

MAR 17 2021

GeoStrata

Engineering & Geosciences

14425 S. Center Point Way, Bluffdale, Utah 84065 ~ T: (801) 501-0583 ~ F: (801) 501-0584

DSHW-2021-004563

March 17, 2021

Utah Division of Waste Management and Radiation Control
Attention: Mr. Brian Speer, Solid Waste Program Manager
195 North 1950 West
Salt Lake City, UT 84114-4880

Bluebell Disposal Final Cover Design Requirements
GeoStrata Project No. 524-081

**RE: Response to Comments
Wonsit Class IIIb Landfill Permit Modification**

Mr. Speer:

In a letter dated March 3, 2021, the Utah Division of Waste Management and Radiation Control reviewed the Wonsit Class IIIb Landfill Permit Modification. Several comments were included in the letter and that they should be addressed, and a correct version be provided to the Division. Attached to this letter is the corrected version of the application. All comments have been addressed in the updated permit modification documents.

Comment 8 in the letter requested that the closure costs for inspections, report, groundwater monitoring and topsoil be adjusted for inflation. Appendix F has been updated to include these cost adjustments. Comment 8 also included the following question: *Why has the topsoil grading been reduced to 19,111 SY from them 35,300 SY reported from a previous estimate?*

Response: The costs presented in Appendix F are for Cell 2 of the Wonsit Landfill. The 35,300 SQ YD of topsoil is the estimate for Cell 1.

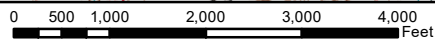
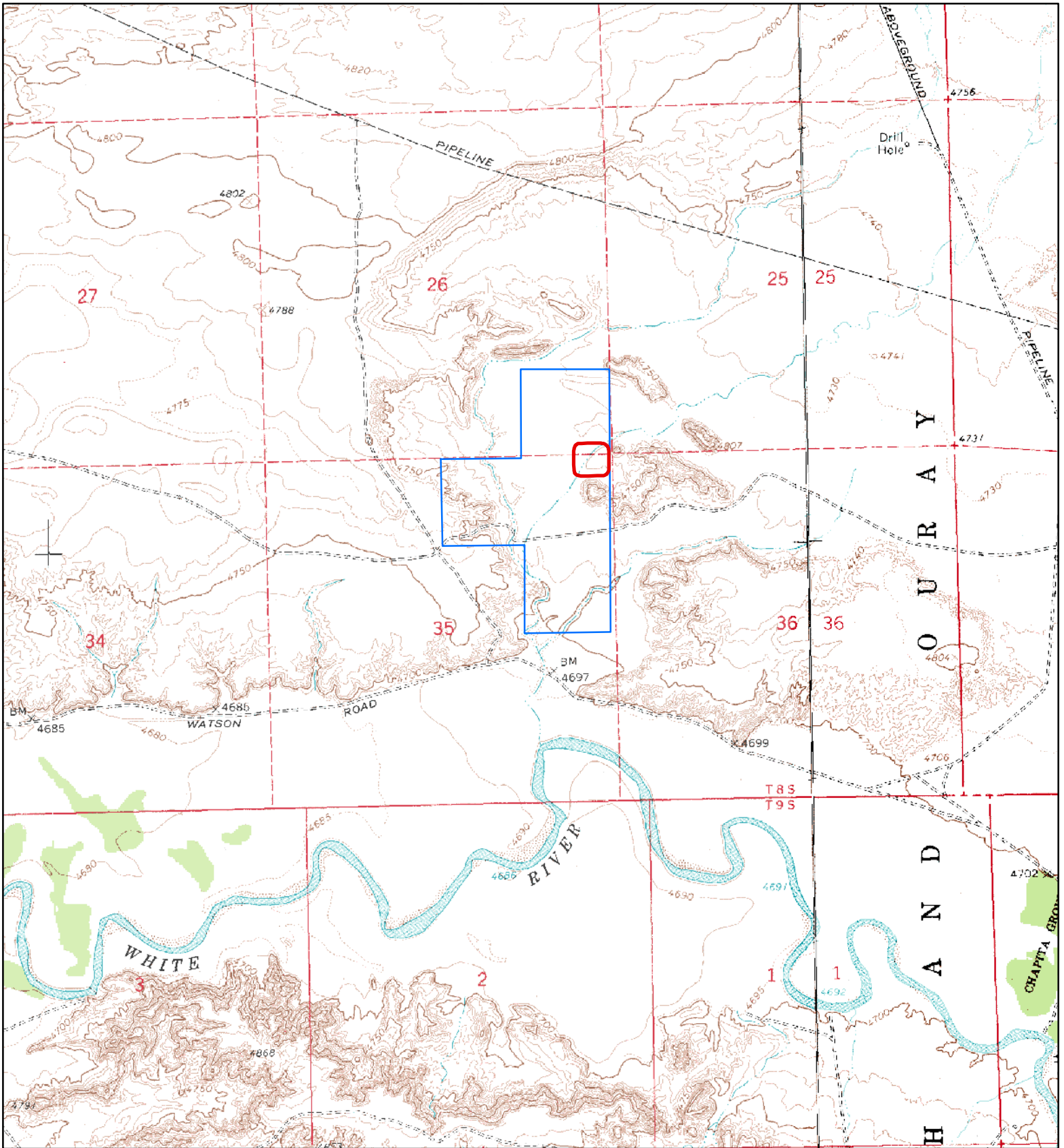
We look forward to having the review of the permit application completed soon. Please feel free to contact us with any further questions at 801-501-0583.

Respectfully submitted,



Jon Peaden
Environmental Scientist

Appendix A



1:24,000

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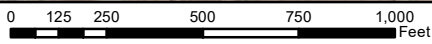
Legend

- Landfill Cell 2
- Site Boundary

Wonsit Landfill Cell 2
 RN Industries
 Project Number: 524-104

**Plate
 A-1**

Site Vicinty Map



1:6,000

Legend

- Wonsit Landfill
- Landfill Cell 2
- Site Boundary

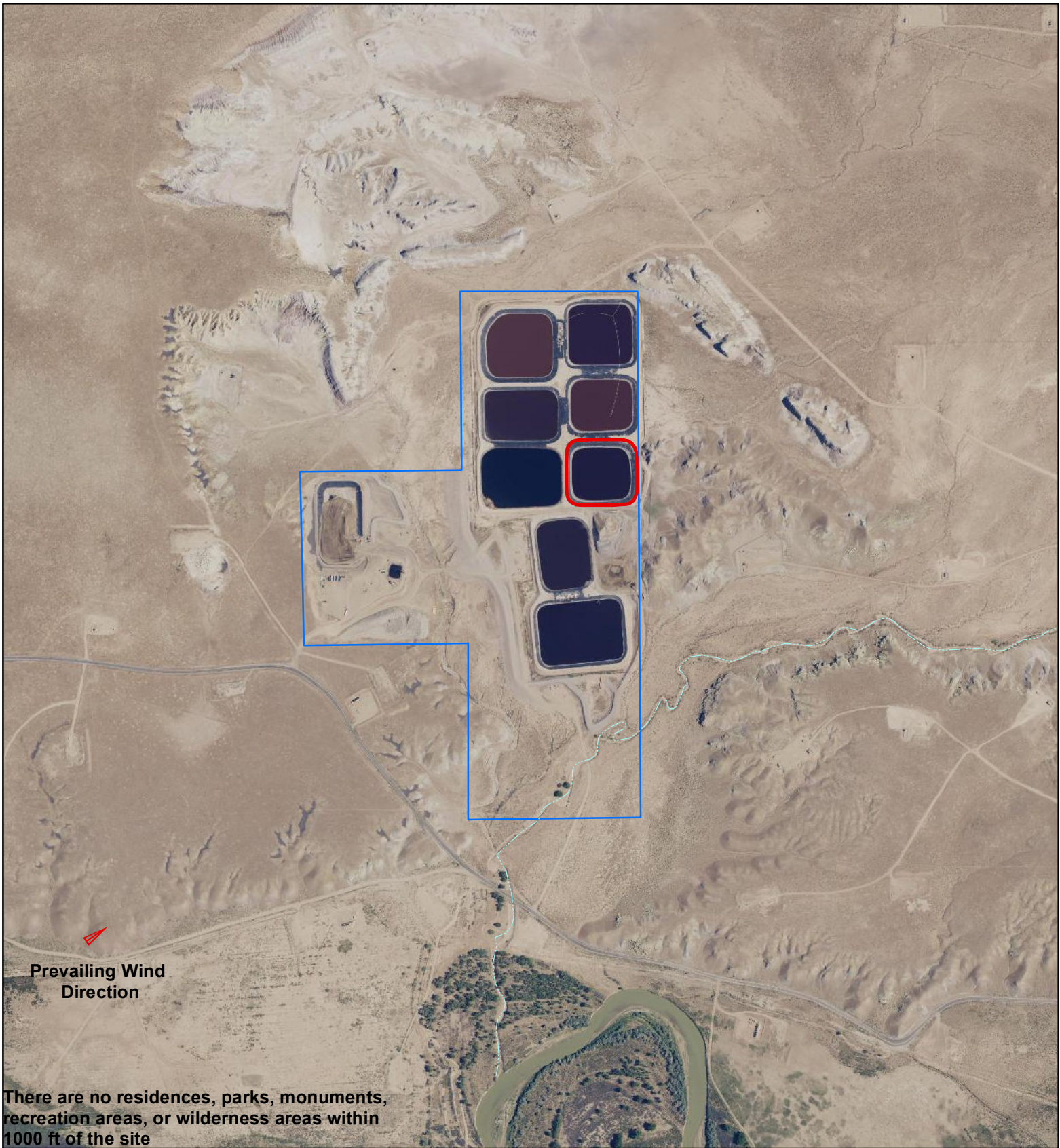
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Wonsit Landfill Cell 2
RN Industries
Project Number: 524-104

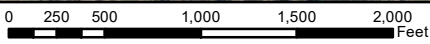
Facility Layout Map

**Plate
A-2**



Prevailing Wind Direction

There are no residences, parks, monuments, recreation areas, or wilderness areas within 1000 ft of the site



1:12,000

Legend

-  Antelope Draw
-  Landfill Cell 2
-  Site Boundary

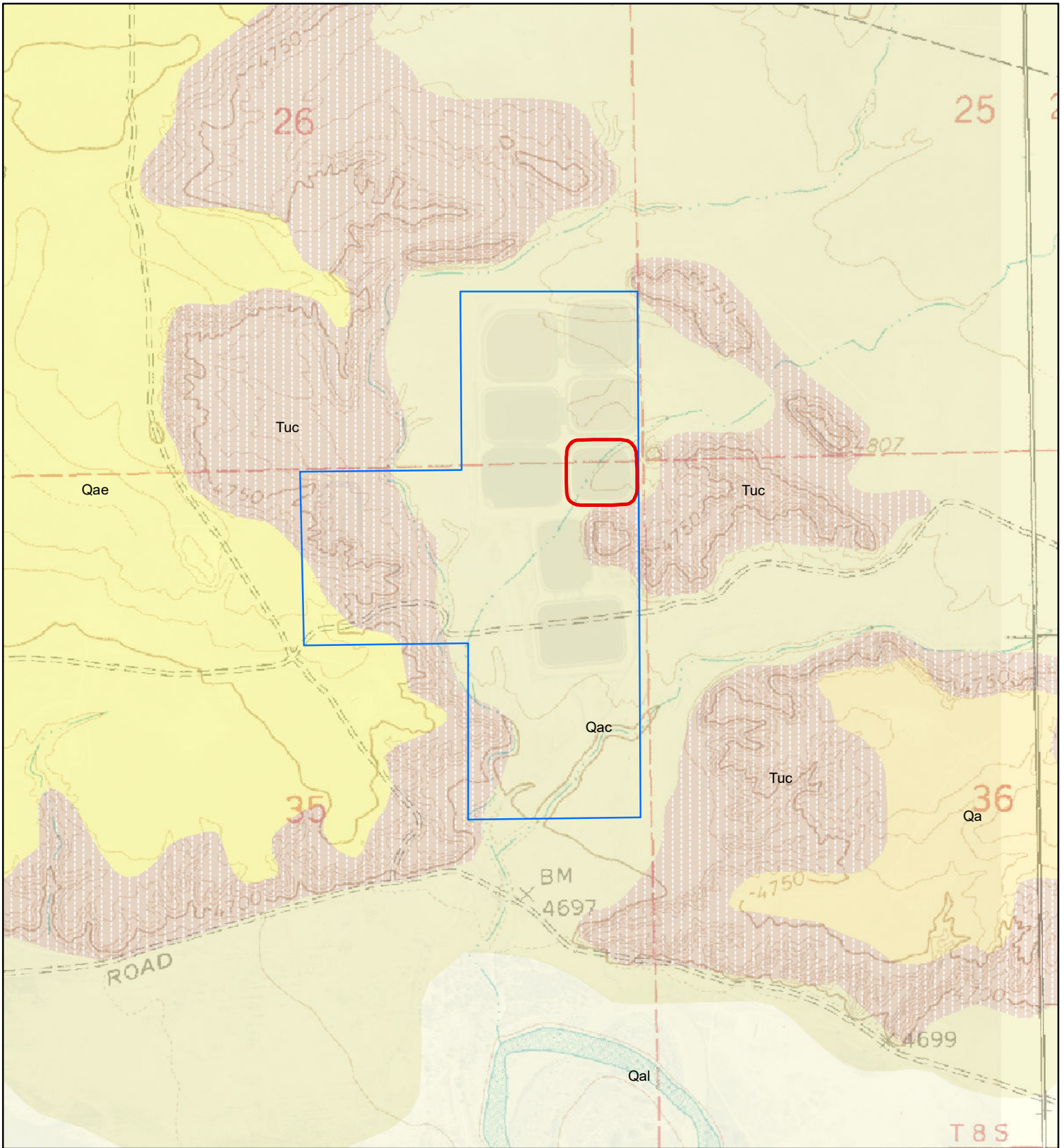
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Wonsit Landfill Cell 2
RN Industries
Project Number: 524-104

Land Use Compatibility Map

**Plate
A-3**

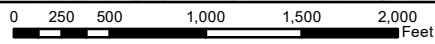


Legend

- Landfill Cell 2
- Site Boundary

Geology

- Qal - flood plain and channel alluvium
- Qa - Piedmont alluvium
- Qac - mixed alluvium and colluvium
- Qae - mixed alluvium and eolian deposits
- Tuc - Member C Unita Formation



1:12,000



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Wonsit Landfill Cell 2
RN Industries
Project Number: 524-104

Plate
A-4








Surficial Geology



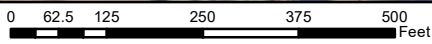
U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov

January 20, 2020

Wetlands

- | | | |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland |  Lake |
|  Estuarine and Marine Wetland |  Freshwater Forested/Shrub Wetland |  Other |
| |  Freshwater Pond |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



1:3,000



Legend

-  Proposed Well
-  Landfill Cell 2
-  Site Boundary

Wonsit Landfill Cell 2
 RN Industries
 Project Number: 524-104

Proposed Wells

**Plate
 A-6**

Appendix B

RN INDUSTRIES WONSIT DISPOSAL FACILITY

POND 6 LANDFILL CONVERSION

January 2020

SECTIONS 26 and 35, TOWNSHIP 8 SOUTH, RANGE 21 EAST,
SALT LAKE BASELINE AND MERIDIAN

				SCALE		 BLUFFDALE, UTAH	LOCATION	UINTAH COUNTY, UTAH	B-1
			NONE	PROJECT			WONSIT CELL 2 LANDFILL		
1	1-8-2020	JDP	PERMIT DRAWINGS	TITLE			COVER SHEET	NO	
REV	DATE	BY	DESCRIPTION						

BINDING EDGE

GENERAL NOTES

1. THE DESIGN IS AN ORIGINAL UNPUBLISHED WORK AND MAY NOT BE DUPLICATED, PUBLISHED AND/OR USED WITHOUT THE WRITTEN CONSENT OF GEOSTRATA, LLC.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH PERTINENT JURISDICTIONAL CODES, RESTRICTIONS, COVENANTS, AND/OR ORDINANCES. ANY CONFLICT BETWEEN DESIGN AND REQUIREMENT SHALL BE REPORTED TO GEOSTRATA, LLC BEFORE PROCEEDING. FAILURE TO DO SO VOIDS THE DESIGN.
3. ANY AND ALL PROPOSED CHANGE, MODIFICATIONS AND/OR SUBSTITUTION SHALL BE REPORTED TO GEOSTRATA, LLC BEFORE PROCEEDING. ANY DEVIATION FROM THE CONTRACT DOCUMENTS, WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF GEOSTRATA, LLC VOIDS THE DESIGN.
4. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN DOCUMENTS AND/OR JURISDICTIONAL REQUIREMENTS, THE MORE RESTRICTIVE FROM THE STANDPOINT OF SAFETY AND PHYSICAL SECURITY SHALL APPLY.
5. ANY INSTALLATION OR WORK NEXCESSARY TO THE FUNCTIONING, SAFETY AND/OR PHYSICAL SECURITY OF DESIGN THAT IS TO BE ENCAPSULATED OR OTHERWISE PERMANENTLY OBSCURED FROM INSPECTION SHALL BE REPORTED TO GEOSTRATA, LLC A MINIMUM OF TWO (2) WORKING DAYS BEFORE ENCLOSURE.
6. ANY DAMAGE, DISRUPTION OR COMPROMISE OF AMBIENT RIGHTS-OF-WAY, UTILITIES, OR ENVIRONMENTAL QUALITY SHALL BE IMMEDIATELY RECTIFIED BY THE CONTRACTOR TO THE SATISFACTION OF GEOSTRATA, LLC AT NO COST TO THE OWNER.
7. ALL WORK SHALL BE INSPECTED BY GOVERNING AGENCIES IN ACCORDANCE WITH THEIR REQUIREMENTS. JURISDICTIONAL APPROVAL SHALL BE SECURED BEFORE PROCEEDING WITH WORK BY CONTRACTOR.

CONSTRUCTION NOTES

1. ALL WORK WITHIN THE SITE SHALL CONFORM TO CURRENT JURISDICTIONAL STANDARDS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA AND UOSHA REQUIREMENTS, LATEST EDITIONS).
3. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE EXCAVATING WITHIN 200 FEET OF SAID UTILITIES WHICH MAY BE EXPOSED, DAMAGED, OR CROSSED AS SHOWN ON THE DRAWINGS OR AS "BLUE STAKED". THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE UTILITY COMPANY TO MOVE THE UTILITY IF NECESSARY OR OBTAIN PERMISSION FROM GEOSTRATA, LLC TO MODIFY GRADES OF PROJECT LINES IN ORDER TO GO AROUND EXISTING UTILITIES.
4. BURIED UTILITIES ARE SHOWN ON THE PLANS IN A GENERAL SCHEMATIC WAY ACCORDING TO INFORMATION RECEIVED FROM OTHERS. THE ACCURACY OR COMPLETENESS OF THE LOCATIONS SHOWN IS APPROXIMATE ONLY. THE CONTRACTOR SHALL DETERMINE THE ACTUAL LOCATION OF EXISTING SERVICE CONNECTIONS AND UTILITIES, VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS AND TAKE THE NECESSARY STEPS TO AVOID THEM.

EROSION CONTROL NOTES

1. AT ALL TIMES DURING CONSTRUCTION, CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING AND CONTROLLING EROSION DUE TO WIND AND RUNOFF. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MAINTAINING THE EROSION STORM WATER CONTROL FACILITIES READ BY CONTRACT DOCUMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING DRAINAGE AND EROSION CONTROL FACILITIES AS REQUIRED. ROADWAYS SHALL BE KEPT CLEAN OF CONSTRUCTION DEBRIS.
3. FUGITIVE DUST SHALL BE CONTROLLED BY SPRAYING WATER ON THE DRY AREAS OF THE SITE.
4. NO RUBBISH, TRASH, GARBAGE, OR THE OTHER SUCH MATERIALS SHALL BE DISCHARGED INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
5. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS SHALL BE REMOVED IMMEDIATELY.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) DUE TO GRADE CHANGES OR OTHER UNFORESEEN CONDITIONS DURING DEVELOPMENT OF THE PROJECT.

LANDFILL (POND 6 CONVERSION)

1. BOTTOM OF LANDFILL, NOMINAL EL. = 4652 FT
2. TOP OF LANDFILL, NOMINAL EL. = 4676 FT
3. INBOARD SLOPE = 3:1
4. OUTBOARD SLOPE = 3:1
5. FINAL COVER GRADE = 2%
6. LANDFILL VOLUME (EXCLUDING BASE AND CAP MATERIAL) = 178,034 CY
7. VOLUME OF 6" LEACHATE SAND = 4,500 CY
8. VOLUME OF 6" PROTECTIVE SOIL = 4,550 CY
9. VOLUME OF 8" OF TOP SOIL CAP = 5,800 CY
10. VOLUME OF 6" OF CLAY CAP (K=10^-6) =4,500 CY
11. SURFACE AREA OF TOP SOIL = 172,000 SF



CAUTION NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO STAKING OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

CONTRACTOR AGREES THAT IT SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY: THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO THE NORMAL WORKING HOURS; AND THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXPECTING FOR LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.



				SCALE AS SHOWN			LOCATION UINTAH COUNTY, UTAH	
							PROJECT WONSIT CELL 2 LANDFILL	B-2
REV	DATE	BY	DESCRIPTION				TITLE GENERAL NOTES	NO

BINDING EDGE



GeoStrata
BLUFFDALE, UTAH

2016 PHOTOGRAPHY

REV	DATE	BY	DESCRIPTION
A	10-18-19	BER	PERMIT DRAWINGS

SCALE
NONE



LOCATION	UINTAH COUNTY, UTAH
PROJECT	WONSIT CELL 2 LANDFILL
TITLE	COVER SHEET


B-3
NO

BINDING EDGE

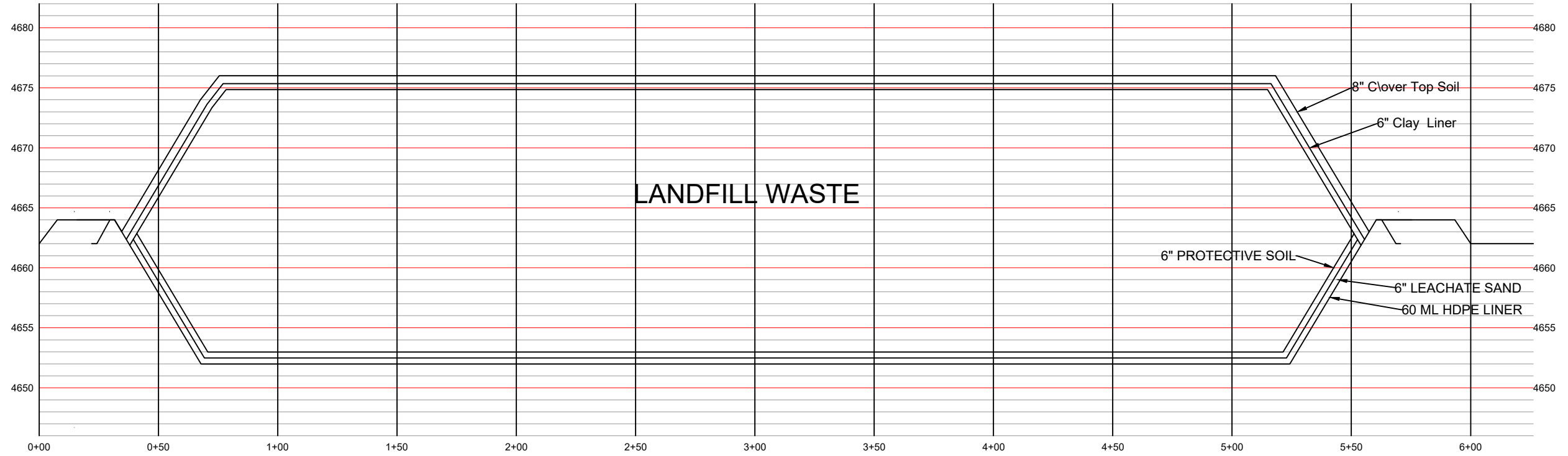


GeoStrata
BLUFFDALE, UTAH

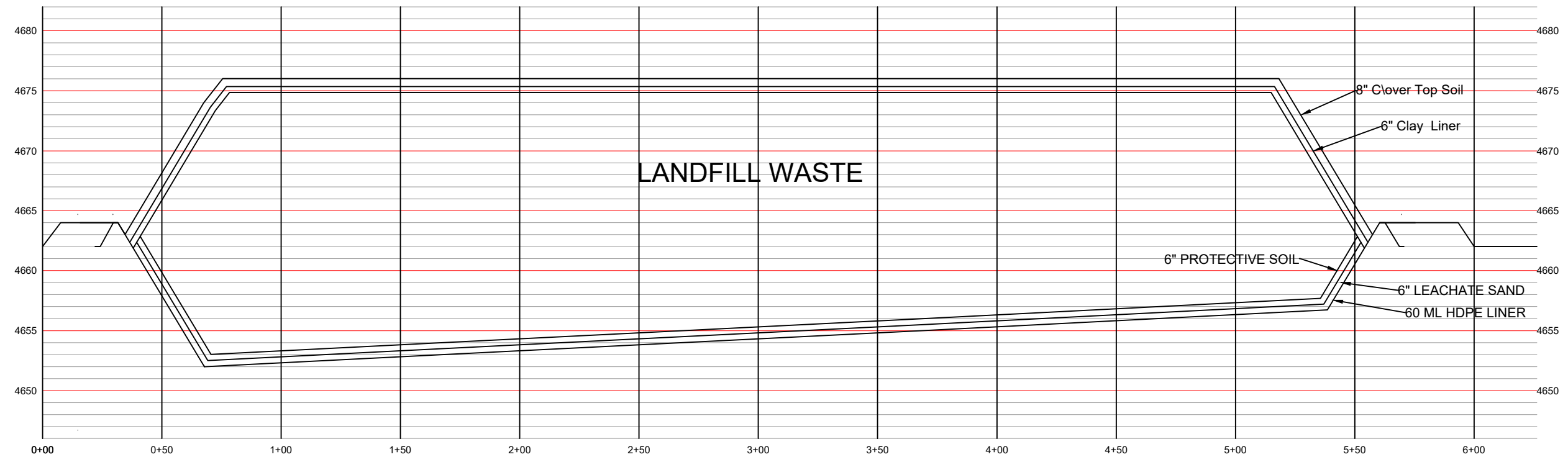
2016 PHOTOGRAPHY

				SCALE NONE		LOCATION	UINTAH COUNTY, UTAH	B-4
						PROJECT	WONSIT CELL 2 LANDFILL	
A	10-18-19	BER	PERMIT DRAWINGS			TITLE	COVER SHEET	NO
REV	DATE	BY	DESCRIPTION					

Profile A



Profile B



BINDING EDGE

REV	DATE	BY	DESCRIPTION
A	10-18-19	BER	PERMIT DRAWINGS

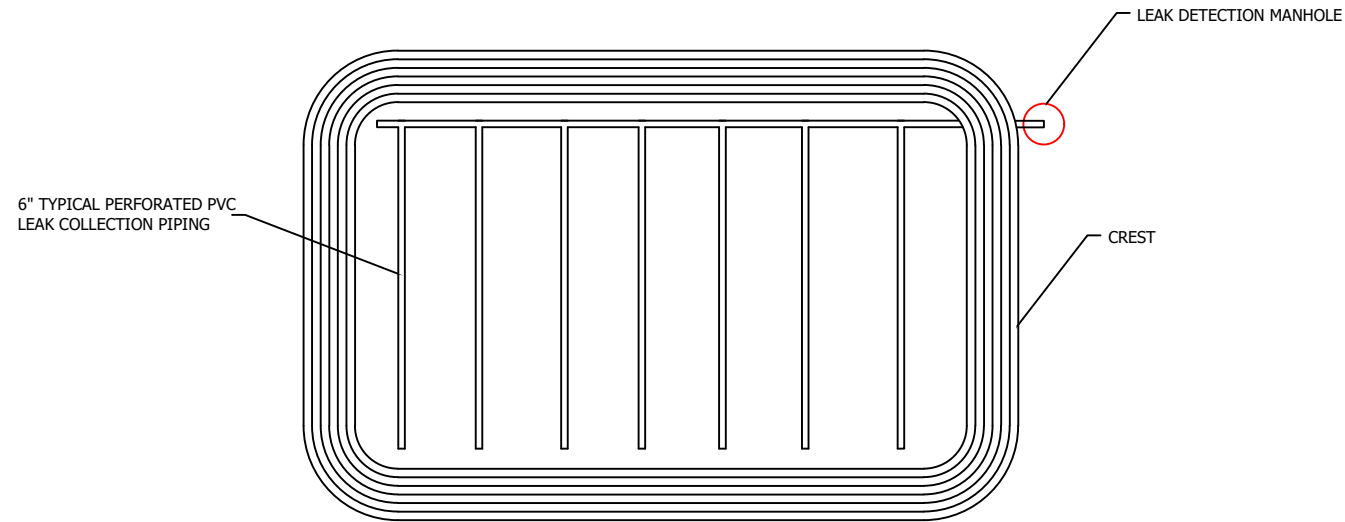
SCALE
Vertical 5:1



LOCATION	UINTAH COUNTY, UTAH
PROJECT	WONSIT CELL 2 LANDFILL
TITLE	POFILES

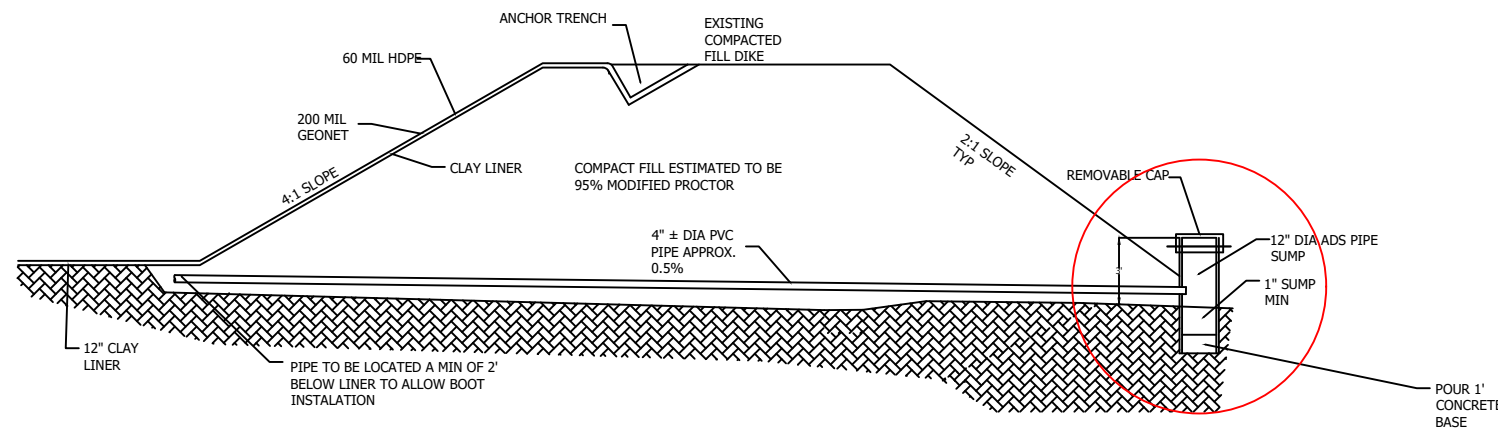
B-5

NO



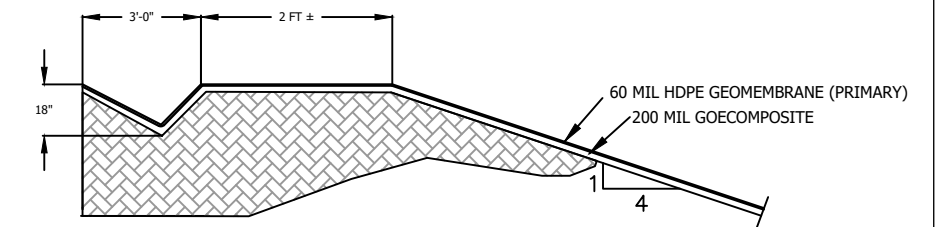
TYPICAL LEAK PIPING PLAN

LEAK COLLECTION PIPING IS SHOWN AS HAS BEEN DESCRIBED BY THE POND BUILDERS. IT IS AT BEST AN APPROXIMATE REPRESENTATION OF WHAT HAS BEEN INSTALLED. ACTUAL PIPE MATERIALS, SLOPES, PERFORATIONS, AND INSTALLATION DETAILS ARE UNKNOWN.



