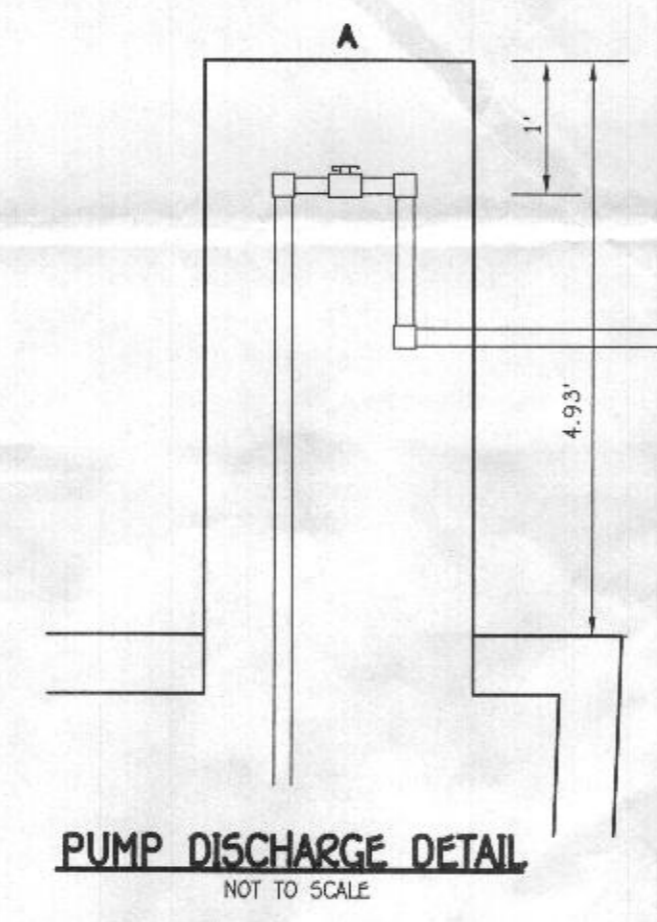


LOW PRESSURE DOSING SYSTEM - INITIAL INSTALLATION

TRENCH	GROUND ELEV.	PIPE INVERT ELEV.	TRENCH LENGTH (FT)	LATERAL PIPE LENGTH (FT)	PERFORATION DIAMETER (IN)	HEAD (FT)	PERFORATION FLOW RATE (GPM)	PERFORATION SPACING (FT)	NUMBER OF ORIFICES	TRENCH FLOW RATE (GPM)
1	733.5	730.0	46.67	44.73	5/16	2	1.63	3.89	12	19.56
2	732.7	729.2	46.67	44.34	5/16	2.8	1.92	4.67	10	19.20
3	731.9	728.4	46.67	44.08	5/16	3.6	2.18	5.19	9	19.62
TOTAL TRENCH FLOW RATE										58.38

TRENCH DESIGN

TRENCH	GROUND ELEV.	TOP OF STONE ELEV.	PIPE INVERT ELEV.	DEPTH TO STONE FROM GROUND	DEPTH OF TRENCH (FT)	EFFECTIVE DEPTH STARTS AT	EFFECTIVE DEPTH (D)	WIDTH OF TRENCHES (W)	TRENCH SPACING
1	733.5	730.5	730.0	3.0'	3.0'	727.5	3.5'	3.0'	10'
2	732.7	729.7	729.2	3.0'	3.0'	726.7	3.5'	3.0'	10'
3	731.9	728.9	728.4	3.0'	3.0'	725.9	3.5'	3.0'	10'



SEWAGE DISPOSAL SYSTEM DATA
 (PERMIT FOR 4 BEDROOMS, DESIGN FOR 4 BEDROOMS)

PROP. INVERT AT FOUNDATION WALL: 725.28
 LOADING RATE = 600 GPD
 APPLICATION RATE = 0.8
 EFFECTIVE SIDEWALL BEGINS AT 3.5 FEET
 TRENCH DEPTH = 6 FEET
 TRENCH WIDTH (W) = 3 FEET
 EFFECTIVE DEPTH (D) = 2.5 FEET
 SF OF DRAINFIELD = 600 GPD / 0.8 = 750 SF
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x2.5)) = 0.555
 TRENCH LENGTH = 750 SF x 0.555 / 3 = 138.75 FEET (USE 140 FEET)
 TRENCH SPACING = 2D+W = (2x2.5) + 3 = 8 USE 10'

