NOTES:
Site conditions require a designed septic system consisting of septic tanks and chambered absorption field. A pumping chamber will be required.

DESIGN CRITERIA:
El Paso County Health Department: Onsite Wastewater Treatment System (OWTS) Regulations Dated April 10, 2014.

PERCOLATION TEST:
The percolation test was performed by Entech Engineering, Inc., report dated December 12, 2016 Entech Job No. 160533. Acceptance Rate LTAR value of 0.20 gallons per square foot per day was observed. Bedrock and groundwater were encountered in the profile hole that was drilled 20 feet. (8" Dia Auger Used)

TACTILE TEST PIT RESULTS:
The tactile test was performed by Entech Engineering, Inc., report dated December 12, 2016 Entech Job No. 160533. Acceptance Rate LTAR value of 0.15 gallons per square foot per day was observed. Bedrock was encountered between 3.5 to 6 feet in the test pits that were excavated to depths of 8 to 10 feet. Groundwater was not encountered in the test pits but estimated as occurring seasonally at the bedrock interface of 3.5 to 6 feet.

DESIGN FLOW:
Total Average flow = 1950 gpd
(SEE CALCULATIONS)

DESIGN BASIS:
Adjustment Factors EPCHD Regulations Table 10.2 - Pressure Dosed Bed = 1.0, Table 10.3 - Bed with Chambers = 0.7.

CALCULATIONS

AVERAGE FLOW PER RV SITE
32.5 GALLONS

SOIL TYPE 4A, LTAR = 0.15

REQUIRED AREA

$$A = \frac{(1950)(1.0)(0.7)}{LTAR}$$

Q = 1950 GPD
0.15 = TREATMENT LEVEL 1 (SOIL TYPE 4A)
1.0 = DOSED BED SYSTEM FACTOR
0.7 = BED W/CHAMBERS SYS. FACTOR
60 = RV SITES

FOR BED SYSTEM WITH
QUICK-4 CHAMBERS

$$A = \frac{(1950)(1.0)(0.7)}{0.15}$$

A= 9,100 SF USE 9,216 SF

$$QUICK\text{-}4 = \frac{9{,}216\ SF}{12\ SF/\ CHAMBER} = 768\ CHAMBERS$$

USE (8) BEDS OF 4 ROWS OF
24 INFILTRATORS FOR
TOTAL OF 768 INFILTRATORS

SEPTIC TANKS:
The new septic tank capacities should be a minimum of 2250 gallons each. The downstream septic tank shall be equipped with an 8-inch Biotube Effluent Filter (36-inch cartridge and 1/16-inch filtration). The septic tanks shall comply with El Paso County Health Department regulations. The tanks should be checked periodically and pumped as needed.

PUMPING CHAMBER:
A pumping chamber with a capacity of 2250 gallons shall be sealed at all joints and shall be coated with a suitable asphaltic waterproofing. A pump with a high water alarm shall be installed in the pumping chamber. The pumping chamber shall comply with El Paso County Health Department regulations. Periodic monitoring of water usage is recommended to adjust dosing to 4 to 5 doses per day, with a 400 gallon minimum dose. Install check valve / air release valve to permit line to drain to pumping tank or to field.

INSTALLATION OBSERVATION:
The installation of the septic system shall be observed to check compliance with the design. Recommended minimum observations include:
1) A meeting with Entech, general contractor, owner, and the installer to stake the field locations.
2) Site observation during and after trenches are excavated.
3) Site observation of pipe installation, distribution valves and manifold assembly, septic tanks, pumping chamber, and verify that the stand pipes have been installed;
4) final site observation including soil cover over the trenches.

PRE-CONSTRUCTION MEETING:
Contractor should contact Entech Engineering, Inc. to discuss installation and scheduling of recommended observations. A site meeting with an engineer from Entech Engineering, Inc., an El Paso County Health Officer and the ISDS contractor is required prior to excavation or installation of the field. The leach field location will be finalized at the pre-construction meeting. The system shall be installed and minimum horizontal distances must be maintained from pertinent physical features according to El Paso County Health Department Regulations.

WATER
A water well exists at the southwest corner of the subject property. The well setback is adequate.

VICINITY MAP
SCALE: 1" = 300'

N

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

STANLEY C. CULP
COLORADO REGISTERED
36723
5/21/18
PROFESSIONAL ENGINEER

STATE OF COLORADO P.E.

