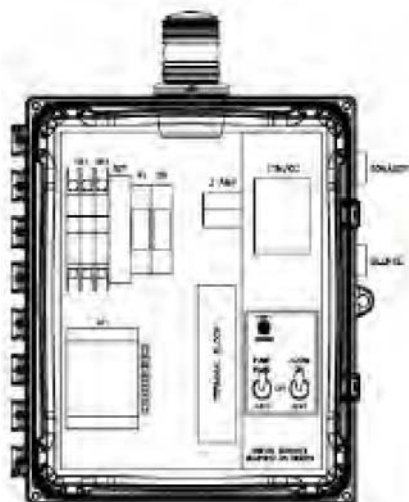


## Time Dose Control Panel

For single phase residential and commercial lift stations and holding tanks  
Float activated pump controllers for time dose applications

### Features

- Circuit breaker for each pump
- Audible alarm with silence
- 360 degree visual alarm
- 3 float operation: Off, Enable, High level
- Externally mounted silence switch
- UL Type 4X enclosure padlockable
- Separate power feed for Pump and Control
- Clearly labeled terminal blocks
- Easy to use timer
- Individually adjustable On and Off Times
- DP Rated contactor
- ETM and Cycle Center
- All components UL Listed



PEDESTAL HEIGHT  
42 INCHES

## ECP-TD-11

Every pump tested in water to ensure pump meets performance curve.



### FEATURES/BENEFITS

#### PERFORMANCE

- Heads up to 65' TDH
- Flows up to 86 GPM

#### MOTOR

- High efficient, 115v or 230v, oil filled, permanent split capacitor motor with upper and lower ball bearings and thermal overload protection
- Constant bearing lubrication
  - Maximum motor cooling
  - Runs cooler and lasts longer
  - Internal overload protection
  - Quiet operation
  - Fasteners and shaft made from rugged, corrosion resistant stainless steel

#### SEAL DESIGN

- Type 21 inboard seal design with secondary exclusion seal
- Rotating components of seal are in the motor housing, being lubricated by the motor oil preventing foreign matter from wrapping around the seal components
  - Seal will last longer if the pump runs dry
  - Secondary exclusion seal keeps debris from entering the seal cavity

#### IMPELLER DESIGN

- Non-clog style, cast-iron vortex impeller (CPEH Thermoplastic Vortex)
- Designed to help reduce clogging by foreign material

#### POWER CORD

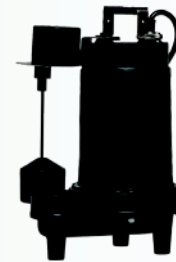
- Sealed entry quick disconnect power cords
- Prevents water from entering the motor housing through a cut cord
  - Easy to replace in the field
  - Available in lengths up to 100'

#### SWITCH

- Piggy-back switch design
- Defective switches can be diagnosed over the phone
  - Pump can be operated manually or supplied with other piggy-back switches
  - Switch can be replaced without having to replace the pump

### APPLICATIONS

Dewatering, septic systems, residential and commercial developments, elevator pits and STEP systems



