



## American Shale Oil, LLC

September 5, 2012

Mr. Kent Walter, Manager  
White River Field Office  
Bureau of Land Management  
220 East Market Street  
Meeker CO 81641

**RECEIVED**  
SEP 10 2012  
GRAND JUNCTION FIELD OFFICE  
DIVISION OF  
RECLAMATION MINING & SAFETY

RE: Oil Shale Lease COC69169  
Installation of Individual Sewage Disposal System

Dear Kent:

During our RD&D activities, we have crews staying at our on-site mancamp on the MWP 1 Pad. This mancamp is permitted as a Temporary Living Quarters with Rio Blanco County.

To date, we have hauled potable water to the site and hauled waste water from the site. We now would like to install a separate individual sewage disposal system (ISDS) on that pad to accommodate up to 12 people. Please see the enclosed figure.

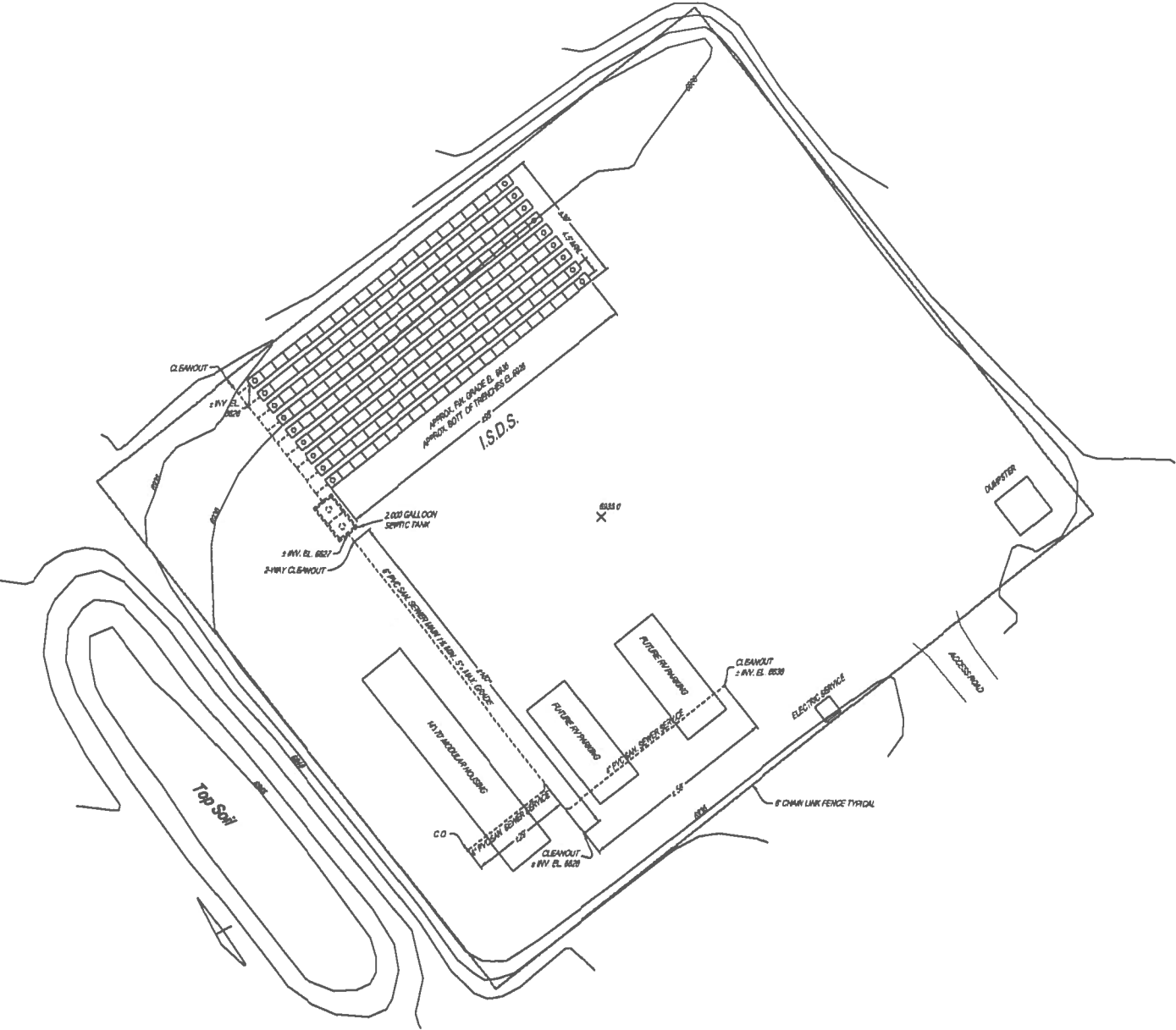
Rio Blanco County has advised us that they would like your opinion of this installation. Mr. Paul Daggett of your office requested information on reclamation of that ISDS.