LEAK DETECTION DETAIL

(VERTICAL OR HORIZONTAL)
NOT TO SCALE



TYPICAL ANCHOR TRENCH (4:1 SLOPE)

NOT TO SCALE



				SCALE AS SHOWN		LOCATION	UINTAH COUNTY, UTAH	B-5
						PROJECT	WONSIT CELL 2 LANDFILL	
A	10-18-19	BER	PERMIT DRAWINGS			TITLE	LANDFILL DETAIL	NO
REV	DATE	BY	DESCRIPTION					

Appendix C

January 18, 2021

RN Industries
Attention: Mr. Austin Weddle
PO Box 98
Roosevelt, UT 84066

Subject; Wonsit Landfill Pond 6 Conversion Project
 Duchesne County, Utah
 GeoStrata Project No. 524-104

Mr. Weddle:

GeoStrata has completed a geotechnical investigation for the proposed expansion of the existing Wonsit landfill facility located approximately 8½ miles east of Ouray, Utah (see Plate A-1, Site Vicinity Map). Information concerning the nature of the improvements were provided to GeoStrata by the Client. Based on our understanding, it is desired to convert evaporation pond number 6 into a landfill cell.

GeoStrata visited the site on January 29, 2020 in order to obtain soil samples of pertinent earthen materials. This letter report has been prepared as a summary of our investigative procedures.

Site Investigation

As part of this investigation, soil conditions were explored during a site visit completed by GeoStrata personnel. During our visit, GeoStrata obtained samples of the existing landfill material currently present in Pond 1, as well as the existing embankment material located on the northern and western sides of Pond 6. In addition, GeoStrata advanced a shallow test pit within the native soil exposure located on the southern and eastern sides of pond 6. Samples of the bedrock/soil materials exposed in the test pit were likewise collected. The approximate locations of our soil sampling are shown on the Exploration Location Map, Plate A-2. Subsurface soil conditions as encountered in the explorations were logged at the time of our investigation by qualified personnel working under the direction of a geotechnical engineer.

In general, the soils exposed within the native bedrock outcrop consisted of relatively thinly bedded sandstone and siltstone associated with the Uintah Formation. Where observed, this material was lightly weathered to fresh, moderately strong, and closely fractured. We understand that this material was utilized in the construction of the pond embankment located on the eastern side of the pond. Based on our observations of the eastern berm, the material appears to be consistent with the bedrock observed in our test pit. GeoStrata also collected three samples of the existing landfill soils in order to obtain potential soil strengths of these materials. Each of the samples was obtained from a different location within the existing landfill.

All samples were transported to our laboratory for testing to evaluate engineering properties of the various earth materials observed. The soils were classified according to the Unified Soil Classification System (USCS) by the Geotechnical Engineer.

Laboratory Testing

Geotechnical laboratory tests were conducted on samples obtained during our field investigation. The laboratory testing program was designed to evaluate the engineering characteristics of onsite earth materials. Laboratory tests conducted during this investigation include:

- Grain Size Distribution Analysis (ASTM D422)
- Atterberg Limits (ASTM D4318)
- Direct Shear Test (ASTM D3080)
- Consolidated Undrained Triaxial Test (ASTM D4767)

Results of our laboratory testing indicate that the landfill soils classify as Sandy Lean CLAY (CL). The fines content (silt and clay) was approximately 84% and typically had low plasticity. The embankment samples classify as a Silty SAND (SM) with some gravel, Clayey SAND (SC) with gravel, Sandy Lean CLAY (CL), with a fine-grained content ranging from 37.9 percent to 66.1 percent, and had low to no plasticity.

Four direct shear tests were completed as part of this investigation. Two direct shear tests were completed on samples of the native bedrock/soils obtained along the eastern and southern sides of Pond 6. A third direct shear test was completed on a sample of the embankment soils located to the north of pond 6. Finally, direct shear test was completed on a fully-softened sample of the landfill soils. The results of our direct shear tests are as follows;

Material Tested	Friction Angle (Phi) (deg)	Cohesion (psf)	Notes
Native Soils (SM) Test Pit 1	27	150	Direct Shear (Peak)
Native Soils (CL) Test Pit 4	18	1165	Direct Shear (Peak)
Embankment Soils (SM) Test Pit 2	34	205	Direct Shear (Peak)
Landfill Soils (Pond 1)	34	10	Fully Softened Conditions

In addition to the direct shear tests described above, GeoStrata completed two consolidated undrained triaxial tests on samples of the landfill soils. The results of our triaxial testing are as follows;

Material Tested	Friction Angle (Phi) (deg)	Cohesion (psf)	Notes
Landfill Soils 1	37	260	90% MDD
Landfill Soils 2	31	320	90% MDD

The results of all laboratory tests are presented on the Laboratory Summary Table and the test result plates presented in Appendix B (Plates B-1 to B-7)

Landfill Embankment Stability

GeoStrata has evaluated the stability of the proposed landfill cell embankments and slopes using SLIDE, a computer application incorporating (among others) Bishop's Simplified Method of analysis. Calculations for stability were developed by searching for the minimum factor of safety for a circular-type failure. In order to complete our slope stability analyses, two cross sections were created across Pond 6. These cross sections are as follows;

1. Cross Section A-A' (North-South Orientation)
2. Cross Section B-B' (East-West Orientation)

Stability analyses were conducted for each of the cross sections described above and were completed modeling post-construction conditions. The stability of the embankments was assessed under static and pseudo-static conditions. The pseudo-static condition is used to assess stability of slopes during seismic events. The peak ground acceleration for the Maximum Credible Earthquake (MCE) was estimated using the site's approximate latitude and longitude and the OSHPD Seismic Design Maps ground motion calculator which correlates the MCE to a 2 percent probability of exceedance in 50 years. Using this procedure, the peak ground acceleration is estimated to be 0.17g. In accordance with Hynes-Griffin (1984), half of this value was used in our analyses. This methodology assumes that no greater than 3 meters of deformation will occur if the calculated factor of safety is greater than 1.0.

Groundwater was not encountered in the test pit advanced as part of our investigation. In addition, no evidence of perched groundwater such as springs or weeps were observed. As such, groundwater was not incorporated into our slope stability modeling. However, we understand that Pond 4 will remain in operation after the conversion of Pond 6, and as such a piezometric surface has been modeled within that pond. Pond 5 has been modeled as not containing water.

The soil strength parameters for the native soils as well as the landfill soils were obtained utilizing the direct shear testing and triaxial testing completed as part of this investigation. The soil strength parameters for the embankment material and native soils/bedrock were obtained through the use of our direct shear testing. The strength parameters utilized for the landfill waste material was selected by using the lower strength values obtained during our triaxial testing. It is anticipated that the landfill material may vary in composition and moisture content, and as such GeoStrata recommends that additional strength testing be completed on a representative sample of the material to be placed within the landfill. However, in order to complete slope stability testing on material nearing its liquid limit, a direct shear test completed under fully-softened conditions was likewise completed. This modeling was completed to account for potentially saturated waste to be

placed within the landfill although this practice is not recommended. Finally, we understand that the landfill will incorporate a geosynthetic liner. We therefore assumed no seepage from the landfill cell. Our modeling has included a “weak” layer with no strength parameters along the surface to be covered by the liner. However, it is recommended that a textured liner be utilized in the construction of the interior of the embankment to increase friction between the waste soils and the embankment support.

The results of our stability modeling indicate the following factors of safety for embankment slope failure assuming that the as-constructed slopes will match the designs assumed by GeoStrata personnel as based on conversations with the Client. The results of our slope stability analyses are as follows;

Stability Assessment	Factor of Safety
Cross Section A-A' Static	2.14
Cross Section A-A' PStatic	1.66
Cross Section B-B' Static Eastern	2.26
Cross Section B-B' Static Western	2.25
Cross Section B-B' PStatic Eastern	1.74
Cross Section B-B' Static Western	1.73

Results of the slope stability modeling are presented in Appendix D as Plates D-1 to D-6 attached to this end of this letter. In general, it was noted that the relatively gentle slopes resulting from the construction of the landfill are not susceptible to slope instability. Slopes with factors of safety greater than 1.5 and 1.1 for the static and pseudo static conditions respectively are typically considered stable. As indicated above the embankments have factors of safety for the static and pseudo static conditions greater than 1.5 and 1.1, respectively. It is therefore GeoStrata’s opinion that the proposed plans for the conversion of Pond 6 as currently envisioned are suitable for construction.

Construction Recommendations

The analyses provided above concerning slope stability of the final construction details that the landfill material is the critical material in maintaining stability of the facility. Our laboratory testing completed to obtain soil strength parameters for the landfill soils were completed on samples compacted to 90 percent of the maximum dry density (MDD) while at optimum moisture content. We understand that the moisture content of the landfill soils varies greatly, with some materials having moisture contents in excess of their liquid limits. GeoStrata attempted to model these

conditions by completing strength testing on soils in a full-softened condition (i.e., at their liquid limit). However, soil strengths can be expected to get progressively lower with the introduction of additional moisture beyond the liquid limit.

As a result, GeoStrata recommends that all efforts be made to reduce the amount of saturated material that is introduced into the landfill. The moisture content should be as close to the optimum moisture content as possible as determined by the ASTM D1557. This will likely require the use of onsite drying, mixing with drier soils, or rejection of the saturated material. Under no circumstances should a continuous layer of high-moisture soils (soils with moisture contents approaching the liquid limit) be placed onsite without mitigation.

In addition, GeoStrata recommends that the landfill soils be compacted to a minimum of 90 percent of the MDD. This can be best achieved by compacting the material in 12-inch lifts with a large ride-on drum-wheel roller or similar equipment. Periodic density testing should be completed by GeoStrata in order to assess the suitability of the level of compactive effort being made as the waste soils are placed.

Our slope stability analyses have been completed utilizing the final site grades as outlined by the Client. Slopes with steeper grades have not been analyzed. As a result, it is considered essential that over-steepened portions of landfill soils not be created during placement of the wastes. We recommend that GeoStrata periodically observe the placement of the landfill soils in order to assess the site for over-steepened slopes.

Conclusions/Limitations

The recommendations contained in this report are based on limited field exploration, laboratory testing, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the explorations made for this investigation. It is possible that variations in subsurface conditions could exist beyond the point explored. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered at this site that are different from those described in this report, we should be immediately notified so that we may make any necessary revisions to the recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, we should be notified.

This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made.

It is the Client's responsibility to see that all parties to the project including the Designer, Contractor, Subcontractors, etc. are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

We appreciate the opportunity to provide these services. Please contact us if you have questions regarding the information provided in this letter.

Respectfully,

GeoStrata

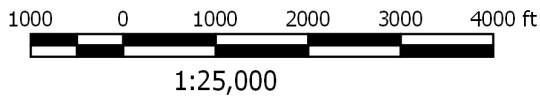
Reviewed by

J. Scott Seal, P.E.


Associate Principal Engineer

Hiram Alba, P.E., P.G.,

Principal



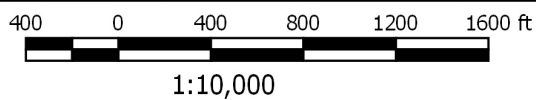
Legend

 Approximate Site Boundary

Dalbo
Wonsit Landfill Pond 6
Project Number: 524-104

Site Vicinity Map

**Plate
A-1**



GeoStrata
Copyright, 2020

Legend

 Approximate Test Pit Locations

Dalbo
Wonsit Landfill Pond 6
Project Number: 524-104

Exploration Location Map

**Plate
A-2**

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah Project Number 524-104			GeoStrata Rep: A. Peay			TEST PIT NO: TP-1				
		COMPLETED:					Rig Type: Trackhoe			Sheet 1 of 1				
		BACKFILLED:												
DEPTH				LOCATION			Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits		
METERS	FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	NORTHING						EASTING	ELEVATION	Plastic Limit
0	0				SP	Embankment						10 20 30 40 50 60 70 80 90		
				MATERIAL DESCRIPTION										
						Poorly Graded SAND - medium dense, reddish brown, moist			95.6	3.9	NP	NP ●		
	1					Bottom of Test Pit @ 3 Feet								

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SAMPLE TYPE

- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL

- MEASURED
- ESTIMATED



NOTES:



Plate
B-1

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah Project Number 524-104			GeoStrata Rep: A. Peay		TEST PIT NO:			
		COMPLETED:					Rig Type: Trackhoe		TP-2 Sheet 1 of 1			
		BACKFILLED:										
DEPTH		LOCATION			Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits		
METERS	FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG						UNIFIED SOIL CLASSIFICATION	NORTHING	EASTING
0	0				SM	Embankment						
		MATERIAL DESCRIPTION										
		Silty SAND - medium dense, reddish brown, moist										
		Bottom of Test Pit @ 3 Feet										
1						112.1	6.0	49.4	NP	NP		



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SAMPLE TYPE
 - GRAB SAMPLE
 - 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
 - MEASURED
 - ESTIMATED

NOTES:

Plate
B-2

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah Project Number 524-104			GeoStrata Rep: A. Peay		TEST PIT NO: TP-3 Sheet 1 of 1			
		COMPLETED:					Rig Type: Trackhoe					
		BACKFILLED:										
DEPTH		LOCATION			Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits		
METERS	FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG						UNIFIED SOIL CLASSIFICATION	NORTHING	EASTING
0	0				SM	Embankment						
		MATERIAL DESCRIPTION								10 20 30 40 50 60 70 80 90		
		Silty SAND - medium dense, reddish brown, moist										
1		Bottom of Test Pit @ 3 Feet										



SAMPLE TYPE
 - GRAB SAMPLE
 - 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
 - MEASURED
 - ESTIMATED

NOTES:

Plate
B-3

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah Project Number 524-104			GeoStrata Rep: A. Peay		TEST PIT NO: TP-4 Sheet 1 of 2			
		COMPLETED:					Rig Type: Trackhoe					
		BACKFILLED:										
DEPTH		LOCATION			Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits		
METERS	FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG						UNIFIED SOIL CLASSIFICATION	NORTHING	EASTING
0	0				CL	Site Native Material						
MATERIAL DESCRIPTION												
					Sandy Lean CLAY - stiff, reddish brown with olive green and tan mottling, moist		14.6	66.1				
1												



SAMPLE TYPE
 □ - GRAB SAMPLE
 ▼ - 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
 ▼ - MEASURED
 ▽ - ESTIMATED

NOTES:

Plate
B-4

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah Project Number 524-104			GeoStrata Rep: A. Peay		TEST PIT NO: TP-4 Sheet 2 of 2							
		COMPLETED:					Rig Type: Trackhoe									
		BACKFILLED:					DEPTH			LOCATION			Moisture Content and Atterberg Limits			
METERS	FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	NORTHING	EASTING	ELEVATION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Plastic Limit	Moisture Content	Liquid Limit
						Site Native Material								MATERIAL DESCRIPTION		
	5															
	2					Bottom of Test Pit @ 6 Feet										
	3															



SAMPLE TYPE
 - GRAB SAMPLE
 - 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
 - MEASURED
 - ESTIMATED



NOTES:



**Plate
B-5**

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah Project Number 524-104			GeoStrata Rep: A. Peay		TEST PIT NO: TP-5 Sheet 1 of 1					
		COMPLETED:					Rig Type: Trackhoe							
		BACKFILLED:												
DEPTH				LOCATION			Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits		
METERS	FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	NORTHING						EASTING	ELEVATION	Plastic Limit
0	0				SC	Fill								
		MATERIAL DESCRIPTION												
						Clayey SAND with gravel - medium dense to dense, riddish brown, moist				16.3	41	23		
						Bottom of Test Pit @ 3 Feet								
1														



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SAMPLE TYPE
 - GRAB SAMPLE
 - 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
 - MEASURED
 - ESTIMATED

NOTES:

Plate
B-6

DATE		STARTED:		Dalbo Wonsit Pond 6 Uinta County, Utah			GeoStrata Rep: A. Peay		TEST PIT NO: TP-6		
		COMPLETED:		Project Number 524-104			Rig Type: Trackhoe		Sheet 1 of 1		
		BACKFILLED:									
DEPTH		LOCATION							Moisture Content and Atterberg Limits		
		NORTHING EASTING ELEVATION							Plastic Limit Moisture Content Liquid Limit		
		Fill									
METERS		MATERIAL DESCRIPTION			Dry Density(pcf)		Moisture Content %		Plasticity Index		
FEET											
SAMPLES		Sandy Lean CLAY - stiff, reddish brown with olive green and tan mottling, moist									
WATER LEVEL		CL			6.7		67.4		24		
GRAPHICAL LOG											
UNIFIED SOIL CLASSIFICATION		Bottom of Test Pit @ 3 Feet									
0											
1											

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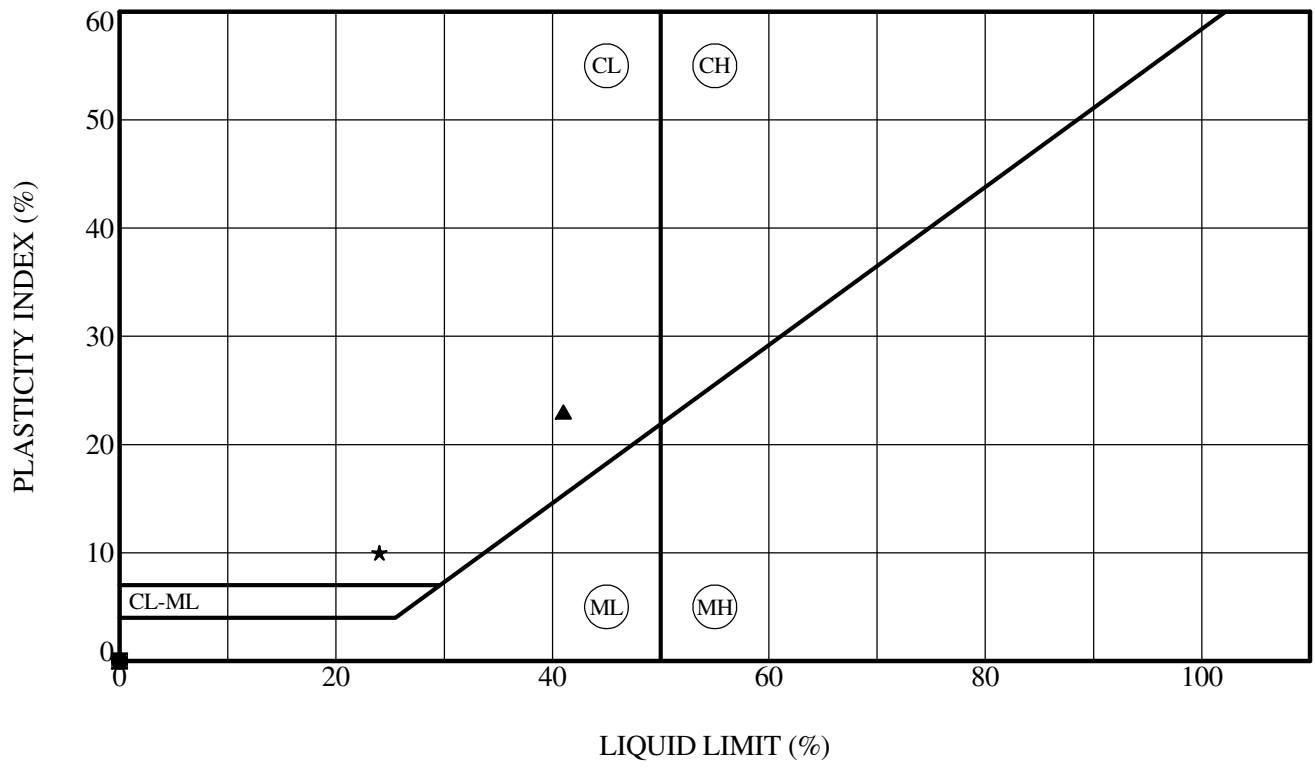
SAMPLE TYPE
 □ - GRAB SAMPLE
 ▩ - 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
 ▼ - MEASURED
 ▽ - ESTIMATED

NOTES:

**Plate
B-7**

Test Pit No.	Sample Depth (feet)	USCS Soil Classification	Natural Moisture Content (%)	Natural Dry Density (pcf)	Optimum Moisture Content (%)	Maximum Dry Density (pcf)	Gradation			Atterberg		Direct Shear		Permeability (cm/sec)
							Gravel (%)	Sand (%)	Fines (%)	LL	PI	Apparent Cohesion (psf)	Friction Angle (°)	
TP-1	2	SP	3.9	95.6			2.9			NP	NP			
TP-2	2	SM	6	112.1			2.0	48.6	49.4	NP	NP			
TP-4	2	CL	14.6				11.2	22.7	66.1					5.38 X 10 ⁻⁹
TP-5	2	SC	16.3		18.6	106.3	18.8			41	23			
TP-6	2	CL	6.7		16.2	110	0.2	32.4	67.4	24	10			1.34 X 10 ⁻⁷



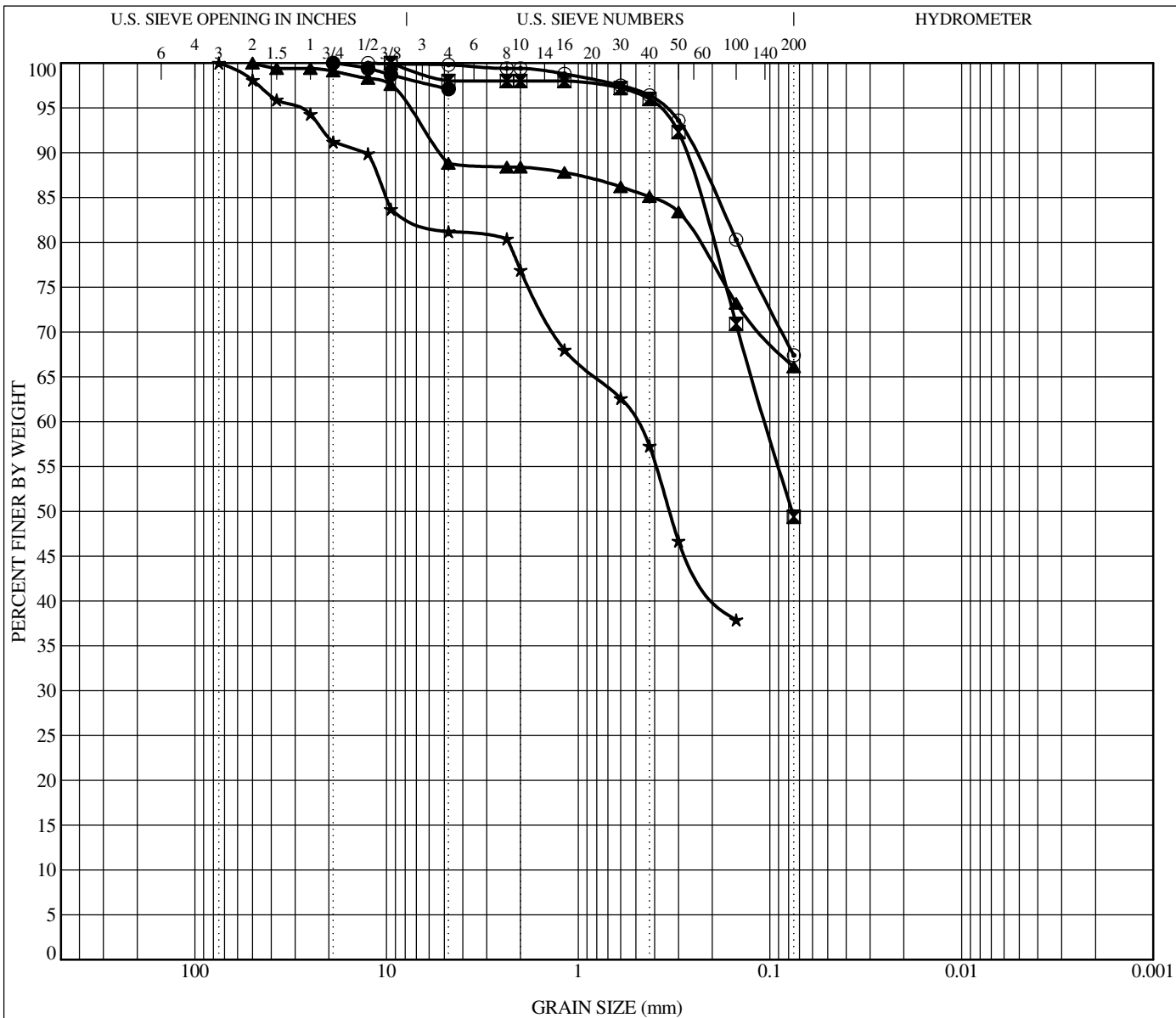
Sample Location	Depth (ft)	LL (%)	PL (%)	PI (%)	Fines (%)	Classification
● TP-1	2.0	NP	NP	NP		Poorly Graded SAND
▣ TP-2	2.0	NP	NP	NP	49.4	Silty SAND
▲ TP-5	2.0	41	18	23		Clayey SAND with gravel
★ TP-6	2.0	24	14	10	67.4	Sandy Lean CLAY

ATTERBERG LIMITS' RESULTS - ASTM D 4318



Dalbo
 Wonsit Pond 6
 Uinta County, Utah
 Project Number: 524-104

Plate
C - 2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample Location	Depth	Classification					LL	PL	PI	Cc	Cu
● TP-1	2.0	Poorly Graded SAND					NP	NP	NP		
☒ TP-2	2.0	Silty SAND					NP	NP	NP		
▲ TP-4	2.0	Sandy Lean CLAY									
★ TP-5	2.0	Clayey SAND with gravel					41	18	23		
◎ TP-6	2.0	Sandy Lean CLAY					24	14	10		
Sample Location	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● TP-1	2.0	19				2.9					
☒ TP-2	2.0	9.5	0.106			2.0	48.6		49.4		
▲ TP-4	2.0	50				11.2	22.7		66.1		
★ TP-5	2.0	75	0.507			18.8					
◎ TP-6	2.0	12.5				0.2	32.4		67.4		

GRAIN SIZE DISTRIBUTION - ASTM D422



Dalbo
Wonsit Pond 6
Uinta County, Utah
Project Number: 524-104

Plate
C - 3

Hydraulic Conductivity of Saturated Pourous Materials Using a Flexible Wall Permeameter

ASTM D5084, Method C

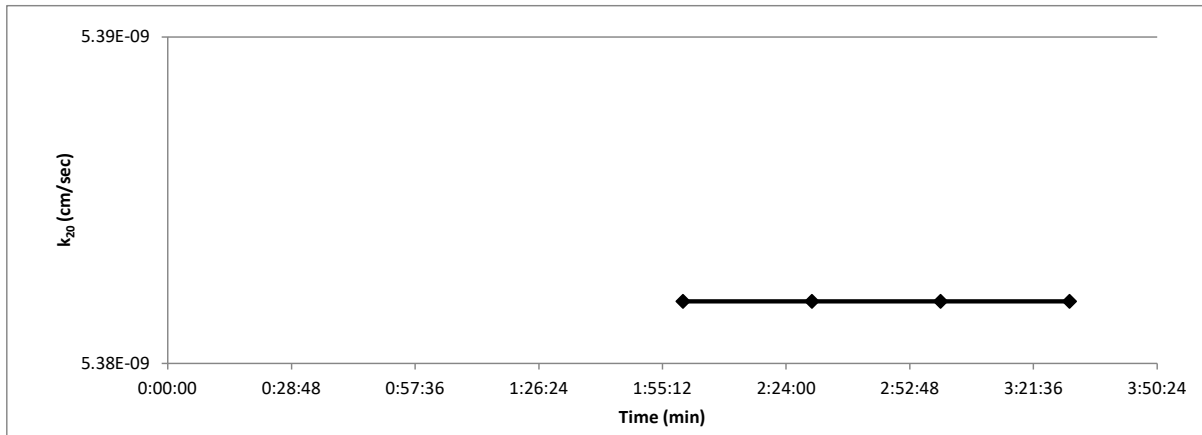
Project: Wonsit
Project Number: 524-104
Soil Classification: Sandy Lean CLAY
Boring: TP-7
Depth: 2
Sample Type: Remolded
Test Date: _____

	Initial	Final
G_s:	2.71	2.71
Mass (g):	641.6	652.6
Height (in.):	2.887	2.887
Diameter (in.):	2.879	2.879
Area (cm²):	41.99	41.99
Volume (cm³):	307.9	307.9
Water Content (%):	16.70	18.70
Dry Unit Weight, γ_d (pcf):	111.5	111.5
Saturation (%):	88	98

Permeant Liquid: Deaired Water
Total Backpressure (psi): _____
Effective Consolidation Stress (psi): _____

Recorded Time	Elapsed Time (sec)	Bottom Burette (cm ³)	Top Burette (cm ³)	Δh (cm)	K (cm/sec)	Temp (°C)	Viscosity Ratio, Rf	k ₂₀ (cm/sec)
2:00:00	1800	1.34	5.38	351.9	5.51E-09	21	0.976	5.38E-09
2:30:00	1800	1.36	5.36	351.9	5.51E-09	21	0.976	5.38E-09
3:00:00	1800	1.38	5.34	351.9	5.51E-09	21	0.976	5.38E-09
3:30:00	1800	1.40	5.32	351.9	5.51E-09	21	0.976	5.38E-09