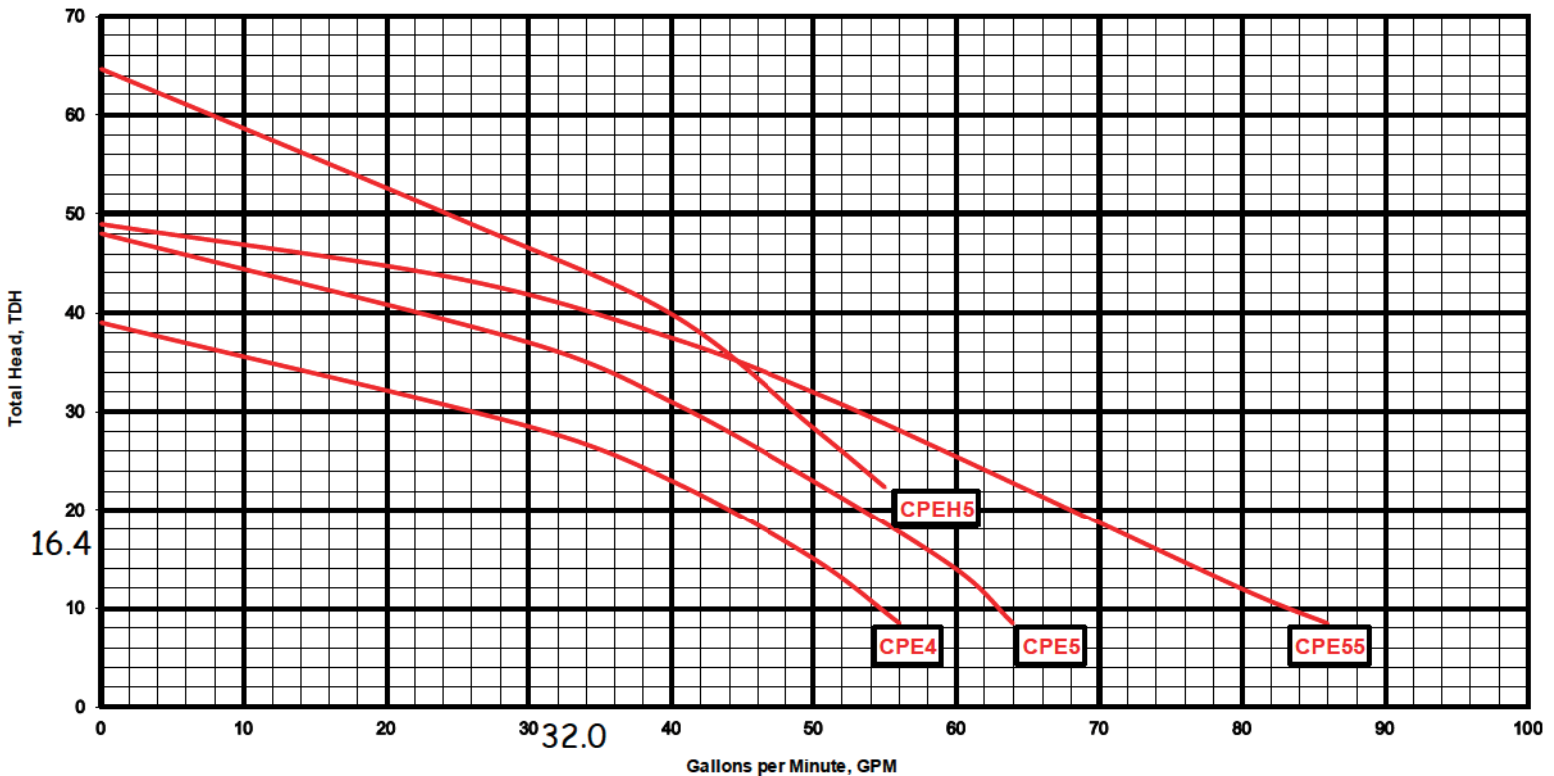
Vertical Float



Wide-Angle Float

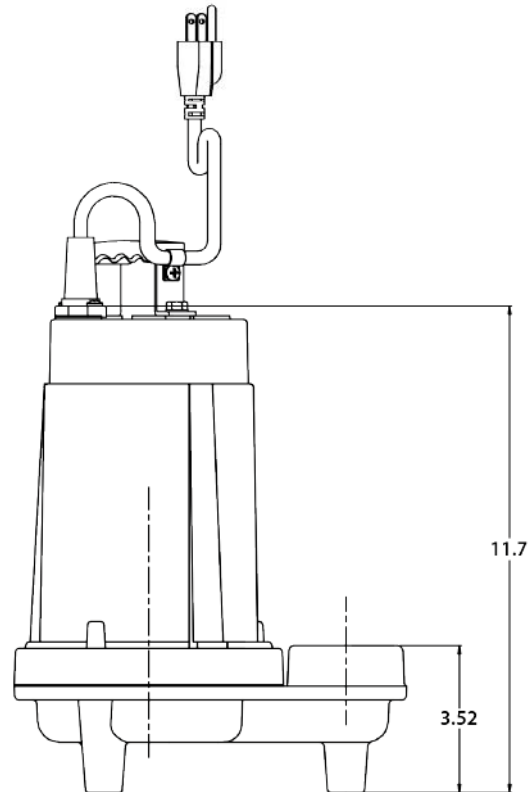
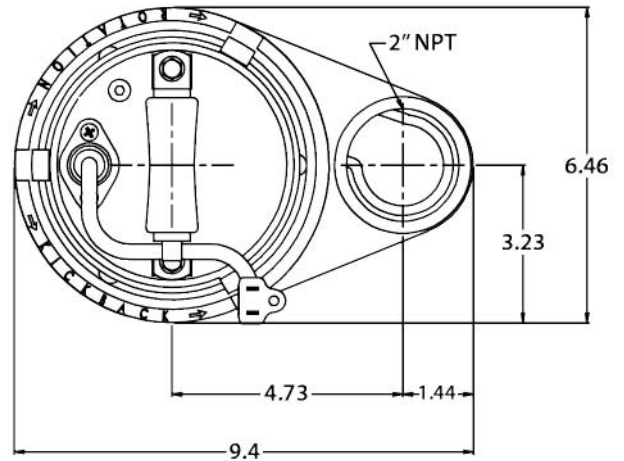
4/10-1/2 HP submersible pumps that handle up to 3/4" solids with 2" discharge

### PERFORMANCE CURVE



# TECHNICAL DATA

<b>DISCHARGE</b>	2" NPT. vertical standard
<b>LIQUID TEMPERATURE</b>	140 Degrees F. (Intermittent)
<b>MOTOR HOUSING</b>	Cast Iron
<b>VOLUTE</b>	Cast Iron
<b>SEAL PLATE</b>	Cast Iron
<b>IMPELLER</b>	Cast Iron / Vortex (CPEH thermoplastic vortex)
<b>SOLIDS HANDLING</b>	3/4"
<b>SHAFT</b>	Stainless Steel
<b>SHAFT SEAL (SINGLE SEAL)</b>	Inboard mechanical with secondary exclusion V-Seal, carbon rotating face, ceramic stationary face, Buna-N elastomer, 300 series stainless steel hardware
<b>BEARINGS (UPPER &amp; LOWER)</b>	Single row, ball, oil lubricated
<b>HARDWARE</b>	300 Series stainless steel
<b>O-RINGS</b>	Buna-N
<b>CORD</b>	20' Length standard. Up to 100' available. (UL/CUL) Listed 16 AWG, Type SJTW
<b>MOTOR (SINGLE PHASE)</b>	4/10-1/2 HP 3450 RPM, 60 Hz, NEMA L Includes Overload Protection in the motor, oil filled, class B permanent split capacitor
<b>WEIGHT</b>	37 lbs. (Manual)



## MODEL(S) INFORMATION

MODEL	HP	VOLTS	PHASE	AMPS	CORD LENGTH	SWITCH
CPE4-12 / CPE5-12 / CPE55-12 / CPEH5-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Manual
CPE4-13 / CPE5-13 / CPE55-13 / CPEH5-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Manual
CPE4-15 / CPE5-15 / CPE55-15 / CPEH5-15	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	50'	Manual
CPE4A-12 / CPE5A-12 / CPE55A-12 / CPEH5A-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Wide-Angle Float
CPE4A-13 / CPE5A-13 / CPE55A-13 / CPEH5A-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Wide-Angle Float
CPE4V-12 / CPE5V-12 / CPE55V-12 / CPEH5V-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Vertical Float
CPE4V-13 / CPE5V-13 / CPE55V-13 / CPEH5V-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Vertical Float
CPE4-22 / CPE5-22 / CPE55-22 / CPEH5-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Manual
CPE4A-22 / CPE5A-22 / CPE55A-22 / CPEH5A-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Wide-Angle Float
CPE4V-22 / CPE5V-22 / CPE55V-22 / CPEH5V-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Vertical Float

# Essential Components for Pressurized Systems

SIM/TECH offers many performance products engineered to protect effluent treatment systems and prevent costly repairs. From our pressurized filter, to the best orifice shield in the industry, we keep your systems performing at 100% efficiency.

