

STATEMENT OF BASIS
The Oil Mining Company, Inc. Holliday Block Mine Project
Ground Water Discharge Permit No. UGW470003

I. Description of Facility

The Oil Mining Company, Inc. (TomCo) intends to develop an oil shale mine and hydrocarbon (kerogen) extraction operation on a tract of State Institutional Trust Lands located in all of Section 13 and portions of Sections 11, 12, and 14 of Township 12 South, Range 24 East, in Uintah County, Utah (SOB Figure 1 Site Location Map). The mining operation would be a surface (open pit) mine, and mining would proceed concurrently with construction of lined and enclosed “capsules” for extraction of kerogen from oil shale ore using heat. TomCo has entered into a licensing agreement with Red Leaf Resources (RLR), which developed the EcoShale™ InCapsule Technology for this process.

At this stage, TomCo proposes to construct one capsule approximately 75 percent of the size of the capsules envisioned for commercial production of kerogen from the mine, to evaluate various technical, environmental and economic aspects of the capsule technology. This initial capsule is hereinafter referred to as the Early Production System (EPS) capsule. The EPS capsule will be approximately 360 feet wide, 705 feet long, 115 feet high at the capsule edge and 167 feet high at the crown. This permit covers construction, operation and closure of the one EPS capsule (SOB Figure 2 EPS Site Plan). Construction of additional capsules for commercial production will require a new Ground Water Discharge Permit, based upon the findings of the EPS capsule.

II. Description of Site

Bedrock at the mine site is the Parachute Creek Member of the Eocene Green River Formation, which consists mostly of shale and oil shale, a dolomitic marlstone containing solid hydrocarbons (kerogen). Ore for the mining operation will be mined from the Mahogany Zone, a kerogen-rich stratigraphic interval approximately 85 feet thick in the project area. Strata at the mine site dip approximately 3 degrees in a direction a few degrees west of north. Depth to the top of the kerogen-rich Mahogany Zone is between the surface and 120 feet below ground surface across the mine site (SOB Figure 3 Generalized Stratigraphic Column Green River Formation). The ore will be excavated from the southeast corner of the mine property (SE corner of Sec. 13, T12S, R24E), where the oil rich shale zones are closest to the land surface.

III. Capsule Design and Construction

The EPS capsule will be constructed primarily from mined materials. It is TomCo’s intent to use the EPS capsule to evaluate the functionality, constructability and economic aspects of various designs for the liner that will surround the ore on the top, bottom and sides of the capsule; however, in all cases the liner will be the functional equivalent of a three-foot thick layer of bentonite-amended soil (BAS) having a saturated hydraulic conductivity of 1×10^{-7} cm/sec. This permit allows some flexibility in the designs used for the EPS capsule liner, to allow TomCo to make this evaluation. Some of the designs TomCo wishes to evaluate incorporate flexible membrane liners (FMLs) in order to contain liquid and gaseous hydrocarbons while the oil shale is being retorted. A primary function of the BAS/Capsule liner, however, is long-term, permanent containment of the spent shale after capsule closure. The Division of Water Quality (DWQ) does not consider FMLs to offer containment beyond the design life of the liner.

Once overburden has been removed from the area where the capsule will be constructed, a three-foot layer of compacted BAS will be placed on the graded bedrock surface to act as a liner. A FML may be incorporated in the liner design to insure recoverability of product and to insure liquid product is not lost to the lower BAS layer. A 13-foot layer of crushed shale gravel overburden material will be placed on top of the lower BAS liner to serve as insulation to conserve heat and protect the BAS from thermal breakdown. A steel liquids-collection pan will be embedded within the gravel insulation layer to collect liquids liberated from the oil shale during capsule operation and to prevent loss of oil to the underlying liner. A bulkhead will be installed on the north side of the capsule to allow for up to six pipe penetrations through the lower BAS liner. This will allow inflow and outflow of hot air and collection of liquid and gaseous hydrocarbons from the steel pan. The bulkhead allows the heating and product recovery pipes to exit the capsule while maintaining a seal to conserve heat and prevent leakage of product.

On top of the bottom insulating layer, liquids collection pan, and lower BAS liner, approximately 132.5 feet of oil shale ore will be stacked. As the ore is stacked, the sides of the capsule will be constructed to include a three-foot wide BAS side liner wall with 13 feet of insulating gravel immediately inside the capsule from the BAS wall. A FML may be used for product containment in the side walls, but will not be incorporated into the BAS wall. These layers will be buttressed on the outside by engineered fill for stability. This fill will have an outside slope of approximately 1.5H:1V. Corrugated steel heating pipes will be placed within the stacked ore. Vapor recovery pipes will be installed in the upper part of the capsule. Another 13-foot layer of insulating material will be placed on top of the stacked ore. A liner with the functional equivalent of a three-foot BAS layer with saturated hydraulic conductivity of 1×10^{-7} cm/sec may be installed on top of the capsule. A BAS layer may be installed after capsule cooling and settlement. In this case, a FML sealed to the capsule side walls will provide product containment during retorting operations (SOB Figure 4 EPS Capsule Roof, Floor and Wall Details).

IV. Capsule Cover

During heating and product recovery, the oil shale ore will undergo significant settlement estimated to be 30 feet or so. (The exact amount of settling is unknown at this time.) TomCo may evaluate two different options for cover design to maintain liner integrity after settling. If no FML is used during retorting operations, the top BAS layer will be designed with a pitched cover surface, and will be joined to the side BAS walls with a sloped "knuckle" structure in the BAS liner. The knuckle and the adjoining roof surface will be covered with 4 to 15 feet of interburden/overburden material to maintain compressive stress on the BAS and gravel layers as settlement of the heated capsule occurs. This surface will be covered with 6 to 12 inches of topsoil or a topsoil substitute to begin reclamation. If only a FML cover is used for product containment during retorting operations, a BAS liner and cover materials will be installed over the FML following capsule cooling and compaction.