Average k₂₀ 5.38E-09 cm/sec

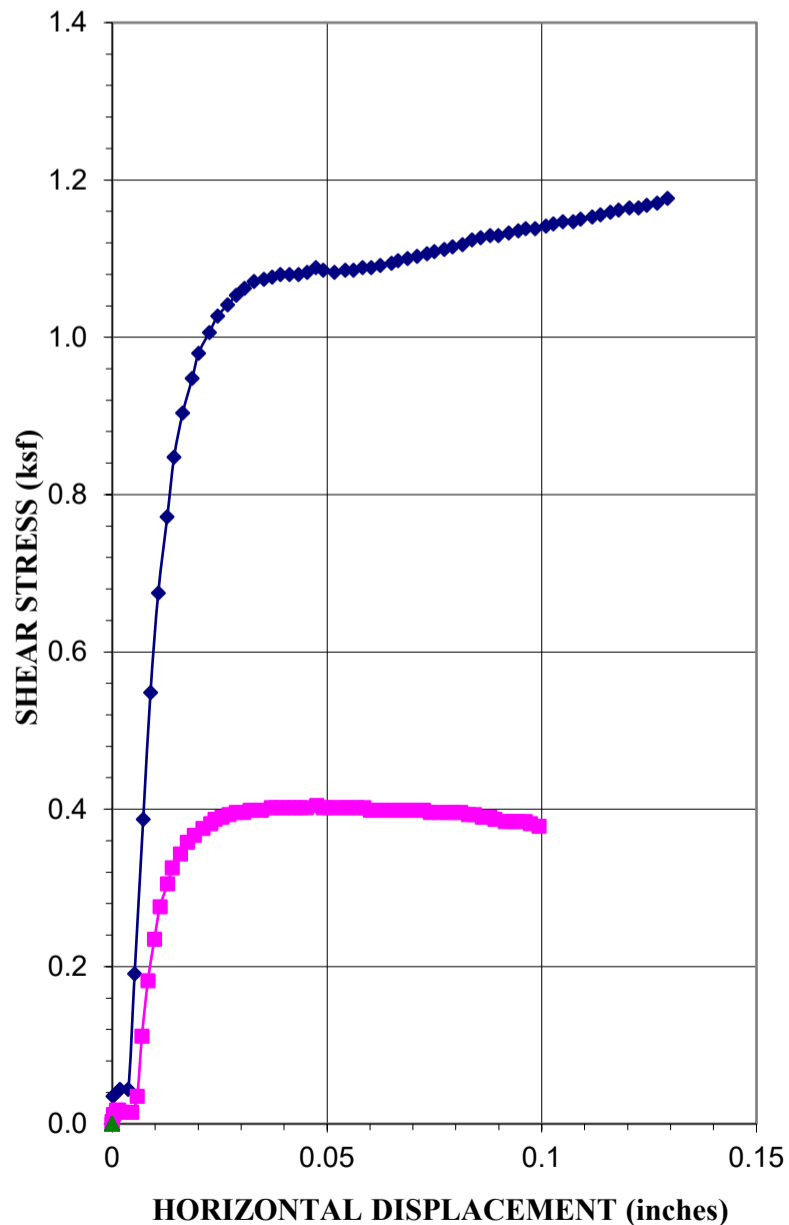
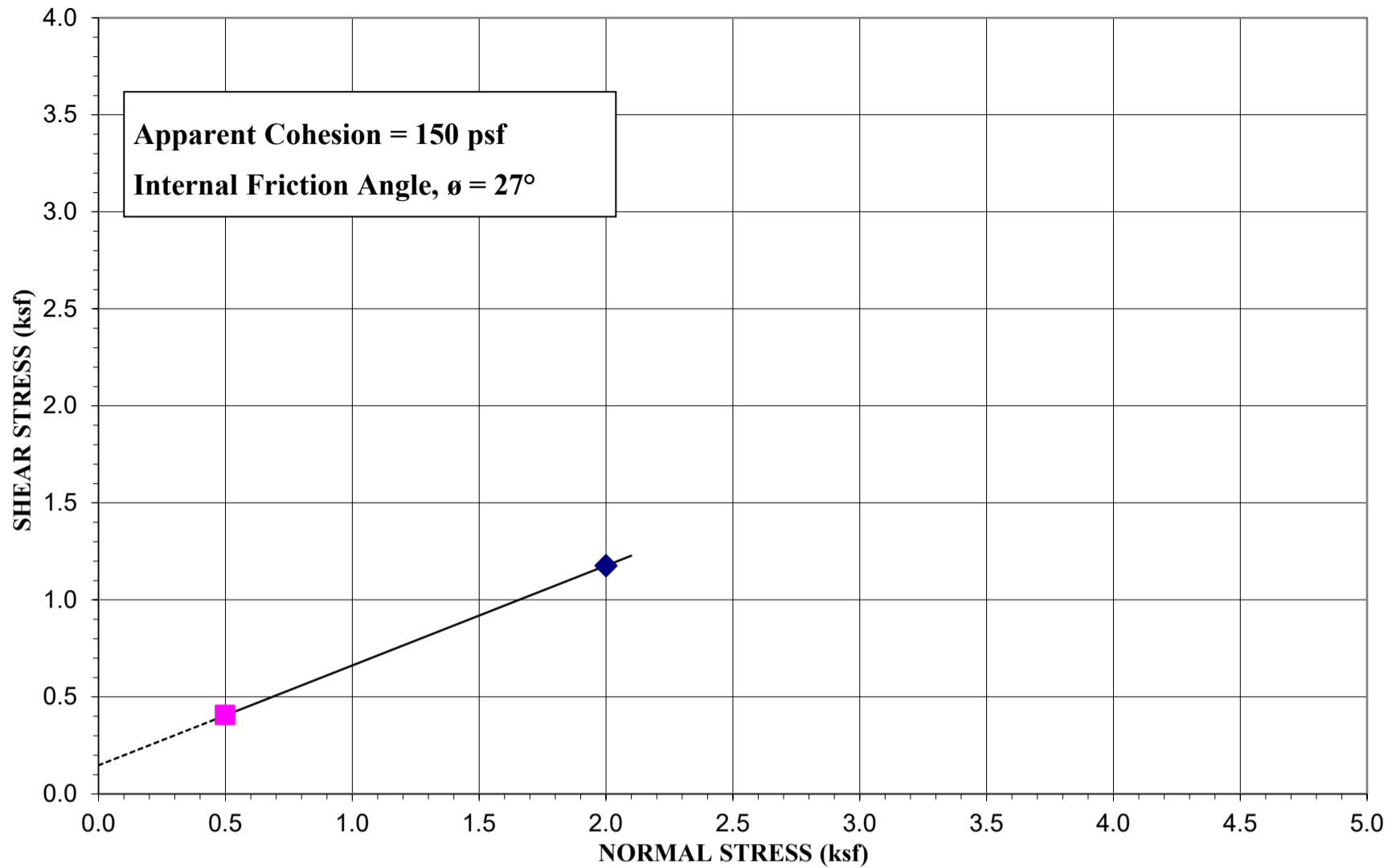


PROJECT NO.: 524-104



FIGURE NO.: C-4

DIRECT SHEAR TEST



Source:	TP-1 at 2 feet
Type of Test:	Consolidated Drained/Saturated

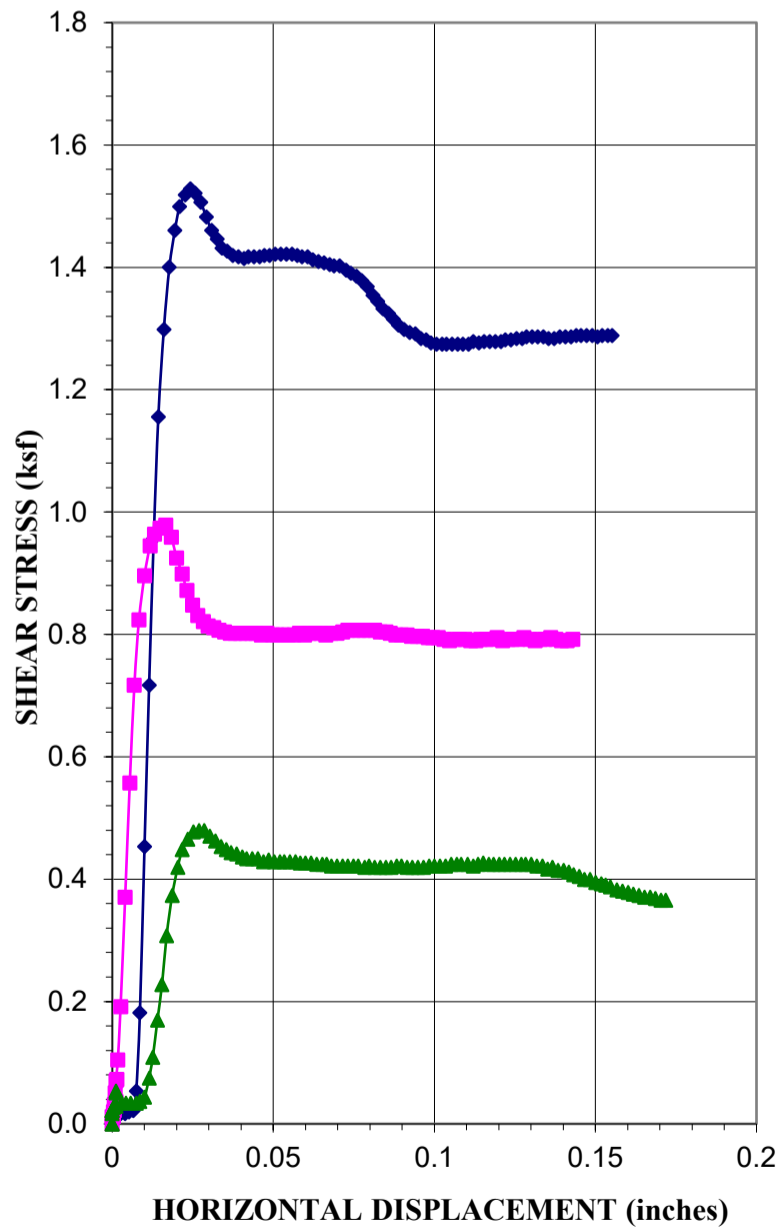
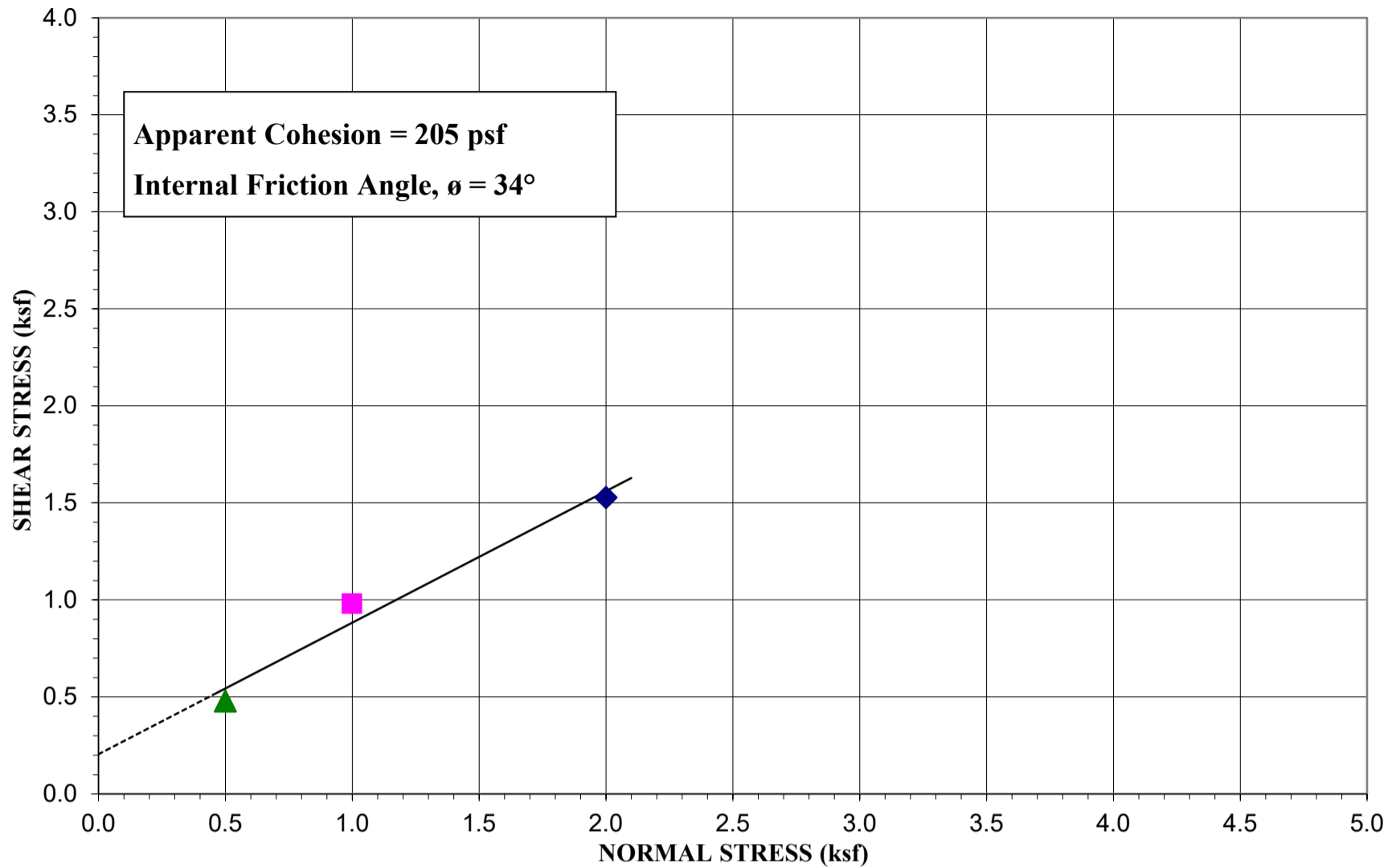
Test No. (Symbol)	1 (◆)	2 (■)	3 (▲)
Sample Type	Remolded		
Initial Height, in.	1	1	
Diameter, in.	2.5	2.5	
Dry Density Before, pcf	97.6	97.4	
Dry Density After, pcf	99.1	99.1	
Moisture % Before	1.5	6.4	
Moisture % After	16.8	17.0	
Saturation, % Before	5.7	24.3	
Saturation, % After	66.7	67.4	
Normal Load, ksf	2.0	0.5	
Shear Stress, ksf	1.18	0.40	
Strain Rate	0.003333 IN/MIN		

Sample Properties	
Cohesion, psf	150
Friction Angle, ϕ	27
Liquid Limit, %	NP
Plasticity Index, %	NP
Percent Gravel	2.9
Percent Sand	53.5
Percent Passing No. 200 sieve	43.6
Classification	SM

PROJECT: Wonsit Landfill Pond 6

PROJECT NO.: 524-104

DIRECT SHEAR TEST



Sample Location:	TP-2 at 2 feet
Type of Test:	Consolidated Drained/Saturated

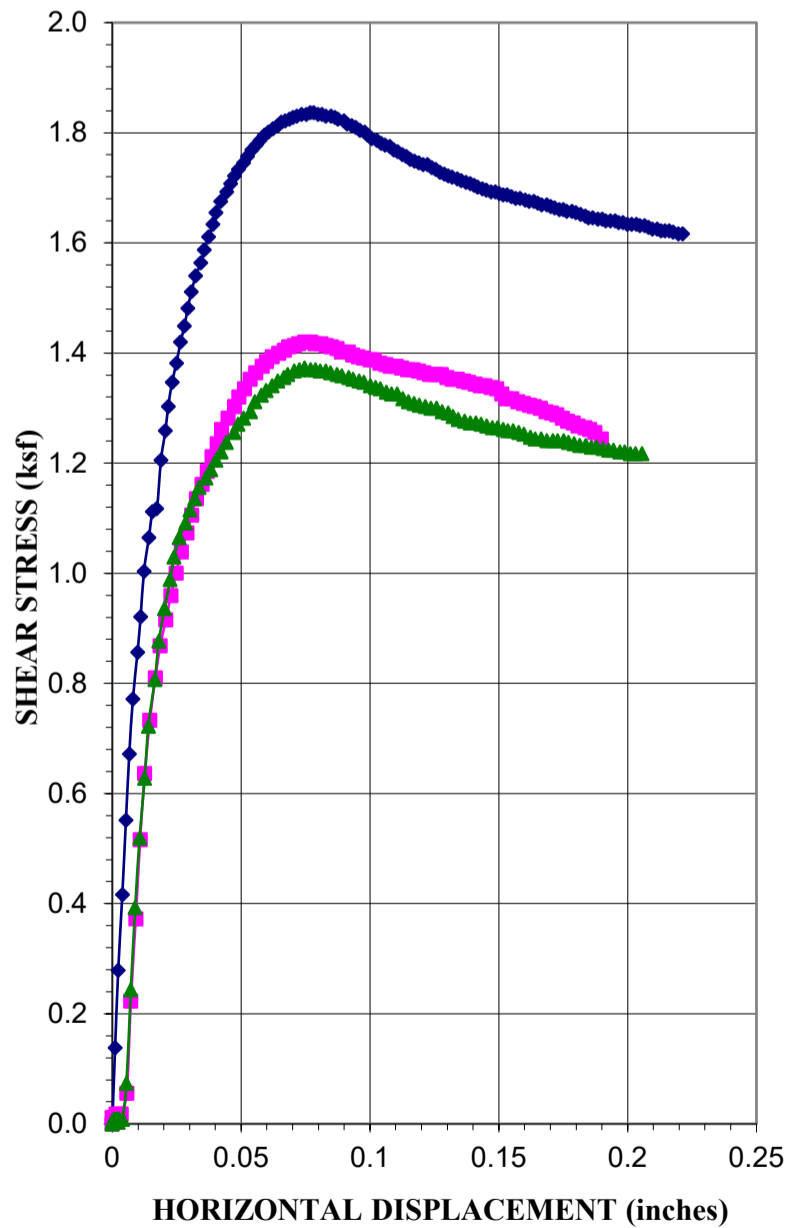
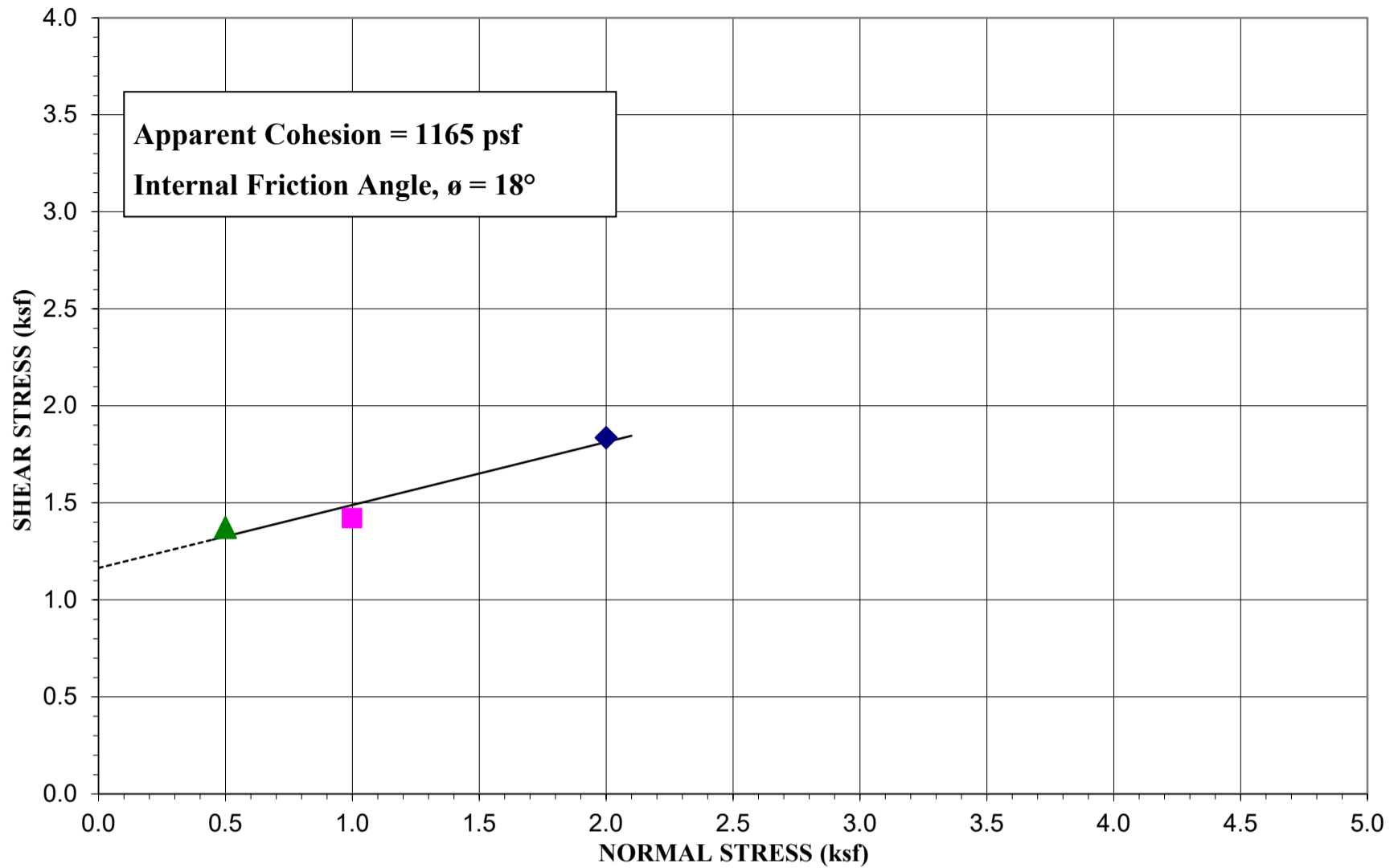
Test No. (Symbol)	1 (◆)	2 (■)	3 (▲)
Sample Type	Remolded		
Initial Height, in.	1	1	1
Diameter, in.	2.5	2.5	2.5
Dry Density Before, pcf	115.5	114.3	115.3
Dry Density After, pcf	117.2	116.1	117.0
Moisture % Before	5.6	10.2	9.3
Moisture % After	14.3	15.3	16.2
Saturation, % Before	34.3	60.7	56.8
Saturation, % After	92.5	95.5	104.3
Normal Load, ksf	2.0	1.0	0.5
Shear Stress, ksf	1.53	0.98	0.48
Strain Rate	0.003333 IN/MIN		

Sample Properties	
Cohesion, psf	205
Friction Angle, ϕ	34
Liquid Limit, %	NP
Plasticity Index, %	NP
Percent Gravel	2.0
Percent Sand	48.6
Percent Passing No. 200 sieve	49.4
Classification	SM

PROJECT: Wonsit Landfill Pond 6

PROJECT NO.: 524-104

DIRECT SHEAR TEST



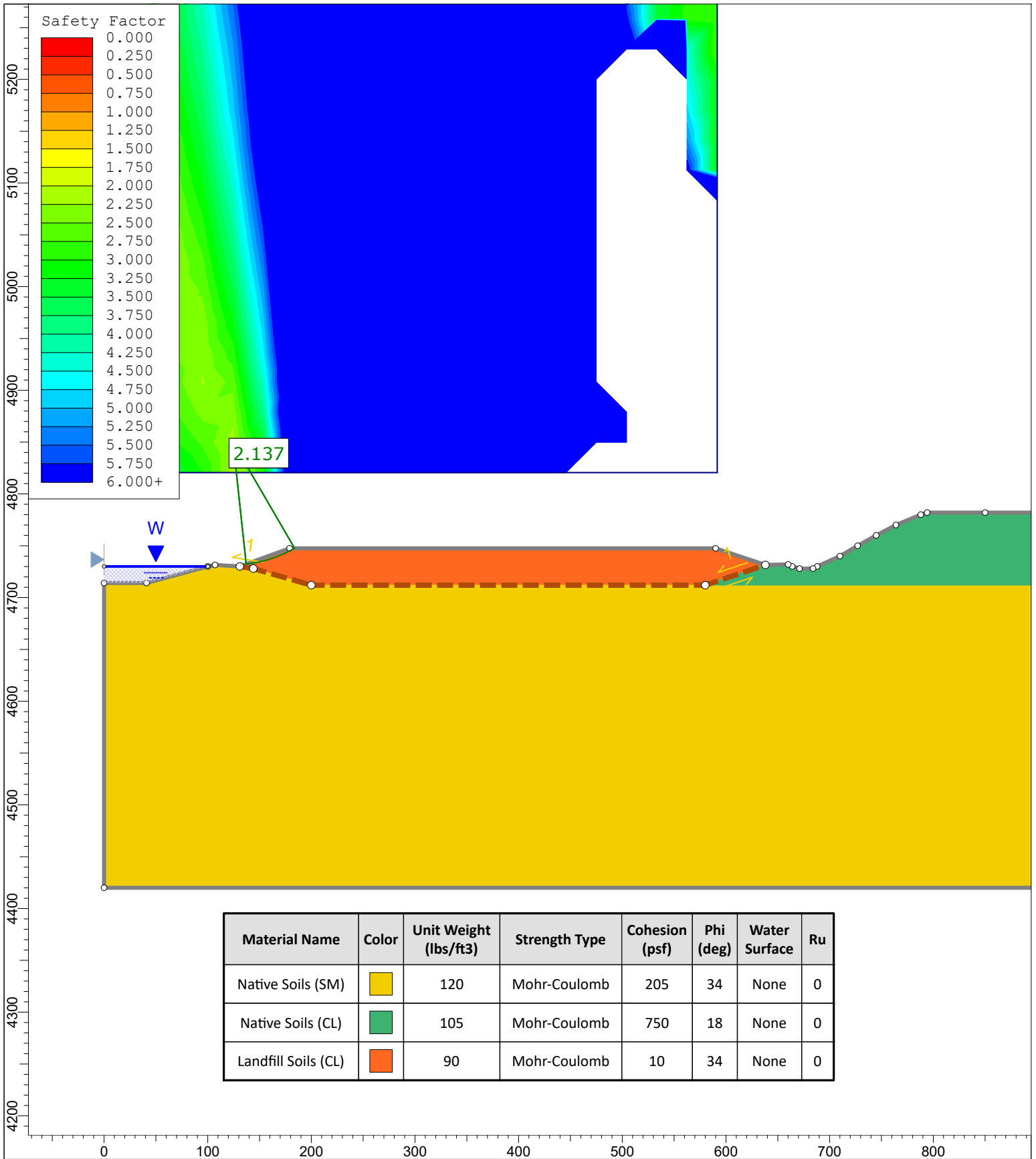
Source:	TP-4 at 2 feet
Type of Test:	Consolidated Drained/Saturated

Test No. (Symbol)	1 (◆)	2 (■)	3 (▲)
Sample Type	Remolded		
Initial Height, in.	1	1	1
Diameter, in.	2.5	2.5	2.5
Dry Density Before, pcf	104.7	101.5	102.8
Dry Density After, pcf	106.7	103.4	104.7
Moisture % Before	16.8	19.6	17.8
Moisture % After	17.6	23.9	22.8
Saturation, % Before	76.6	82.5	77.5
Saturation, % After	84.6	105.8	104.2
Normal Load, ksf	2.0	1.0	0.5
Shear Stress, ksf	1.84	1.42	1.37
Strain Rate	0.003333 IN/MIN		

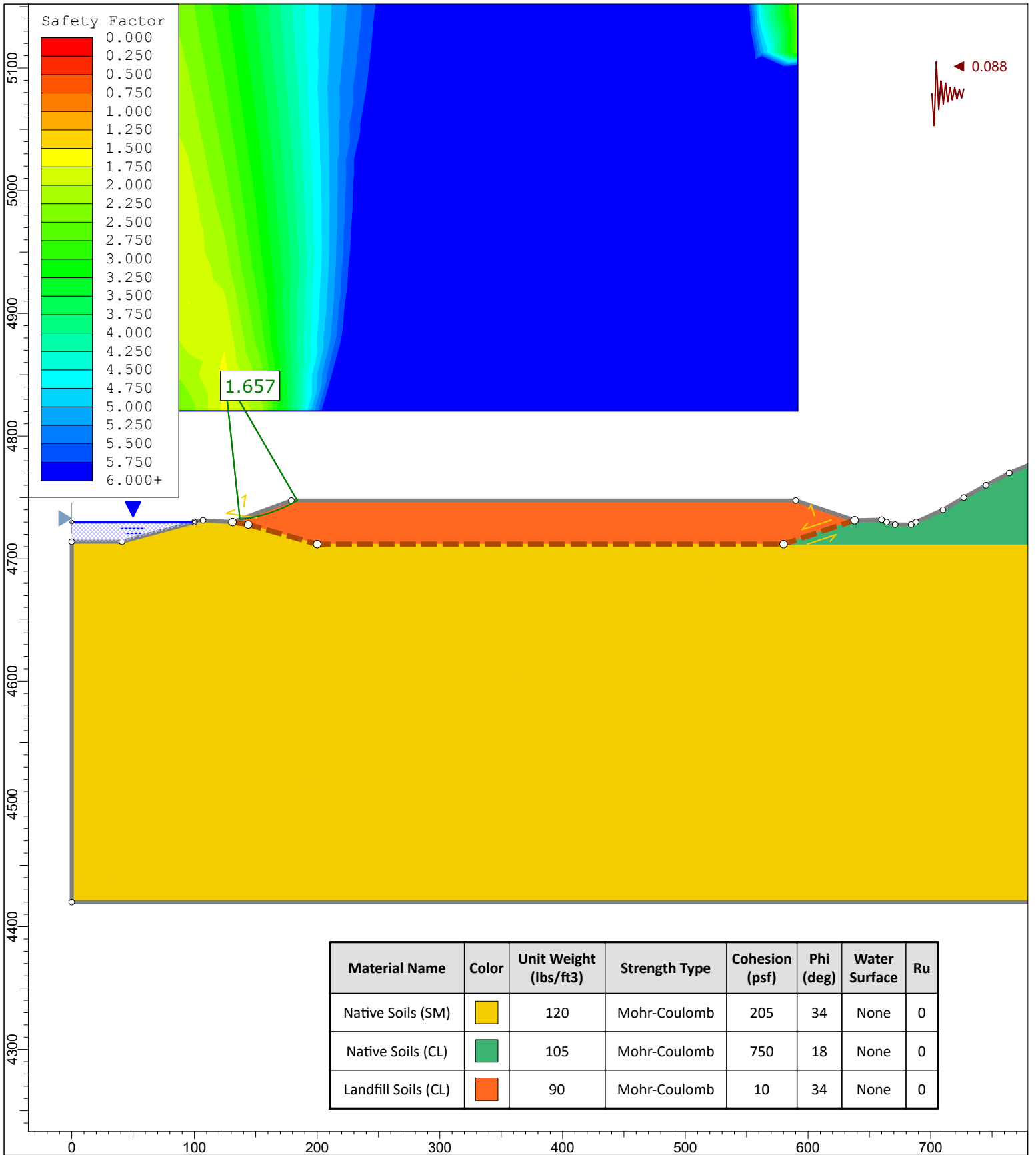
Sample Properties	
Cohesion, psf	1165
Friction Angle, ϕ	18
Liquid Limit, %	44
Plasticity Index, %	28
Percent Gravel	11.2
Percent Sand	22.7
Percent Passing No. 200 sieve	66.1
Classification	CL