Sometimes the simplest ideas are the best, so depend on a time proven leader.... protecting effluent treatment systems is our business - SIM/TECH Filter.

STF-103  
Lid/screen removal wrench.  
(Holds lid after removal)

STF-107  
Alert w/latching light

STF-101 Pressure  
switch

STF-100  
Pressure filter

pump chamber  
(dosing tank)

septic tank

## STF-100 Sim/Tech Filter

Pressure system filter - molded in tough PVC plastic, with installed stainless steel screen.

Installs easily onto effluent pump in holding tank. The vortex scrubbing action helps keep the filter clean.

*The last line of defense before the laterals.*

## STF-102 Filter Screen STF-104 Filter Sock

Optional filter socks can lower the acceptable TSS size from .023 inches to .0039 inches, depending on the application.

Our standard stainless steel screen will filter .062" in diameter. (1/16 of an inch)

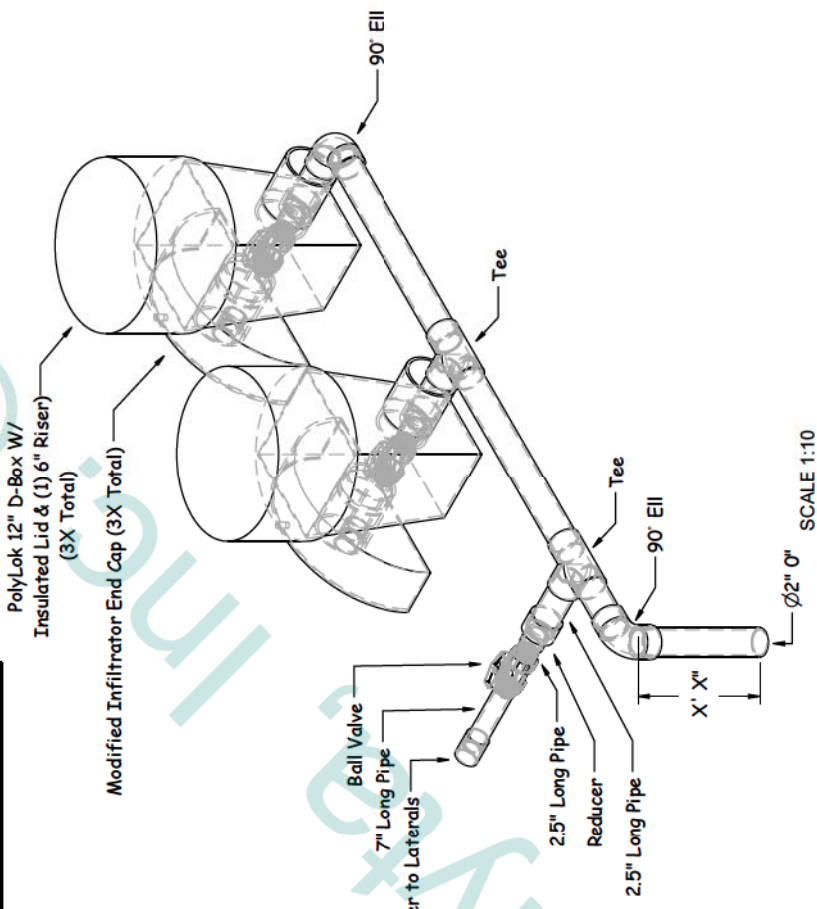
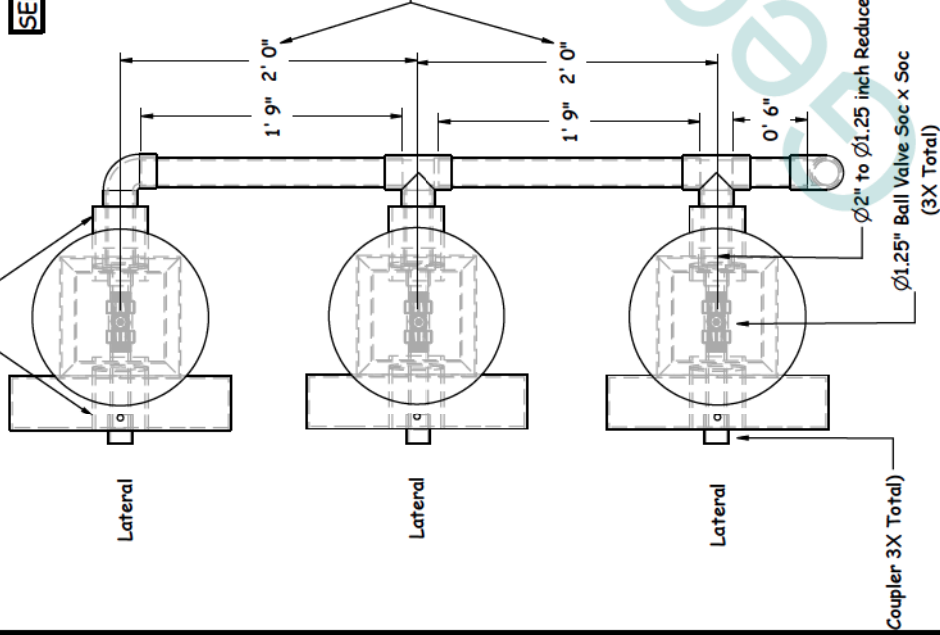
Socks easily install inside stainless steel screen.