Consolidation in the EPS capsule will be monitored carefully and assessed post-cooling to evaluate cover performance (see "Basis for Permit Issuance, #2", SOB pg. 7 and Section II, F(3) of the permit, permit pg. 5).

V. Characteristics of Leachate from Spent Shale

TomCo's capsule technology does not use process water and does not involve containment of wastewater. Discharge of contaminants to the subsurface related to the oil shale retorting process would only occur as a result of precipitation infiltrating into the closed capsules and reacting with the spent shale remaining after extraction of hydrocarbon liquids and gases. To evaluate potential contaminants which may be present in such leachate, RLR (developer of the EcoShale™ InCapsule Technology) collected samples of spent shale from bench scale testing of the oil shale retort process and tested them for leachability using the Synthetic Precipitation Leaching Procedure (SPLP, EPA SW846 Method 1312). While the SPLP testing cannot predict the exact chemistry of actual leachate formed under field conditions, it does give a measure of the content of leachable materials in the sample. The complete results of these analyses are given in Appendix G of TomCo's December, 2014 Ground Water Discharge Permit Application. Of the parameters tested, the three replicate samples showed levels of antimony (Sb) in the SPLP extract fluid that were slightly higher than the ground water standards, and detections of acetone, acrylonitrile and benzoic acid, for which there are no specific ground water standards. The SPLP extract fluid had high pH, around 10, in the three replicate samples. To evaluate whether the SPLP tests performed at RLR would be applicable to the TomCo site, TomCo conducted a study of published reports of Uintah Basin geology and reviewed digital data obtained from the United States Geological Survey and Utah Geological Survey covering over 630 wells drilled in the region and the TomCo and RLR project areas. The report with their findings, presented in Appendix K of TomCo's December, 2014 Ground Water Discharge Permit Application, found that the geologic setting and stratigraphy between the sites is similar and contiguous, that Fischer analyses obtained for the Mahogany Zone were similar throughout the region studied, and these similarities suggest that waste ore characteristics should yield similar SPLP results.

VI. Monitoring Requirements for Spent Shale

As a permit condition, TomCo will test spent shale collected directly from the EPS capsule when the retorting process is completed. When the capsule is closed after heating and extraction of hydrocarbons, it is likely that some hydrocarbon product will remain, adhering to rock fragments and the metal collection pan. As part of the report on capsule performance that TomCo will submit after retorting operations have ceased, the leachability of a representative sample of capsule contents, including any residual cooled hydrocarbon product, will be evaluated by SPLP testing. The Meteoric Water Mobility Procedure (MWMP) will also be performed on the samples. The spent shale residue from both extractions will be analyzed for:

- General chemistry,
- Metals from Table 1 of the Ground Water Quality Protection Regulations; and
- Petroleum-related parameters BTEX (benzene, toluene, ethylbenzene, xylenes), naphthalene, total petroleum hydrocarbons- gasoline range organics, total petroleum hydrocarbons- diesel range organics, and total recoverable petroleum hydrocarbons.

It is anticipated that all overburden excavated from the mine will be used in capsule construction, but it will not be enclosed in a liner following capsule closure. There is a possibility that precipitation may react with this exposed overburden material and leach soluble constituents out of it, and because the exposed overburden is not contained in lined cells as the spent shale is, the resulting solution may

discharge to waters of the state. To evaluate whether this may be a problem and, if necessary, help develop appropriate methods to manage storm water, as a permit condition TomCo will obtain a representative sample of exposed overburden and analyze it using the SPLP and MWMP extractions, for the same parameters to be used for the spent shale samples.

VII. Description of Hydrogeology

1. General Geology of the Mine Site

Bedrock at the mine site is the Eocene Green River Formation. These sedimentary rocks dip approximately 3 degrees in a generally northerly direction. Rocks exposed at the surface and in the strata to be mined are within the Parachute Creek Member, which consists mainly of oil shale, with minor interbedded amounts of siltstone, sandstone and altered volcanic tuff, and is approximately 1,100 feet thick. Oil shale is a dolomitic marlstone that contains solid hydrocarbon material known as kerogen. The Parachute Creek Member overlies the Douglas Creek Member which consist of (in decreasing order of abundance) sandstone, mudstone, siltstone, algal limestones, chalky limestones and dolomitic limestones. The contact between the Parachute Creek and Douglas Creek Members is gradational and has been placed at different locations in the sedimentary column by different workers, depending on whether the interpreted contact was based on field mapping or drill hole data. A detailed stratigraphic column showing the main ore zone, named the Mahogany Zone, as well as rocks above and below it and key stratigraphic horizons is shown in Figure 9-2 of TomCo's December 2014 ground water discharge permit application. Immediately on top and on the bottom of the Mahogany Zone are two horizons known as the A Groove and the B Groove, respectively, which get their names from their appearance in outcrop, as slope formers above and below the cliff-forming Mahogany Zone. At this location, these horizons are marlstone.

The Green River Formation was deposited in a large ancient lake, referred to as Lake Uinta. Lake levels varied as the sediments were deposited. Coarse-grained clastic sediments were deposited around the ancient lake shores, while sediments deposited in the central, deeper part of the lake, far from the shores, were fine-grained carbonates, organic matter and clays that settled out of the water column. The transition from the sandy Douglas Creek Member to the fine-grained Parachute Creek Member, therefore, represents a time when the lake level was rising and as a result, near-shore sediments were overlain by sediments deposited in a deep-water environment, far from the shore. Because the Parachute Creek Member was deposited in deep, open water conditions far from the shore and land-derived clastic sediments, it is expected to be of fairly uniform lateral composition across the mine site. Sandstone strata in the Douglas Creek Member, representing deposition in beaches, stream channels and deltas, may not be laterally continuous.