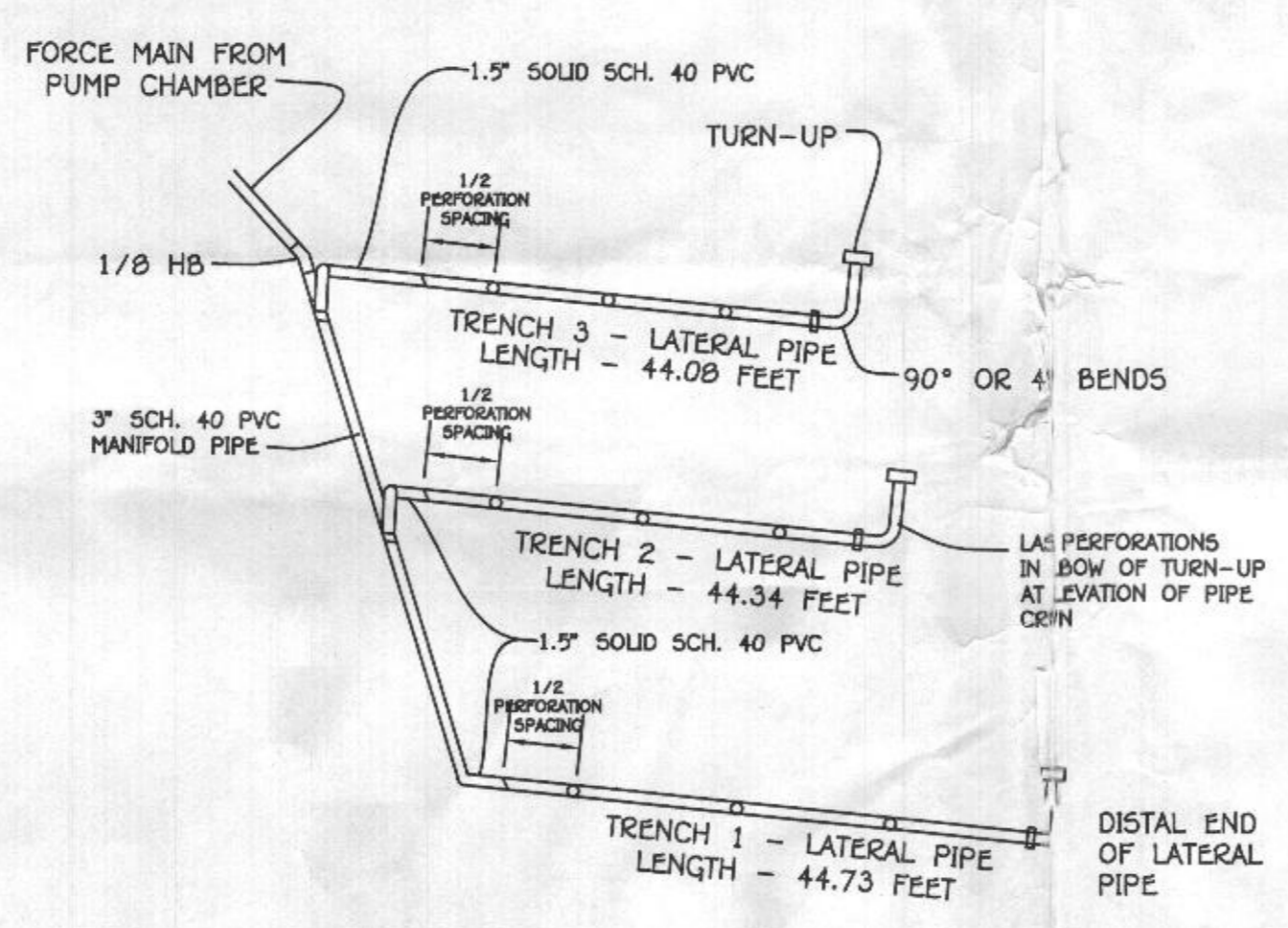
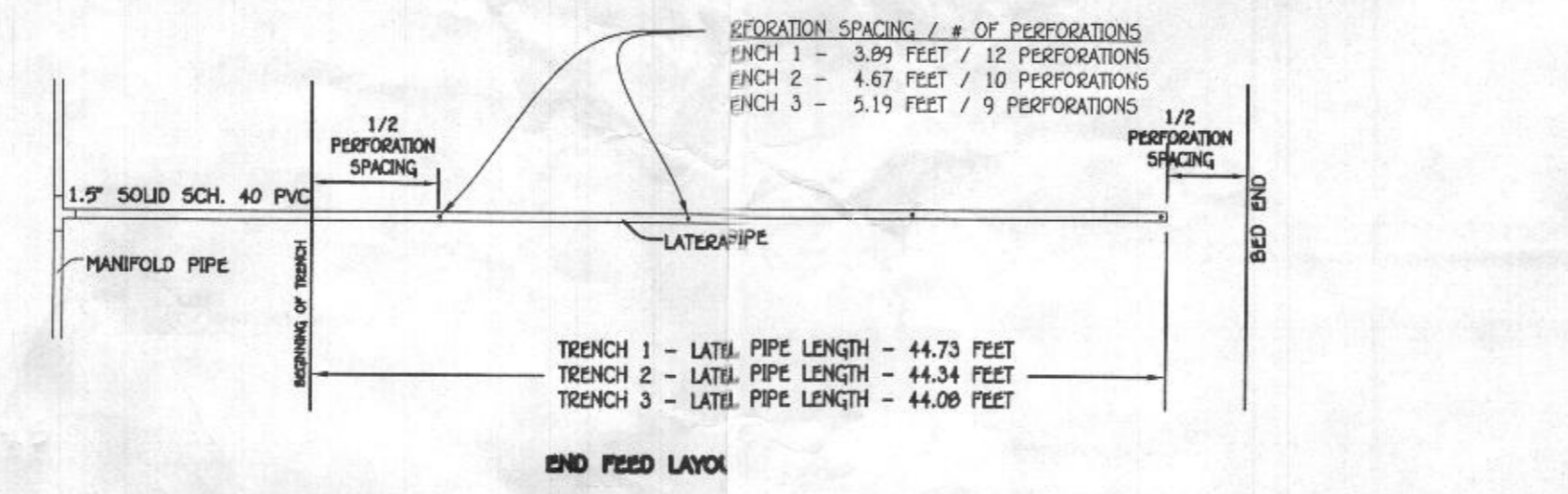
SEPTIC SYSTEM ELEVATIONS