REVISIONS			
ZONE	REV	DESCRIPTION	DATE
DESIGNER: SETH V. LAYNE, GEOPHYTA INC.			13.MAR.20
APPROVED			

Ø4" SCH40 PVC Pipe 6" Sleeves  
(6X Total)

SEE BOM FOR FULL LIST OF COMPONENTS



SIZE	FIG. NO.	DWG. NO.	REVISIONS
B			
SCALE	1:1	Manifold Detail	SHEET 1 OF 1



**INFILTRATOR**  
water technologies

**Quick4<sup>PLUS</sup>**  
CHAMBER SYSTEMS

# The Quick4<sup>®</sup> Plus Equalizer 36 Low Profile (LP) Chamber

## Quick4 Plus<sup>™</sup> Series

The Quick4 Plus Equalizer 36 Low Profile (LP) offers maximum strength through its two center structural columns. This chamber can be installed in a 24-inch-wide trench. It is 4 inches shorter in height than other Equalizer 36 model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection<sup>™</sup>, which permits turns up to 15°, right or left. The Quick4 Plus All-in-One 8 and Quick4 Plus Endcaps provide increased flexibility in system design and configurations.



**Maximum Strength**

### Quick4 Plus Equalizer 36 LP Chamber Specifications

**Size**

22"W x 53"L x 8"H  
(559 mm x 1346 mm x 203 mm)

**Effective Length**

48" (1219 mm)

**Louver Height**

6.3" (160 mm)

**Storage Capacity**

20 gal (76 L)

**Invert Height**

3.3" (84 mm), 9.6" (244 mm)



### Quick4 Plus Equalizer 36 Low Profile (LP) Chamber Benefits:

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Two center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12" of cover

### Quick4 Plus All-in-One Periscope Benefits:

- Allows for raised invert installations
- 180° directional inletting
- 12" raised invert is ideal for serial applications



### Quick4 Plus All-in-One 8 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe

### Quick4 Plus Endcap Benefits:

- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe



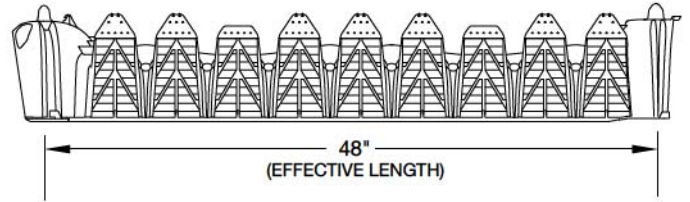
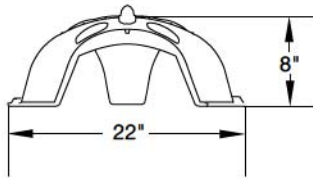
Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)



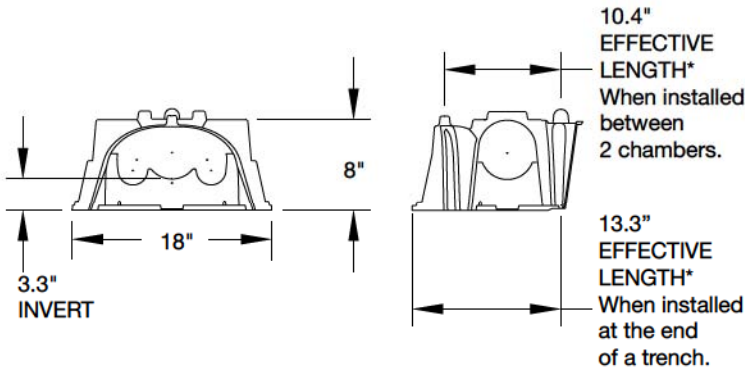
APPROVED in \_\_\_\_\_

APPROVED-SCGHD

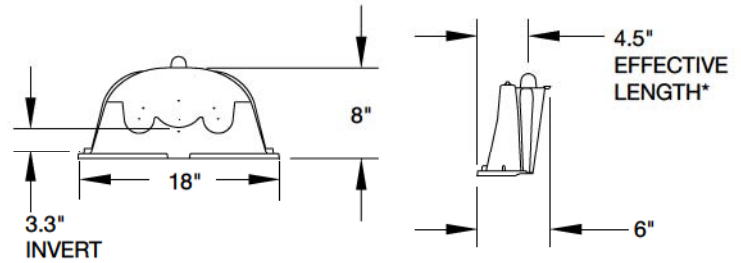
**Quick4 Plus Equalizer 36 Low Profile Chamber**



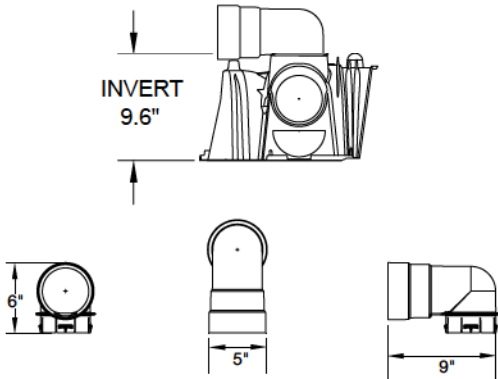
**Quick4 Plus All-in-One 8 Endcap**



**Quick4 Plus Endcap**



**Quick4 Plus All-in-One Periscope**



**INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY**

- (a) The structural integrity of each chamber, endcap and other accessory manufactured by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.
- (b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE
- (c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.
- (d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



4 Business Park Road  
P.O. Box 768  
Old Saybrook, CT 06475  
860-577-7000 • Fax 860-577-7001  
1-800-221-4436  
www.infiltratorwater.com  
info@infiltratorwater.com

U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,116; 5,401,459; 5,511,903; 5,716,163; 5,588,778; 5,839,844 Canadian Patents: 1,329,959; 2,004,564 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickCut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, Inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.