2. Water-Bearing Characteristics of Rocks in the Subsurface

Hydrogeologic studies conducted by TomCo were based on a conceptual site model developed in part using data shared from the RLR hydrogeologic studies performed at their site located approximately 12 miles southwest of the TomCo property. Given the close proximity of the two mine sites, and that the Parachute Creek Member is the ore source at both locations, the RLR data is applicable to the TomCo site and is referenced as appropriate. In addition, nine coreholes and four monitoring wells were drilled by TomCo within their project area.

In general, the Parachute Creek Member consists of fine-grained and low-permeability sedimentary rock that behaves as an aquiclude (an impermeable body of rock or stratum of sediment that acts as a barrier to the flow of groundwater); inhibiting infiltrating precipitation from recharging underlying rocks (Holmes and Kimball, 1987, p.35).

In accordance with the requirements of R317-6-6.3D, TomCo identified all water wells, springs, water bodies and drainages within a one-mile radius of the proposed mine operations. No water wells or water bodies were identified. Two springs were identified, both outside of the mine property, but within the one-mile radius. One spring did not have a measureable flow rate, but it was estimated at 0.5 gallons per minute (gpm). The second spring was measured to have a flow rate of 3.3 gpm. These springs are topographically above (higher elevation) the mine site, and are located upgradient of ground water flow, indicating that the source of the spring flow will not be impacted by mining activities.

In 2010 TomCo drilled nine coreholes to determine the depth and thickness of the Mahogany Zone. Depths ranged from 116 to 304 feet below ground surface (bgs). Based on data gathered from those borings the Mahogany Zone did not appear to be water bearing. Six of the nine coreholes did not exhibit ground water. Three of the nine coreholes showed limited amounts of ground water believed to be from sandstones below the Mahogany Zone. To further investigate these ground water shows, four monitoring wells were installed in 2013. Three monitoring wells were completed in the Parachute Creek Member at a depth of 200 feet bgs from locations as near as practical to the three boring locations that had exhibited limited ground water during the 2010 drilling program, and one deep monitoring well was completed in the Douglas Creek Member at a depth of 1,100 feet bgs. Water quality samples were collected and aquifer testing was conducted in each monitoring well as described in greater detail in the December 2014 Ground Water Discharge Permit Application.

The deep monitoring well, MW-04, completed in the Douglas Creek Member, pumped at flow rates up to 20 gallons per minute (gpm) during packer production testing conducted from the open borehole before the monitoring well was completed. Based on results of the water quality samples collected from the monitoring well, the ground water would be classified as Class II – Drinking Water Quality. Total dissolved solids (TDS) concentrations were 1,400 mg/L and no ground water quality standards were exceeded.

In contrast, the three shallow monitoring wells completed in the Parachute Creek Member could not be pumped at sustainable flow rates. These 3 monitoring wells were installed at locations as near as practical to the 3 corehole locations that showed ground water during the 2010 study described above (recall that 6 of the 9 coreholes were devoid of water). During pump tests conducted in October and November 2014, each monitoring well was dewatered at pumping rates averaging less than 1 gpm. Volumes removed before the monitoring wells were dewatered ranged from 3.14 gallons in MW-03 to 6.85 gallons in MW-02. Recharge to these monitoring wells was slow, as water levels had not recovered to pre-test levels in any of the wells 8 days after pumping was stopped. Hydraulic conductivities calculated from the data gathered during these tests ranged between 2×10^{-4} to 7×10^{-3} feet per day, values consistent with published values representative of silt, clayey sand, or silty sand (Halford and Kuniansky 2002; Fetter 1994). The low hydraulic conductivity, low volume of production, and slow recharge of these monitoring wells are all evidence that ground water encountered in the Parachute Creek Member does not represent a productive aquifer and is not of sufficient volume to be of beneficial use. Based on results of the water quality samples collected from the monitoring wells, the ground water would be classified under R317-6-3.6 as Class III – Limited Use Ground Water. TDS values ranged from 1,100 mg/L to 5,700 mg/L and ground water quality standards were exceeded in one or more of the monitoring wells for fluoride, chromium, antimony, and arsenic. Table 9-13 from the December 2014 Ground Water Discharge Permit application lists the analytical results for the ground water samples collected from the monitoring wells.

The deep monitoring well MW-04, installed to a depth of 1,100 feet bgs, taps the uppermost aquifer under the mine site contained in sandstones of the Douglas Creek Member. The interval below the Mahogany Zone (extent of mining) and above the water bearing formations encountered approximately 900 feet bgs consists of a minimum of 400 feet of interbedded low permeability shales, marlstones, and fine-grained sandstones (refer to boring log MW-04 in TomCo's December 2014 Ground Water Discharge Permit Application). These layers provide a natural hydraulic barrier between the Mahogany Zone oil shale and the sandstone aquifer present in the Douglas Creek Member. Static water levels in the monitoring well were measured at 720 feet bgs whereas the driller observed that the most significant water production was between 900 and 1,100 feet bgs. This was further confirmed by a series of packer tests conducted in sandstones from intervals of 776-797 feet bgs, 818-839 feet bgs, 846-867 feet bgs, and 936-957 feet bgs. None of these tests produced ground water despite being from intervals that appeared to be porous sandstone. The hypothesis for why these sandstone intervals did not produce water is that they are tar sands and the pore spaces are filled with tar. Refer to Section 9.3.2.1 of the December 2014 Ground Water Discharge Permit Application for a detailed discussion of the packer testing results and stratigraphic layers observed during the drilling program.

The fact that the water level rose above the elevation of the strata where ground water is being produced suggests it is under artesian pressure. The aquifer is recharged in the area to the south of the mine site where the Douglas Creek Member crops out (Holmes and Kimball 1987, p. 34). Ground water flows in a northerly direction from this recharge zone, down the dip of the strata, and the artesian pressure is a result of the recharge zone being at a higher elevation than the underground location where the well encountered the water-bearing stratigraphic interval. Upward hydraulic pressure indicates that this aquifer is protected from contaminants that may be introduced from above.