FFE = 736.45
 B5E = 727.45
 INV. OUT OF HOUSE = 725.28
 PROP. GROUND AT BAT = 729.8
 TOP OF BAT = 725.70
 COVER OVER BAT = 4.1 FT (TRAFFIC BEARING TANK)
 INV. INTO TANK = 724.43
 INV. OUT OF TANK = 724.10

PUMP TANK ELEVATIONS

A = 729.8
 B = 724.04 (INV. INTO TANK)
 C = 719.79
 D = 720.12
 E = 721.37
 F = 722.87
 G = 723.37
 H = 724.87
 I = 727.3 (INV. OUT OF TANK)
 COVER OVER PUMP TANK = 4.93 FT (TRAFFIC BEARING TANK)

NOTE: SEPTIC SYSTEM ALARM WILL BE ON A CIRCUIT SEPARATE FROM ANY OTHER SEPTIC SYSTEM COMPONENTS OR ALARMS.



NOTE: SEE PLAN VIEW FOR LATERAL PIPE CONFIGURATION / HORIZONTAL BENDS, ETAL TO SHOW SPACING AND TURN UPS ONLY.

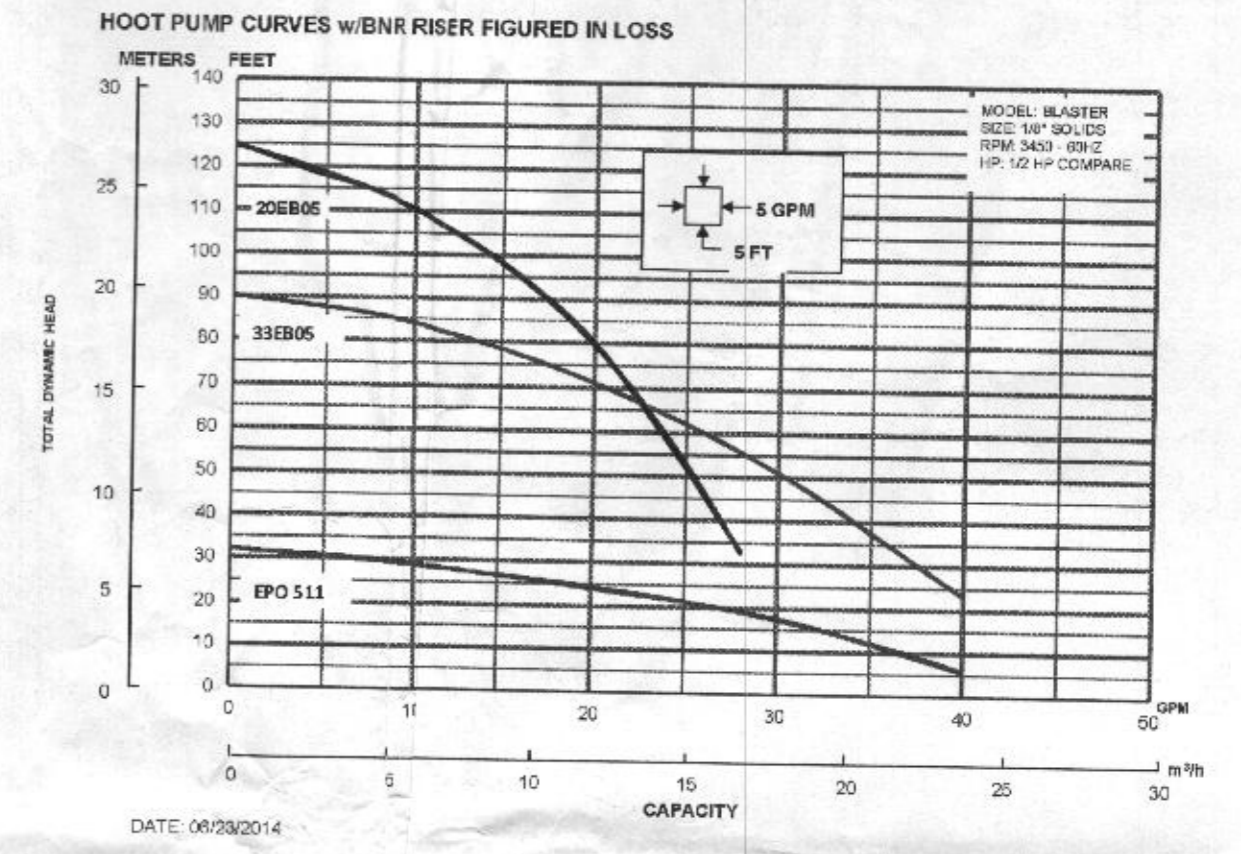
GOULDS PUMPS
 Engineered for life

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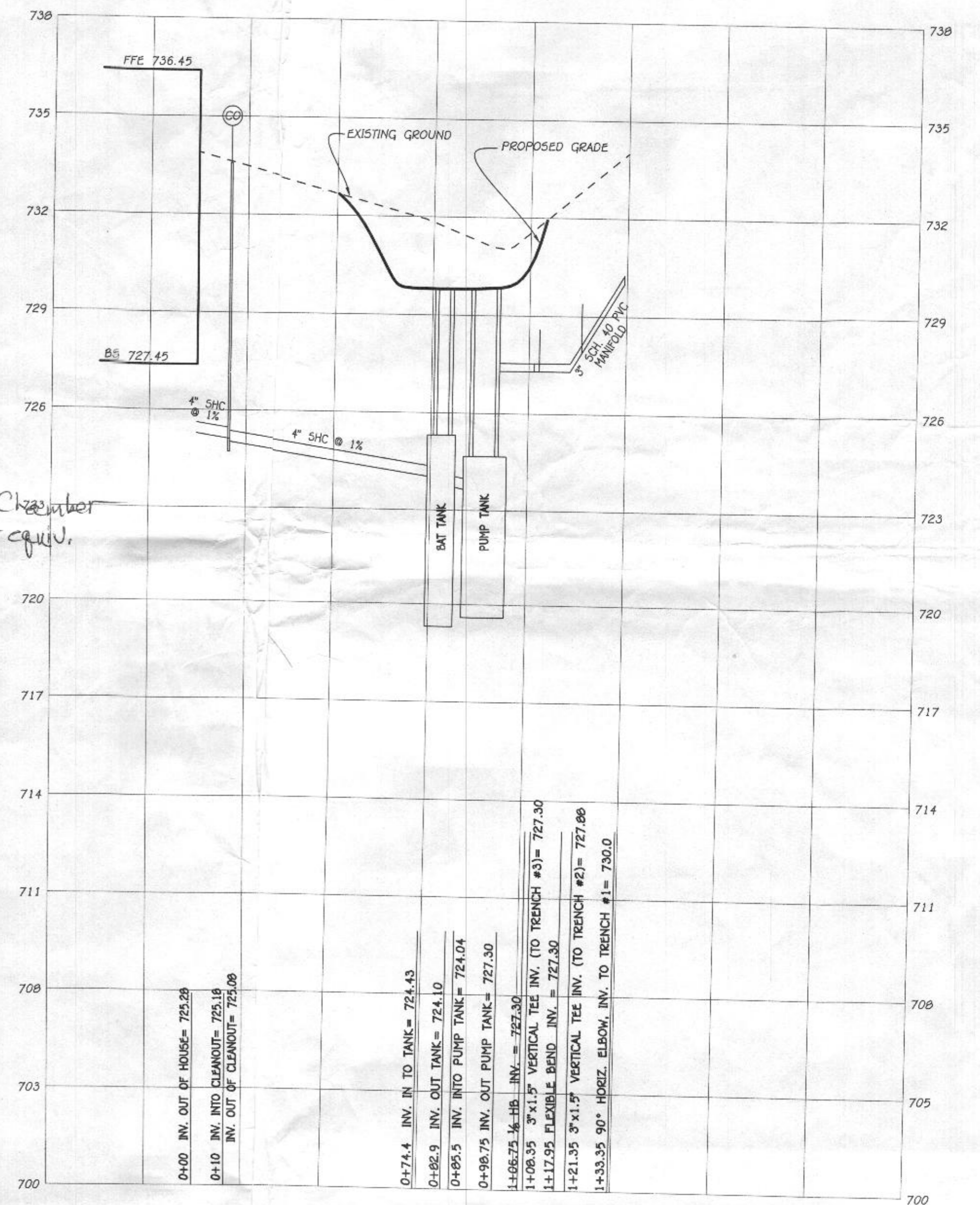
83885 June, 2009
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OWNER AND DEVELOPER