PROJECT: Wonsit Landfill Pond 6

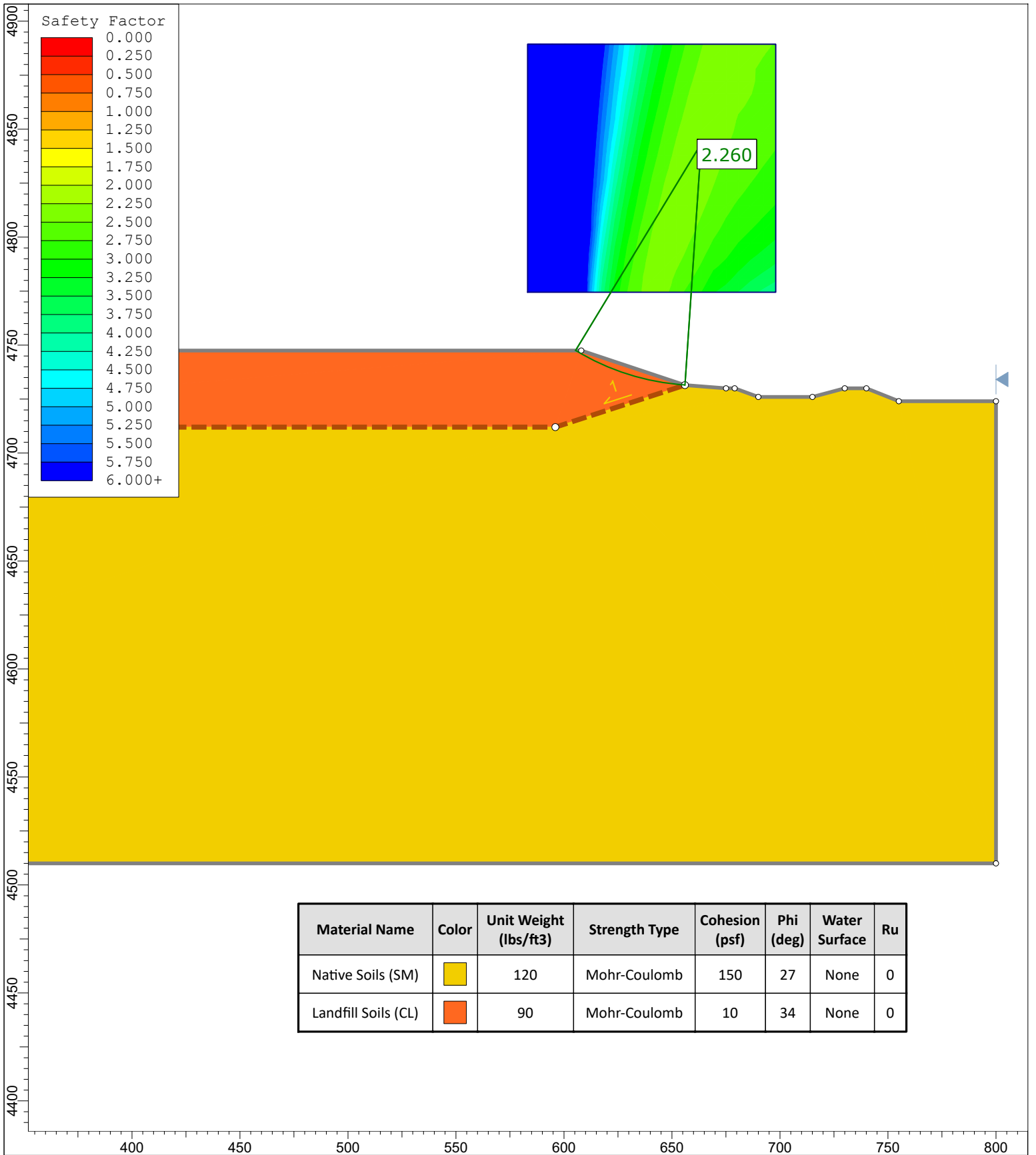
PROJECT NO.: 524-104

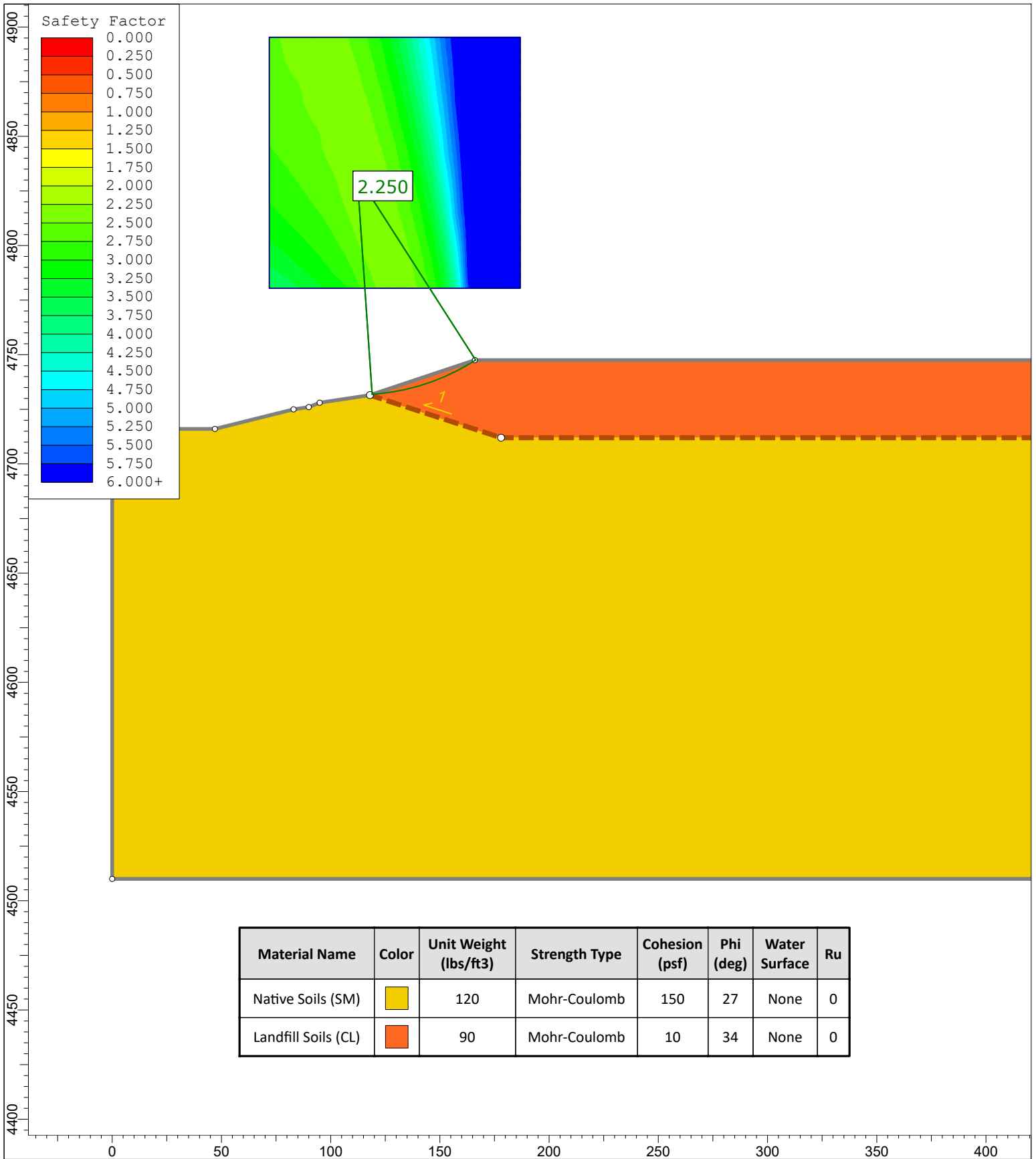


Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Native Soils (SM)	■	120	Mohr-Coulomb	205	34	None	0
Native Soils (CL)	■	105	Mohr-Coulomb	750	18	None	0
Landfill Soils (CL)	■	90	Mohr-Coulomb	10	34	None	0

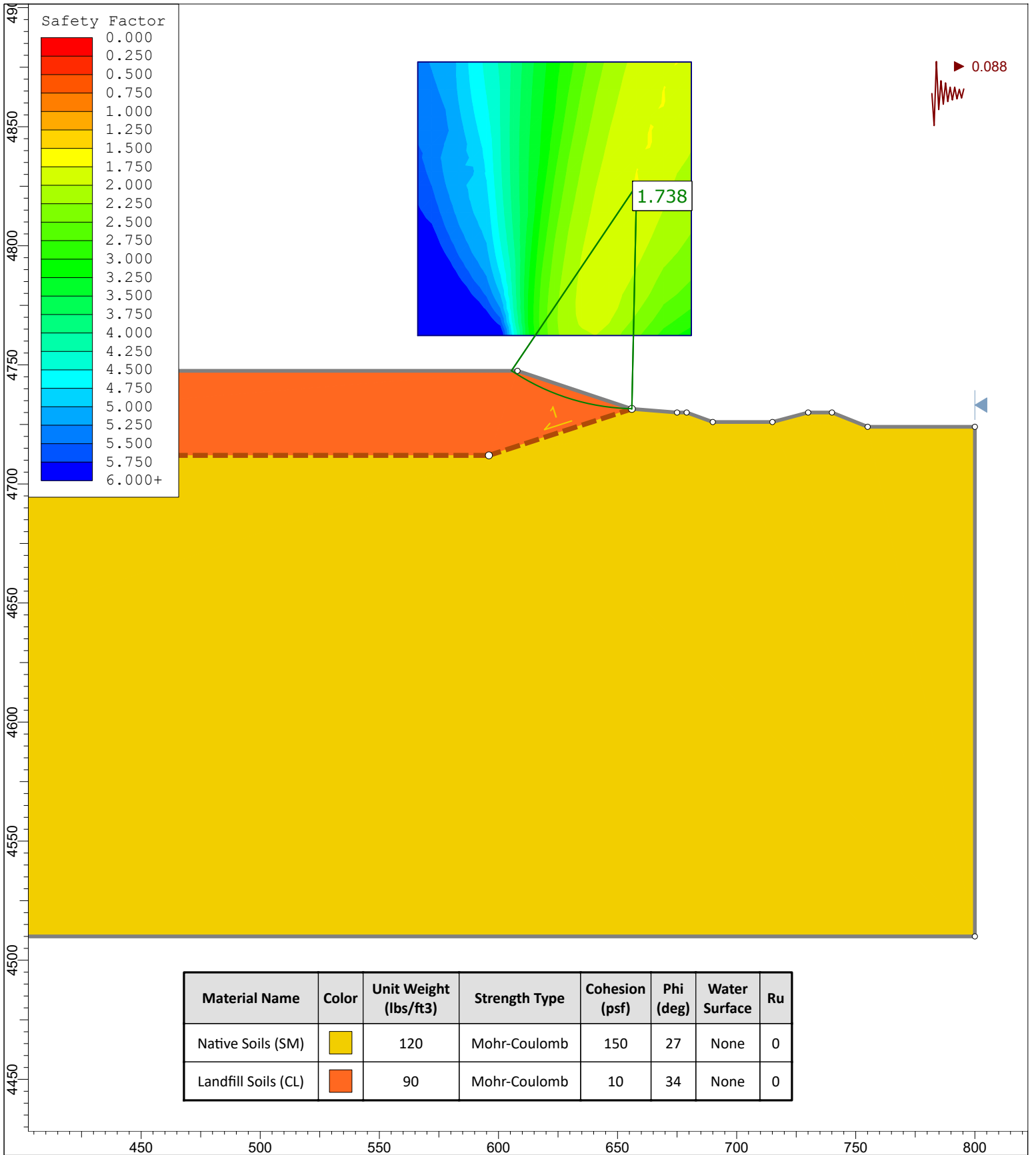


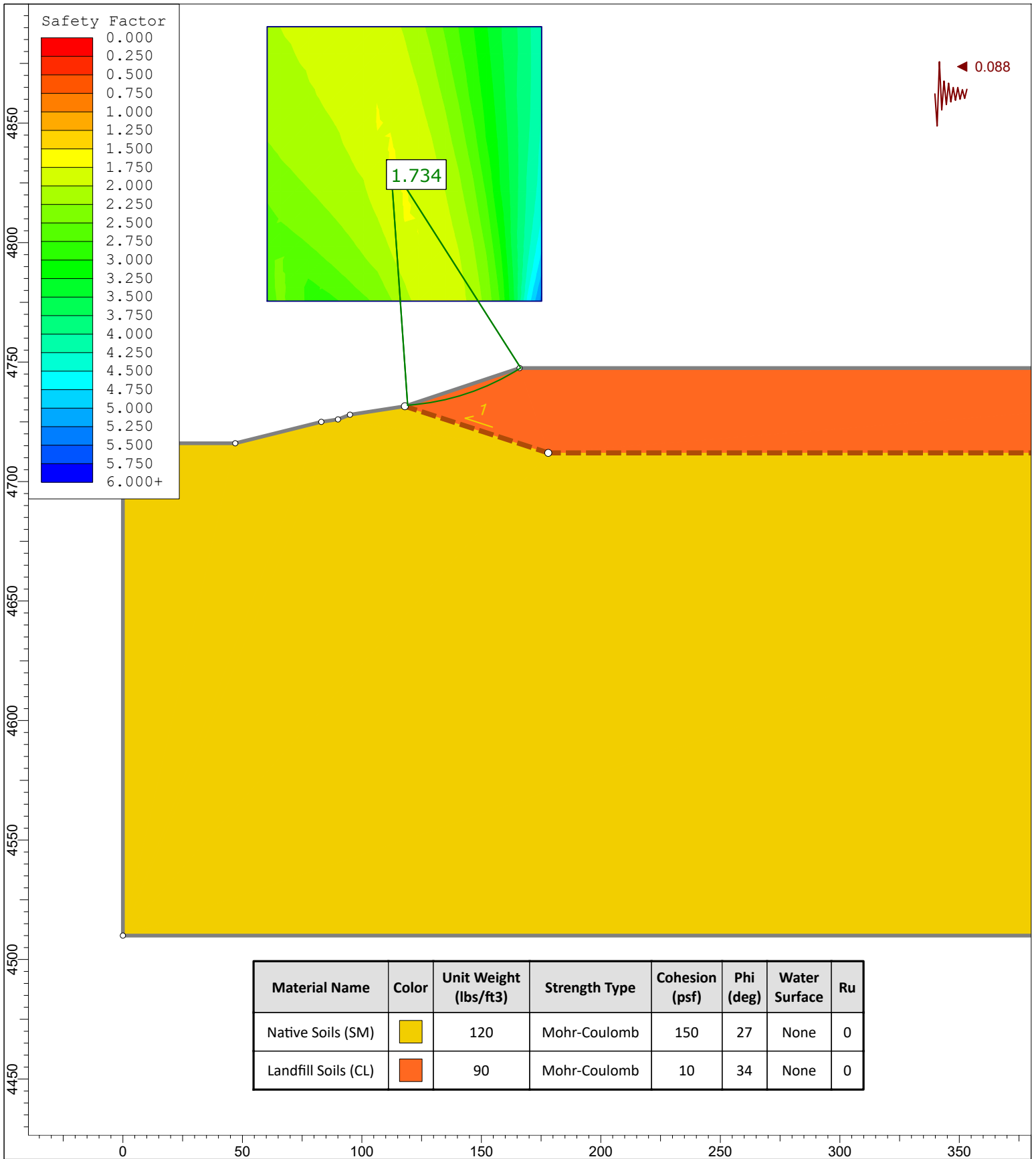
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Native Soils (SM)	Yellow	120	Mohr-Coulomb	205	34	None	0
Native Soils (CL)	Green	105	Mohr-Coulomb	750	18	None	0
Landfill Soils (CL)	Orange	90	Mohr-Coulomb	10	34	None	0







Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Native Soils (SM)		120	Mohr-Coulomb	150	27	None	0
Landfill Soils (CL)		90	Mohr-Coulomb	10	34	None	0





Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Native Soils (SM)		120	Mohr-Coulomb	150	27	None	0
Landfill Soils (CL)		90	Mohr-Coulomb	10	34	None	0

Appendix D



Engineering & Geosciences

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Phone (801) 501-0583 | Fax (801) 501-0584

Wonsit Pond 6 Liner Inspection
R.N. Industries

GeoStrata Job No. 524-104

December 20, 2020

Prepared for:

R.N. Industries

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1.1 PURPOSE AND SCOPE OF WORK	2
1.2 PROJECT DESCRIPTION	2
2.0 METHOD OF STUDY	3
2.1 FIELD EQUIPMENT	3
2.2 ARTIFICIAL LEAK AND LEAK TESTS	3
2.3 DATA ACQUISITION AND SURVEY LAYOUT FOR LIS SURVEY	4
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APPENDIX

Plate 1	Artificial Leak and Leak Test Location Map
Plate 2	Artificial Leak Test Log
Plate 3-5	Liner Survey photos

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE OF WORK

This report presents the results of a liner integrity study for of pond 6 at the at the Wonsit facility in Uintah County owned and operated by RN Industries (RNI). The purpose of this investigation was to evaluate the integrity of the primary liner in advance of permitting the pond as a Landfill for placement of exploration and production waste.

The scope of work completed for this study included visual inspection of the liner and a liner integrity survey (LIS) of the bottom of the pond.

The recommendations contained in this report are subject to the limitations presented in the **Limitations** section of this report (Section 5.0).

1.2 PROJECT DESCRIPTION

The Wonsit waste water disposal facility is located in Uintah County approximately 25 miles south of Vernal. The currently permitted landfill is a converted wastewater pond that is lined with a single 60ml HDPE liner with a leak detection system constructed in 2005. This pond was originally identified as Pond #6 and is approximately 540 ft long and 500 ft wide. At the time of the survey the bottom of the pond was covered in 6-12 inches of soil and an additional 0 to 36 inches of water. To evaluate the HDPE liner beneath the soil in the bottom of the pond a liner integrity survey (LIS) was completed following ASTM 6747 and ASTM 7007 for soil-covered geomembranes. The survey conducted was to identify significant defects in the liner.

2.0 METHOD OF STUDY

2.1 FIELD EQUIPMENT

The field work completed for this study included visual inspection of the liner and a liner integrity survey (LIS) of the bottom of the pond. The equipment used for the LIS portion of the of the liner survey consisted of a power source, a voltmeter, and a dipole system. For the power source GeoStrata used a TDK-Lambda GENESYS 750W/1500W Programmable DC power supply powered by a portable generator. The GENESYS supplied DC power to charge soil overlying the geomembrane. Voltages during the survey and during artificial leak testing were measured using a Fluke 289 multimeter. The Fluke 289 can measure DC voltage to 0.0025% accuracy.

GeoStrata used a dipole system to measure DC voltage during for the survey. The multimeter leads are connected to copper electrodes on the bottom of the dipole frame so that the multimeter can measure the voltage difference between the electrodes. The frame of the dipole system used by GeoStrata is approximately 3.5 ft wide.

GeoStrata used a Trimble GPS system to record the locations of the survey lines, artificial leak locations, power source locations, and the electrical anomalies found. The GPS system is generally accurate to +/- 5 ft.

Once the soils were charged an electrical field is created around any holes/discontinuities in the HDPE liner. The GENESYS has a range of 0 – 600 Volts (V) and 0 – 2.6 Amps (A). During the surveys and the artificial leak tests the power source was generating 0.6 amps at 100 volts.

2.2 ARTIFICIAL LEAK AND LEAK TESTS

In order to determine the spacing for the LIS survey of the soil covered liner in the bottom of the pond GeoStrata personnel conducted artificial leak and leak tests. GeoStrata personnel followed the artificial leak test procedure as outlined in ASTM 7007.

To conduct an artificial leak test the negative lead is disconnected from the ground stake and connected to the artificial leak. A stake that was approximately 3 feet in length was used for the artificial leak in this survey. Both the positive lead from the power source and the artificial leak lead were immersed into the soil layer. Next a technician conducted a localized survey around

the artificial leak to establish or verify the spacing for surveys. The ASTM standard D 7007 suggests that a signal to noise ratio of 3 be used to determine the survey spacing.

Based on the findings of the artificial leak surveys we spaced our survey lines at every 10 feet. An additional artificial leak test was conducted at the end of the liner survey and similar results were found during this artificial leak test. Results of the artificial leak test are attached to the end of this report.

2.3 DATA ACQUISITION AND SURVEY LAYOUT FOR LIS SURVEY

LIS data acquisition was completed at the subject site on December 10, 15 and 16. During data acquisition the basal portion of the liner was covered with approximately 0 - 10 inches of soil. The entire subject area of the soil covered liner was divided into 3 sections based on the area where the artificial leak tests were conducted. Each section was constrained by the ability for the equipment to reach that portion of the liner. To maintain accurate lines during the survey, each survey line was measured and flagged at 5 ft. intervals to mark the location of each survey line. Each survey line was oriented in an East-West direction across the subject area.

3.0 RESULTS AND DISCUSSION

3.1 LIS SURVEY

GeoStrata conducted an LIS survey of the basal portion of the landfill liner according to the ASTM 6747 and ASTM 7007 for soil-covered geomembranes. The sloped portions of the liner had no soil cover and these areas will be visually inspected. The sloped portions of the liner were covered in snow at the time of our survey and were not inspected. GeoStrata will perform a visual inspection of the sloped portions of the liner later. Inspection of the exposed liner will also be part of the operations plan of RNI operated landfills after they are put into operation.

GeoStrata conducted 3 artificial leak tests as part of this survey. Notes of the artificial leak results are included in this report. Based on our artificial leak tests, GeoStrata determined to further investigate any electrical anomalies encountered with a voltage three times greater than the background noise of the section of liner being tested. For example, if the background noise for a particular section was at 0.20 volts, a reading of 0.60 volts would be identified as an electrical anomaly. Electrical anomalies would then be further investigated with the dipole system to better constrain the location and magnitude of the anomaly and if the anomaly persisted, it was flagged for further testing and repair. At the time of our survey, no holes or anomalies were identified in the liner.

3.2 DISCUSSION

No anomalies that indicate the presence of a hole in the liner were identified during the LIS. It is possible that during construction and placement of waste into the liner, it may be damaged or punctured. As the liner is cleaned and prepared for waste placement, we recommend visually inspecting the liner at the location of waste placement and verify that there are no holes in the liner.

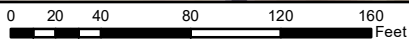
The sloped portions that have been covered with snow are currently inaccessible for visual inspection and cannot be tested using this method. We recommend that these areas be visually inspected prior to construction and waste placement. We also recommend that the operator continue to protect the liner from damage by using proper bedding materials and following waste placement recommendations in the landfill permit.

4.0 LIMITATIONS

The information presented in this report is based on limited field exploration, laboratory testing, and understanding of the proposed project. It is possible that pin holes may not have been detected by the LIS. It is also possible that the sloped portions may have holes and were not inspected using this method. GeoStrata should be notified if any holes or areas of compromised liner are detected. GeoStrata is also willing to inspect the sloped portions after the snow is removed or melts from off the liner.





This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made.

We appreciate the opportunity to be of service on this project. Should you have any questions regarding the report or wish to discuss additional services, please do not hesitate to contact us at your convenience at (801) 501-0583.



1:1,024

Legend

-  Artificial Leak
-  Source
-  Landfill Cell 2
-  Site Boundary

GeoStrata
 Engineering & Geosciences
 Copyright GeoStrata, 2020



Wonsit Landfill Cell 2
 RN Industries
 Project Number: 524-104

Liner Survey Map

**Plate
1**

GeoStrata

Project Name: Wonsit Landfill
 Project Number: 524-104

Date: 12-15 + 12-16 2020
 Pond: 6



Portion of Liner to be tested:

Power Settings:	
Volts: <u>107</u>	Amps: <u>0.2 - 0.7</u>

Background Noise (N)	
Max:	<u>.25</u>
Min:	<u>.04</u>
N:	<u>.25</u>

[S+N] Overall	
Max:	<u>0.44</u>
Min:	<u>0.25</u>

Artificial Leak (AL):					
1			2		
Distance (ft)	Volts (S+n)	R Value	Distance (ft)	Volts (S+n)	R Value
250	1.1		20	.04	
200	1.04		25	.11	
150	.89		20	.15	
100	.76		20	.15	
70	.73		15	.14	
50	.67		15	.15	
35	.69		10	.20	
20	.750		10	.15	
5	.4		5	.55	
1	.6	2	5	.45	
			5	.48	
			4	.48	
			4	.55	
			3	.78	
			3	.9	
			2	.9	
			1	1.0	
			1	.9	
			1	.85	

⑤
 5 - .4
 10 - .3
 15 - .25
 20 - .15
 20 - .15
 20 - .15
 15 - .15
 10 - .25
 9 - .26
 8 - .29
 7 - .28
 6 - .33
 5 - .50
 4 - .54
 3 - .75
 2 - .75
 1 - 1.0

R=(S+N)/N R must be greater than 3.0



Copyright GeoStrata LLC 2021

Artificial Test Data Log

Wonsit Liner Evaluation
 RN Industries
 Uintah County, Utah
 Project Number 524-104

Plate
 2



GeoStrata

Copyright GeoStrata LLC 2021

Survey Area with Marked Holes

Wonsit Liner Evaluation
RN Industries
Uintah County, Utah
Project Number 524-077

**Plate
3**





State of Utah

**Department of
Natural Resources**

MICHAEL R. STYLER
Executive Director

**Division of
Oil, Gas & Mining**

JOHN R. BAZA
Division Director

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

November 28, 2005

Mr. Roger Chapman
R N Industries Inc.
P. O. Box 98
Roosevelt, Utah 84066

Re: Final Approval to Operate Pit 3 – Wonsit Facility (“the Facility”)
Section 35, Township 8 South, Range 21 East, Uintah County, Utah

Dear Mr. Chapman,

On September 7, 2005, the Division of Oil, Gas & Mining (“the Division”) received your application to construct and operate commercial produced water evaporative Pit 3 at the Facility. Having met all the technical permit requirements of R649-9 et al., final approval to operate Pit 3 is hereby granted.

It is required that a minimum of 2 feet of freeboard be maintained in the pit at all times, and that a method of obviously displaying the freeboard be devised, in addition the pit is to be maintained such that hydrocarbons do not collect on the surface and curtail evaporation.

Spraying water to accelerate evaporation should be closely monitored. Over spray outside of the lined pit area is considered an illegal surface discharge, and could result in the closure of the Facility.

The leak detection system must be checked weekly. Any leak must be reported to the Division immediately, and corrective measures must be taken. Quarterly reports must be filed that contain a record of the leak detection system inspections, and water volumes received. Failure to report as outlined herein will be considered a violation. In addition, Division personnel will conduct periodic visual inspections of the Facility, and leak detection system(s).

The secondary perimeter containment berm surrounding Pit 3 shall be inspected regularly to ensure its’ integrity.

Page 2
Mr. Roger Chapman
November 28, 2005

The issuance of this permit does not supercede local ordinances, county planning and zoning requirements, or other permits required to conduct business at the Facility.

The Facility is not authorized to take any hazardous wastes, and may be subject to Utah, Department of Environmental Quality and Federal, Environmental Protection Agency laws if wastes of this nature are collected.

A copy of this approval should be kept at the Facility field office, and/or personnel should be aware of the conditions of approval.

Should you have any questions, please contact Lisha Cordova at (801) 538-5296 or Brad Hill at (801) 538-5315.

Sincerely,



Gil Hunt
Associate Director, Oil & Gas

Attachments: 2

LC:mf

cc: Dan Jarvis, Technical Services Manager
Richard Powell, Roosevelt Office
Uintah County Planning Office
Jennifer Corser, Tri County Health
Facility File
Bond File

CIVCO Engineering, Inc.

Civil Engineering Consultants

P.O. Box 1758
365 West 50 North, Suite W-1
Vernal, Utah 84078

8 November 2005

Lisha Cordova
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84180

Re: Chapman Disposal Ponds at The Wonsit Facility,

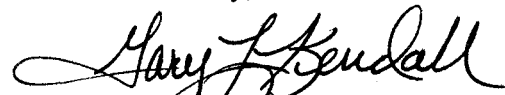
Dear Lisha:

I am sending the information you requested on The Wonsit Disposal Ponds New Facility, and I hope this gives you the information you need for Pond #4.

The pond and the leak detection system will be constructed in the same manner and using the same standards as the ponds that have been constructed and permitted in the master plan for the Wonsit Disposal facility. I am sending this notice of application as per Roger's request for the approval to construct pond #4 and will send more information to you upon request as soon as possible.

If you should have any questions or need additional information concerning this matter, please feel free to contact myself at CIVCO Engineering Inc. (435-789-5448).

Sincerely,



Gary L. Kendall
CIVCO Engineering Inc.

cc: Nile Chapman
Project File

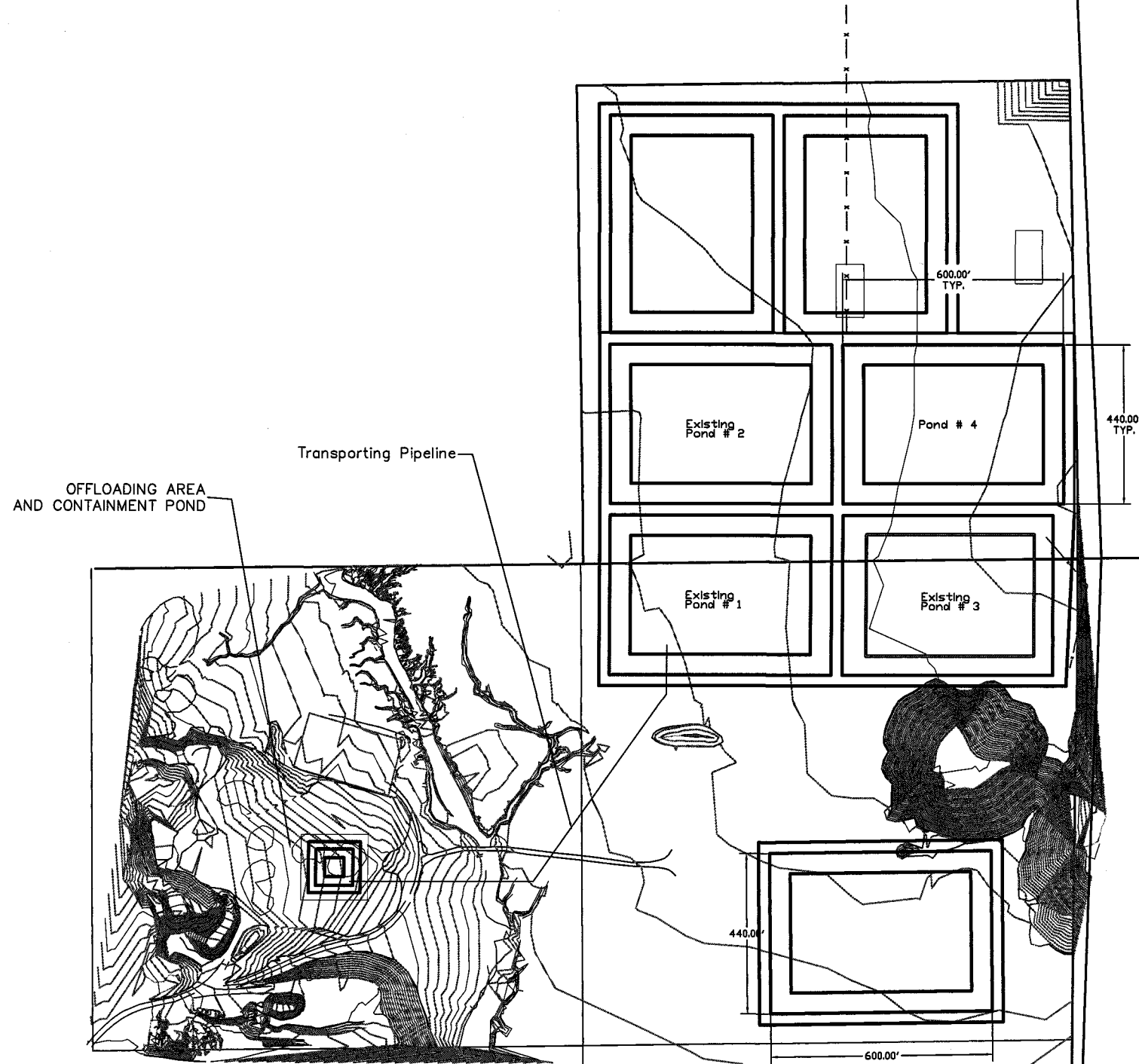
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NOV 22 2005

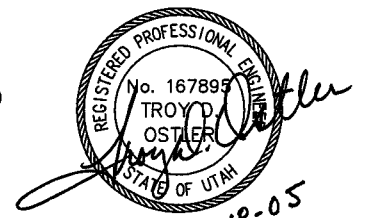
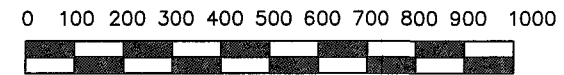
DIV. OF OIL, GAS & MINING

R.N.INDUSTRIES WONSIT FACILITY

Located in the
S1/2SE1/4SE1/4 of Section
26, T8S, R21E, S.L.B. & M.
and in the
N1/2NE1/4 and the
SE1/4N1/4 Section 35,
T8S, R21E, S.L.B. & M.