In conclusion, any fluids unintentionally discharged to the subsurface from TomCo's planned operations would have to pass through the rocks underlying the Mahogany Zone oil shale strata before it affected the uppermost aquifer at the site found in sandstones of the Douglas Creek Member. Given the impermeable nature of the Parachute Creek Member and the upward gradient of ground water observed in the Douglas Creek Member, ground water resources at the site are protected by the natural hydrogeological conditions in addition to the Best Available Technology (BAT) practices that will be implemented at the facility.

VIII. Basis for Permit Issuance

The issuance of this permit is part of an evaluation phase that will be used to test assumptions and factors related to ground water protection and capsule performance that are still not completely known. TomCo's proposed capsule technology for extraction of hydrocarbons from oil shale, along with site conditions, however, lead DWQ to conclude that construction of the EPS capsule as presented in TomCo's ground water discharge application will not degrade beneficial uses of ground water.

Also factored in is that the ore does not use process water nor involve containment of wastewater. After heat extraction of kerogen, the spent shale will be dry and not have any significant water content, and it will also be completely enclosed in a three-foot thick liner of bentonite-amended soil (BAS), or its functional equivalent. As part of site reclamation, a vegetative cover will be established over the capsule that will promote evapotranspiration of water from the soil. Formation of leachate and its discharge to the subsurface would only occur if precipitation infiltrates the vegetative cover and upper BAS liner in sufficient quantities to bring the water content of the near 100-foot thick layer of dry spent shale and the "rind" of insulating waste rock to field capacity, and then if this water breaks through the

metal oil collection pan and builds up on the lower BAS liner and breaks through it. Available information suggests that such leachate would have levels of dissolved contaminants that are comparable to or less than the existing ground water in the underlying rocks. Also, rocks located immediately below the capsule are of very low permeability, and protect underlying aquifers from contaminants that may be introduced from the capsule.

The unlikely possibility that the capsule would cause a discharge of contaminants to the subsurface, in combination with the low permeability of the rocks underneath the capsule and the poor quality of ground water contained in them, lead DWQ to conclude that monitoring ground water quality at this site would not provide useful information to evaluate TomCo's compliance with the Ground Water Quality Protection Regulations. However, the purpose for construction of the EPS capsule is to evaluate the capsule design for suitability in the construction of future capsules for commercial production.

To better evaluate any potential discharge to the subsurface or to waters of the state that may result from large-scale commercial production at the mine, as permit conditions TomCo shall conduct the following investigations:

1. After closure and sufficient cooling of the EPS capsule, TomCo shall obtain representative samples of spent shale, including residual hydrocarbons, and also graded overburden rock that will be left in place underneath the layer of topsoil or growth medium used for final site reclamation. SPLP and MWMP extracts from these samples shall be analyzed for:

- General Chemistry: pH, total dissolved solids (TDS), major ions (Na, K, Mg, Ca, Cl, SO₄, alkalinity), F, Sr, OH, nitrate/nitrite (as N), total organic carbon;
- Metals from Table 1 of UAC R317-6: antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium and zinc; and
- Petroleum-related parameters: benzene, toluene, ethylbenzene, xylenes, naphthalene, total petroleum hydrocarbons- gasoline range organics, total petroleum hydrocarbons- diesel range organics and total recoverable petroleum hydrocarbons.

2. If the BAS cover layer is installed on top of the capsule prior to retorting operations, TomCo shall evaluate the post-settling hydraulic conductivity of the upper BAS liner, particularly in places that have experienced the most mechanical strain during compaction.

TomCo shall also investigate hydrologic properties of the spent shale, particularly initial water content and field capacity after retorting. TomCo shall then use the best estimates for values of hydraulic properties of the various capsule components, based on actual field observations, in an analysis using the Hydrologic Evaluation of Landfill Performance (HELP) model to estimate infiltration through the upper liner into the capsule. The report should compare the infiltration rate through the upper liner with the volume of water that would be needed to bring the spent shale to field capacity, in both the EPS and future production capsules.

3. TomCo shall monitor discharges from the EPS capsule after ore retorting operations have ended. The capsule is designed to collect liquid hydrocarbons on a metal pan at the base of the stacked crushed oil shale, as the shale is heated. The pan will remain in place after capsule closure. If any leachate is formed by contact of infiltrating precipitation with the spent shale, it will collect on the metal pan before it can discharge to the subsurface. After capsule closure, TomCo will be able to monitor drainage

from the metal pan and also from the top of the BAS liner (below the metal pan), as described in Section 5.5 of the December 2014 permit application. As a permit condition, following capsule closure TomCo will monitor the drains leading from these points for presence of any fluid or liquid hydrocarbons starting with a weekly frequency, reducing to monthly, then semi-annually if fluids are not observed. If any fluid is present coming from the drains in quantities large enough to take a sample, TomCo will sample this water and analyze it for petroleum parameters, parameters of concern in the streams that drain the mine site, and other parameters that may be identified as potential pollutants in the SPLP and MWMP analyses of the spent shale. Any such water may not be discharged to surface water and disposal of the water shall be protective of other waters of the state. TomCo shall report the quantity of liquid hydrocarbons that have discharged from the capsule in the previous six months to DWQ. As a permit condition, TomCo will remove liquid hydrocarbons from the site for as long as they flow from the capsule drains.

TomCo shall submit reports on the results of these investigations to DWQ whether or not they decide to apply for an additional permit to construct an additional capsule or capsules. If TomCo decides to pursue the construction of additional capsules, DWQ will take into account the results of monitoring required by this permit in developing conditions for a future permit addressing similar activities.