The ISDS would be installed at least one foot below grade in the original pit constructed on that pad. That pit was never used, and we backfilled it with cut material from our Test Pad to create a level surface on the MWP 1 Pad. Following Rio Blanco county standards, upon abandonment, the wastewater tank and leach field would be pumped out and removed, and the pumped out material and debris properly disposed of. The ISDS would be reclaimed as part of overall reclamation of MWP 1 Pad, following BLM and Colorado Division of Reclamation, Mining and Safety requirements.

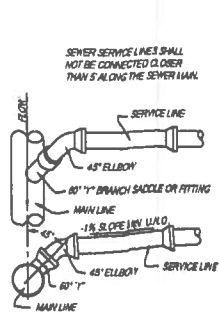
Please advise AMSO of your opinion of our installing and reclaiming this ISDS. Please contact me if you need more information or if you have any questions.

Sincerely,  
American Shale Oil, LLC

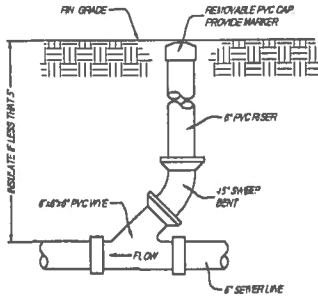
Roger L. Day  
VP of Operations



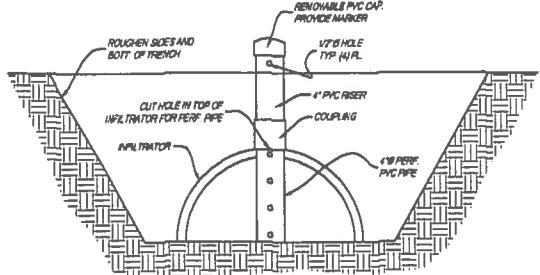
SITE PLAN - I.S.D.S.  
SCALE: 1" = 20'



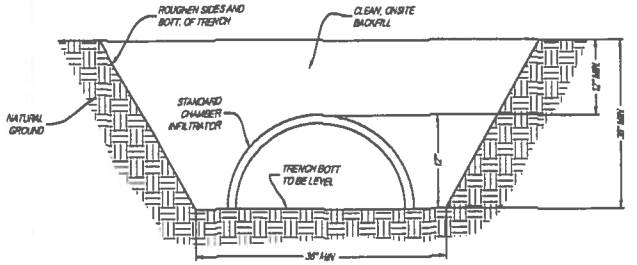
SAN. SEWER SERVICE TO MAIN  
N.T.S.



TYPICAL CLEAN OUT DETAIL  
N.T.S.



INSPECTION RISER DETAIL  
N.T.S.



INFILTRATOR TRENCH DETAIL  
N.T.S.

CONTRACTOR TO VERIFY LENGTHS AND GRADES PRIOR TO CONSTRUCTION. IN ADDITION CONTRACTOR SHALL VERIFY THE INFILTRATOR CAPACITY WITH THE MANUFACTURER FOR THE LAYOUT, DETAILS, AND CALCULATION SHOWN ON THIS DRAWING.

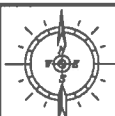
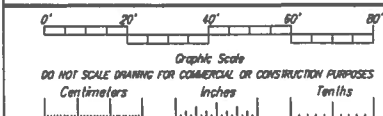
DESIGN BASIS:  
COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
TABLE 1: INFILTRATOR RATES  
(1) PEOPLE PER S.F. STEEL  
O = 12 x 75 GPD = 800 GPD  
DESIGN FLOW = 1.5 x 120 = 180 GPD = 0.04 cfs  
USE A 2,000 GAL. SEPTIC TANK = 0.04 cfs

TRENCH FIELD AREA:  
O = 1.25 GPD  
(1 x 30 MIN. USE HP GEOTECH REPORT DATED 21 APRIL 2008)  
A = 0.04 cfs / 1.25 gpd = 1.81 S.F.  
NO. UNITS = (1.81 S.F. / 1.0 S.F. PER UNIT) = 1.81 UNITS

USE (1) TRENCHES WITH (2) UNITS = 1.81 TOTAL UNITS  
NO AREA DEDUCTION GIVEN FOR STANDARD CHAMBER INFILTRATOR  
USE EQUALIZER TANK CHAMBERS AS MANUFACTURED BY INFILTRATOR SYSTEMS, INC. OR AN APPROVED EQUAL. CONFORM 6.0 S.F. PER UNIT WITH THE SELECTED CHAMBER MANUFACTURER.