NEW POND 4

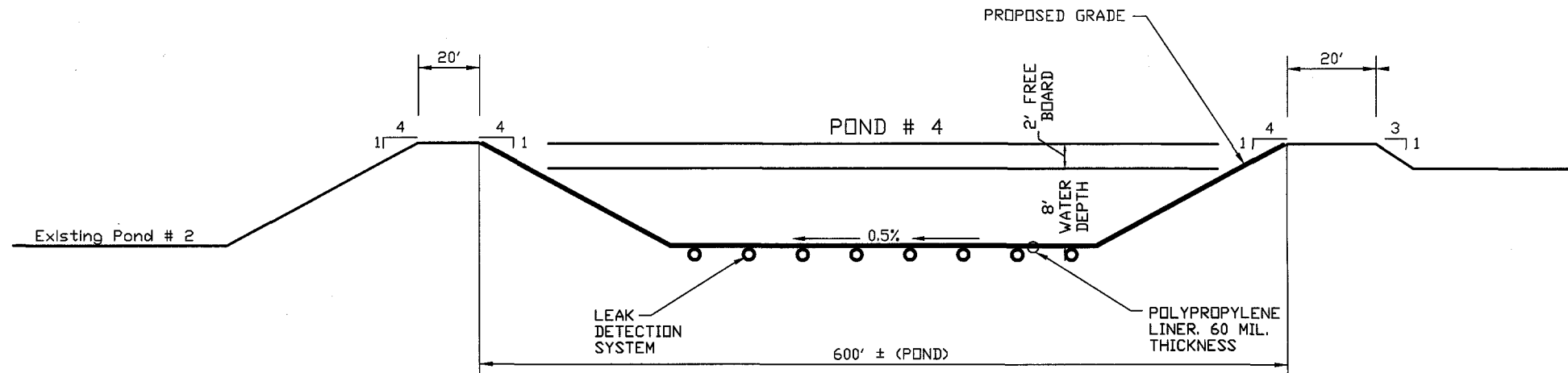


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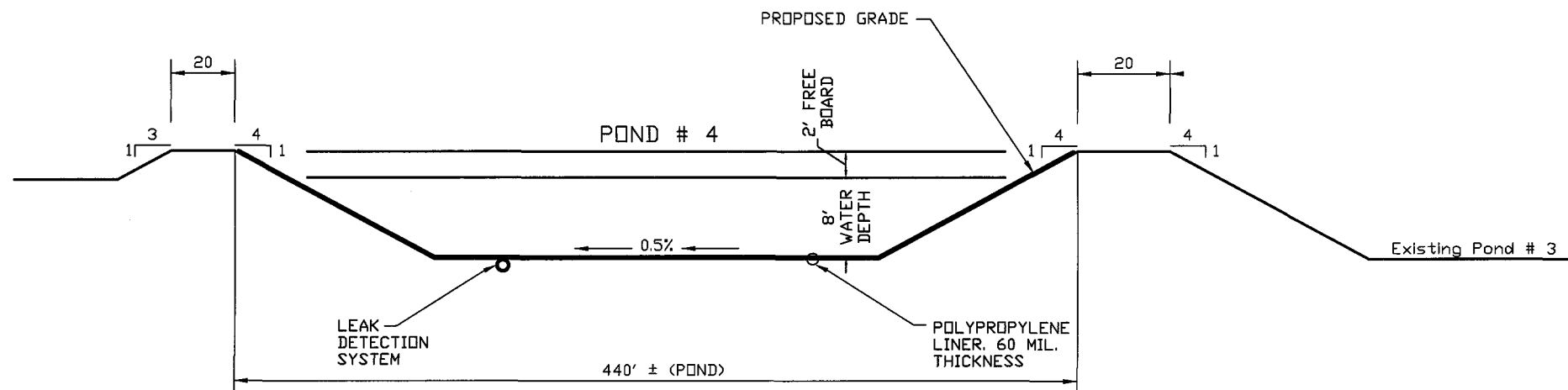
NOV 22 2005

DIV. OF OIL, GAS & MINING

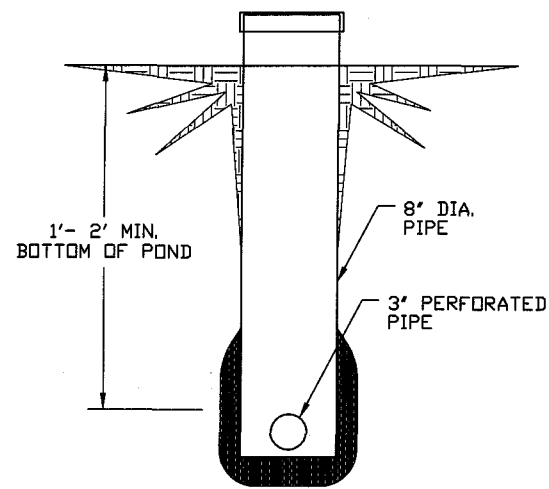
P.O. Box 1758, Vernal, Utah 84078 Telephone: (435) 789-5448 Fax: (801) 789-4485		REVIEW
DESIGN 11/05	GLK	CHECK IDO 11/05
DRAWN 11/05	GLK	CHECK IDO 11/05
APPROVAL 11/05	TROY E. OSTLER, P.E.	NO. DATE
APPROVED 11/05	GARY KENDALL	DESIGN 11/05
		PARCELS REQUEST
		ORIGINAL SUBMISSION FOR AUTHORIZATION
		REMARKS
R N INDUSTRIES	WONSIT FACILITY	
	POND # 4	
PROJECT NUMBER		
UINTAH COUNTY		
SHEET NO.	2	



SECTION "A-A"

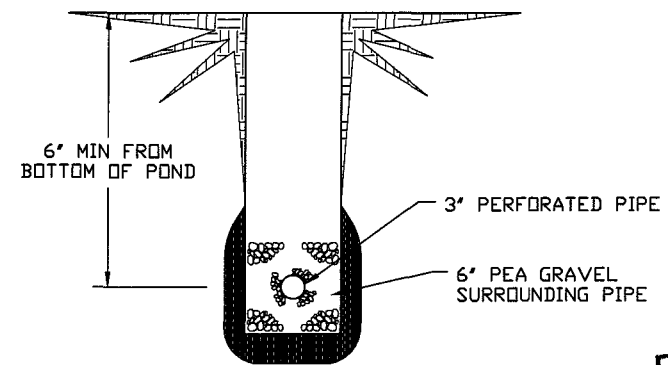


SECTION "B-B"

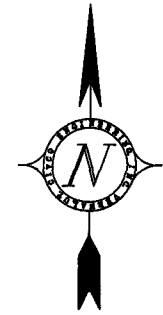


SUMP CROSS SECTION

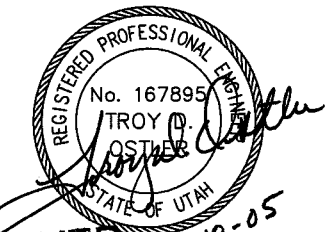
POND #4



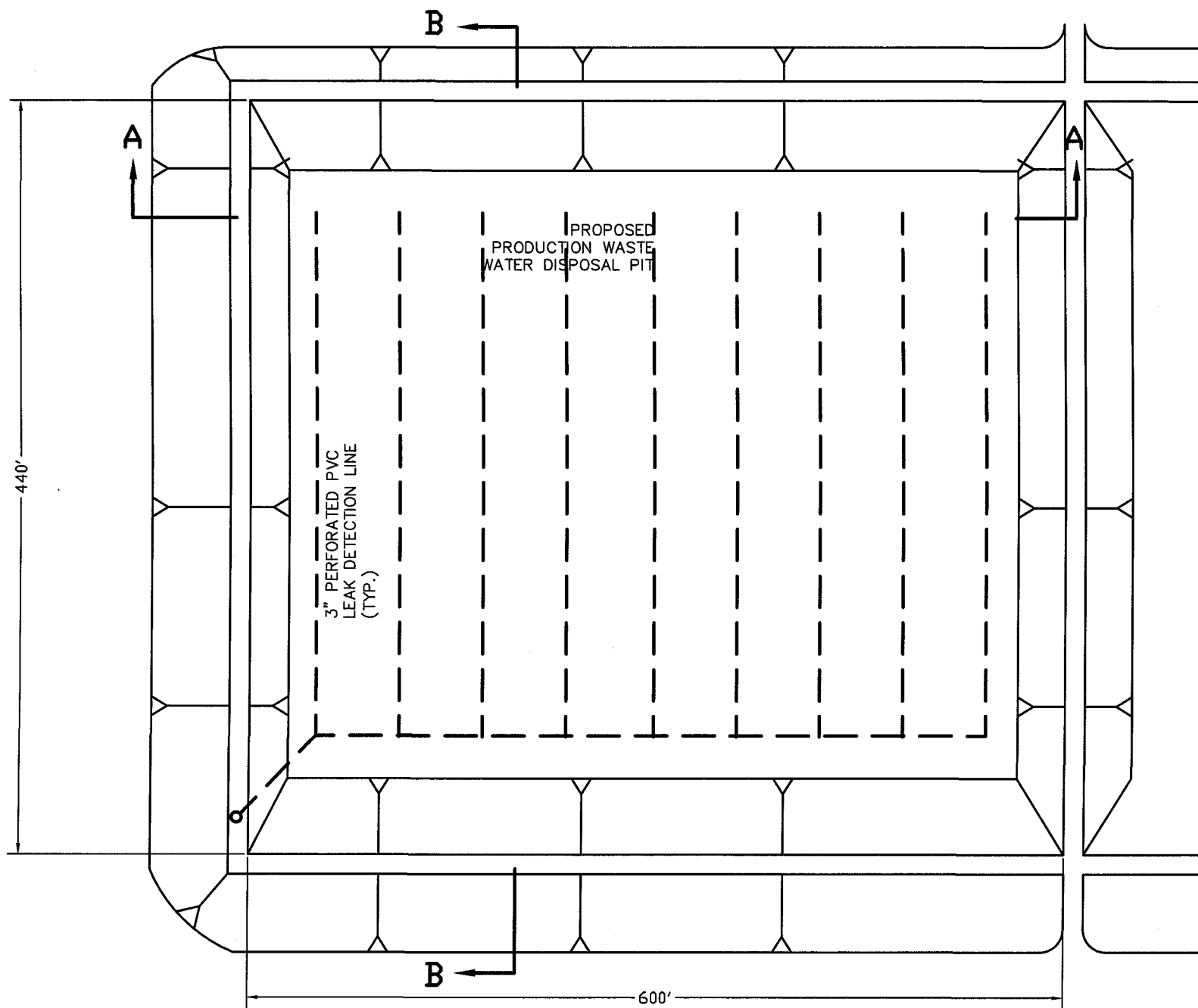
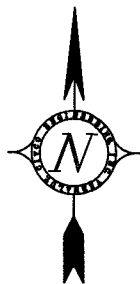
TRENCH CROSS SECTION



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NOV 22 2005
11-18-05

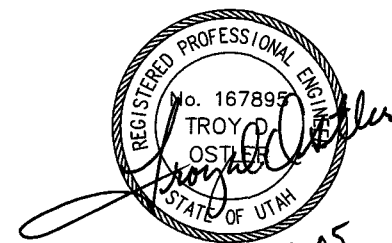


R. N. INDUSTRIES		WONSIT FACILITY		TYPICAL SECTION		POND #4	
PROJECT NUMBER		3		COUNTY		UINTAH	
SHEET No.		3		DIV. OF OIL, GAS & MINING		NOV 22 2005	
CIVCO Engineering Inc.		P.O. Box 1758, Vernal, Utah 84078		Telephone: (435) 789-5448 Fax: (801) 789-4485		GARY L. KENDALL	
DESIGN	GLK	11/05	CHECK	IDO	11/05	BY	
DRAWN	GLK	11/05	CHECK	GLK	11/05	DATE	
APPROVAL		11/05	APPROVED		11/05	TROY D. OSTLER, P.E.	



NOTES:
 PIT CAPACITY = 398,933 BARRELS (ASSUMING 42 GAL. PER BARREL & 2' FREE BOARD.)
 OR 16,755,200 MILLION GALLONS.

PONDS # 4



11-18-05
 RECEIVED

NOV 22 2005

DIV. OF OIL, GAS & MINING

R. N. INDUSTRIES		CIVCO Engineering Inc.	
WONSIT FACILITY		P.O. Box 1758, Vernal, Utah 84078 Telephone: (435) 789-5448 Fax: (801) 789-4485	
TYPICAL SECTION		DESIGN	GLK 11/05
POND # 4		CHECK	TDG 11/05
PROJECT NUMBER	4	DRAWN	GLK 11/05
		CHECK	GLK 11/05
		DATE	11/05
		BY	
		REVISIONS	

UINTAH
 COUNTY

SHEET No. 4



United States Department of the Interior
FISH AND WILDLIFE SERVICE
OFFICE OF LAW ENFORCEMENT
Lyndon B. Johnson Federal Building
324 25th Street, Room 1424
P.O. Box 2369 Ogden, Utah 84402
(801) 625-5570

November 7, 2005

Roger and Nile Chapman
R N Industries Inc.
P. O. Box 98
Roosevelt, Utah 84066

Re: Protection of Wildlife and Commercial Oil and Waste Disposal Service Facilities

Dear Mr. Chapman:

The United States Fish and Wildlife Service, Office of Law Enforcement, recently conducted inspections of Commercial Oil and Waste Disposal Service Facilities throughout Utah. The RN Industries facilities, in the Bluebell area and Glen Bench area, were identified as having the potential for causing wildlife and migratory bird mortalities. Please be advised that contaminated waste pits are highly likely to cause wildlife mortality, especially during the fall and spring of the year, as birds migrate through the area.

In 1997, the Service estimated that 2 million migratory birds are lost each year to oil pits throughout the United States. Since 1997, many oil and natural gas operators have taken measures to prevent migratory bird and other wildlife mortality in waste pits. Birds are attracted to oil pits by mistaking them for natural bodies of water. The sticky nature of oil entraps birds in the pits and they die from exposure and exhaustion. Birds that do manage to escape can die from starvation or the toxic effects of oil ingested during preening. Waterfowl ingesting sub-lethal doses of oil can experience impaired reproduction. Female aquatic birds returning to their nests with oil on their feathers can inadvertently apply the oil to the eggs. Micro liter amounts of oil applied externally to eggs are extremely toxic to bird embryos. Scavengers and predators can also suffer adverse effects by consuming oiled birds.

In the past, energy companies have chosen a variety of methods to exclude wildlife from contact with the often toxic contents of waste pits. Such methods include pit netting, fencing, predator decoys, and the use of bird exclusion balls. Information on wildlife exclusion techniques can be found at the following U.S. Fish and Wildlife Service, Region 6 web site:
<http://www.r6.fws.gov/contaminants/oilpits.htm>.

RECEIVED

NOV 10 2005

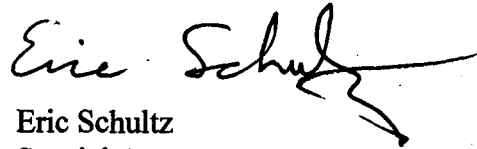
DIV. OF OIL, GAS & MINING

Any migratory bird that dies as a result of contact with contaminants in reserve pits, evaporation pits, or other storage facilities are considered to be unlawfully taken under the Migratory Bird Treaty Act, Title 16, United States Code, Section 703. Each violation of the Migratory Bird Treaty Act carries criminal penalties of a fine up to \$15,000 and six months in jail. I have included a copy of the law with this letter for your review.

Please pass this letter along to company management, and legal counsel, to ensure that they become acquainted with the matter.

If you have any questions please feel free to call.

Sincerely,



Eric Schultz
Special Agent

Enclosure: Copy of MBTA

cc: G. Hunt, UDOGM
J. Neal, RAC, USFWS/LE
Chris Cline, USFWS/ES

16 USC 703-712
Migratory Bird Treaty Act

SUBCHAPTER II—MIGRATORY BIRD TREATY

Release date: 2004-04-30

- § 703. Taking, killing, or possessing migratory birds unlawful
- § 704. Determination as to when and how migratory birds may be taken, killed, or possessed
- § 705. Transportation or importation of migratory birds; when unlawful
- § 706. Arrests; search warrants
- § 707. Violations and penalties; forfeitures
- § 708. State or Territorial laws or regulations
- § 709. Omitted
- § 709a. Authorization of appropriations
- § 710. Partial invalidity; short title
- § 711. Breeding and sale for food supply
- § 712. Treaty and convention implementing regulations; seasonal taking of migratory birds for essential needs of indigenous Alaskans to preserve and maintain stocks of the birds; protection and conservation of the birds

§ 703. Taking, killing, or possessing migratory birds unlawful

Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions between the United States and Great Britain for the protection of migratory birds concluded August 16, 1916 (39 Stat. 1702), the United States and the United Mexican States for the protection of migratory birds and game mammals concluded February 7, 1936, the United States and the Government of Japan for the protection of migratory birds and birds in danger of extinction, and their environment concluded March 4, 1972 ^[1] and the convention between the United States and the Union of Soviet Socialist Republics for the conservation of migratory birds and their environments concluded November 19, 1976.

§ 704. Determination as to when and how migratory birds may be taken, killed, or possessed

(a) Subject to the provisions and in order to carry out the purposes of the conventions, referred to in section 703 of this title, the Secretary of the Interior is authorized and directed, from time to time, having due regard to the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, to determine when, to what extent, if at all, and by what means, it is compatible with the terms of the conventions to allow hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any such bird, or any part, nest, or egg thereof, and to adopt suitable regulations permitting and governing the same, in accordance with such determinations, which regulations shall become effective when approved by the President.

(b) It shall be unlawful for any person to—

- (1)** take any migratory game bird by the aid of baiting, or on or over any baited area, if the person knows

16 USC 703-712
Migratory Bird Treaty Act

or reasonably should know that the area is a baited area; or
(2) place or direct the placement of bait on or adjacent to an area for the purpose of causing, inducing, or allowing any person to take or attempt to take any migratory game bird by the aid of baiting on or over the baited area.

§ 705. Transportation or importation of migratory birds; when unlawful

It shall be unlawful to ship, transport, or carry, by any means whatever, from one State, Territory, or district to or through another State, Territory, or district, or to or through a foreign country, any bird, or any part, nest, or egg thereof, captured, killed, taken, shipped, transported, or carried at any time contrary to the laws of the State, Territory, or district in which it was captured, killed, or taken, or from which it was shipped, transported, or carried. It shall be unlawful to import any bird, or any part, nest, or egg thereof, captured, killed, taken, shipped, transported, or carried contrary to the laws of any Province of the Dominion of Canada in which the same was captured, killed, or taken, or from which it was shipped, transported, or carried.

§ 706. Arrests; search warrants

Any employee of the Department of the Interior authorized by the Secretary of the Interior to enforce the provisions of this subchapter shall have power, without warrant, to arrest any person committing a violation of this subchapter in his presence or view and to take such person immediately for examination or trial before an officer or court of competent jurisdiction; shall have power to execute any warrant or other process issued by an officer or court of competent jurisdiction for the enforcement of the provisions of this subchapter; and shall have authority, with a search warrant, to search any place. The several judges of the courts established under the laws of the United States, and United States magistrate judges may, within their respective jurisdictions, upon proper oath or affirmation showing probable cause, issue warrants in all such cases. All birds, or parts, nests, or eggs thereof, captured, killed, taken, sold or offered for sale, bartered or offered for barter, purchased, shipped, transported, carried, imported, exported, or possessed contrary to the provisions of this subchapter or of any regulation prescribed thereunder shall, when found, be seized and, upon conviction of the offender or upon judgment of a court of the United States that the same were captured, killed, taken, sold or offered for sale, bartered or offered for barter, purchased, shipped, transported, carried, imported, exported, or possessed contrary to the provisions of this subchapter or of any regulation prescribed thereunder, shall be forfeited to the United States and disposed of by the Secretary of the Interior in such manner as he deems appropriate.

§ 707. Violations and penalties; forfeitures

(a) Except as otherwise provided in this section, any person, association, partnership, or corporation who shall violate any provisions of said conventions or of this subchapter, or who shall violate or fail to comply with any regulation made pursuant to this subchapter shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not more than \$15,000 or be imprisoned not more than six months, or both.

(b) Whoever, in violation of this subchapter, shall knowingly—

(1) take by any manner whatsoever any migratory bird with intent to sell, offer to sell, barter or offer to barter such bird, or

(2) sell, offer for sale, barter or offer to barter, any migratory bird shall be guilty of a felony and shall be fined not more than \$2,000 or imprisoned not more than two years, or both.

(c) Whoever violates section 704 (b)(2) of this title shall be fined under title 18, imprisoned not more than 1 year, or both.

(d) All guns, traps, nets and other equipment, vessels, vehicles, and other means of transportation used by any person when engaged in pursuing, hunting, taking, trapping, ensnaring, capturing, killing, or attempting

16 USC 703-712
Migratory Bird Treaty Act

to take, capture, or kill any migratory bird in violation of this subchapter with the intent to offer for sale, or sell, or offer for barter, or barter such bird in violation of this subchapter shall be forfeited to the United States and may be seized and held pending the prosecution of any person arrested for violating this subchapter and upon conviction for such violation, such forfeiture shall be adjudicated as a penalty in addition to any other provided for violation of this subchapter. Such forfeited property shall be disposed of and accounted for by, and under the authority of, the Secretary of the Interior.

§ 708. State or Territorial laws or regulations

Nothing in this subchapter shall be construed to prevent the several States and Territories from making or enforcing laws or regulations not inconsistent with the provisions of said conventions or of this subchapter, or from making or enforcing laws or regulations which shall give further protection to migratory birds, their nests, and eggs, if such laws or regulations do not extend the open seasons for such birds beyond the dates approved by the President in accordance with section 704 of this title.

§ 709. Omitted

§ 709a. Authorization of appropriations

There is hereby authorized to be appropriated, from time to time, out of any money in the Treasury not otherwise appropriated, such amounts as may be necessary to carry out the provisions and to accomplish the purposes of said conventions and of this subchapter and regulations made pursuant thereto, and the Secretary of the Interior is authorized out of such moneys to employ in the city of Washington and elsewhere such persons and means as he may deem necessary for such purpose and may cooperate with local authorities in the protection of migratory birds and make the necessary investigations connected therewith.

§ 710. Partial invalidity; short title

If any clause, sentence, paragraph, or part of this subchapter, which shall be known by the short title of the "Migratory Bird Treaty Act", shall, for any reason, be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, or part thereof directly involved in the controversy in which such judgment shall have been rendered.

§ 711. Breeding and sale for food supply

Nothing in this subchapter shall be construed to prevent the breeding of migratory game birds on farms and preserves and the sale of birds so bred under proper regulation for the purpose of increasing the food supply.

§ 712. Treaty and convention implementing regulations; seasonal taking of migratory birds for essential needs of indigenous Alaskans to preserve and maintain stocks of the birds; protection and conservation of the birds

(1) In accordance with the various migratory bird treaties and conventions with Canada, Japan, Mexico, and the Union of Soviet Socialist Republics, the Secretary of the Interior is authorized to issue such regulations as may be necessary to assure that the taking of migratory birds and the collection of their

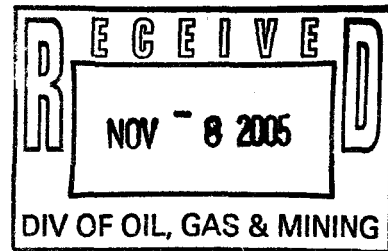
16 USC 703-712
Migratory Bird Treaty Act

eggs, by the indigenous inhabitants of the State of Alaska, shall be permitted for their own nutritional and other essential needs, as determined by the Secretary of the Interior, during seasons established so as to provide for the preservation and maintenance of stocks of migratory birds.

(2) The Secretary of the Interior is authorized to issue such regulations as may be necessary to implement the provisions of the convention between the United States and Great Britain for the protection of migratory birds concluded August 16, 1916, the convention between the United States and the United Mexican States for the protection of migratory birds and game mammals concluded February 7, 1936, the convention between the United States and the Government of Japan for the protection of migratory birds in danger of extinction, and their environment concluded March 4, 1972, and the convention between the United States and the Union of Soviet Socialist Republics for the conservation of migratory birds and their environment concluded November 19, 1976.

From: "Gary Kendall" <garykendall@civcoengineering.com>
To: "Lisha Cordova" <lishacordova@utah.gov>
Date: 11/8/2005 11:02:23 AM
Subject: Wonsit Pond #4

Lisha, here is the drawings to permit Pond #4. I will send hardcopies later.
If your need more then let me know



CIVCO Engineering, Inc.

Civil Engineering Consultants

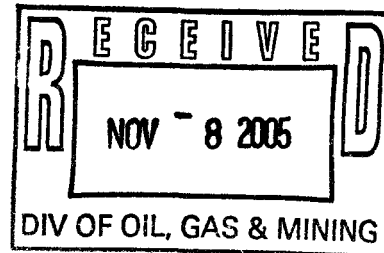
P.O. Box 1758
365 West 50 North, Suite W-1
Vernal, Utah 84078

8 November 2005

Lisha Cordova
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84180

Re: Chapman Disposal Ponds at The Wonsit Facility,

Dear Lisha:



I am sending the information you requested on The Wonsit Disposal Ponds New Facility, and I hope this gives you the information you need for Pond #4.

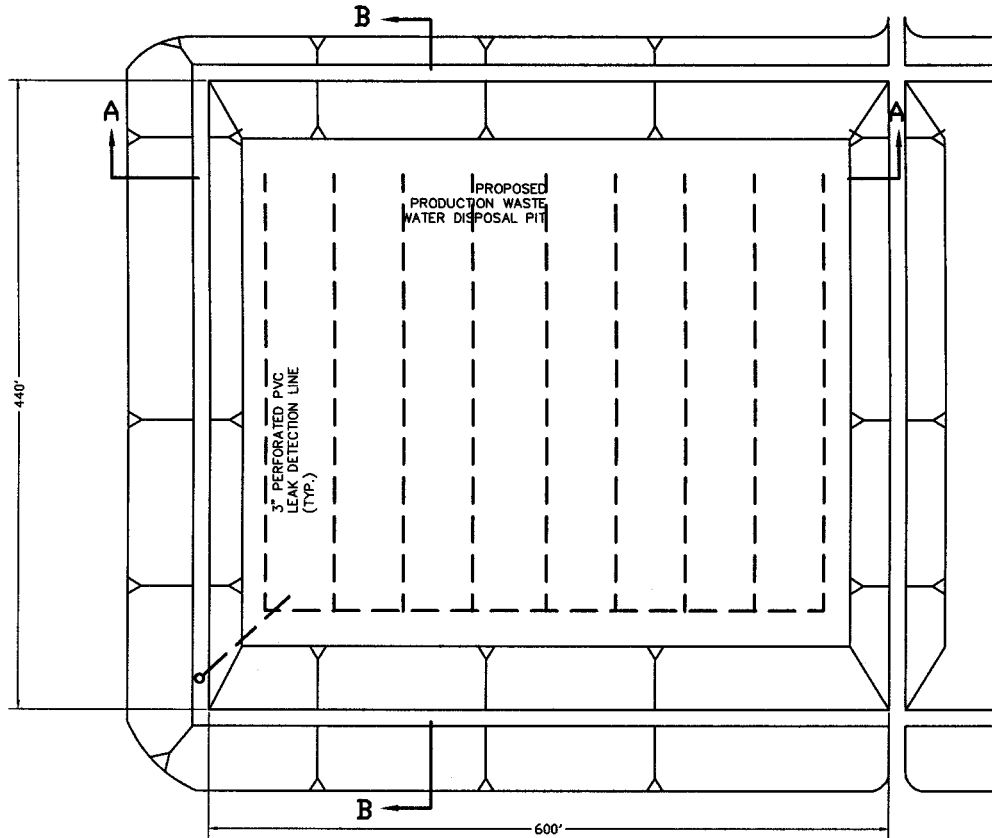
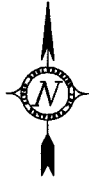
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If you should have any questions or need additional information concerning this matter, please feel free to contact myself at CIVCO Engineering Inc. (435-789-5448).

Sincerely,

Gary L. Kendall
CIVCO Engineering Inc.

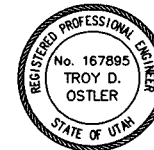
cc: Nile Chapman
Project File



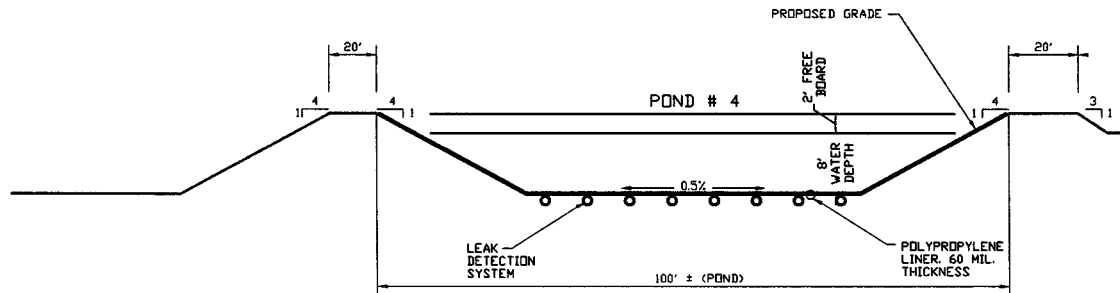
PONDS # 4

NOTES:
 PIT CAPACITY = 398,933 BARRELS (ASSUMING 42 GAL. PER BARREL & 2' FREE BOARD.)
 OR 16,755,200 MILLION GALLONS.