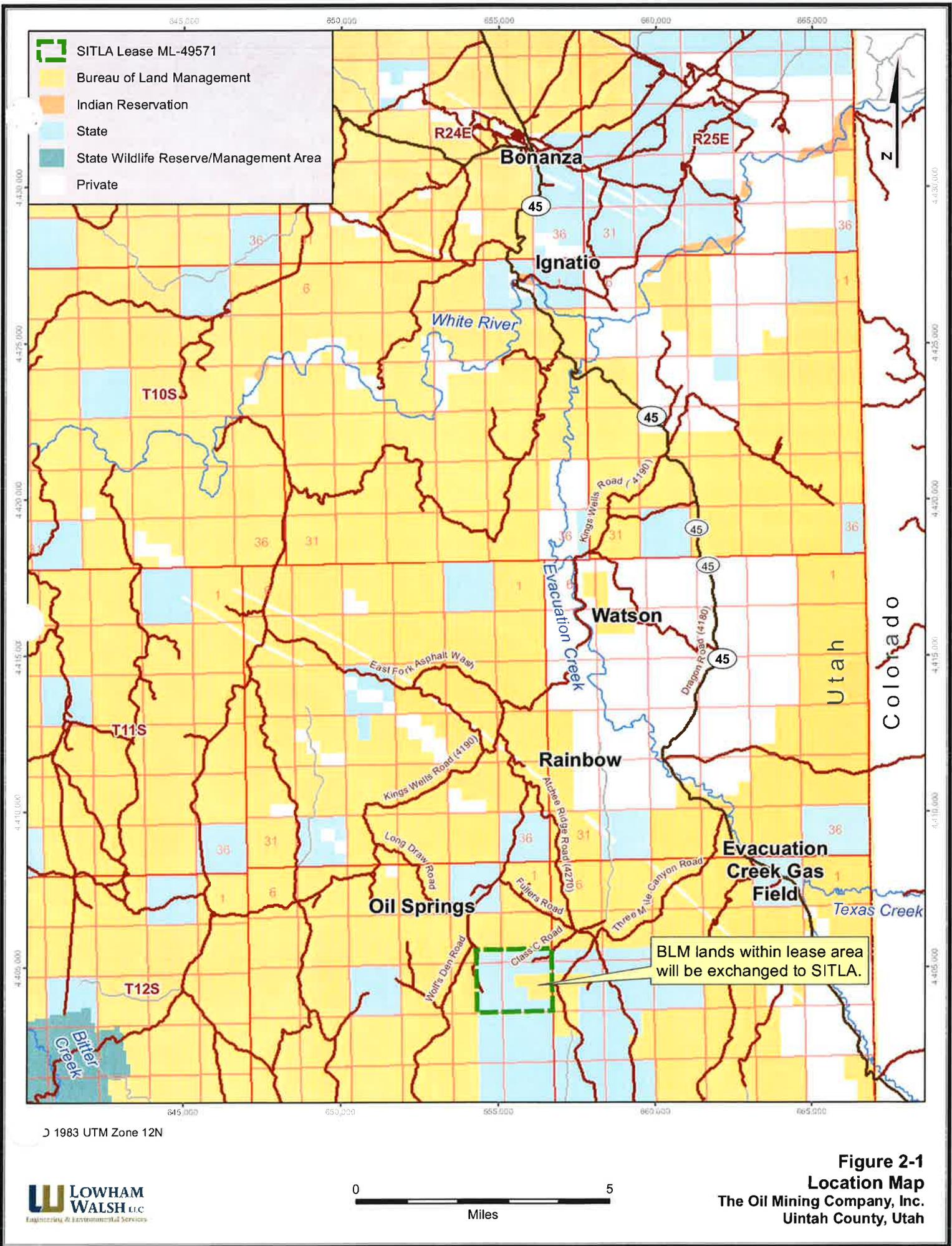
REFERENCES

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Holmes, W. F. and Kimball, B. A., 1987, Ground Water in the Southeastern Uinta Basin, Utah and Colorado: U.S. Geological Survey Water-Supply Paper 2248

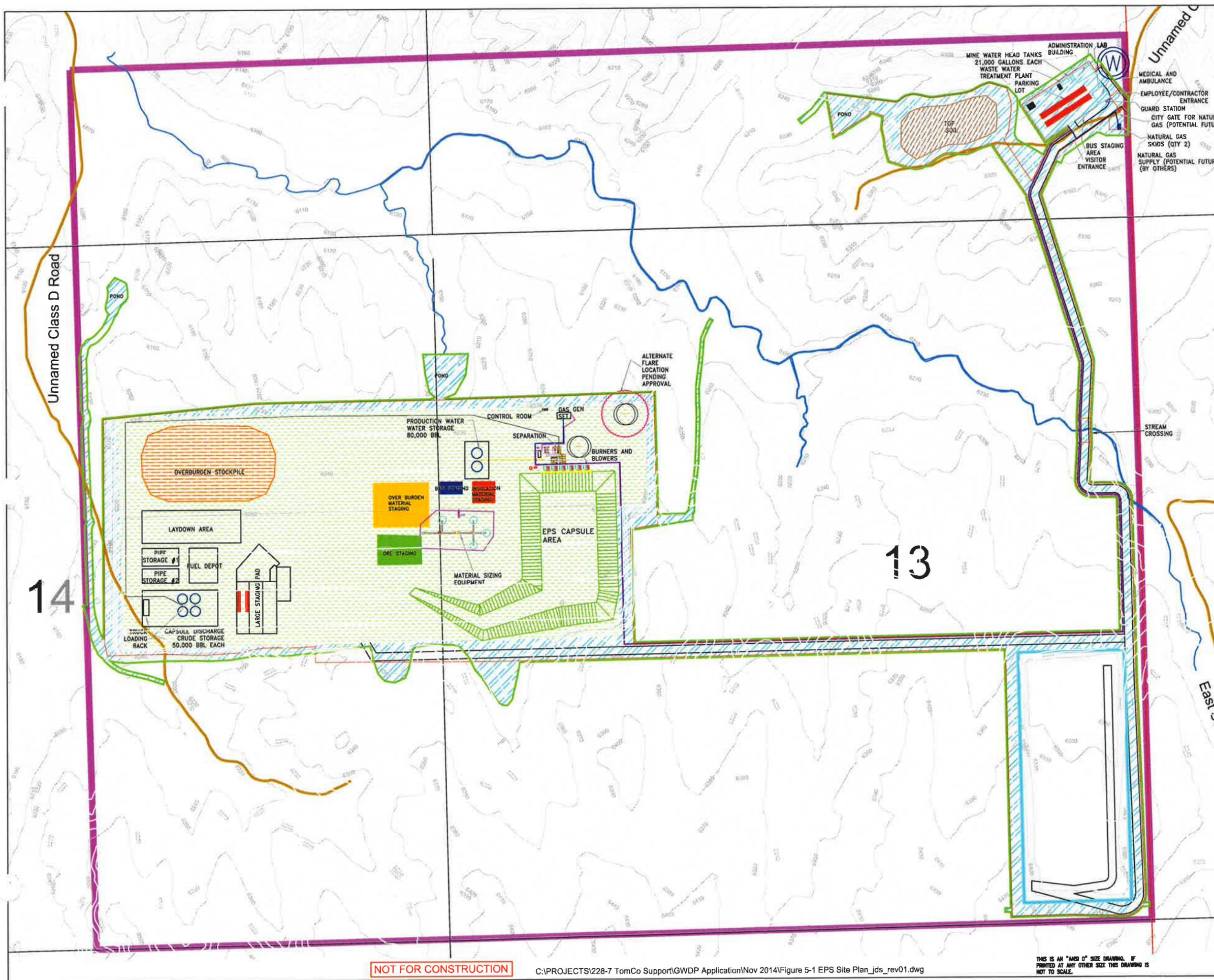
The Oil Mining Company, Inc., 2014, Ground Water Discharge Permit Application, Holliday Block, December, 2014: DWQ files, DWQ-2014-016166