ISDS AND ADSORPTION TRENCH NOTES:

1. ADSORPTION TRENCHES SHALL FOLLOW CONTOURS, SHALL NOT EXCEED 100 FEET IN LENGTH AND THE BOTTOMS OF TRENCHES SHALL BE LEVEL. THE BOTTOM AND SIDES OF THE TRENCHES SHALL BE ROUGHENED BY TROWEL OR SOME SHARP APPROVED METHOD AFTER EXCAVATION TO OPEN SOIL SURFACES. EXCAVATION OF TRENCHES DURING WET WEATHER OR WHEN THE SOIL IS WET IS NOT PERMITTED.
2. PROVIDE DRAIN SHALES AROUND TRENCH FIELD TO PREVENT SURFACE WATER FROM ENTERING THE FIELD. USE OF RUBBER TIED VEHICLES SHALL NOT BE PERMITTED ON THE TRENCH FIELD.
3. STANDARD CHAMBER INFILTRATORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. INFILTRATORS SHALL BE CONFIGURED FOR PARALLEL DISTRIBUTION AS SHOWN.
4. ANY LARGE ROCKS ENCOUNTERED DURING TRENCH EXCAVATION SHALL BE REMOVED AND REPLACED WITH PIT-RUN GRAVEL OR OTHER SIMILAR APPROVED GRANULAR MATERIALS.
5. ALL CONSTRUCTION AND INSTALLATION SHALL CONFORM TO THE RIO BLANCO COUNTY, AND THE STATE OF COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT REGULATIONS GOVERNING INDIVIDUAL SEWAGE DISPOSAL SYSTEMS. CONTRACTOR SHALL BECOME FAMILIAR WITH THESE REGULATIONS AND ENSURE COMPLIANCE. CLEAN OUTS ARE REQUIRED AT 100' INTERVALS AND AT ALL BENDS IN THE SEWER LINE. SOILS AND PERCOLATION DATA IS INCLUDED IN THE HP GEOTECH REPORT.
6. SEPTIC TANKS SHALL BE CONCRETE WITH Baffles AS MANUFACTURED BY COPELAND CONCRETE, RIPLE, COLORADO OR AN APPROVED EQUIVALENT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL SEWER LINES, TANKS, FILTERS, ETC. WHERE DEPTH OF COVER IS LESS THAN 3 FEET SHALL BE PROTECTED WITH BLUEBOARD INSULATION.
7. INSURE THAT FINAL GRADING DIRECTS ALL SURFACE WATER AWAY FROM THE TRENCH FIELD. TOPSOIL COVER DEPTH MAY VARY TO ALLOW LANDSCAPING, BUT SHALL NOT EXCEED ONE FOOT VARIANCE.
8. PERMANENT MARKERS SHALL BE INSTALLED AT ALL RISERS, CLEAN OUTS, AND OTHER BURIED COMPONENTS NOT VISIBLE FROM THE GROUND SURFACE.



ELECTRIC DATA PERFORMANCE REPORT:  
THIS REPORT WAS PREPARED BY THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT. IT IS A TECHNICAL REPORT AND IS NOT A DESIGN. IT IS THE RESPONSIBILITY OF THE DESIGNER TO OBTAIN ALL NECESSARY DATA AND TO PROVIDE ALL NECESSARY INFORMATION TO THE DESIGNER. THE DESIGNER SHALL BE RESPONSIBLE FOR THE DESIGN AND THE CONSTRUCTION OF THE SYSTEM. THE DESIGNER SHALL BE RESPONSIBLE FOR THE DESIGN AND THE CONSTRUCTION OF THE SYSTEM. THE DESIGNER SHALL BE RESPONSIBLE FOR THE DESIGN AND THE CONSTRUCTION OF THE SYSTEM.

REFERENCE DRAWINGS
DRAWING NUMBER
DRAWING NUMBER
DRAWING NUMBER


ENGINEERS SEAL



DRAWING ISSUE STATUS  
APPROVED FOR CONSTRUCTION  
DATE: 23 AUGUST 2012

AMERICAN SHALE OIL, LLC  
MWP-1 PAD MANCAMP TLQ  
INDIVIDUAL SEWAGE DISPOSAL SYSTEM  
PLAN AND DETAILS  
RIO BLANCO COUNTY, COLORADO

DRAWN: ACABON	8/12
CHECKED:	
APPROVED:	
SCALE:	1" = 20'
CAD FILENAME:	
PROJECT NUMBER:	
C1.2	0