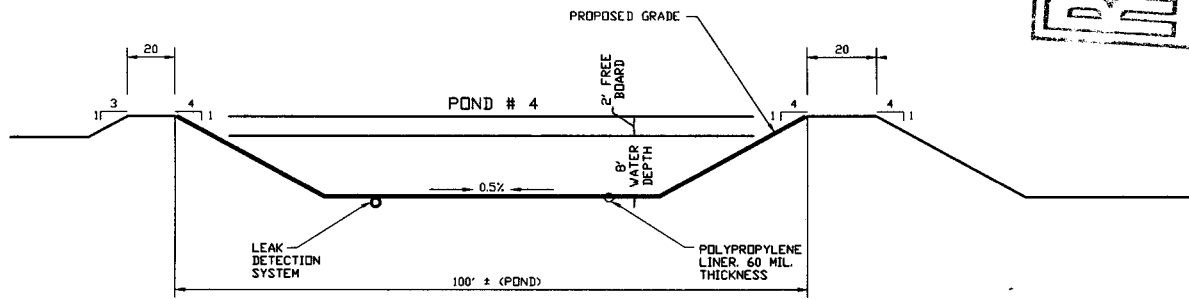
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 DIV OF OIL, GAS & MINING



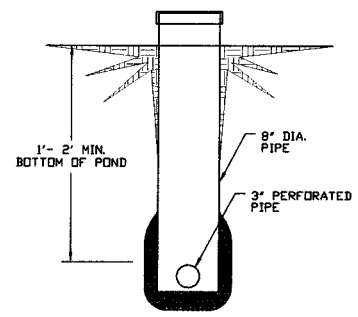
R. N. INDUSTRIES	CIVCO Engineering Inc.			
WONSI FACILITY	P.O. Box 1726, Tropic, Utah 84078 Telephone: (435) 739-5448 Fax: (435) 739-4445	DESIGNER: TROY D. OSTLER, P.E.	DATE: 11/05	REVISIONS
TYPICAL SECTION	APPROVAL: 11/05	DATE: 11/05	DATE: 11/05	
POND # 4	PROJECT NUMBER: 11/05	DATE: 11/05	DATE: 11/05	
UINTAH COUNTY				
SHEET No. 4				



SECTION 'A-A'

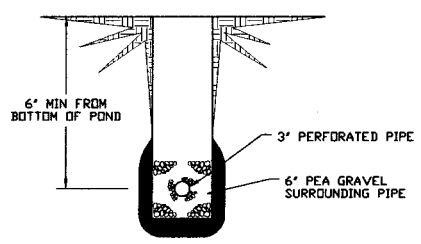


SECTION 'B-B'



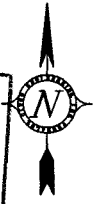
SUMP CROSS SECTION

POND #2



TRENCH CROSS SECTION

RECEIVED
 NOV - 8 2005
 DIV OF OIL, GAS & MINING



CIVCO Engineering Inc. P.O. Box 1758, Torrey, Utah 84078 Telephone: (435) 799-3448 Fax: (801) 799-4488	
DESIGNER: TROY D. OSTLER CHECKED: TROY D. OSTLER, P.E. DATE: 11/05	REVISIONS NO. DATE BY 1 11/05 2 11/05 3 11/05 4 11/05
PROJECT NUMBER: POND #4 COUNTY: UTAH	TYPICAL SECTION WONSIT FACILITY R. N. INDUSTRIES
REGISTERED PROFESSIONAL ENGINEER No. 167895 TROY D. OSTLER STATE OF UTAH	
SHEET No. 3	



State of Utah

**Department of
Natural Resources**

MICHAEL R. STYLER
Executive Director

**Division of
Oil, Gas & Mining**

JOHN R. BAZA
Division Director

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

September 27, 2005

Mr. Roger Chapman
RN Industries Inc.
P.O. Box 98
Roosevelt, Utah 84066

Re: Wonsit Facility - Approval to Construct Produced Water Evaporative Pit 3,
Located in Section 35, Township 8 South, Range 21 East, Uintah County,
Utah.

Dear Mr. Chapman,

Your application to construct produced water evaporative Pit 3 at the Wonsit Facility ("the Facility") was received on September 7, 2005. The application was reviewed by Division staff and meets the requirements for a produced water disposal pit in accordance with Utah Administrative Code R649-9 et al., of the Oil and Gas General Rules.

Therefore approval to commence construction of Pit 3 at the Facility is hereby granted.

The Division requires that our staff be informed of all phases of construction and be allowed the opportunity for inspection during the construction and installation activities including but not limited to, leak detection system emplacement, liner installation, and dike construction.

Final approval to operate Pit 3 at the Facility will be issued upon completion of the construction phase, and compliance with all the stipulations.

This approval does not exempt the operator from complying with all other federal, state and local rules and ordinances.

Page 2
Mr. Roger Chapman
September 27, 2005

If you have any questions concerning this approval, please contact Lisha Cordova at (801) 538-5296 or Brad Hill at (801) 538-5315.

Sincerely,



Gil Hunt
Associate Director, Oil & Gas

Attachments (1)

LC:mf

cc: Dan Jarvis, Acting Technical Services Manager
Richard Powell, Roosevelt Office
Uintah County Planning Office
Jennifer Corser, Tri County Health
Wonsit Facility File

CIVCO Engineering, Inc.
Civil Engineering Consultants
P.O. Box 1758
365 West 50 North, Suite W-1
Vernal, Utah 84078

7 September 2005

Lisha Cordova
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84180

Re: Chapman Disposal Ponds at Glen Bench New Facility,

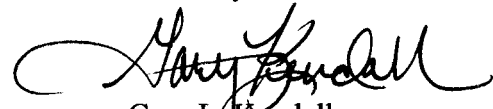
Dear Lisha:

I am sending the information you requested on The Wonsit Disposal Ponds New Facility, and I hope this gives you the information you need to help locate Pond #3.

The pond and the leak detection system will be constructed in the same manner and using the same standards as the ponds that are proposed and permitted in the master plan for the Wonsit Disposal facility. I am sending this notice of application as per Roger's request for the approval to construct pond #3 and will send more information to you upon request as soon as possible.

If you should have any questions or need additional information concerning this matter, please feel free to contact myself at CIVCO Engineering Inc. (435-789-5448).

Sincerely,

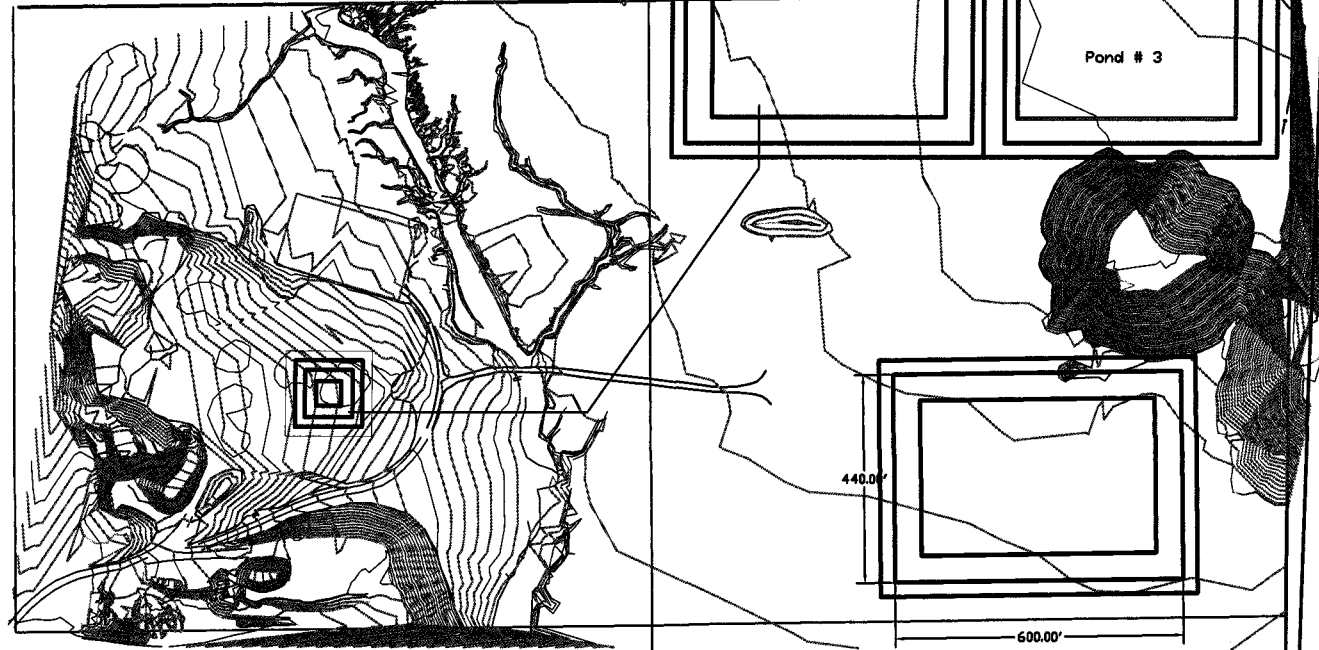

Gary L. Kendall
CIVCO Engineering Inc.

cc: Nile Chapman
Project File

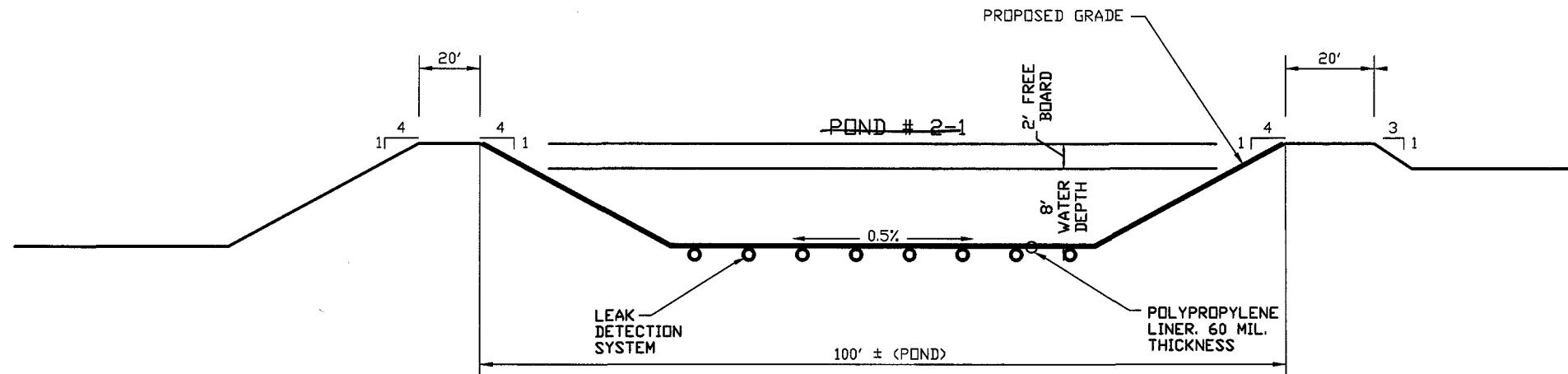
RECEIVED

SEP 26 2005

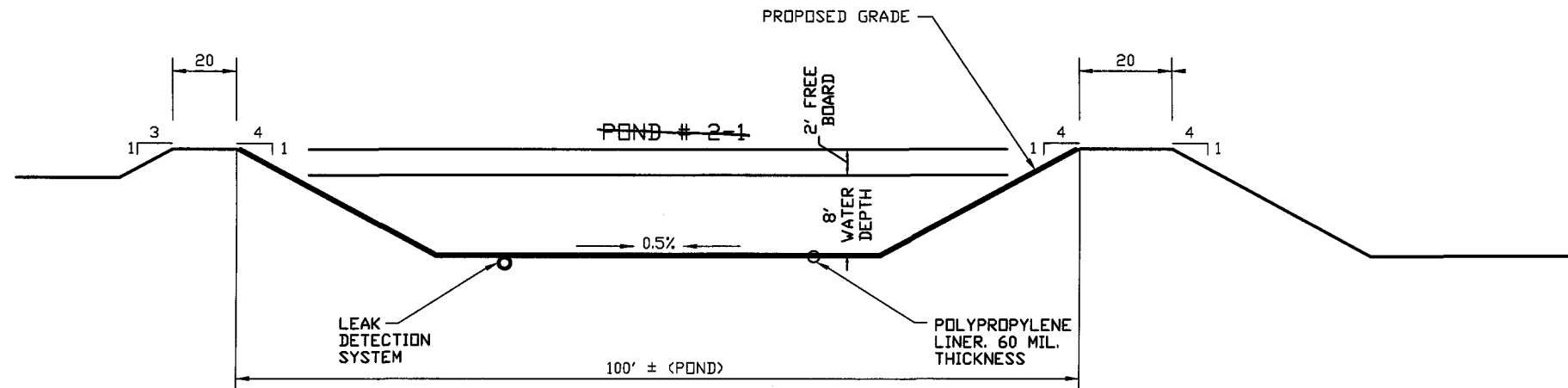
DIV. OF OIL, GAS & MINING



R N INDUSTRIES		DESIGN	9/05	GLK	GLK	CHECK	TDO	9/05	REVIEW
WONSIT FACILITY		DRAWN	9/05	GLK	GLK	CHECK	TDO	9/05	DATE
POND # 3		QUANT.	6/05	GLK	GLK	CHECK	TDO	9/05	BY
PROJECT NUMBER		APPROVAL	9/05	TROY D. OSTLER, P.E.					
COUNTY		APPROVED	9/05	GARY KENDALL					
SHEET NO. 2		ORIGINAL SUBMISSION FOR AUTHORIZATION							
		R. E. V. L. S. I. O. N. S.							
		REMARKS							

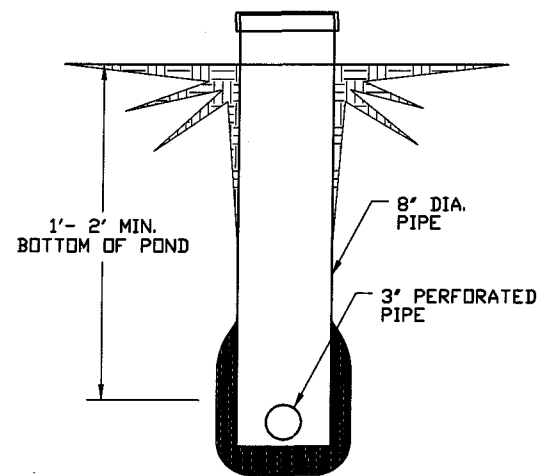


SECTION "B-B"

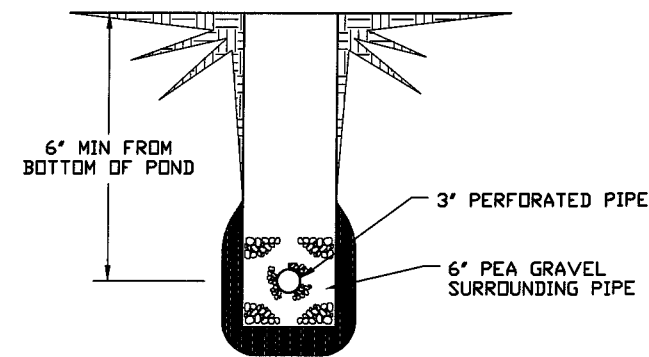


SECTION "A-A"

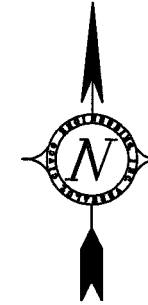
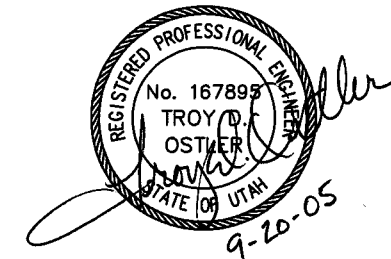
POND # 3



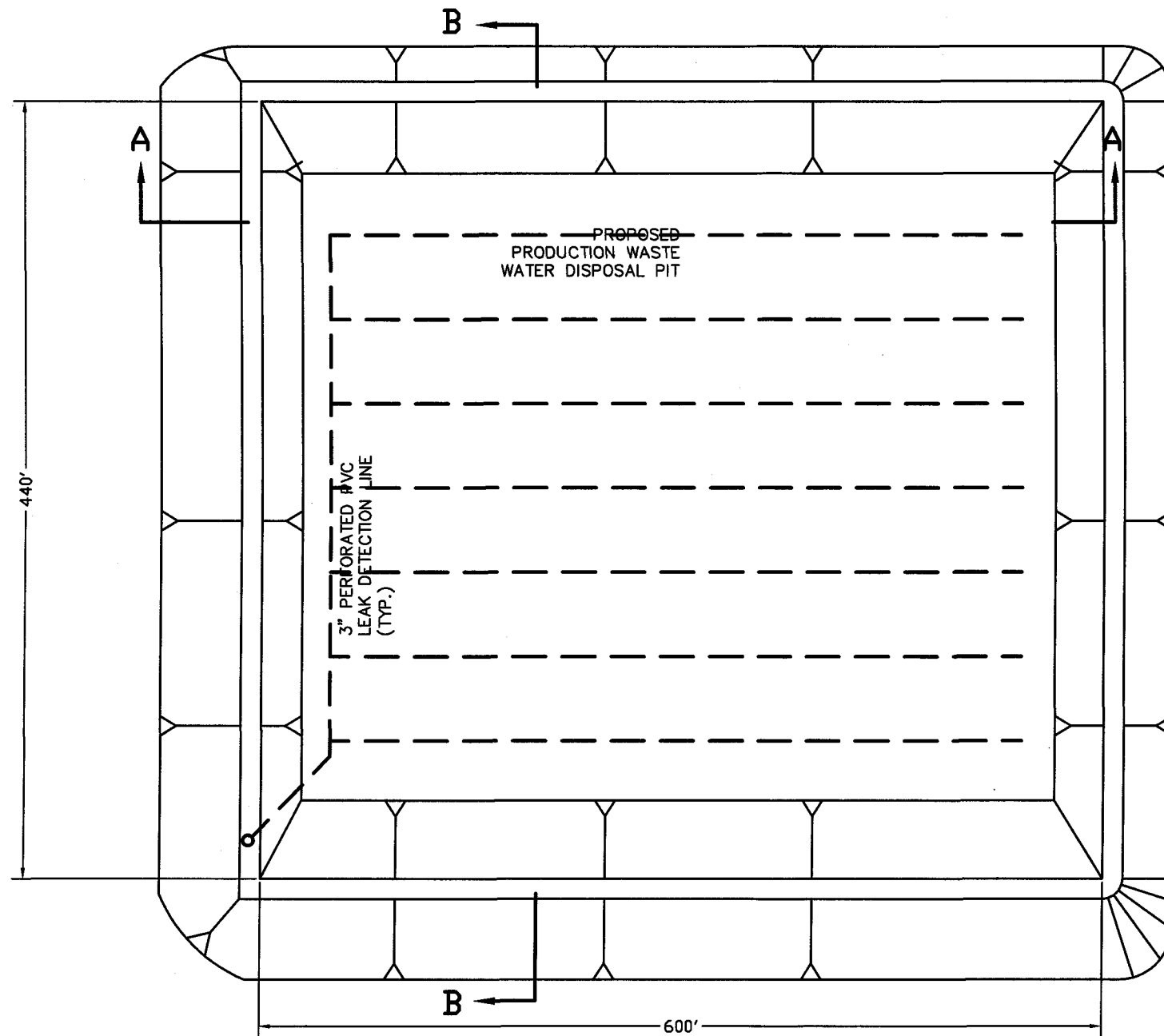
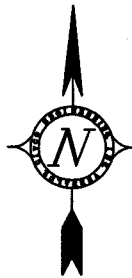
SUMP CROSS SECTION



TRENCH CROSS SECTION

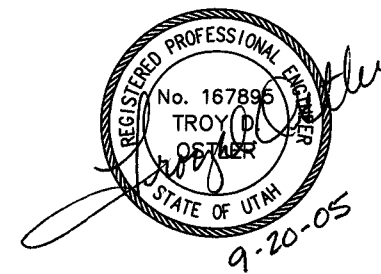


R. N. INDUSTRIES		WONSIT FACILITY		TYPICAL SECTION		Pond # 3	
PROJECT NUMBER		COUNTY		SHEET No.		3	
CIVICO Engineering Inc. P.O. Box 1728, Vernal, Utah 84078 Telephone: (435) 789-5448 Fax: (801) 789-4485		DESIGN	GLK	9/05	CHECK	TDO	9/05
APPROVAL	9/05	DATE	BY	REVISIONS			
APPROVED	9/05	DATE	BY	REVISIONS			
GARY L. KENDALL		TROY D. OSTLER, P.E.					



NOTES:
 PIT CAPACITY = 398,933 BARRELS (ASSUMING 42 GAL. PER BARREL & 2' FREE BOARD.)
 OR 16,755,200 MILLION GALLONS.

PONDS # 3



R. N. INDUSTRIES		DESIGN	GLK	9/05	CHECK	IDO	9/05
WONST FACILITY		DRAWN	GLK	9/05	CHECK	GLK	9/05
TYPICAL SECTION		QUANT.	GLK	9/05	CHECK	IDO	9/05
POND # 3		REVISIONS					
PROJECT NUMBER	DATE	BY	REMARKS				
UNTAH COUNTY							
SHEET No. 4							

DIVISION OF OIL, GAS AND MINING

STATEMENT OF BASIS WONSIT FACILITY / PIT 3

Applicant: R N Industries Inc.

Pit Type: Commercial/Evaporative

Location: Wonsit Facility - Sec. 26 (Pits 2,4,&5) & Sec. 35 (Unloading Pit & Pits 1,3,&6)
T8S, R21E, Uintah County, Ut Cause No. WD-01-2005

Ownership and Local Setting:

The Wonsit Facility ("the facility") is located in Wonsits Valley approx. 3 miles northwest of RNIs' Glen Bench Facility on Fee land owned by RNI surrounded by Native American lands. The facility is approx. 24 miles south of Vernal, Utah, approx. ¾ mile north of the White River, and approx. 6 miles southeast of the Green River. The initial onsite review of the facility was conducted on March 9, 2005. Approval to operate Pit 1 was granted on April 26, 2005, approval to operate the Unloading Pit was granted on July 19, 2005, and approval to operate Pit 2 was granted on July 28, 2005. The facility will consist of one unloading pit and six evaporative pits. The location of Pit 3 has changed slightly from the original plan and will now be located in Sec. 35 (from Sec. 26), see maps. Verbal approval to begin dirt work and install leak detection system was granted on September 13, 2005. An onsite review of the leak detection system/monitoring station, and liner will be conducted after installation, prior to approval to operate. The pits, berms (pit & secondary containment), and water transport lines were designed by a registered professional engineer (Troy Ostler/CIVCO) and construction at the site is being performed under his direct supervision. Approval to construct & operate Pits 3-6 will be granted on a pit-by-pit basis, this analysis is specifically for Evaporative Pit 3 ("Pit 3").

Pit Design Specifications / Pit 3:

Containment for disposable of produced water derived from Oil & Gas operations.

Pit with cut and compacted fill dikes constructed in lifts.

600' X 440' X 10' deep (including 2' of freeboard).

4:1 interior sides, 3:1/4:1 exterior sides.

Total storage capacity of 398,933 bbls or 51.4 acre-feet (not including 2' of freeboard).

7-8 lateral leak detection system (3" diameter perforated pipe surrounded by 6" of pea gravel), 50' centers.

Primary liner (flexible 60 mil HDPE liner keyed into trench).

Secondary liner (native clay/soil material underlain by 1' of compacted soil).

External sump-type monitor station (8" diameter pipe) inspected weekly.

Secondary perimeter containment berm (2-4' high X 8-10' wide).

Site Characteristics:

The evaporative pits (1-6) will be located in an open/extended area on stable ground that slopes very gently (1/2 % grade) toward the SW with an approx. elevation difference of 22' from the higher NE corner to the lower SW corner. There are small silt hills located directly to the North, NE, and East. Surface soils are a weathered sedimentary material composed of silt-sized particles, light tan-brown in color, with no visible rocks and very little natural erosion. Test boring soil sampling was conducted by Q C Testing Inc. to characterize the properties of the substrata.

The Unloading Pit is located SW of the pits (1-6) on a stable silt hill, +/- 20' higher in elevation than the evaporative pits. Surface soils are a weathered sedimentary material composed of silt-sized particles, light tan-brown in color, with small-medium sized rocks and very little natural erosion.

The surface formation at this site is the Uinta Formation and Quaternary alluvium derived from the Uinta Formation. The Uinta formation is comprised of interbedded sandstones, siltstones and shales. The sandstones are lenticular and discontinuous and do not generally make good aquifers. The Quaternary alluvium is mostly fine-grained material with scattered sandstone and siltstone fragments.

The facility is located on the southeastern edge of Wonsits Valley north of Watson Road and the White River. The land including access is owned by RNI and is surrounded by Native American lands. Local flora is sparse; native grasses, sagebrush, greasewood, prickly pear, salt brush, shadscale and local fauna include; reptiles, rodents, birds, coyotes, deer & elk, etc.

Westports' Ouray 35-174 (43-047-33248) producing gas well ("PGW") is located south of Pit 1 (NW of Pit 6), the Fed 35-52 St (43-047-32697) PGW is located southeast of the Ouray 35-174 (and evaporative pit area), and the Ouray 35-94 (43-047-33053) PGW is located north of the Unloading Pit (+/- 20' lower in elevation), access roads & well pads should not be impacted by facility operations. There are numerous other PGW's within a one-mile radius of the facility, see AcrView map.

Surface and Ground Water Protection:

The facility is not in a floodplain or wetland area. However, there is one major drainage (two forks that merge into one) approx. 2-4' deep that runs in a southeasterly direction between the Unloading Pit and Pits 1-6 toward the White River approx. 3/4 mile from the site. The pits, berms (pit & secondary containment), and water transport lines were designed by a registered professional engineer (Troy Ostler/CIVCO) and construction at the site is being performed under his direct supervision to ensure that the drainage will not be impacted by operations at the facility. Two secondary perimeter containment berms will be built at the facility; one around the entire evaporative pit area and the

other around the entire unloading pit area (2-4' high X 8-10' wide) to prevent pit water from leaving the site in the event of catastrophic pit failure. Diversion ditches will be built to channel any sheet flow/storm water runoff away from the facility. The application states "piping used at the facility will be compatible with the material or fluids it transports and will meet the Spill Prevention, Control and Countermeasures Plan (SPCC) requirements".

The pits/facility will be constructed on native relatively impermeable dense clays & other fine compacted sediments. Two feet of freeboard are to be maintained in the pits (unloading & evap.) at all times. Routine weekly inspections of the leak detection monitoring systems will be conducted and reported to the Division quarterly. Any leaks will be reported to the Division immediately and corrective measures will be taken.

A search of the Division of Water Rights database reveals that there are no underground water wells within 10,000 feet of the facility. Within a one-mile radius there is one active surface water permit south of the facility (No. 49-1659) issued to Price Water Pumping Inc. (source water is from the Green & White River's) for drilling gas wells.

The facility elevation is approx. 4706 feet (average elevation of 3 wells in NE ¼ Sec. 35); the base of moderately saline ground water is +/- 4600 feet (Tech Pub 92/Plate 1), +/- 106 feet below surface. Precipitation for "2003-2004/Nov-Oct" is 8-9 inches, and the evaporation rate is 56 inches. Meteoric waters are expected to evaporate.

Site Security:

The facility will be fenced to keep out livestock & wildlife, and to prevent unauthorized entry, and a facility sign will be posted. Field staff will be on-site during regular business hours. Produced water was originally trucked & unloaded into Pit 1 while the Unloading Pit was being constructed. Now that the construction of the Unloading Pit is complete, produced water is being trucked & unloaded into the Unloading Pit (4 unloading hoses) that is fenced & netted to deter birds, and produced water to Pit 1 has ceased. Piping that meets SPCC requirements will transport water from the Unloading Pit to Pit 1 (and from Pit 1 to Pit's 2-6). All pits will be monitored for hydrocarbons; any accumulation will be skimmed off immediately and placed in a tank to be sold. Leak detection monitoring systems will be inspected weekly and reported to the Division quarterly, any leaks will be reported to the Division immediately and corrective measures will be taken. Spray systems to enhance evaporation will be monitored to ensure that overspray does not occur. In addition, DOGM staff will conduct periodic facility inspections.

Bonding:

Bonding for the Wonsit Facility will be determined using the following formula from R649-9-9, Bonding of Disposal Facilities, of the Oil & Gas Conservation General Rules:

\$14,000 per acre of pit, partial acres will be calculated at the rate of \$14,000 per acre; plus
\$1.00 per barrel of produced water for one-quarter of the total storage capacity of the facility.

RNI has submitted facility bonding, CD No. 027-9084339 (\$201,000), and Ultimate CD No. 27-76569-2 (up to \$500,000), issued by Zions Bank, which currently covers the Unloading Pit, and Pits 1-3. Excess bonding will be applied to future Pit 4. Bond letters & spreadsheets "reflecting up-to-date facility bonding" will be mailed to the operator throughout the facility construction phase as pits are added and/or changed, and afterwards if changes are made which effect the area & storage capacities of the pits, and if new pits are added.

Actions Taken and Further Approvals Needed:

Properly designed & constructed pits/facilities, in concert with regular leak detection inspections and pit maintenance, pose no threat to fresh or useable surface and groundwater supplies.

The Division issued Notice of Agency Action, Cause No. WD-01-2005 on February 24, 2005 (15-day comment period after publication) that was published in the Salt Lake Tribune on March 4, 2005, and in the Uintah Basin Standard on March 8, 2005. No letters of objection were filed. The Division granted approval of the Wonsit Facility on April 8, 2005, which began with the construction of Pit 1 and the Unloading Pit. Additional noticing is not required.

Reviewer(s): Lisha Cordova

Date: September 26, 2005

**Evaluation Ranking Criteria and Ranking Score (Wonsit Facility)
For Reserve and Onsite Pit Liner Requirements**

<u>Site-Specific Factors</u>	<u>Ranking</u>	<u>Site Ranking</u>
Distance to Groundwater (feet)		
>200	0	
100 to 200	5	
75 to 100 *Ouray 35-174 & 35-94	10	10
25 to 75	15	
<25 or recharge area	20	
Distance to Surf. Water (feet)		
>1000 *White River	0	
300 to 1000	2	
200 to 300	10	
100 to 200	15	
< 100 *Drainage	20	20
Distance to Nearest Municipal Well (feet)		
>5280	0	0
1320 to 5280	5	
500 to 1320	10	
<500	20	
Distance to Other Water Wells (feet)		
>1320	0	0
300 to 1320	10	
<300	20	
Native Soil Type		
Low permeability	0	0
Moderate permeability	10	
High permeability	20	
Fluid Type		
Air/mist	0	
Fresh Water	5	
TDS >5000 and <10000 *Prod Water	10	
TDS >10000 or Oil Base Mud Fluid	15	15
Fluids containing significant levels of hazardous constituents	20	
Drill Cuttings		
Normal Rock	0	0
Salt or detrimental	10	
Annual Precipitation (inches)		
<10	0	0
10 to 20	5	
	10	
Affected Populations		
<10	0	0
10 to 30	6	
30 to 50	8	
>50	10	
Presence of Nearby Utility Conduits		
Not Present	0	0
Unknown	10	
Present	15	

Final Score 45 (Level I Sensitivity)

Sensitivity Level I = 20 or more: total containment is required, consider criteria for excluding pit use.

Sensitivity Level II = 15-19: lining is discretionary.

Sensitivity Level III = below 15: no specific lining is required.