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Figure 2-1
Location Map
The Oil Mining Company, Inc.
Uintah County, Utah

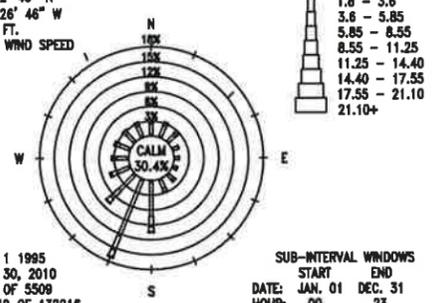
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- LEGEND**
- OVERBURDEN STAGING
 - ORE STAGING
 - INSULATION MATERIAL STAGING
 - BAS STAGING
 - TOPOGRAPHY CONTOUR
 - MINE PIT BOUNDARY
 - DISTURBANCE BOUNDARY
 - PERMIT BOUNDARY
 - EXISTING RD
 - PROPOSED RD
 - MINE WATER
 - POTABLE WATER
 - FIREWATER SYSTEM
 - POWER LINE (POTENTIAL FUTURE)
 - NATURAL GAS SUPPLY (POTENTIAL FUTURE)
 - FENCE LINE
 - CAPSULE DISCHARGE WATER
 - CRUDE OIL LINE
 - CLEAR AND GRUB
 - STRIP AREAS
 - TOPSOIL STOCKPILE
 - OVERBURDEN STOCKPILE
 - WATER WELL

	AREA (sqft)	VOLUME (cuft)
CLEAR & GRUB	3413773	
STRIP	3015400	3015400
STOCKPILE	377186	

STATION : UPPER SAND WASH UTAH
 LATITUDE : 39° 42' 49" N
 LONGITUDE : 109° 26' 46" W
 ELEVATION : 8300 FT.
 ELEMENT : MEAN WIND SPEED



START DATE : JUNE 1 1995
 END DATE : JUNE 30, 2010
 # OF DAYS : 5509 OF 5509
 # OBS-POSS : 130249 OF 132216
 WESTERN REGIONAL CLIMATE CENTER

SUB-INTERVAL WINDOWS
 START DATE: JAN. 01
 END DATE: DEC. 31
 HOUR: 00

UPPER SAND WASH REFERENCE WIND ROSE

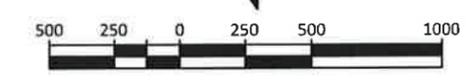


Figure 5-1

EPS Site Plan
 The Oil Mining Company, Inc.
 Uintah County, Utah

NOT FOR CONSTRUCTION

C:\PROJECTS\228-7 TomCo Support\GWDP Application\Nov 2014\Figure 5-1 EPS Site Plan_jds_rev01.dwg