REVISIONS	BY:
CHANGE VICINITY MAP SCALE 11/29/17	SCC
REVISE HYDRAULIC CALCULATIONS 05/21/18	SCC

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK - EAST SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY , COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY: S. CULP
DESIGNED BY: S. CULP
CHECKED BY: J. GOODE
DATE: 8/16/17
SCALE: AS SHOWN
JOB NO.: 160533
SHEET NO.: 1 OF 4 SHEETS

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

N

NOTE: BUILDERS/OWNERS SHOULD REVIEW THEIR COVENANTS TO VERIFY IF THERE ARE SETBACK OR LAND-CLEARING RESTRICTIONS THAT MIGHT AFFECT SYSTEM INSTALLATION, PRIOR TO CONSTRUCTION.

NOTE:
THE CONFIGURATION OF THE DRIP SYSTEM CAN BE ALTERED TO ACCOMMODATE SITE SPECIFIC CONDITIONS AS APPROVED BY ENTECH

SITE PLAN

NOTE: LOCATE DISTRIBUTION VALVE MANIFOLD AT THE "HIGH POINT" IN THE SYSTEM AND PROVIDE AIR RELEASE VALVE.

THE MAXIMUM SOIL COVER OVER THE TOP OF A SEPTIC TANK IS 48" UNLESS OTHERWISE APPROVED BY EL PASO COUNTY

ORIENTATION APPROXIMATE; COORDINATE EXACT LOCATION & ORIENTATION WITH ENGINEER ON-SITE, PRIOR TO CLEARING & CONSTRUCTION.

COLORADO REGISTERED PROFESSIONAL ENGINEER
SCOTT A. CULP
36723
5/21/18

STATE OF COLORADO P.E.

REVISIONS	BY:
REVISED SITE PLAN 11/29/17	SCC
REVISED SITE PLAN 05/21/18	SCC

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK – EAST SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY, COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY: S. CULP
DESIGNED BY: S. CULP
CHECKED BY: J. GOODE
DATE: 8/16/17
SCALE: 1:45
JOB NO.: 160533
SHEET NO.: 2 OF 4 SHEETS

NOTE: SUMP AND ALARM TO BE ON SEPARATE CIRCUITS

PUMPING CHAMBER

N.T.S.

SECTION A-A

N.T.S.

PLACEMENT AND TESTING:
MATERIAL SHALL BE PLACED TO CONTROL SETTLEMENT WITHOUT INTENTIONAL COMPACTION. CONTACT ENTECH FOR REQUIRED TESTING TO INCLUDE ADDITIONAL PERCOLATION TESTING OF PLACED IMPORTED SAND PRIOR TO PLACEMENT OF INFILTRATORS.

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

ZONES MAY BE INSTALLED IN GROUPS AND SPACED AROUND SITE TO AVOID TREES ETC. THE LATERALS WITHIN EACH ZONE MUST BE AT THE SAME ELEVATION AND INSTALLED LEVEL.

STATE OF COLORADO P.E.

REVISIONS	BY:
REVISED DETAIL 05/21/18	*SCC*

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK - EAST SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY, COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY: S. CULP
DESIGNED BY: S. CULP
CHECKED BY: J. GOODE
DATE: 8/16/17
SCALE: AS SHOWN
JOB NO.: 160533
SHEET NO.: 3 *OF* 4 *SHEETS*

TYPICAL ABSORPTION LAYOUT (8 ZONES)

N.T.S.

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

ZONES MAY BE INSTALLED IN GROUPS AND SPACED AROUND SITE TO AVOID TREES ETC. THE LATERALS WITHIN EACH ZONE MUST BE AT THE SAME ELEVATION AND INSTALLED LEVEL.

COLORADO REGISTERED STATE OF COLORADO 36723 PROFESSIONAL ENGINEER 5/6/18

STATE OF COLORADO P.E.

REVISIONS	BY:
REVISED FIELD 05/21/18	SCC

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK – EAST SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY, COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY:	S. CULP
DESIGNED BY:	S. CULP
CHECKED BY:	J. GOODE
DATE:	8/16/17
SCALE:	AS SHOWN
JOB NO.:	160533
SHEET NO.:	4 OF 4 SHEETS

NOTES:
Site conditions require a designed septic system consisting of septic tanks and chambered absorption field. A pumping chamber will be required.