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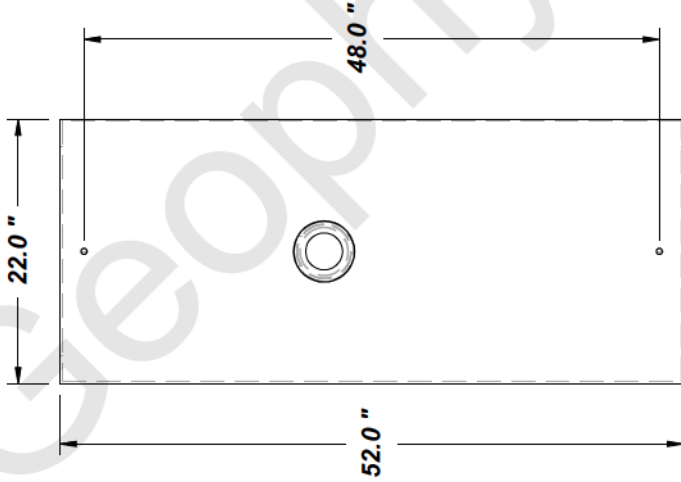
PLUS06 0713

**Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436**

REVISIONS

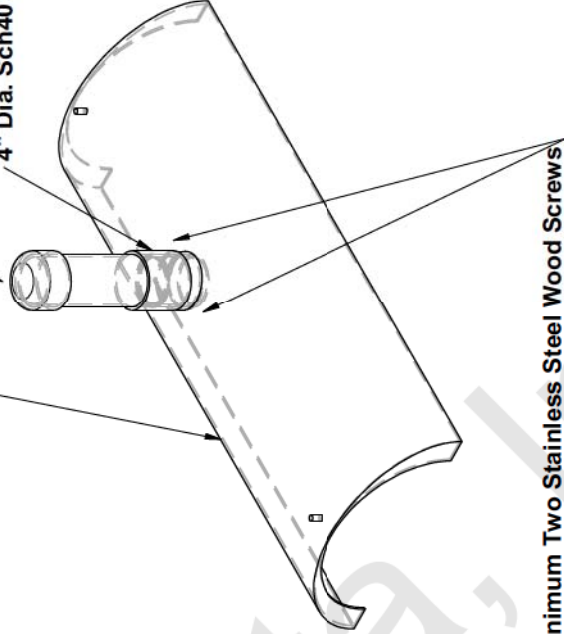
ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	22-Oct-13	

Drawn By Nathan Wright, Geophyta Inc. 22-Oct-13

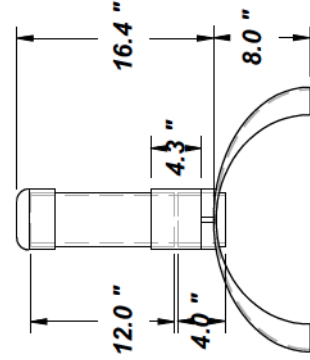


Infiltrator Quick4 Plus  
Equalizer 36 Low Profile Chamber

4" Dia. Sch40 Friction Cap,  
Or Optional Threaded Cap Assembly



Minimum Two Stainless Steel Wood Screws  
Needed To Secure 4" Sch40 PVC To Dome



SIZE	FSCM NO.	DWG NO.	REV
A			

Sand Inspection Port For Dome Chamber Mounds

SCALE	SHEET
1:15	

# Orifice Shields



## Why Use Orifice Shields?

Sim/Tech Filter orifice shields are designed to protect the discharge holes in pressurized systems from the outside. Most of these systems are designed with specific flow-rates, pressure heads, etc. to obtain “even distribution” in the drain field and thus allow for proper treatment. Much like our pressure filter prevents debris from obstructing the discharge holes from the inside, our orifice shields prevent blockage on the outside. As shown in the top picture to the left, drain media can block the small discharge holes, throwing the whole design and operation of a system out of whack. The bottom picture to the left shows our standard orifice shield installed on the lateral piping of a system. The orifice shield creates a protective void between the drain media and the discharge hole. The design allows the discharge hole to spray effluent into the shield where the much larger open area of the shield keeps the hole discharging at its designed flow rate.

## Why Use Sim/Tech Filter Orifice Shields?

They have a large open area, 9 inches of gripping surface and a simple, but very effective design. The large open area of the interior of the shield prevents it from becoming easily blocked if you are not using a Sim/Tech pressure filter on your system. There is also a large open area for allowing effluent to drain from the shield. There are various slots depending upon the configuration you desire and both ends of the shield also have open area for drainage.

### Styles and Sizes Available

Sim/Tech Filter currently offers two orifice shield designs. The STF-106D is designed for systems that have discharge holes that point down. The STF-106TDS is designed for systems that have discharge holes that point up. Both versions of the Sim/Tech Filter orifice shield are available in four different sizes to fit the pipe sizes 3/4”, 1”, 1-1/4” & 1-1/2” and 2”. A 3” size is also available as a special custom order.

US Patent 6,167,914



STF-106D



STF-106TDS

*Solutions*

We offer free CAD detail drawings in DXF format to cover our complete product line.

For the protection and performance of wastewater systems by



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	19-Jan-15	

All Pipe & Fittings  
Sch 40 PVC, 1 1/4".

Expand/Reduce To  
2.00", 1.50", 1.25", Or 1.00"  
Laterals As Bill of Materials  
Specifies.

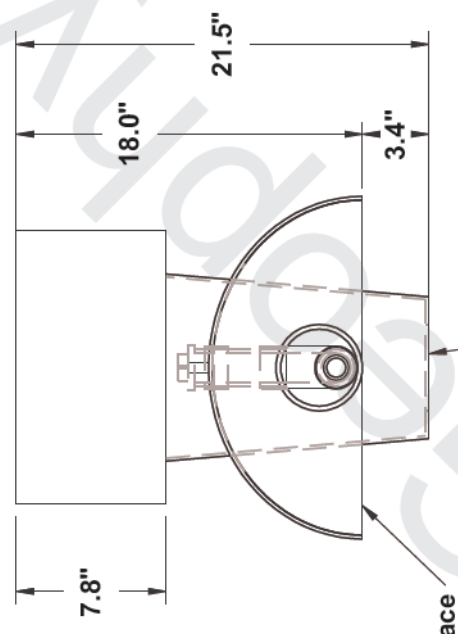
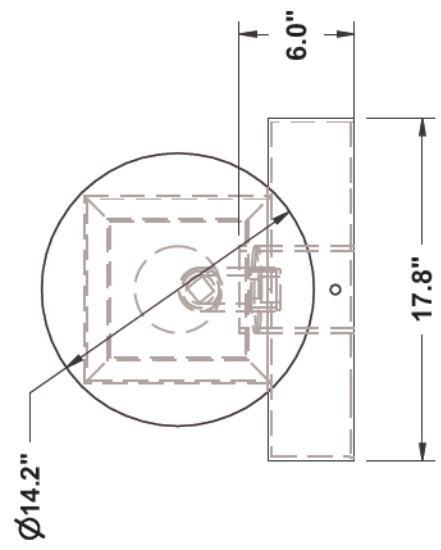
Removable PolyLok  
Lid - Insulated.  
Level With Mound Soil Cover.