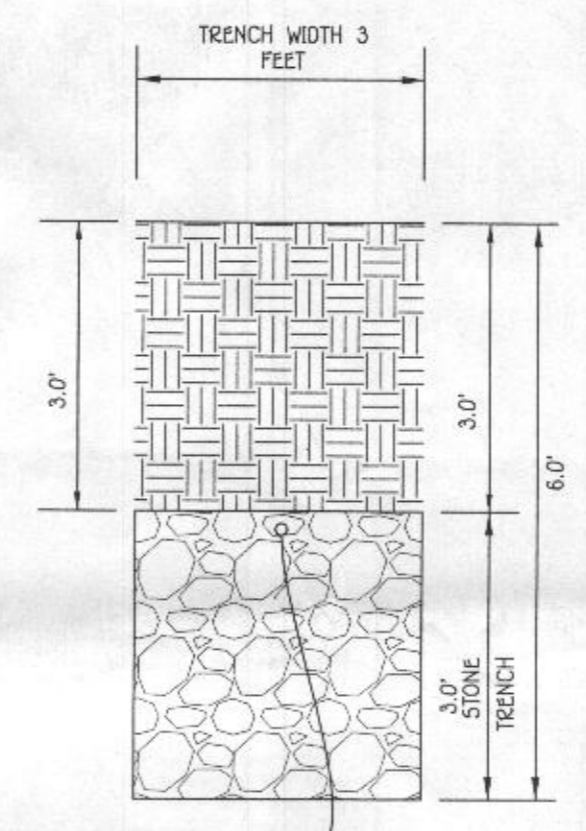
MR. JOSEPH SHEARS
 17034 WOOD ROAD
 MT. AIRY, MARYLAND 21771
 410-89-4310



NOTE: USE BLASTER PUMP (EPO 511) FOR RECIRCULATION TO BAT TANK



SEPTIC SYSTEM PROFILE
 SCALE: HORIZ. 1" = 30', VERT. 1" = 3'



NOTE: PLACE AN OBSERVATION PIPE IN THE GRAVEL BED AT THE DISTAL END OF EACH TRENCH SEGMENT.

BAT PLAN
SHEARS PROPERTY
LOT 2

A RESUBDIVISION OF POPLAR HEIGHTS SUBDIVISION
 LOT 41-44 AS RECORDED IN THE LAND RECORDS
 AS PLAT No. 3, FOLIO 26

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38386, EXPIRATION DATE: 01/12/2016.

Signature: [Signature]
 Date: 8/14/15



TAX MAP #7 GRID: 8 PARCEL: 31
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: 1" = 30' DATE: AUGUST, 2015

ITT

GOULDS PUMPS
 Wastewater

APPLICATIONS
 Specifically designed for the following uses:
 • Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Efficient Systems.

SPECIFICATIONS
 Pump
 • Solid handling capabilities: 2" maximum.
 • Discharge size: 2" NPT.
 • Capacities: up to 140 GPM.
 • Total heads: up to 128 feet TDH.
 • 1/2" NPT.
 • 104°F (40°C) continuous, 140°F (60°C) intermittent.
 • See cover numbers on reverse side for specific HP, voltage, phase and RPM's available.

MOTORS
 • Fully submerged in high-grade cast iron for corrosion and efficient heat transfer.
 • Class B insulation on 1-1/2" HP models.
 • Class F insulation on 2 HP models.