DESIGN CRITERIA:
El Paso County Health Department: Onsite Wastewater Treatment System (OWTS) Regulations Dated April 10, 2014.

PERCOLATION TEST:
The percolation test was performed by Entech Engineering, Inc., report dated December 12, 2016 Entech Job No. 160533. Acceptance Rate LTAR value of 0.20 gallons per square foot per day was observed. Bedrock and groundwater were encountered in the profile hole that was drilled 20 feet. (8" Dia Auger Used)

TACTILE TEST PIT RESULTS:
The tactile test was performed by Entech Engineering, Inc., report dated December 12, 2016 Entech Job No. 160533. Acceptance Rate LTAR value of 0.10 gallons per square foot per day was observed. Bedrock was encountered between 3.5 to 6 feet in the test pits that were excavated to depths of 8 to 10 feet. Groundwater was not encountered in the test pits but estimated as occurring seasonally at the bedrock interface of 3.5 to 6 feet.

DESIGN FLOW:
Total Average flow = 1950 gpd
(SEE CALCULATIONS)

DESIGN BASIS:
Adjustment Factors EPCHD Regulations Table 10.2 - Pressure Dosed Bed = 1.0, Table 10.3 - Bed with Chambers = 0.7.

CALCULATIONS

AVERAGE FLOW PER RV SITE
32.5 GALLONS

SOIL TYPE 5, LTAR = 0.10

REQUIRED AREA

$$A = \frac{(1950)(1.0)(0.7)}{LTAR}$$

Q = 1950 GPD
0.10 = TREATMENT LEVEL 1 (SOIL TYPE 5)
1.0 = DOSED BED SYSTEM FACTOR
0.7 = BED W/CHAMBERS SYS. FACTOR
60 = RV SITES

FOR BED SYSTEM WITH
QUICK-4 CHAMBERS

$$A = \frac{(1950)(1.0)(0.7)}{0.10}$$

A= 13,650 SF USE 13,824 SF

$$QUICK\text{-}4 = \frac{13{,}824\ SF}{12\ SF/\ CHAMBER} = 1{,}152\ CHAMBERS$$

USE (12) BEDS OF 4 ROWS OF
24 INFILTRATORS FOR
TOTAL OF 1,152 INFILTRATORS

SEPTIC TANKS:
The new septic tank capacities should be a minimum of 2250 gallons each. The downstream septic tank shall be equipped with an 8-inch Biotube Effluent Filter (36-inch cartridge and 1/16-inch filtration). The septic tanks shall comply with El Paso County Health Department regulations. The tanks should be checked periodically and pumped as needed.

PUMPING CHAMBER:
A pumping chamber with a capacity of 2250 gallons shall be sealed at all joints and shall be coated with a suitable asphaltic waterproofing. A pump with a high water alarm shall be installed in the pumping chamber. The pumping chamber shall comply with El Paso County Health Department regulations. Periodic monitoring of water usage is recommended to adjust dosing to 4 to 5 doses per day, with a 400 gallon minimum dose. Install check valve / air release valve to permit line to drain to pumping tank or to field.

INSTALLATION OBSERVATION:
The installation of the septic system shall be observed to check compliance with the design. Recommended minimum observations include:
1) A meeting with Entech, general contractor, owner, and the installer to stake the field locations.
2) Site observation during and after trenches are excavated.
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4) final site observation including soil cover over the trenches.

PRE-CONSTRUCTION MEETING:
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WATER
A water well exists at the southwest corner of the subject property. The well setback is adequate.

VICINITY MAP
SCALE: 1" = 300'

N

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

COLORADO REGISTERED PROFESSIONAL ENGINEER
STANLEY V. CULP
36723
5/21/18

STATE OF COLORADO P.E.