PolyLok  
6" Riser

Cut 4.5" Dia. Hole  
In Bottom Of PolyLok D-Box  
For Drainage & Inspection.

Infiltrator Q4Plus End Cap,  
Cut Access Hole For Laterals.

4" Sch40 PVC Connector



Bottom Of PolyLok Box, 3.4" Into Sand

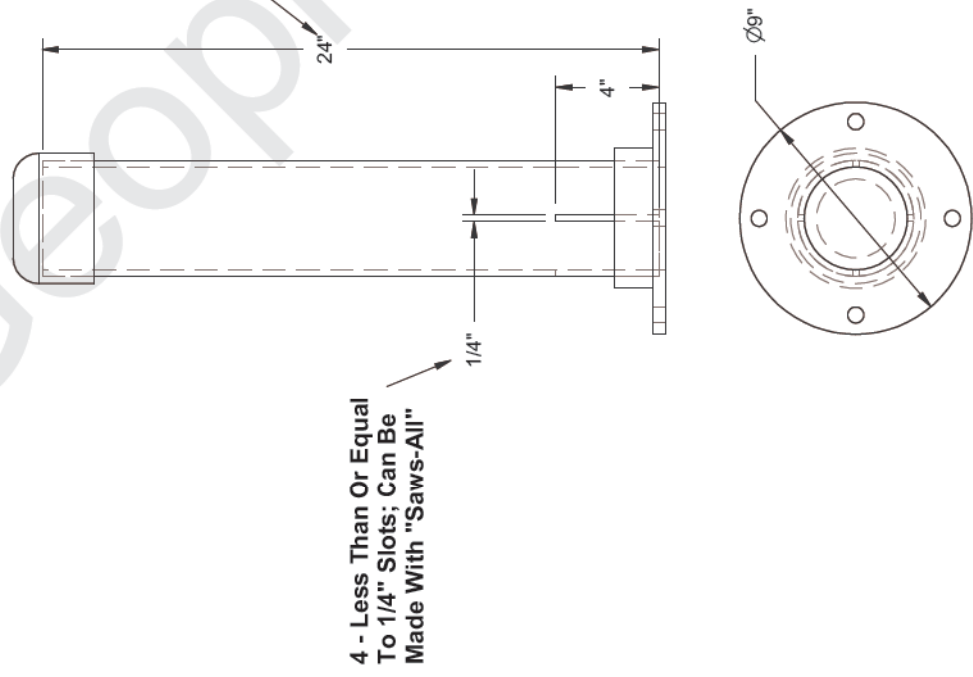
Sand Surface

SIZE <b>A</b>	FSCM NO.	DWG NO. 12" PolyLok Cleanup Port For Chambers	REV
SCALE <b>1:10</b>	SHEET		



REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophyta Inc.	25-Jan-2010	



Standard Sch40 PVC 4" Cap  
Above Soil Surface, Friction  
Fit Only. No Glue.  
Alternate Is Threaded  
Cleanout Fitting Glued  
To Pipe

Standard Sch40 PVC 4" dia.

4 - Less Than Or Equal To 1/4" Slots  
4" Minimum Length  
For Effluent Seepage

Standard Sch40 PVC  
Toilet Flange, Glued  
To Pipe

Length Will Vary  
Based On Location  
And Purpose.  
20 - 36" Length.  
See Actual in BOM.


4 - Less Than Or Equal  
To 1/4" Slots; Can Be  
Made With "Saws-All"

Open Bottom For  
Sand/Soil Observation.  
SOME SCH40 PVC FLANGES  
HAVE PLASTIC KNOCKOUT  
THAT MUST BE REMOVED

SIZE	FSCM NO.	DWG NO.	REV
A			Sand/Soil Observation Tube 20-36inch
SCALE	1:7		SHEET

Bill of Materials - 7917 C.R. 59, HSTS Replacement - Engineered Sand Mound		
Quantity	Part Name	Section
2	SCH40PVC4inchTwo-Way Cleanout Tee SxSxS	Sewer Main Replaced to Foundation
2	SCH40PVC4inchpipe2ft.	
2	SCH40PVC4inchCap	
2	SCH40PVC4inchCoupler	
2	SCH40PVC4inch45DegreeEl	
1	SCH40PVC4inchpipe3ft.	
1	SCH40PVC4inchpipe8ft.	Septic Tank
4	SCH40PVC4inchpipe10ft.	
1	Septic Tank	
1	Septic Tank Filter	
1	SCH40PVC4inchCoupler	Septic To Dose
1	SCH40PVC4inchpipe3ft.	
1	Dose Tank	Dose Tank
1	Control Panel For Pump Float Control, Timer & Alarms	Control Panel
~60 ft.	2 conductor w/ground, 14 gauge UG wire	Dose Pump Assembly
~60 ft.	2 conductor w/ground, 14 gauge UG wire	
~60 ft.	Plastic conduit, to contain 6-14ga	
1	Dose Tank Pressure Filter	
1	Effluent Pump (2inchNPT 0.4 HP)	
1	SCH40PVC2inchpipe1ft. W/ 0.25inch Weep hole	
2	SCH40PVC2inch90DegreeEl	
1	SCH40PVC2inchAdapterMNPTtoSoc	
1	SCH40PVC2inchQuick Disconnect	
1	SCH40PVC1inchpipe6ft. L. Float Tree	
2	SCH40PVC2inchpipe3inch	Force Main
1	SCH40PVC2inchpipe18.5inch	
1	SCH40PVC2inchpipe59inch	
2	SCH40PVC2inchCoupler	
1	SCH40PVC2inch45DegreeEl	
2	SCH40PVC2inch90DegreeEl	
1	SCH40PVC2inchpipe3ft.	
1	SCH40PVC2inchpipe5ft.	
2	SCH40PVC2inchpipe10ft.	
1	SCH40PVC2inchpipe1.5ft.	
3	PolyLok 12" Dia. D-Box W/ (1) Riser W/ Insulated Lid	
3	Infiltrator Q4 Plus End Cap Modified For Mound	
6	SCH40PVC4inchpipe6inch	
2	SCH40PVC2inch90DegreeEl	
2	SCH40PVC2inchx2inchx2inchTee SxSxS	
3	SCH40PVC2inchto1.25inchReducer SxS	
		See Mound Cross-Section Print