**R649-9-3. Permitting of Disposal Pits
Analysis Document For Permit Review
Wonsit Facility / R N Industries Inc.**

**Sec. 26 (Evap. Pits 2, 4, & 5) & Sec. 35 (Unloading Pit & Evap. Pits 1, 3, & 6)
Township 8 South, Range 21 East, Uintah County, Utah**

R649-9-3. Permitting of Disposal Pits

1. All commercial disposal pits and disposal pits located off of an existing mineral lease shall be bonded in accordance with R649-9-9, Bonding of Disposal Facilities to assure proper operation, maintenance, and closure of the pits.

2. Application shall be made to the Division for approval of any disposal pit. The pit shall be designed appropriately for the intended purpose. Commercial disposal pits shall be designed and constructed under the supervision of a registered professional engineer. The application and site shall meet the following requirements:

2.1 The pit shall be located on level, stable ground, and an acceptable distance away from any established or intermittent drainage.

2.2. The pit shall not be located in a geologically and hydrologically unsuitable area, such as aquifer recharge areas, flood plains, drainage bottoms, and areas near faults.

2.3. The pit shall have adequate storage capacity to safely contain all produced water even during those periods when evaporation rates are at a minimum.

2.4. The pit shall be designed and constructed so as to prevent the entrance of surface water.

2.5. The pit shall be designed, maintained and operated to prevent unauthorized surface or subsurface discharge of water.

2.6. The pit shall be fenced and maintained to prevent access by livestock, wildlife and unauthorized personnel and if required, equipped with flagging or netting to deter entry by birds and waterfowl.

2.7. The pit levees for produced water pits receiving volumes in excess of five barrels per day, shall be constructed so that the inside grade of the levee is no steeper than 3:1 and the outside grade no steeper than 2:1. The top of the levee shall be level and of sufficient width to allow for adequate compaction.

2.8 All approved produced water pits not located at a well site shall be identified with a suitable sign.

2.9. The artificial materials used in lining pits shall be impervious and resistant to weather, sunlight, hydrocarbons, aqueous acids, alkalis, salt, fungi, or other substances which might be contained in the produced water.

3. If rigid materials are used, leak proof expansion joints shall be provided, or the material shall be of sufficient thickness and strength to withstand, without cracking, expansion, contraction and settling movements in the underlying earth.

3.1. If flexible materials are used, they shall be of sufficient thickness and strength to be resistant to tears and punctures. Commercial disposal pits shall be lined with a minimum liner thickness of 40 mils or as approved by the Division.

3.2. Lined pits constructed in relatively impermeable soils shall have an underlying gravel filled sump and lateral system or suitable leak detection system.

3.3 Lined pits constructed in relatively permeable soils shall have a secondary liner underlying the leak detection system, which is graded so as to direct leakages to the observation sump.

3.4. Test borings shall be taken in sufficient quantity and to an adequate depth to satisfactorily define subsurface conditions and assure that the liner will be placed on a firm stable base and to determine the appropriate leak detection system.

4. Requirements for Unlined Disposal Pits.

4.1 An application for disposal of produced water into an unlined pit will be considered if such disposal does not demonstrate significant pollution potential to surface or ground water and meets at least one of the following criteria:

4.2. The water to be disposed of does not have a higher total

1. RNI has submitted facility bonding, CD #027-9084339 (\$201,000), and Ultimate CD #27-76569-2 (up to \$500,000), issued by Zions Bank, that currently covers Pit 1, Unloading Pit, Pit 2, and Pit 3, see Wonsit Facility bonding spreadsheet.

2. Ok, original application rec'd 2/23/05, Pit 3 maps rec'd 9/7/05 (CIVCO).

2.1. Ok, there is one major drainage (2 forks that merge into one) that runs in a southeasterly direction between the Unloading Pit & evaporative pit area. The pits, berms (pit & secondary containment), and water transport lines were designed by a registered professional engineer "Troy Ostler/CIVCO" and construction at the site is being performed under his direct supervision to ensure that the drainage is not impacted by operations at the facility.

2.2. Ok.

2.3. Ok, 2' FB will be maintained in all the pits, at all times.

2.4. Ok, in addition a 2-4' high by 8-10' wide secondary containment berm will be built around the entire facility.

2.5. Ok, in addition a secondary containment berm around the entire facility will prevent pit water from leaving the site in the event of catastrophic pit failure.

2.6. Ok, in addition staff will be on-site during regularly scheduled operating hours.

2.7. Ok, interior slope 4:1, and exterior slope 3:1/4:1.

2.8. Ok, a facility sign will be posted.

2.9. Ok, 60 mil flexible HDPE primary liners, and natural clay/soil mix secondary liners, placed & compacted in 6" lifts.

3. N/A

3.1. Ok, see 2.9.

3.2. Ok, 7-8 lateral leak detection system (50' centers) of 3" diameter perforated pipe surrounded by 6" of pea gravel, and an 8" diameter sump monitoring station inspected weekly.

3.3. N/A

3.4. Ok, test boring sampling was conducted by Q. C. Testing Inc. (Vernal), results were rec'd 3/30/05.

4. et al, N/A

dissolved solids "TDS" content than ground water that could be affected and provided that the water does not contain objectionable levels of constituents and characteristics including chlorides, sulfates, pH, oil, grease, heavy metals and aromatic hydrocarbons.

4.3. That all, or a substantial part of the produced water is being used for beneficial purposes such as irrigation and livestock or wildlife watering and a water analysis indicates that the water is acceptable for the intended use.

4.4. The volume of water to be disposed of does not exceed five barrels per day on a monthly basis.

5. Application Requirements for Produced Water Pits.

5.1. Applications for disposal of produced water into lined pits shall include the following information:

5.2. A topographic map and drawing of the site on a suitable scale that indicate the pit dimensions, cross section, side slopes, leak detection system and location relative to other site facilities. The drawings shall be of professional quality.

5.3. The maximum daily quantity of water to be disposed of and a representative water analysis of such water that includes the concentrations of chlorides and sulfates, pH, total dissolved solids "TDS", and information regarding any other significant constituents if requested.

5.4. Climatological data indicating the average annual evaporation and precipitation for the area.

5.5. The method and schedule for disposal of precipitated solids.

5.6. Drawings of unloading facilities and explanation of the method for controlling and disposing of any liquid hydrocarbon accumulation so that the evaporation process is not hampered

5.7. The engineering data and design criteria used to determine the pit size which includes a 2-foot free-board.

5.8. The type, thickness, strength, and life span of material to be used for lining the pit and the method of installation.

5.9. A description of the leak detection method to be utilized and the proposed inspection frequency of the detection system. Also the proposed procedures for repair of the liner should leakage occur.

6. Applications for disposal of produced water into Unlined Pits shall include the following information:

6.1. A topographic map and drawing of the site on a suitable scale that indicate the pit dimensions, cross section, side slopes, size and location relative to other site facilities.

6.2. The daily quantity of water to be disposed of and a representative water analysis of such water that includes the total dissolved solids "TDS", pH, oil and grease content, the concentrations of chlorides and sulfates, and information regarding any other significant constituents if required.

6.3. Climatological data indicating the average annual evaporation and precipitation for the area.

6.4. The estimated percolation rate based on soil characteristics under and adjacent to the pit.

6.5. Estimated depth and areal extent of any USDW in the area and an indication of any effect or interaction of the produced water with any such water resources present at or near the surface.

6.6. If beneficial use is the basis for the application, written confirmation from the user should be submitted.

6.7. If the application is made on the basis that surface and subsurface waters will not be adversely affected by disposal in an unlined pit, the following additional information is required:

6.7.1. A map showing the location of surface waters, water wells, and existing water disposal facilities within a one mile radius of the proposed disposal facility.

6.7.2. The weighted average concentration of total dissolved solids "TDS" of all surface and subsurface waters within a one mile radius that might be affected by the proposed disposal.

6.7.3. Any reasonable geological and hydrological evidence showing that the proposed disposal method will not adversely affect existing water quality or major uses of such waters.

5. See below.

5.1. See below.

5.2. Ok, Pit 3 maps rec'd 9/7/05 (CIVCO).

5.3. Ok, a representative water analysis was conducted by American West Analytical Laboratories, results were rec'd 3/30/05.

5.4. Ok, info. derived from www.crh.noaa.gov/gjt/climate.php.

5.5. Ok, no precipitated solids are anticipated, info. rec'd 3/30/05.

5.6. Ok, any accumulation of hydrocarbons will be skimmed off and placed in a tank to be sold, see original application rec'd 2/23/05 (CIVCO).

5.7. Ok, Pit 3 maps rec'd 9/7/05 (CIVCO).

5.8. Ok, flexible 60 mil HDPE liners (all pits), approx. 20-year lifespan, info. rec'd 3/30/05, and 9/7/05 (Pit 3).

5.9. Ok, see original permit application (2/23/05) & maps rec'd 9/7/05.

6. et al, N/A

7. Within 30 days of the submission of an application for disposal of produced water into a commercial disposal pit, the division shall review the application as to its completeness and adequacy for the intended purpose and shall require such changes that are found necessary to assure compliance with the applicable rules. If the application is in order, the Division shall provide for a public notice to be published in a newspaper of general circulation in the county where the pit is to be located.

7. Ok, Notice of Agency Action, Cause No. WD-01-2005, was issued 2/24/05 (15-day comment period after publication), and was published in the SL Tribune on 3/4/05, and Uintah Basin Standard on 3/8/05. No comments and/or objections were rec'd. No add'l noticing is required.

R649-9-4. Permitting of Other Disposal Facilities.

1. Facilities used for the treatment and disposal of E and P wastes other than evaporation pits shall be permitted by the Division. This would include such activities as landfarming, composting, solidifying, bioremediation, and others.
2. All commercial treatment and disposal facilities must be bonded in accordance with R649-9-9, Bonding of Disposal Facilities, to assure proper operation, maintenance, and closure of the facility.
3. Application Requirements for Treatment and Disposal Facilities. The application shall contain the following:
 - 3.1 A complete description of the proposed facility and processes involved including a complete list of all wastes to be accepted at the facility and products generated.
 - 3.2 Maps and drawings of suitable scale showing all facilities and equipment.
 - 3.3 Materials or products to be applied to the land surface or subsurface shall meet the Division's cleanup levels for contaminated soil and other wastes. If leachability and/or toxicity is of concern due to the type or source(s) of wastes, tests will be required and may utilize the Toxicity Characteristic Leaching Procedure (TCLP).
 - 3.4 The submission of an application to the Division of Water Quality, Department of Environmental Quality, for a discharge permit may be required if it is determined that the facility and associated activity will not have a de minimus actual or potential effect on ground water quality. If the Division determines there is potential for discharge, or if the proposal involves a commercial disposal operation it will be forwarded to the Division of Water Quality for their review.

R649-9-4. et al, N/A

R649-9-5. Construction and Inspection Requirements for Disposal Facilities.

1. Division personnel shall be afforded a reasonable opportunity for inspection of any proposed disposal facility during the construction and operation of the facility.
2. The division shall be notified at least two working days prior to the installation of a pit liner so that an inspection of the leak detection system can be conducted.
3. In any case, the division shall be notified after completion of facility construction, at least two working days prior to its use, so that an inspection can be conducted to verify that the facility has been constructed in accordance with the approved application.
4. Disposal facilities shall be operated in accordance with an approved application and in a manner which does not cause pollution or safety and health hazards.
5. Failure to meet the requirements and standards for construction and operation of a disposal facility shall be considered as noncompliance and will result in the imposition of corrective actions and compliance schedules or a cessation of operations order.

1. Operator is required to adhere to this requirement.
2. Operator is required to adhere to this requirement.
3. Operator is required to adhere to this requirement.
4. Operator is required to adhere to this requirement.
5. The Division will adhere, if operator fails to meet the requirements.

R649-9-6. Reporting and Recordkeeping Requirements for Disposal Facilities.

1. All unauthorized discharges or spills from disposal facilities including water observed in a leak detection system shall be promptly reported to the division.
2. Each producer who utilizes any approved produced water disposal facility shall comply with the reporting requirements of R649-8-10.

1. Operator is required to adhere to this requirement.
2. Operator is required to adhere to this requirement.

3. Each operator of a disposal facility, excluding disposal wells, shall report to the Division on a quarterly basis. This report shall include the volume and type of wastes received at the facility during the quarter and results of the leak detection system inspections.

4. The occurrence of water in a leak detection system during operation of a pit constitutes liner failure and requires immediate action. The Division has the option of allowing the operator a short period of time to take corrective action. Further utilization of the pit will be allowed only after liner repairs and an inspection by the Division.

5. Each owner/operator of a commercial disposal facility shall keep records showing at a minimum the following: date and time waste was received, origin, volume, type, transporter, and generator of the waste. These records shall be available for inspection by the Division for at least six years.

R649-9-7. Final Closure and Cleanup of Disposal Facilities.

1. A plan for final closure of a disposal facility shall be submitted to the Division for approval. The closure plan shall include the following:

1.1 Provisions for removal of all equipment at the site.

1.2 Proposed plans and procedures for sampling and testing soils and ground water at the site. Soils will need to meet the Division's Cleanup Levels for Contaminated Soils or background levels whichever is less stringent.

1.3 Provisions for a monitoring plan if required by the Division, and

1.4 A consideration of post disposal land use and landowner requests when the closure plan is developed.

2. A bond for a disposal facility will be released when the requirements of a closure plan approved by the Division has been met as determined by the Division.

R649-9-8. Variances from Requirements and Standards.

Requests for approval of a variance from any of the requirements or standards of these rules shall be submitted to the director in writing and provide information as to the circumstances which warrant approval of the requested variance and the proposed alternative means by which the requirements or standards will be satisfied. Variances may be approved only after proper notice and public hearing before the board.

R649-9-9. Bonding of Disposal Facilities.

1. Disposal facilities, other than injection wells, shall be bonded according to this rule in order to protect the State and oil and gas producers from unnecessary liabilities and cleanup costs in the future. The objectives are to provide the State with adequate security to allow rehabilitation of a site to the point of preventing further or future pollution, and health and safety hazards should a facility owner default.

1.1. The parameters used to calculate the proper bond amount are: pit area, storage capacity, and volume of waste stored.

1.2. Bonds accepted shall be of the same type as those accepted for wells i.e. surety, collateral, or a combination of the two as described in the R649-3-1. In order to assist facility owners in providing bonding, the total bond amount provided may consist of an initial amount as determined by the division and an additional amount collected at a price per barrel and/or price per cubic yard of waste collected until the total bond amount is reached. The total bond will be held by the division or financial institution until the facility has been closed and inspected by the division in accordance with a division approved closure plan.

1.3. Total bond amount is calculated using values for pit area, pit storage capacity, and volume of stock piled waste material. No salvage value of equipment or removal cost is used. This bond will only be used by the State to treat or remove waste from the site and secure the facility to prevent any future contamination should the facility owner default on cleanup responsibilities. Bond

3. Operator is required to adhere to this requirement.

4. Operator is required to adhere to this requirement.

5. Operator is required to adhere to this requirement.

1. Ok, original application includes a closure plan, and as stated in the permit application "operator will submit a final closure plan to Division prior to actual closure for approval". The Div. will approve the clean-up/closure plan according to best practices at time of closure.

1.1. Operator is required to adhere to this requirement.

1.2. Operator is required to adhere to this requirement.

1.3. Operator is required to adhere to this requirement.

1.4. Operator is required to adhere to this requirement.

2. The Division will adhere, when closure is complete.

R649-9-8. N/A

1. Operator is required to adhere to this requirement, see R649-9-3.1.

1.1. See R649-9-3.1 & updated Wonsit Facility bonding spreadsheet.

1.2. Operator is required to adhere to this requirement.

1.3. Ok, see R649-9-3.1 & updated Wonsit Facility bonding spreadsheet.

amounts will be calculated as follows, and per volume or per acre figures may be adjusted periodically to compensate for change in cost to perform the necessary cleanup work:

\$14,000 per acre of pit, partial acres will be calculated at the rate of \$14,000 per acre; plus

\$1.00 per barrel of produced water for one-quarter of the total storage capacity of the facility; plus

\$30 per cubic yard of solid or semi-solid waste material stockpiled at the facility.

\$10,000 Minimum bond amount.

1.4 All commercial disposal facilities (except injection wells covered by R649-3-1) will be covered by an adequate and acceptable bond before being permitted to accept any exploration and production waste.

1.4. Operator is required to adhere to this requirement, see R649-9-3.1.

The initial and minimum bond payment will be at least \$10,000.

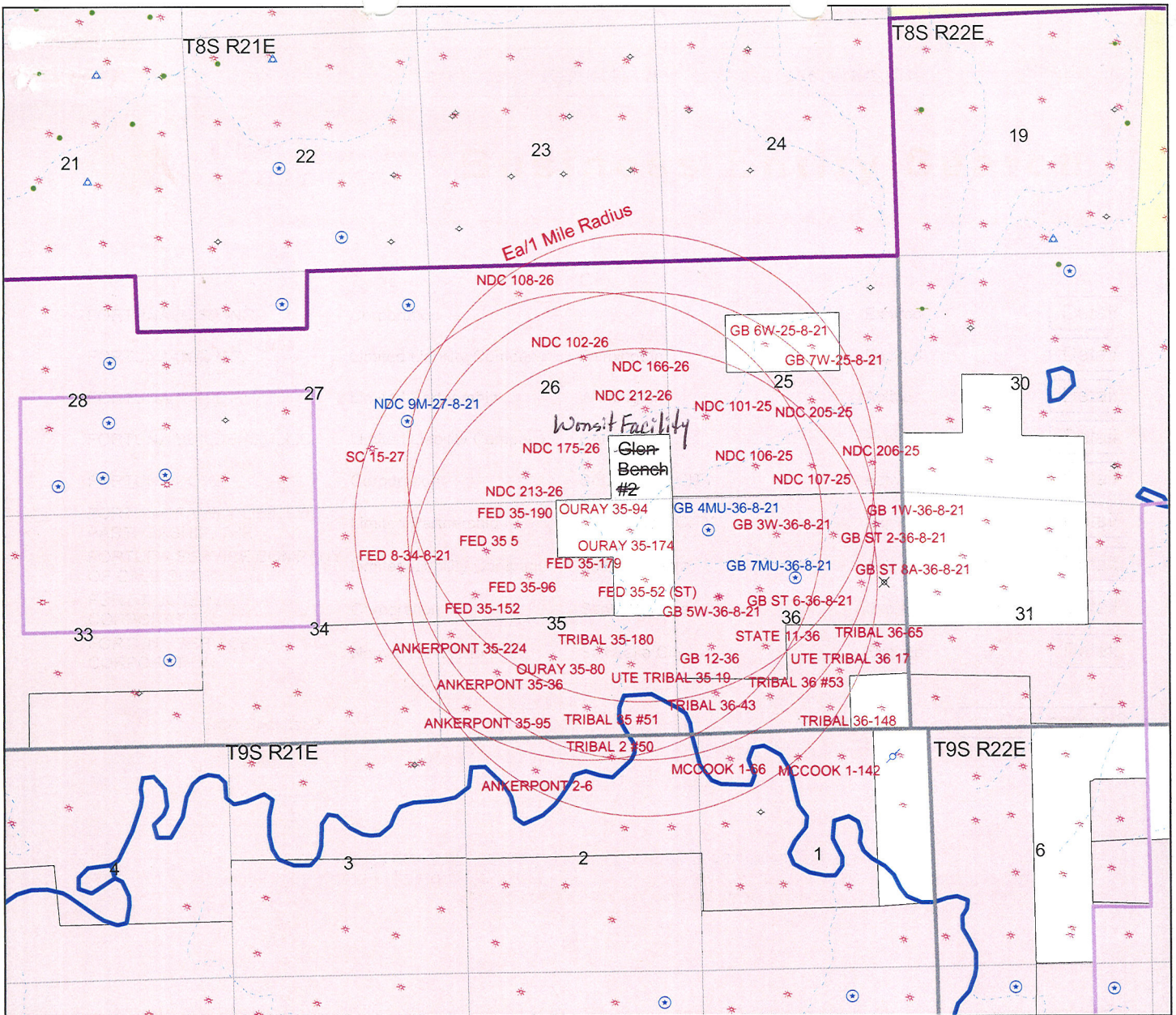
The total bond amount will be calculated as described in R649-9-9-1.3. If requested by the disposal facility owner, the bond beyond the initial amount may be posted at a rate of two cents per barrel of liquid or sixty cents per cubic yard of solid/semi-solid waste material accepted for disposal at the facility.

9/13/05 Pit 3 maps and the original Wonsit Facility application have been reviewed. Verbal approval to begin dirt work granted. Official approval to construct & install leak detection system will be granted upon receipt of original documents (e-mail rec'd 9/7/05).

9/26/05 Official approval to construct & install leak detection system granted (originals rec'd 9/26/05).

Reviewer(s): Lisha Cordova

Date: September 26, 2005

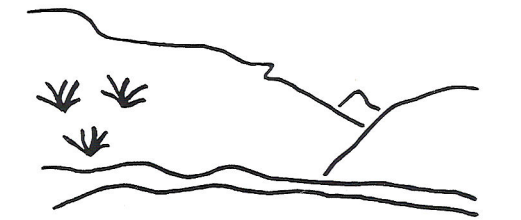


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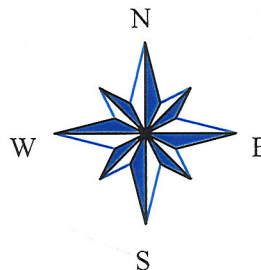
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- GAS STORAGE
- LOCATION ABANDONED
- NEW LOCATION
- PLUGGED & ABANDONED
- PRODUCING GAS
- PRODUCING OIL
- SHUT-IN GAS
- SHUT-IN OIL
- TEMP. ABANDONED
- TEST WELL
- WATER INJECTION
- WATER SUPPLY
- WATER DISPOSAL

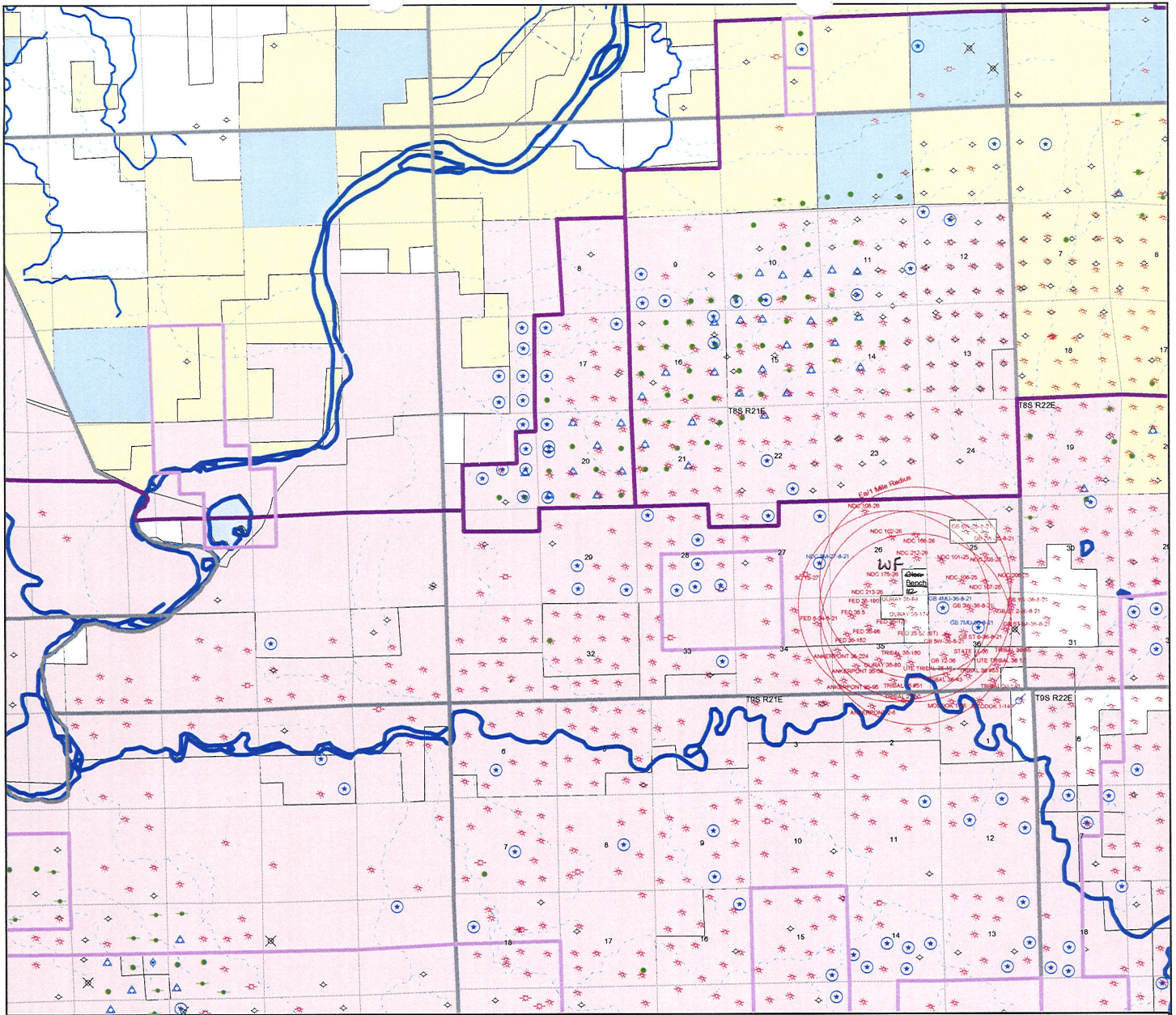
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- Field Status**
- ABANDONED
- ACTIVE
- COMBINED
- INACTIVE
- PROPOSED
- STORAGE
- TERMINATED
- Sections



Utah Oil Gas and Mining



Prepared by: Lisha Cordova
Date: February 23, 2005



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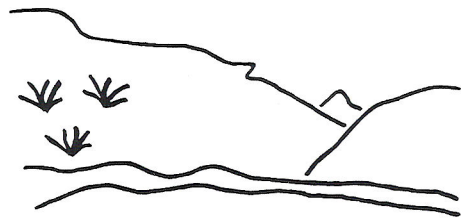
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- NEW LOCATION
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- PRODUCING GAS
- PRODUCING OIL
- SHUT-IN GAS
- SHUT-IN OIL
- TEMP. ABANDONED
- TEST WELL
- WATER INJECTION
- WATER SUPPLY
- WATER DISPOSAL

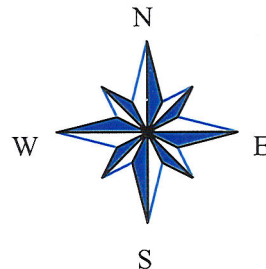
County Boundary

Field Status

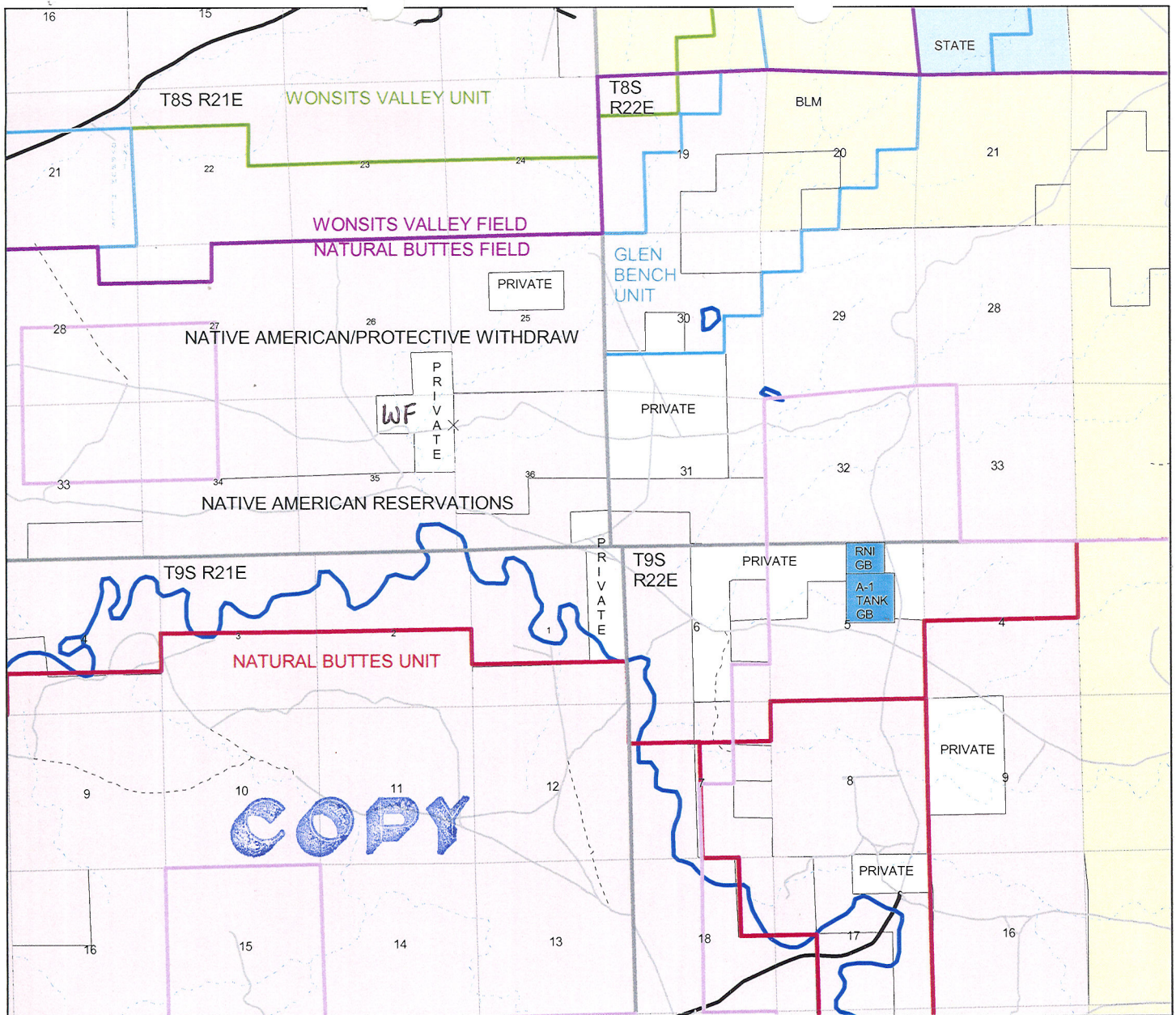
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- ACTIVE
- COMBINED
- INACTIVE
- PROPOSED
- STORAGE
- TERMINATED
- Sections



Utah Oil Gas and Mining



Prepared by: Lisha Cordova
Date: February 23, 2005

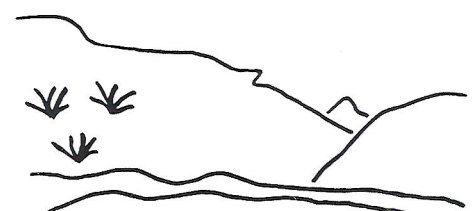


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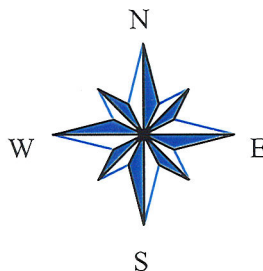
Wells

- GAS INJECTION
- GAS STORAGE
- LOCATION ABANDONED
- NEW LOCATION
- PLUGGED & ABANDONED
- PRODUCING GAS
- PRODUCING OIL
- SHUT-IN GAS
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- WATER DISPOSAL

- County Boundary
- Field Status**
- ABANDONED
- ACTIVE
- COMBINED
- INACTIVE
- PROPOSED
- STORAGE
- TERMINATED
- Sections



Utah Oil Gas and Mining



Prepared by: Lisha Cordova
 Date: February 22, 2005
 X=626980 (x) & 4437958 (y)

From: Lisha Cordova
To: Gary Kendall
Date: 9/12/2005 10:32:44 AM
Subject: Re: Wonsit Pond 3

Hi Gary,

Thanks for the information, I will start working on Pit 3 approval. Please sign the Sept. 7, 2005, letter and mail it to me. Also, please do not cover the leak detection system until after DOGM inspects it.