REVISIONS	BY:
CHANGE VICINITY MAP SCALE 11/29/17	SCC
REVISE HYDRAULIC CALCULATIONS 05/21/18	SCC

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK - SE SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY , COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY: S. CULP
DESIGNED BY: S. CULP
CHECKED BY: J. GOODE
DATE: 8/16/17
SCALE: AS SHOWN
JOB NO.: 160533
SHEET NO.: 1 OF 4 SHEETS

REVISIONS	BY:
REVISED SITE PLAN 11/29/17	SCC
REVISED SITE PLAN 05/21/18	SCC

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK – SE SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY , COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY: S. CULP
DESIGNED BY: S. CULP
CHECKED BY: J. COODE
DATE: 8/16/17
SCALE: 1:45
JOB NO.: 160533
SHEET NO.: 2 OF 4 SHEETS

SITE PLAN

NOTE: BUILDERS/OWNERS SHOULD REVIEW THEIR COVENANTS TO VERIFY IF THERE ARE SETBACK OR LAND-CLEARING RESTRICTIONS THAT MIGHT AFFECT SYSTEM INSTALLATION, PRIOR TO CONSTRUCTION.

NOTE:
THE CONFIGURATION OF THE DRIP SYSTEM CAN BE ALTERED TO ACCOMMODATE SITE SPECIFIC CONDITIONS AS APPROVED BY ENTECH

NOTE: LOCATE DISTRIBUTION VALVE MANIFOLD AT THE "HIGH POINT" IN THE SYSTEM AND PROVIDE AIR RELEASE VALVE.

THE MAXIMUM SOIL COVER OVER THE TOP OF A SEPTIC TANK IS 48" UNLESS OTHERWISE APPROVED BY EL PASO COUNTY

ORIENTATION APPROXIMATE; COORDINATE EXACT LOCATION & ORIENTATION WITH ENGINEER ON-SITE, PRIOR TO CLEARING & CONSTRUCTION.

COLORADO REGISTERED STATE OF COLORADO 36723 PROFESSIONAL ENGINEER
5/21/18

STATE OF COLORADO P.E.

NOTE: SUMP AND ALARM TO BE ON SEPARATE CIRCUITS

PUMPING CHAMBER

N.T.S.

SECTION A–A

N.T.S.

PLACEMENT AND TESTING:
MATERIAL SHALL BE PLACED TO CONTROL SETTLEMENT WITHOUT INTENTIONAL COMPACTION. CONTACT ENTECH FOR REQUIRED TESTING TO INCLUDE ADDITIONAL PERCOLATION TESTING OF PLACED IMPORTED SAND PRIOR TO PLACEMENT OF INFILTRATORS.

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

ZONES MAY BE INSTALLED IN GROUPS AND SPACED AROUND SITE TO AVOID TREES ETC. THE LATERALS WITHIN EACH ZONE MUST BE AT THE SAME ELEVATION AND INSTALLED LEVEL.

COLORADO REGISTERED PROFESSIONAL ENGINEER 36723 7/21/18

STATE OF COLORADO P.E.

REVISIONS	BY:
REVISED DETAIL 05/21/18	*SCC*

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK – SE SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY , COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY:	S. CULP
DESIGNED BY:	S. CULP
CHECKED BY:	J. GOODE
DATE:	8/16/17
SCALE:	AS SHOWN
JOB NO.:	160533
SHEET NO.:	3 OF 4 SHEETS

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED, TO BE DETERMINED AT THE TIME OF SITE OBSERVATIONS.

ZONES MAY BE INSTALLED IN GROUPS AND SPACED AROUND SITE TO AVOID TREES ETC. THE LATERALS WITHIN EACH ZONE MUST BE AT THE SAME ELEVATION AND INSTALLED LEVEL.

TYPICAL ABSORPTION LAYOUT (12 ZONES)

N.T.S.

COLORADO REGISTERED PROFESSIONAL ENGINEER
JAMES C. GOODE
36723
6/21/18

STATE OF COLORADO P.E.

REVISIONS	BY:
REVISED FIELD 05/21/18	*SCC*

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

ON-SITE WASTEWATER SYSTEM
JUDGE ORR ROAD RV PARK - SE SYSTEM
14010 JUDGE ORR ROAD
EL PASO COUNTY , COLORADO
FOR: WILLIAM GUMAN & ASSOCIATES, LTD.

DRAWN BY:	S. CULP
DESIGNED BY:	S. CULP
CHECKED BY:	J. GOODE
DATE:	8/16/17
SCALE:	AS SHOWN
JOB NO.:	160533
SHEET NO.:	4 OF 4 SHEETS