		Manifold	See Manifold Detail Print
3	SCH40PVC1.25inchFull-Flow Ball Valve SxS		
3	SCH40PVC1.25inchCoupler		
3	SCH40PVC2inchpipe2.5inch		
3	SCH40PVC2inchpipe6inch		
1	SCH40PVC2inchpipe1ft.		
2	SCH40PVC2inchpipe21inch		
3	SCH40PVC1.25inchpipe2.5inch		
3	SCH40PVC1.25inchpipe7inch		
-	Sand Section 88' L. x 5.5' W. x 6" H. Basal 14.42' W.		
-	Topsoil Cap 106.5' L. x 18.5' W. x 2.2' H.		
66	Infiltrator Quick4 Equalizer 36 LP Chamber	Sand Mound	~31.0 yd.^3 @ 54.25 Tons ASTM C-33 Sand ~37.0 yd.^3 @ 64.75 Tons Silt Loam Or Better Infiltrator 4' L. x 2' W. x 8" H. LP Chambers
3	Orifice Shields	Laterals	Simtech STF-106D (See Detail Print) All Holes 12 o'clock Except End Holes At Cleanout Are 6 o'clock
3	SCH40PVC1.25inchPipe 88' L. W/ 0.125 Orifices 3.4' Spacing W/ Cleanout End Drain		
6	SCH40PVC4inchCoupler		
6	SCH40PVC4inchCap		
6	SCH40PVC4inchpipe4inch		
6	SCH40PVC4inchpipe1ft.		
2	SCH40PVC4inchCap		
2	SCH40PVC4inchToilet Flange Soc		
2	SCH40PVC4inchSand Observation Tube 2' L. W/ Slots		
3	SCH40PVC4inchpipe6inch		
6	SCH40PVC1.5inchpipe3.75inch		
3	Infiltrator Q4 Plus End Cap Modified		
3	SCH40PVC1.5inchx1.25inchReducer Coupler SxS		
3	SCH40PVC1.5inchFipt Coupler		
6	SCH40PVC1.5inchDegree45Elbow		
3	PolyLok 12" Dia. D-Box W/ (1) Riser W/ Insulated Lid		
3	SCH40PVC1.5inchMiptPlug		
Additional Notes			
Large Maple Tree Removal Required in Mound Area, Installer to Flush Cut With Ground Surface And Suggested to Grind Stump Slightly to Reduce Depression Created Once Stump Deteriorates.			
Remove Small Chunk of Concrete & Clothes Post in Mound Area During Install.			
Internal Plumbing: Redirect Any Plumbing on West Sewer Main to Main Sewer Exit.			
Internal Plumbing: Water Softener Recharge & Sump Discharge to be Redirected Out of Sewer Main in Basement to Either Existing Catch Basin at Road or to a French Drain Away From System.			
Pump, Crush & Backfill Old Tankage			
-	Grass Seed	2 lbs./1000 ft.^2 K. Bluegrass	~2100 ft.^2 @ 4.2 lbs.
-	Straw Mulch For Grass Establishment	Homeowner's Choice	~2100 ft.^2
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft.^2	~2100 ft.^2 @ 21.0 lbs.
***Call OUPS before you dig.***			
Installer substitution of materials not specified in this Bill Of Materials may void Health Dept. approval of this design and will result in a re-design fee and is the sole responsibility of the installer.			
Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.			

# Operation and Maintenance Procedures

## Home Septic Treatment Systems With Effluent Distribution Through A Sand Mound

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems utilize processing, storage, and pumping tanks. A sand/soil absorption component, the mound, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

**Improper operation and/or maintenance of your home septic treatment system will result in its failure.**

**Geophyta, Inc. strongly recommends that a homeowner hire a professional service provider to inspect and maintain your system. Your county health department has a list of registered service providers. Make sure that your service provider has “mound system” experience.**

### 1) Homeowner Responsibility:

- a) The system owner is responsible for the continuous operation and maintenance of this home septic treatment system
- b) Your county health department may require third-party inspection and maintenance of your home septic treatment system.
- c) Home Interior Design & Appliance Selection:
  - i) Install water conserving fixtures such as low flow shower heads, low flow toilets, and front loading washers.
  - ii) Space out water use throughout the day and week. Avoid doing all laundry in one day.
  - iii) Repair all water leaking fixtures.
  - iv) Eliminate garbage disposals, or limit their use. Collect food scraps with sink strainers for disposal as trash or for composting; this includes coffee grounds.
  - v) DO NOT pipe sump pump output into your sewer line.
- d) Home Landscaping Limitations:
  - i) Do not pipe roof downspouts or any other rainwater drainage into the septic or dose tanks.
  - ii) Divert all downspouts or other rainwater drainage away from your entire septic system.
  - iii) Divert all downspouts or other rainwater drainage away from the sand/soil mound area.
  - iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and sand/soil mounds.