Single phase 160 HHz
 • Capacitor start motors for maximum starting torque.
 • Built-in overload with automatic reset.
 • SITOW = SITOW severe duty oil and water resistant power cords.

AGENCY LISTINGS
 Inlet to US 788 and CSA 222-130 treatments by Certified Treatment Manufacturer for Residue Goolds Pumps is ISO 9001 Registered.

GOULDS PUMPS
 Wastewater

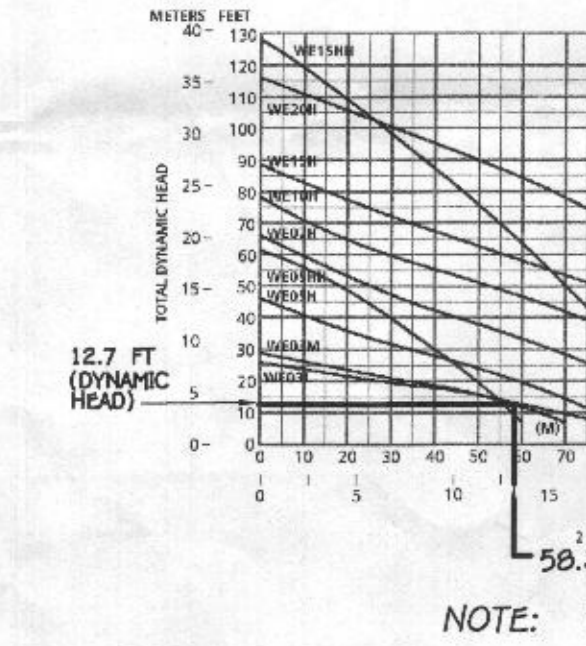
PERFORMANCE RATINGS (gallons per minute)

Head (ft)	1 HP	1.5 HP	2 HP	3 HP	4 HP	5 HP	6 HP	8 HP	10 HP
10	110	165	220	275	330	385	440	495	550
20	75	110	145	180	215	250	285	320	355
30	55	80	105	130	155	180	205	230	255
40	40	60	80	100	120	140	160	180	200
50	30	45	60	75	90	105	120	135	150
60	25	35	45	55	65	75	85	95	105
70	20	30	40	50	60	70	80	90	100
80	15	25	35	45	55	65	75	85	95
90	10	20	30	40	50	60	70	80	90
100	5	15	25	35	45	55	65	75	85

COMPONENTS

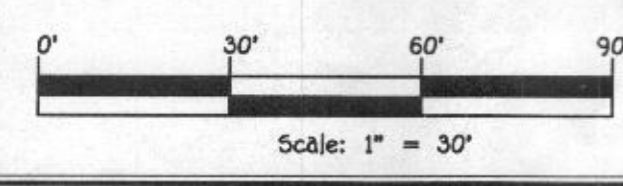
Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearing
7	Power Cable
8	Coupling

DIMENSIONS
 All dimensions are in inches. Do not use for construction purposes.



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELECTIC CITY, MARYLAND 21046
 410-461-2895