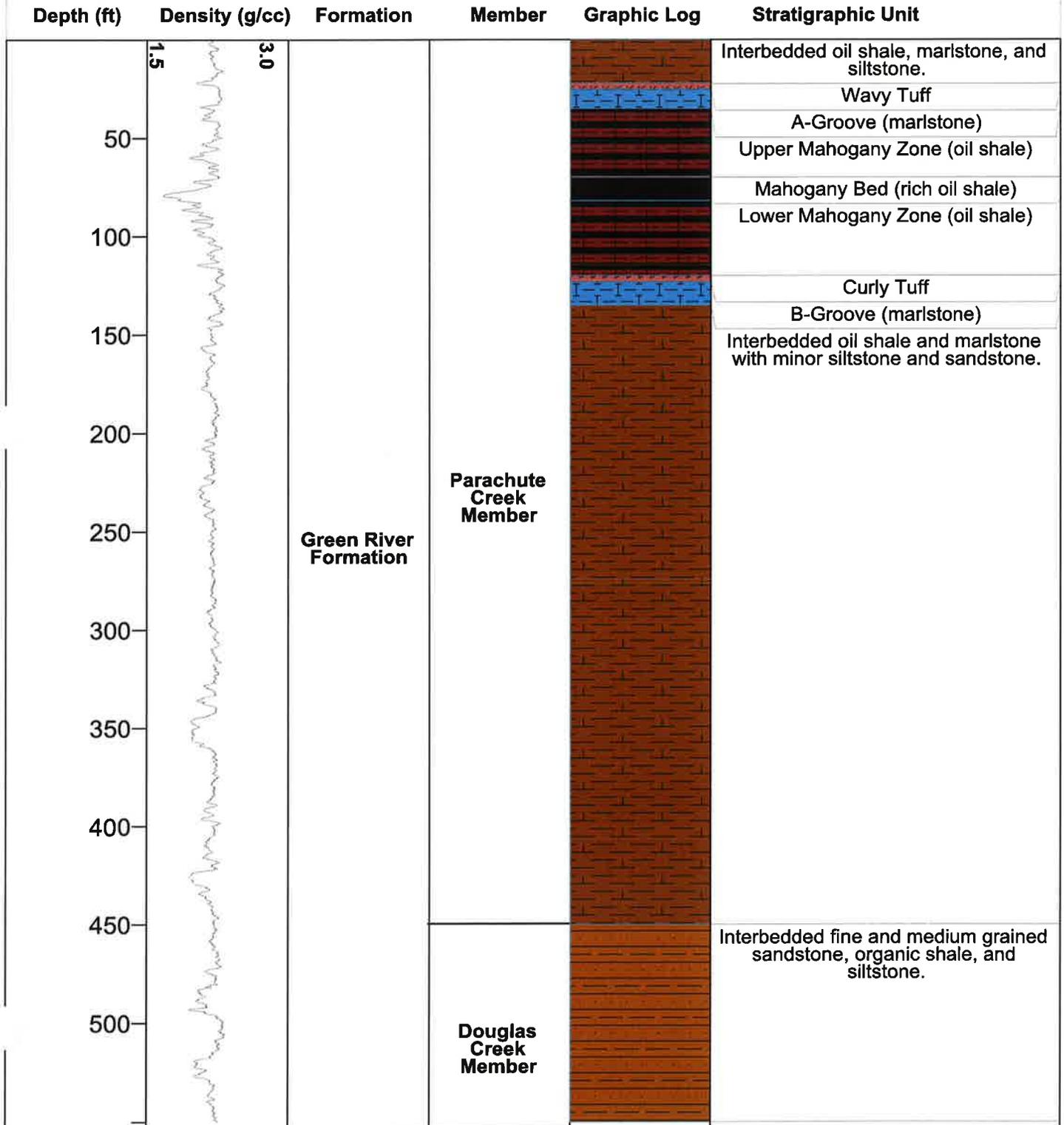
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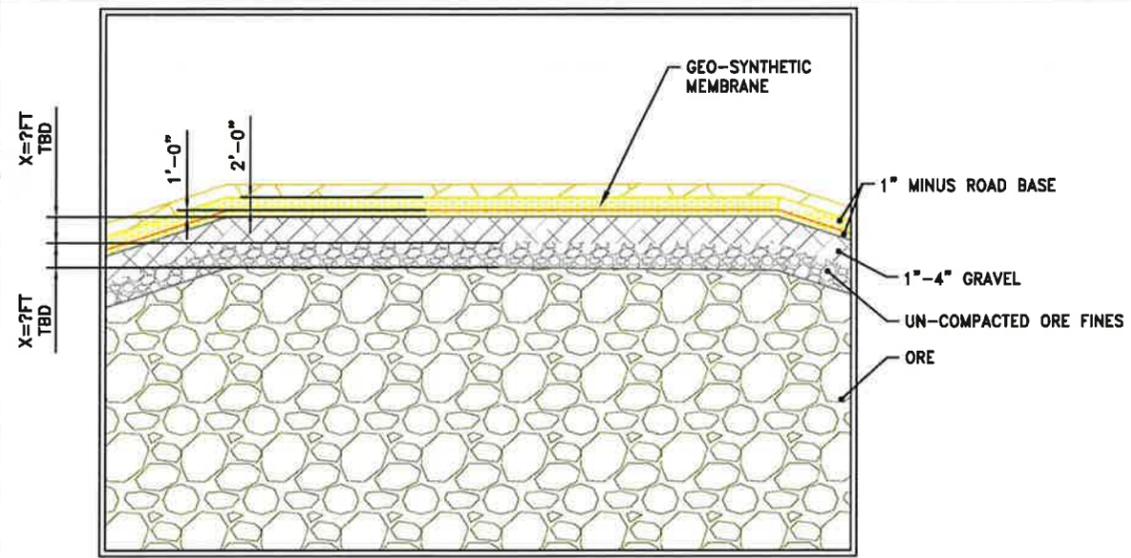
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 SCALE: AS NOTED
 NORWEST CORPORATION

Figure 9-2

Type Stratigraphic Column

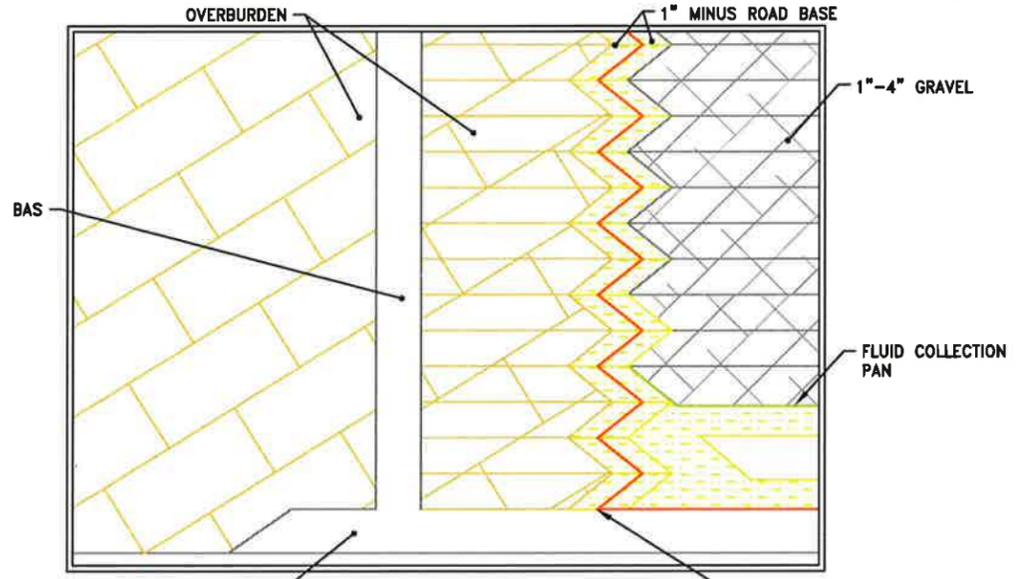
The Oil Mining Company, Inc.
 Uintah County, Utah