- v) Do not add additional soil fill on or near the sand/soil mound. This will limit air movement into the mound for effluent treatment and may cause system failure.
  - vi) Limit lawnmower traffic on the mound when soil is excessively wet.
  - vii) Do not plant any deep rooted plants on top of or near your mound sand/soil absorption area.
- e) Home Resident Responsibilities:
- i) Only flush or drain bio-degradable human waste, toilet paper, laundry and dish and personal care soaps, and water into your home septic treatment system.
  - ii) Severely limit disposal of food fats, oils, and greases. These will clog your system.
  - iii) Do not flush or drain undiluted bleach, cleansers, or drain cleaners.
  - iv) Do not flush any non-biodegradable items. For example, plastic items.
  - v) Do not flush or drain motor oils, greases, anti-freezes, cleaners, etc.
  - vi) Do not flush cat litter.
  - vii) Do not flush paper towels, facial tissue, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms.
  - viii) Do not flush prescription or over-the-counter drugs. Antibiotics and cancer treatment drugs are very harmful to your home septic treatment system.
  - ix) Do not dump solvents like dry cleaning fluid, pesticides, photographic chemicals, paint thinner down the drain.
  - x) Don't use septic tank additives.
  - xi) Don't drain a hot tub or large amounts of water into your septic system.
- f) Home Improvement/Expansion:
- i) Contact your county sanitarian before adding new driveways, decks, patios, pools, and outbuildings not identified on your original layout plan to make sure all setback distances from your septic system tanks and mound are met.
  - ii) Contact your county sanitarian before adding bedrooms and/or increasing your home occupancy. This may overload your septic system. Septic system expansion may be required to prevent failure.
- g) Homeowner Cautions:
- i) **DO NOT ENTER TANKS WITHOUT PROPER SAFETY EQUIPMENT.** Septic and dose tanks contain noxious and deadly gases.
  - ii) Pump or dose tanks and control boxes contain electrical components. **ELECTRICAL SHOCK HAZARD CAN EXIST WITH IMPROPERLY WIRED OR FAILING COMPONENTS.**
  - iii) Always keep tank fall guards in place, except for the time needed to replace components when safety equipment is present.
  - iv) Always replace and secure septic and dose tank lids after completing any inspection.
  - v) Any disconnection or removal of filters, screens, floats, alarms, and/or control panels will result in system failure.
  - vi) Contact your county sanitarian for allowed homeowner maintenance and repair of your septic system.

## 2) Inspection & Maintenance Requirements:

- a) Perform inspection & maintenance every six months.
- b) Review Baseline Operation and Maintenance Data:
  - i) The installer of your system set and recorded all float/liquid level heights, pump down times, cycles per day, and distal head pressures required in the design specifications.
  - ii) Review all previous six month inspection data.
- c) Identify any house additions, patios, pools, ponds, driveways, outbuildings, etc. added since the last inspection that may impact the home septic treatment system. Draw a sketch of these differences.
- d) Inspect bottom of house sewer main two-way cleanout tee
  - i) Check for clogging.
  - ii) Check for continuous clear water flows from the home.
- e) Evaluate Septic Tank & Pump Tank:
  - i) Measure sludge and scum depths; pump tank when cumulative thickness is 1/3 of the tank depth.
  - ii) Look for signs of clogging and tank damage.
  - iii) Look for signs of tank and riser leakage.
  - iv) Clean & inspect septic tank outlet filter.
  - v) Make sure lids are securely attached to risers.
- f) Evaluate Pump/Dose Tank & Pumping Equipment:
  - i) Measure sludge and scum depths; pump tank when septic tank is pumped.
  - ii) Look for signs of clogging and tank damage.
  - iii) Look for signs of tank and riser leakage.
  - iv) Inspect and assure proper functioning of floats or other liquid level controls.
  - v) Clean and inspect dose pump outlet filter. May not be present in some designs.
  - vi) Inspect and assure proper condition and functioning of the effluent pump.
  - vii) Make sure lids are securely attached to risers.
- g) Evaluate Drain Fields:
  - i) Inspect all soil and sand inspection tubes plus maintenance ports for surface condition, surface color, and depth of ponded effluent, if present.
  - ii) Look for surfacing effluent.
  - iii) Look for excessively moist soil at mound sides and toe slopes.
  - iv) Identify appropriate vegetative cover.
  - v) Look for surface disturbances, compaction, abnormal settling, and erosion.
  - vi) Identify any deep rooted vegetation recently planted near the mound area.
- h) Evaluate Laterals:
  - i) Flush all distribution laterals, one at a time. Monitor flush output.
  - ii) Record new distal head pressures for all laterals.
  - iii) Perform additional lateral and orifice cleaning if lateral distal head pressures are not equal.
  - iv) Adjust lateral distal head pressures if needed after additional cleaning.
- i) Measure Pump Run Time and/or Drawdown:
  - i) For demand dosed systems, verify original design effluent drawdown depth.

- ii) For time dosed systems, verify original design pump run time.
- iii) For systems with a cycle counter or run time meter, record the current values.
- j) Test Alarms:
  - i) Evaluate proper function of low liquid level alarm.
  - ii) Evaluate proper function of high liquid level alarm and warning light.

**3) Findings & Repairs:**

- a) All findings during inspection and maintenance must be recorded. See attached "Mound System Inspection and Maintenance Record".
- b) Any system adjustments must be recorded.
- c) Any system deficiencies, worn out components, and/or damage must be repaired to return your septic system to a properly functioning state.
- d) All repairs must be recorded.

## Mound System Inspection and Maintenance Record

System Owner: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
 System Address: \_\_\_\_\_ Inspector Name: \_\_\_\_\_  
 System Address: \_\_\_\_\_ Inspector Phone Number: \_\_\_\_\_

<b>Septic Tank Condition:</b>	Scum depth: Sludge depth: Filter cleaned?
<b>Dose Tank Condition:</b>	Sludge present?
<b>Dose Pump Condition:</b>	
<b>Controls Condition:</b>	Level controls functional? Alarm functional? Control box functional?

**Mound Area Evaluation:**

Landscape Changed?		Signs of Surface Ponding?		Mound Damaged?		New Construction Area?	
yes	no	yes	no	yes	no	yes	no

**Soil Inspection Tubes:**

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

**Sand Inspection Tubes:**

	Tube 1		Tube 2	
Ponding?	yes	no	yes	no

**Cleanout Ports:**

	Port 1		Port 2		Port 3		Port 4	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

	Port 5		Port 6		Port 7		Port 8	
Ponding?	yes	no	yes	no	yes	no	yes	no
Pressure:		feet		feet		feet		feet

**Comments/Sketches:**