LEGEND

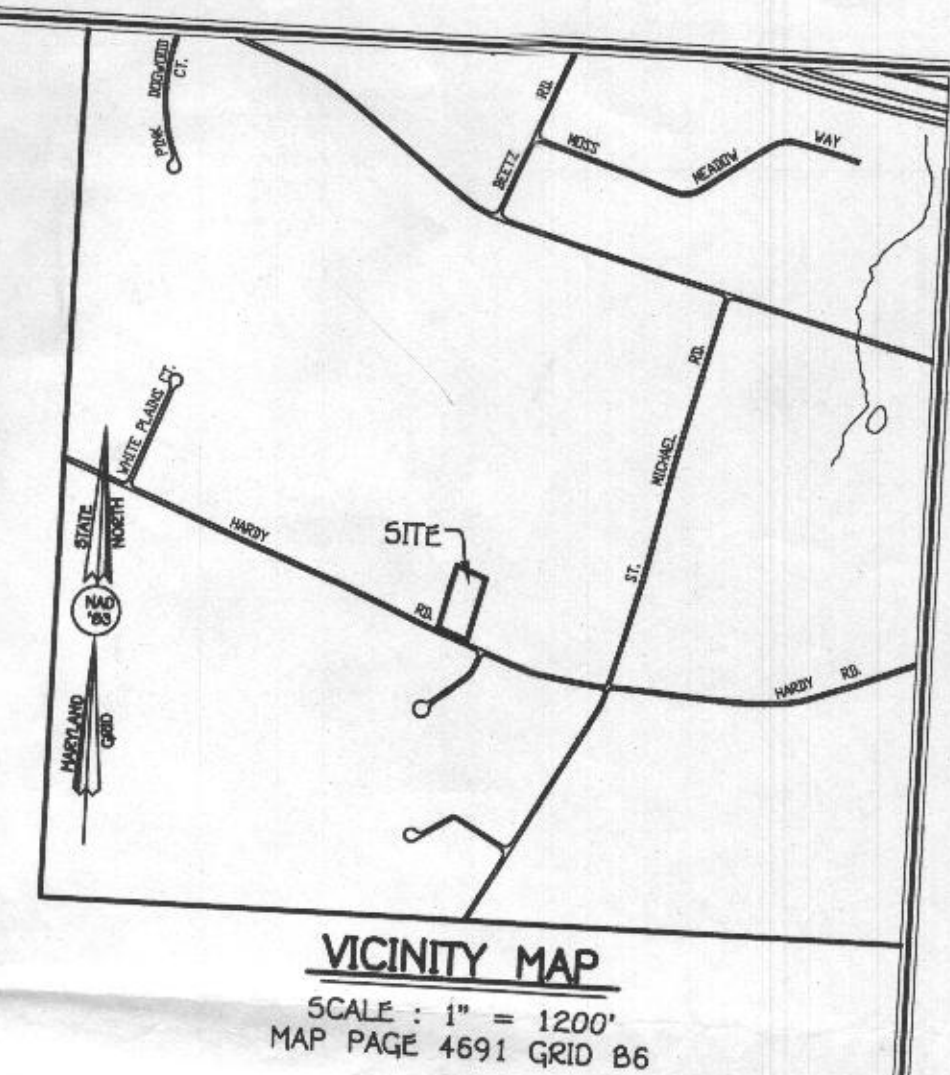
EXISTING 2' CONTOURS
 EXISTING 10' CONTOURS
 EXISTING TREE LINE
 SOIL LINES AND TYPES
 DENOTES PROPOSED WELLS & Existing WELLS
 DENOTES PROPOSED HOUSE
 DENOTES 1500-Sq-Ft. ALTERNATE WELL-SITE
 DENOTES FAILED PERC
 DENOTES PASSED PERC

Minimum Lot Size Chart

LOT No.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
2	40,531 SQ.FT.	7,519 SQ.FT.	33,012 SQ.FT.

BAT NOTES

ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
 THE BAT SHALL BE 3 FEET THE MAXIMUM COVER OVER THE BAT SHALL BE 3 FEET. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
 THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
 WITHIN ONE MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.
 ANY ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 AN AGREEMENT AND EASEMENT HAS BEEN COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY.
 THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
 SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.



- GENERAL NOTES**
- SUBJECT PROPERTY ZONED: RC-DEO
 - TOTAL AREA OF PROPERTY: 38,536 SQ.FT. OR 0.88 AC.
 - SEPTIC EASEMENT SUBJECT TO HOWARD COUNTY HEALTH DEPARTMENT REVIEW.
 - CONTRACTOR/BUILDER TO VERIFY ELEVATION IN THE FIELD BEFORE BEGINNING ANY CONSTRUCTION.
 - BOUNDARY IS BASED ON A FIELD RUN BOUNDARY CONDUCTED BY FISHER, COLLINS & CARTER, INC. DATED APRIL, 2010.
 - TOPOGRAPHY SHOWN HEREON BASED ON FIELD RUN SURVEY CONDUCTED BY FISHER, COLLINS & CARTER, INC. DATED APRIL, 2010. TOPOGRAPHY IN NON-DEVELOPED AREAS IS BASED ON HOWARD COUNTY 200 SCALE TOPOGRAPHY.
 - NO WETLANDS EXIST ON THIS LOT.
 - SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.
 - AT HIGH WATER ALARM PROBE, PUMP WILL HAVE CONTINUOUS OPERATION UNTIL LEVEL GOES BENEATH PROBE.
 - IF WATER LEVEL RISES ABOVE THE ALARM PROBE, AN AUDIBLE AND VISUAL ALARM WILL SOUND. SEE MANUFACTURER SPECS FOR ADDITIONAL INFORMATION.
 - ALARM TO BE WIRED TO A CIRCUIT SEPARATE FROM THE PUMP CIRCUIT.

NOTE

THE EXISTING WELL SHOWN ON THIS PLAN, HAS BEEN FIELD LOCATED BY FISHER, COLLINS & CARTER, INC., PROFESSIONAL LAND SURVEYORS AND IS ACCURATELY SHOWN.