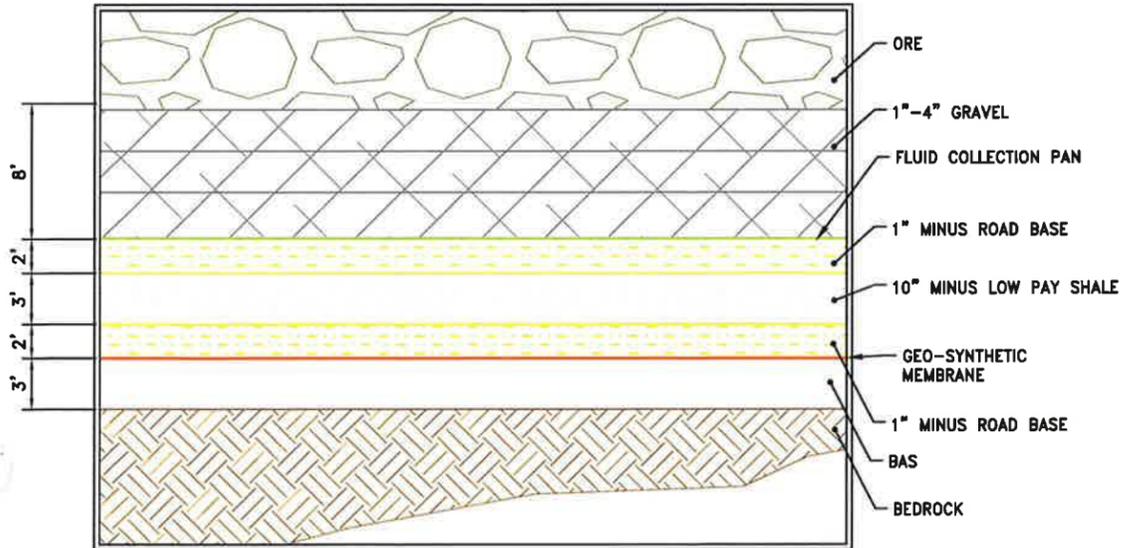
ROOF DETAILS

(MEMBRANE ALTERNATIVES (WITH BAS TO BE PLACED AFTER CAPSULE SETTLEMENT AND COOLING))



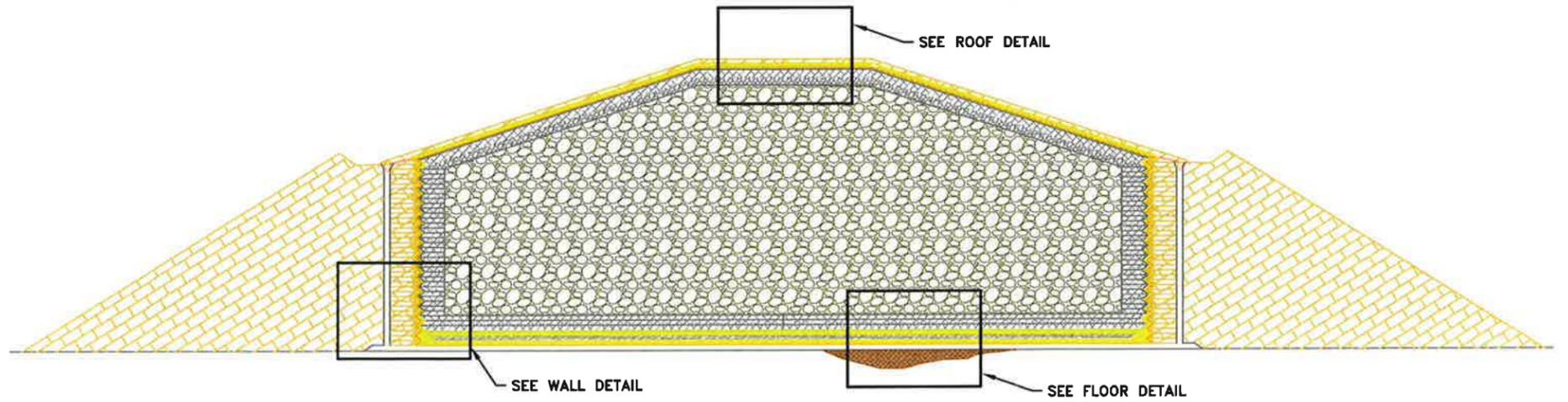
WALL DETAILS

(ALTERNATIVES: BAS ONLY OR BAS + MEMBRANE)



FLOOR DETAILS

(ALTERNATIVES: BAS ONLY OR BAS + MEMBRANE)



MEMBRANE ROOF CAPSULE

ALTERNATE DESIGN - MEMBRANE ROOF (WITH BAS TO BE PLACED AFTER CAPSULE SETTLEMENT AND COOLING)

- NOTE:**
1. FLOOR DETAIL THICKNESSES SUBJECT TO CHANGE FOR FINAL DESIGN.
 2. ROOF DETAIL "TBD" DIMENSIONS ARE TO BE CONFIRMED.

THIS IS AN "ANSI D" SIZE DRAWING. IF PRINTED AT ANY OTHER SIZE THIS DRAWING IS NOT TO SCALE.

NOT FOR CONSTRUCTION

PRELIMINARY



FIGURE 5-7

EPS Capsule Construction Engineering Functional Equivalents to Base Case Design Capsule Roof, Walls, and Floor Details
The Oil Mining Company, Inc.
Uintah County, Utah