APPROVED SEPTIC PLAN
 Howard County Department
 HOOT GOOBNR20-gal
 2 GALLONS WELP Chamber
 Pump (Porequin)
 Date: 8/20/15
 Signature: [Signature]

FRICITION LOSS IN 1.5"/3" PIPE FITTINGS:

0 1/8" HB	x 4 FEET PER FITTING =	0 EQUIVALENT FEET OF 1.5" PIPE
3 ELBOWS	x 9 FEET PER FITTING =	27 EQUIVALENT FEET OF 1.5" PIPE
0 TEE/CROSS	x 11 FEET PER FITTING =	0 EQUIVALENT FEET OF 1.5" PIPE
3 UNIONS	x 4 FEET PER FITTING =	12 EQUIVALENT FEET OF 1.5" PIPE
3 ELBOWS	x 12 FEET PER FITTING =	36 EQUIVALENT FEET OF 3" PIPE
2 TEE/CROSS	x 17 FEET PER FITTING =	34 EQUIVALENT FEET OF 3" PIPE

TOTAL LINEAR FEET OF 1.5" & 3" SCH. 40 PVC = 27 LF + 74 LF = 101 LF (EQUIVALENT FEET)
 1.5" PIPE TOTAL = 27 LF + 18LF = 45 LF
 3" PIPE TOTAL = 74 LF + 38.3 LF = 112.3 LF

DYNAMIC HEAD

45 LF x 2.46 FT PER 100 LF OF 1.5" PIPE = 1.11 FT OF FRICTION HEAD
 112.3 LF x 0.86 FT PER 100 LF OF 3" PIPE = 0.97 FT OF FRICTION HEAD
 DIGITAL HEAD = 2.0 FT
 HIGH POINT IN PUMP CHAMBER = 5.93 FT OF FRICTION HEAD
 TOTAL DYNAMIC HEAD = 12.71 FT

PIPE VOLUMES

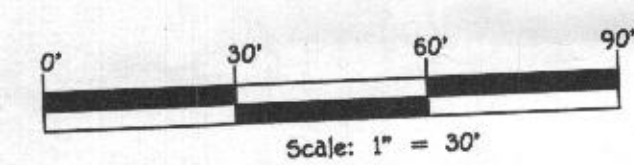
38.3 LF (3" SCH. 40 PIPE) x 38.4 GALLONS PER 100 LF = 14.7 GALLONS
 18 LF (1.5" SCH. 40 PIPE) x 10.6 GALLONS PER 100 LF = 1.9 GALLONS
 133.15 LF (1.5" SCH. 40 PIPE) x 10.6 GALLONS PER 100 LF = 14.1 GALLONS

MINIMUM DOSE

MINIMUM DOSE = (5 x LATERAL PIPE VOLUME) + (FORCE MAIN & MANIFOLD)
 = (5 x 14.1) + (16.6)
 = 87.1 GALLONS

87.1 GALLONS IS LESS THAN 1/6 DESIGN FLOW (600/6=100)
 USE 116.76 GALLON DOSE (100 GALLON MINIMUM)
 (RUN TIME = 2 MIN (50.38 GPM X 2 = 116.76 GALLON DOSE))

PUMP NEEDS TO HANDLE 50.38 GPM AT 12.71 FT OF HEAD
 USE 0.3 HP (WEO3L PUMP)



SOILS LEGEND

SOIL	NAME	CLASS
GgA	Glenelg loam, 0 to 3 percent slopes	B
GgB	Glenelg loam, 3 to 8 percent slopes	B
GgC	Glenelg loam, 8 to 15 percent slopes	C
GgB	Glenville-Balle silt loams, 0 to 8 percent slopes	C

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 (410) 461-2855

OWNER AND DEVELOPER

MR. JOSEPH SHEARS
 17034 HARDY ROAD
 MT. AIRY MARYLAND 21771
 410-489-4310

PROFESSIONAL CERTIFICATION

CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 36186. EXPIRATION DATE: 01/12/2016.

Andrew Teute 8/14/15
 State of Professional Engineer DATE



BAT PLAN
SHEARS PROPERTY
LOT 2
 SUBDIVISION OF POPLAR HEIGHTS SUBDIVISION
 OF 41-44 A5 RECORDED IN THE LAND RECORDS
 A5 PLAT No. 3, FOLIO 26

TAX MAP #7
 4TH ELECTION DISTRICT
 SCALE: 1"=30'

GRID: B
 PARCEL: 31
 HOWARD COUNTY, MARYLAND
 DATE: AUGUST, 2015