Thanks for your help!

>>> "Gary Kendall" <garykendall@civcoengineering.com> 9/7/2005 4:37 PM >>>
Lisha, I am sending the information and Dwgs for Pond 3 to be permitted

CC: Richard Powell

9/13/05 Verbal to begin dirt work & LD install.

*Waiting on originals before official approval to construct will be granted.

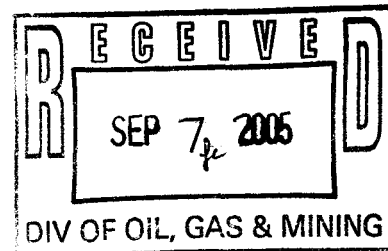
9/20/05 Waiting on signed letter & maps via mail.

CIVCO Engineering, Inc.**Civil Engineering Consultants**

P.O. Box 1758
365 West 50 North, Suite W-1
Vernal, Utah 84078

7 September 2005

Lisha Cordova
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84180



Re: Chapman Disposal Ponds at Glen Bench New Facility,

Dear Lisha:

I am sending the information you requested on The Wonsit Disposal Ponds New Facility, and I hope this gives you the information you need to help locate Pond #3.

The pond and the leak detection system will be constructed in the same manner and using the same standards as the ponds that are proposed and permitted in the master plan for the Wonsit Disposal facility. I am sending this notice of application as per Roger's request for the approval to construct pond #3 and will get more information upon request of it to you as soon as possible.

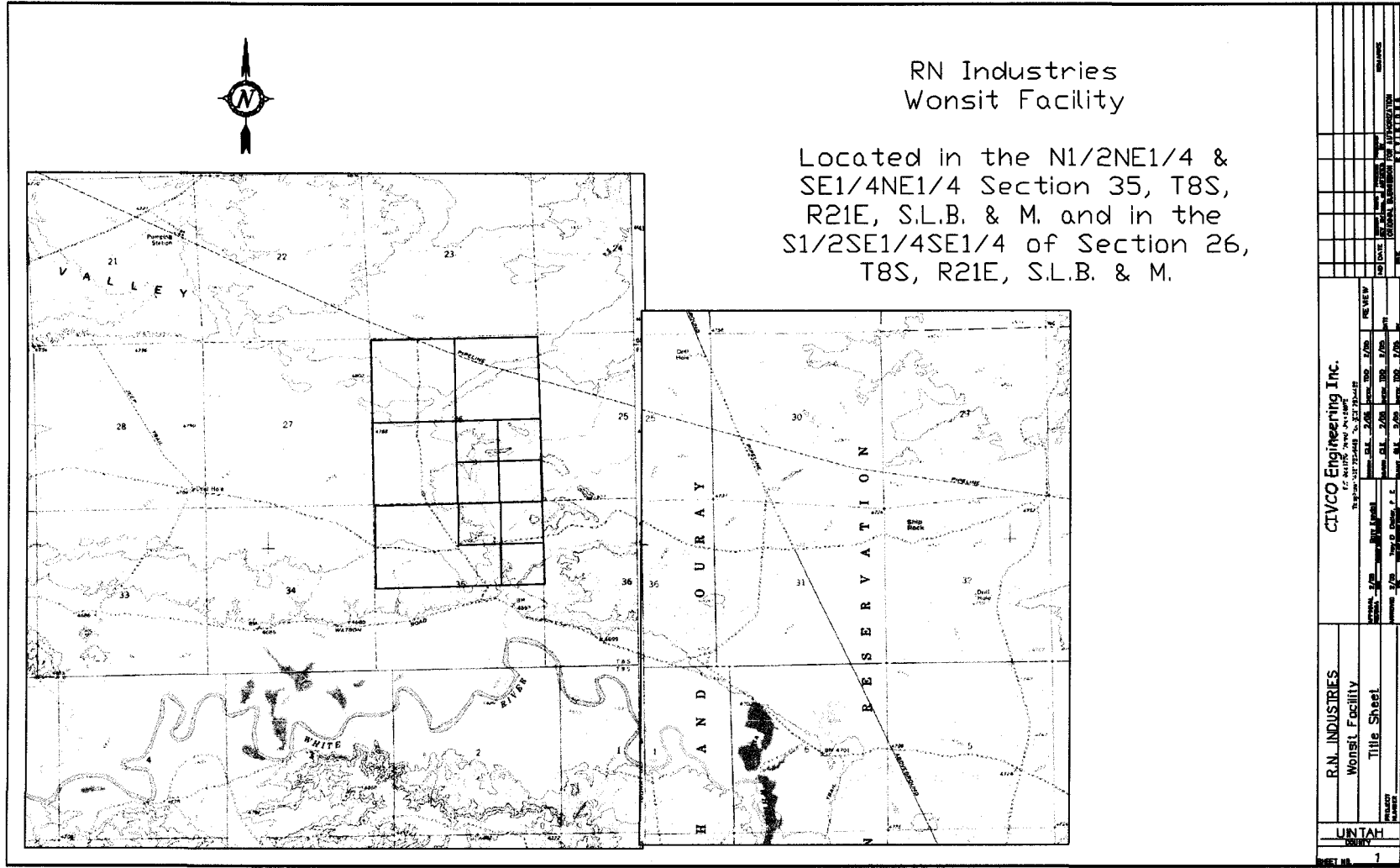
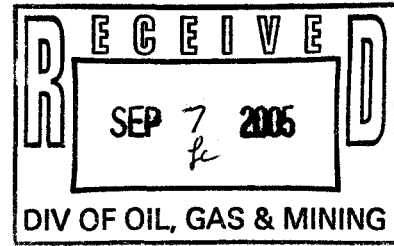
If you should have any questions or need additional information concerning this matter, please feel free to contact myself at CIVCO Engineering Inc. (435-789-5448).

Sincerely,

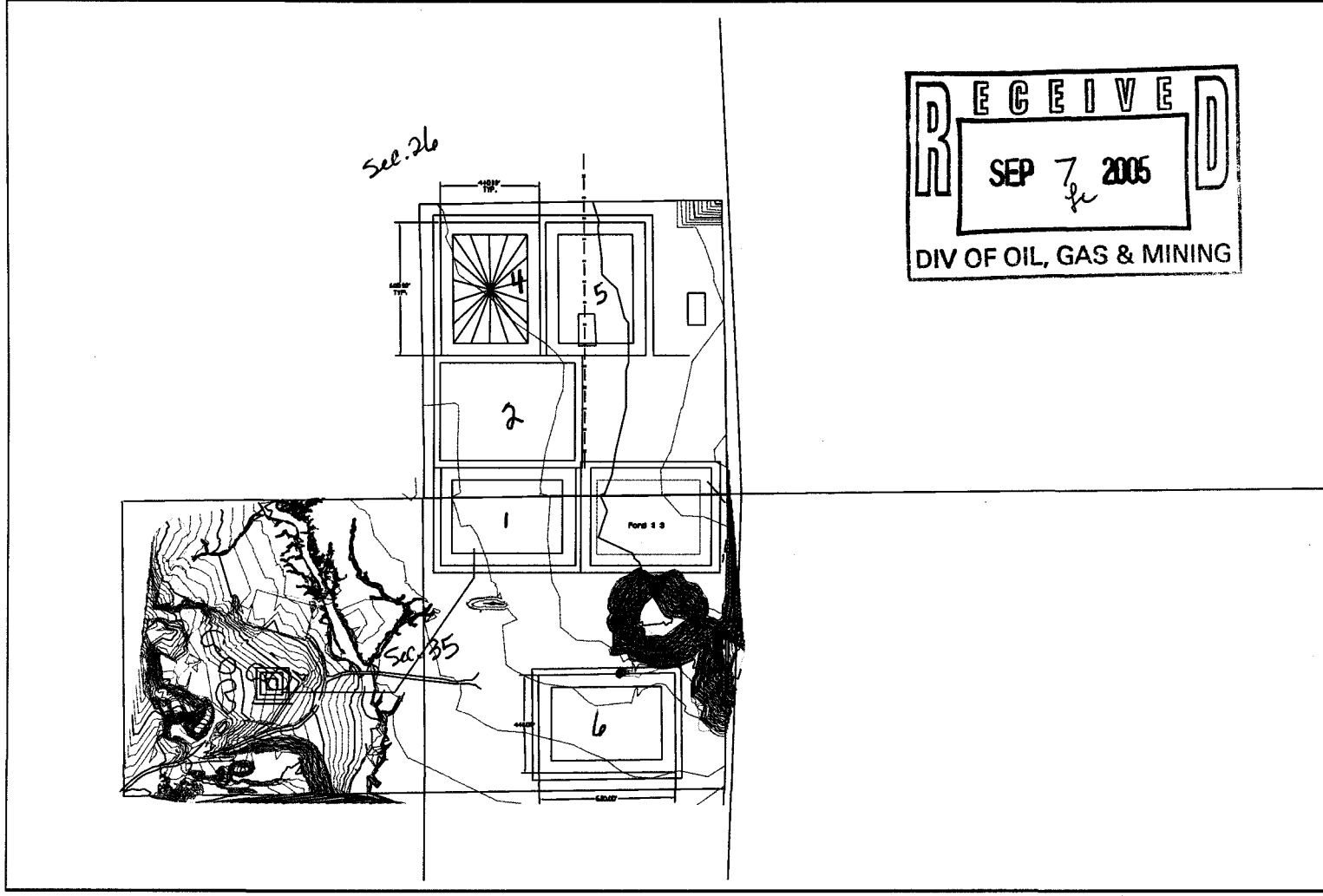
Gary L. Kendall
CIVCO Engineering Inc.

cc: Nile Chapman
Project File

Phone (435)789-5448 * Fax (435)789-4485
Email: garykendall@civcoengineering.com

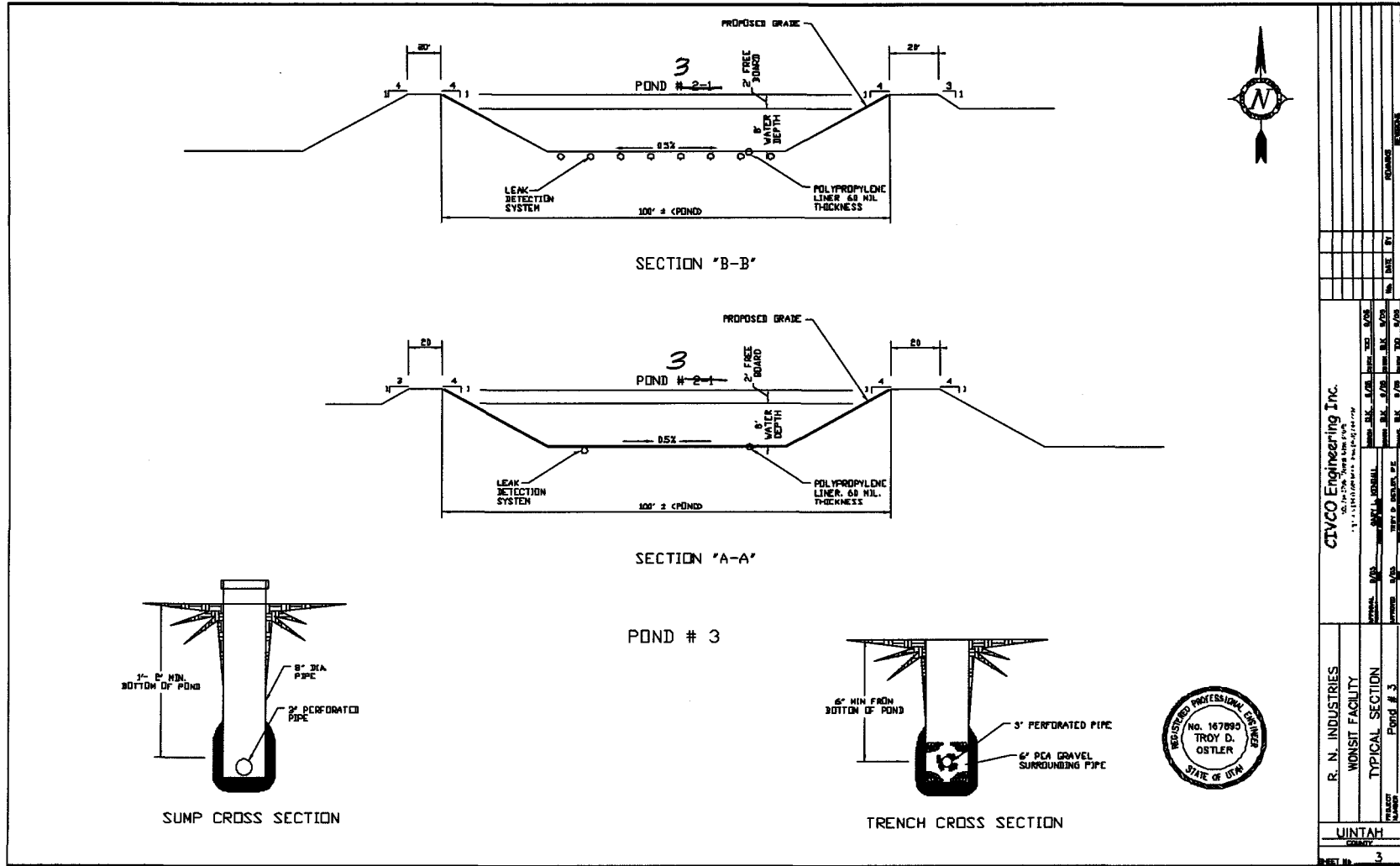
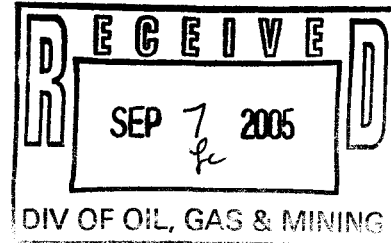


PATN

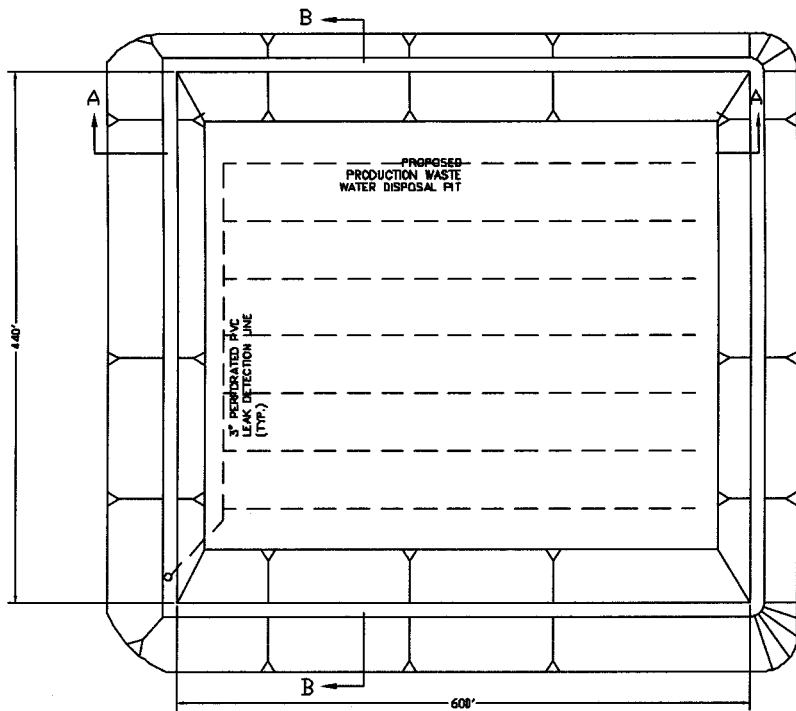


RECEIVED
 SEP 7 2005
 DIV OF OIL, GAS & MINING

R. N. INDUSTRIES		DATE	BY	CHKD.	APP'D.
MONSIE FACILITY		DATE	BY	CHKD.	APP'D.
POND # 3		DATE	BY	CHKD.	APP'D.
UNTAH		DATE	BY	CHKD.	APP'D.
SHEET NO. 2		DATE	BY	CHKD.	APP'D.



CIVCO Engineering Inc. 1111 W. 1000 N. SUITE 100 SALT LAKE CITY, UT 84119 TEL: 801.488.8888 FAX: 801.488.8889	
R. N. INDUSTRIES WONSIT FACILITY TYPICAL SECTION Pond # 3	SHEET NO. 3 OF 3



NOTES:
 PIT CAPACITY - 388,833 BARRELS (ASSUMING 42 GAL. PER BARREL & 2' FREE BOARD.)
 OR 16,755,200 MILLION GALLONS.

PONDS # 3

RECEIVED
 SEP 7th 2005
 DIV OF OIL, GAS & MINING



R. N. INDUSTRIES		DATE: 9/7/05	BY: TDO	CHK: TDO	APP: TDO	REV: 0
WONSI FACILITY		SCALE: 1/8" = 1'-0"	DATE: 9/7/05	BY: TDO	CHK: TDO	APP: TDO
TYPICAL SECTION		PROJECT: 05-0000	DATE: 9/7/05	BY: TDO	CHK: TDO	APP: TDO
POND # 3		DATE: 9/7/05	BY: TDO	CHK: TDO	APP: TDO	REV: 0
UNTAH		STATE OF UTAH				
COUNTY		COUNTY				
SHEET NO. 4		SHEET NO. 4				

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RNI Emergency Response	
RNI Incident Manger	Phone Number
Austin Weddle	435-790-6690

Local Emergency Contacts		
Local Reponders	Phone Number	Address
Uintah County Emergency Management	435-789-1911	152 E 100 N Vernal, UT 84078
Uintah Fire District	435-781-6755	152 E 100 N Vernal, UT 84078
Uintah County Sheriff's Office	435-789-2511	641 E 300 S, Vernal, UT 84078
Uintah Basin Medical Center	435-722-4691	250 W 300 N Roosevelt, Ut 84066

Emergency Contact Numbers

Appendix E

Landfill Capacity

Landfill Cell Volume (cy)	Landfill
178,034	Combined

Average Daily Volume*

	Years									
Annual Growth %	1	2	3	4	5	6	7	8	9	10
10%	60	66	73	80	88	97	106	117	129	141

Cumulative Volume over 10 Years

	Years									
Waste Volume	1	2	3	4	5	6	7	8	9	10
Combined	21,900	45,990	72,489	101,638	133,702	168,972	207,769	250,446	297,391	349,030

* - Assumes Mixing Ratio: 0.5 Cubic Yards of soil to 1 Cubic Yard of waste for a total of 52 Cubic Yards of waste per day.

Volume – Year that cumulative volume of waste reached max capacity.



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Projected Landfill Life – Soil/Waste Mix

RN Industries
Landfill Permit
Roosevelt, UT
Project Number: 524-104

**Plate
E-1**

Appendix F

Task	Description	Unit Cost	No. Units	Landfill Cell 2	Unit Type	Total Cost	Details
Engineering	Laboratory/field Testing/Support	\$ 15,270.00	1		Estimate	\$ 15,270.00	Liner testing, lab testing, engineering support
	As built survey	\$ 2,036.00	1		Estimate	\$ 2,036.00	As built survey and CAD drawing
	Final Storm Water Management Plan	\$ 6,617.00	1		Estimate	\$ 6,617.00	Engineers Estimate
	Letter of notification of closure	\$ 1,527.00	1		Estimate	\$ 1,527.00	Letter to DWMRC and County
Construction Cost	Topsoil Material	\$ -	5800		Cu Yd	\$ -	Use topsoil on site from excavation of landfill
	Loading Topsoil	\$ 1.18	5800		Cu Yd	\$ 6,849.10	RS Means 2019 - 31 23 23.15 line 6040
	Trucking Topsoil 0.25 miles	\$ 2.99	5800		Cu Yd	\$ 17,358.94	RS Means 2019 - 31 23 23.20 line 0014
	Topsoil Graded	\$ 0.21	19111		Sq Yd	\$ 4,085.55	RS Means 2019 - 31 23 16.10 line 3300
	Clay liner material	\$ -	4500		Cu Yd	\$ -	Use Weathered Mudstone on-site from excavation of landfill
	Loading Clay	\$ 1.18	4500		Cu Yd	\$ 5,313.96	RS Means 2019 - 31 23 23.15 line 6040
	Trucking Clay liner 0.25 Miles	\$ 2.99	4500		Cu Yd	\$ 13,468.14	RS Means 2019 - 31 23 23.20 line 0014
	Place and Compaction of Clay liner	\$ 1.22	19111		Sq Yd	\$ 23,346.00	RS Means 2019 - 31 23 16.10 line 3300 and 31 23 23.23 line 5600
	Hydro Seeding with mulch and fertilizer	\$ 64.13	191		1000 Sq ft	\$ 12,249.59	RS Means 2019 - 32 92 19.14 lin 4600
	Final Storm Water Swales and Culverts	\$ 5,090.00	1		Estimate	\$ 5,090.00	Not required for Phase 2 final cover
Contingency	10% of constuction cost	\$ 8,776.13	1			\$ 8,776.13	GeoStrata Estimate
TOTAL COST:						\$ 121,987.41	

Engineers opinion of probable Costs



Closure Cost Summary

RN Industries
Wonsit Cell 2 Landfill Permit
Unitah County, UT
Project Number: 524-104

**Plate
F-1**

Task	Description	Unit Cost	No. Units	Unit Type	Total Cost	Total units 30 yrs.	Total cost 30 yrs.	Details/Source
Inspections	Quarterly 1st 2 years; Semiannually for 28 years	\$ 86.02	4	hours	344.08	64	\$ 22,021.12	4 inspections/year for the first 2 years and then 2 inspections/year for 28 years
Report	Quarterly 1st 2 years; Semiannually for 28 years	\$ 86.02	2	hours	172.04	64	\$ 11,010.56	4 reports/year for the first 2 years and then 2 reports/year for 28 years
TOTAL for 30 yrs							\$ 33,031.68	

Groundwater Monitoring	Sufacewater Sampling labor	\$ 86.02	6	hour	516.12	13	\$ 6,709.56	Annual monitoring for first 5 years, biennial for next 10 years, then monitoring evey 5th year for final 15 years. Sampling from 2 monitoring wells for 13 rounds of sampling
	GRO	\$ 131.56	2	sample	263.12	13	\$ 3,420.56	
	Heavy Metals	\$ 180.14	2	sample	360.27	13	\$ 4,683.54	
	Inorganic Constituents/other	\$ 236.81	2	sample	473.62	13	\$ 6,157.01	
	Surfacewater sampling report	\$ 1,214.40	1	report	1214.40	13	\$ 15,787.20	
	Transport to lab	\$ 101.20	1	vehicle	101.20	13	\$ 1,315.60	
TOTAL for 30 yrs							\$ 38,073.46	

Maintenance	Re-grading top Soil	\$ 0.22	4777.75	Sq Yd	1033.64	1	\$ 1,033.64	Assumes 25% of topsoil of final cover of both cells will have to be replaced over 30 years	
	Soil replacement	\$ 2.99	1450	Cu Yd	4339.73	1	\$ 4,339.73		
	Reseeding	\$ 64.13	191	1000 Sq Ft	12249.59	1	\$ 12,249.59		
TOTAL for 30 yrs							\$ 17,622.97		Assumes 1 total reseeding of final cover over 30 years

TOTAL for all tasks 30 yrs							\$ 88,728.12	
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Contingency	10% of total cost for all tasks						\$ 8,872.81	
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TOTAL POST CLOSURE COST							\$ 97,600.93	
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Engineers opinion of probable costs
Pricing has been adjusted for inflation using the 2021 Inflation factor of 1.012

Appendix G

Species	Status	Habitat Description	Likelihood of Occurrence
Mammal			
Canada Lynx (<i>Lynx canadensis</i>)	Threatened	Occurs in extensive tracts of dense coniferous forest, primarily Engelmann spruce and subalpine fir, with substantial understory with habitat for its prey, snowshoe hare.	None. No suitable habitat occurs within the site.
Black-Footed Ferret (<i>Mustela nigripes</i>)	Endangered (Introduced)	Black-footed ferrets live in underground prairie dog burrows and eat prairie dogs as their primary food source. The black-footed ferret is, therefore, closely associated with prairie dog towns. For this reason, the major threat to the species is the decimation of prairie dog colonies through plague, poisoning, and habitat loss. The black-footed ferret breeds from March to April, and young are born in about six weeks; average litter size is three. The black-footed ferret is nocturnal.	None. No suitable habitat occurs within the site.
Bird			
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>)	Threatened	Inhabit large stands of cottonwood-willow habitat below 7,000 ft. Species is a riparian obligate and require low, dense, shrubby vegetation for nest sites, and restricted to closed-canopy, deciduous, riparian forests with a dense shrub understory.	None. No suitable habitat occurs within 300 meters of the site.
Mexican Spotted owl (<i>Strix occidentalis lucida</i>)	Threatened	Spotted owls reside in old-growth or mature forests that possess complex structural components (uneven aged stands, high canopy closure, multi-storied levels, high tree density). Canyons with riparian or conifer communities are also important. Owls are also found in canyon habitat dominated by vertical-walled rocky cliffs within complex watersheds, including tributary side canyons. Rock walls with caves, ledges provide protected nesting sites. Canyon habitat may include small isolated patches or stringers of forested vegetation including stands of mixed-conifer, ponderosa pine, pine-oak, pinyon-juniper, and/or riparian vegetation. Owls are found in areas with some a water source (i.e., perennial stream, creeks, and springs, ephemeral water, small pools from runoff, reservoir emissions).	None. No suitable habitat occurs within 300 meters of the site.

Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Endangered	The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs. In most instances, the dense vegetation occurs within the first 10 to 13 feet above ground. Habitat patches must be at least 0.25 ac in size and at least 30 feet wide. Historically the southwestern willow flycatcher nested in native vegetation including willows, seepwillow, boxelder, buttonbush, and cottonwood. Following modern changes to riparian communities, this subspecies still nests in native vegetation, but also uses thickets dominated by non-native tamarisk and Russian olive, or in mixed native non-native stands. The flycatcher builds a small open cup nest, most often 6.5 to 23 feet above ground in a fork or on a horizontal branch of a medium-sized bush or small tree with dense vegetation above and around the nest.	None. No suitable habitat occurs within 300 meters of the site.
Fish			
Bonytail chub (<i>Gila elegans</i>)	Endangered	Riparian habitat.	None. No suitable habitat occurs within 300 meters of the site.
Colorado pikeminnow (<i>Ptychocheilus lucius</i>)	Endangered	Riparian habitat.	None. No suitable habitat occurs within 300 meters of the site.
Humpback chub (<i>Gila cypha</i>)	Endangered	Riparian habitat.	None. No suitable habitat occurs within 300 meters of the site.
Razorback sucker (<i>Xyrauchen texanus</i>)	Endangered	Riparian habitat.	None. No suitable habitat occurs within 300 meters of the site.
Plant			
Clay Reed-Mustard (<i>Schoenocrambe argillacea</i>)	Threatened	Desert shrub on clay soils which are rich in gypsum and overlain with sandstone talus.	Not likely, this is a previously disturbed site.
Pariette Cactus (<i>Sclerocactus brevispinus</i>)	Threatened	This cactus grows on the clay badlands of the Pariette Draw, where the soil is quite saline and alkaline. It grows on hills and flats in sagebrush. Similar habitat is <i>S. wetlandicus</i> .	Not likely, this is a previously disturbed site.

<p>Shrubby Reed-Mustard (<i>Hesperidanthus suffrutescens</i> (formerly <i>Schoenocrambe</i>))</p>	<p>Endangered</p>	<p>Occurs on one or two barren, white shale lenses of the Green River formation on BLM and Ute Tribe lands in the Uinta Basin. The plant community typically contains mixed desert shrubs and pinon and juniper trees.</p>	<p>Not likely, this is a previously disturbed site.</p>
<p>Uinta Basin Hookless Cactus (<i>Sclerocactus wetlandicus</i>)</p>	<p>Threatened</p>	<p>This cactus species grows on sparsely vegetated arid desert shrubland in association with shadscale (<i>Atriplex confertifolia</i>), rabbitbrush (<i>Ericameria nauseosa</i>) and horsebrush (<i>Tetradymia</i> spp.). Shares same habitat as <i>S. brevispinus</i>.</p>	<p>Areas surrounding site have same habitat, but actual site is previously disturbed and no habitat exists at the site.</p>
<p>Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)</p>	<p>Threatened</p>	<p>Known primarily from moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations between 4300-6850 feet (1310-2090 meters). Vegetation and hydrology types occupied by Ute ladies'-tresses include seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lakeshores. In addition, 26 populations have been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands. Surveys have also expanded the elevational range of the species from 720-1830 feet (220-558 meters) in Washington to 7000 feet (2134 meters) in northern Utah. Over one-third of all known Ute ladies'-tresses populations are found on alluvial banks, point bars, floodplains, or ox-bows associated with perennial streams.</p>	<p>None. No suitable habitat occurs within 300 meters of the site.</p>

BIOLOGICAL ASSESSMENT

Cell 2 Wonsit RNI Landfill
SE 1/4 of Section 26; NE 1/4 Section of 35, Township 8 South, Range 21 East
Uintah County, Utah

Prepared by Lindsey Hale, Ph.D.
February 7, 2020

This offsite report documents the occurrence of threatened and endangered species at the cell 2 Wonsit RNI Landfill site. The report was conducted by Dr. Lindsey Christensen Hale, on behalf of Jon Peaden at GeoStrata. The wastewater disposal facility is privately owned and operated by R.N. Industries (RNI) and is a Class IIIb Landfill site. The facility location is at the SE 1/4 of Section 26; NE 1/4 Section of 35, Township 8 South, Range 21 East, Salt Lake Base and Meridian, 7 miles (~11 kilometers) east of Ouray, Utah at 374 East Chapita Road, Uintah County, Utah (Fig. 1).

RN Industries has proposed work on Cell 2. The area proposed is a previously heavy managed area, with new construction occurring only on previously disturbed sites.



Figure 1: Location of Wonsit RNI Landfill, Uintah County, Utah. Facility is shown in proximity to riparian areas to the south.

METHODS

An offsite data review was conducted for initial assessment of the project site. This was completed to gather pre-existing information to assist in the evaluation of the occurrence of protected natural resources within the project area. The data review entailed an evaluation of online resources and agency publications to determine the presence or potential occurrence of protected natural resources, including threatened and endangered species and critical habitat. These documents include:

- USFWS Federally listed and proposed endangered, threatened, and candidate species, species list for Uintah County;
- Identification of critical habitat in Uintah County;

- Review of Google Earth images and identification of habitat that could support species protected by the Bald and Golden Eagle Protection Act (BGEPA);
- Review of GIS mapped vegetation “Dominant Vegetation”, obtained from the Utah Division of Wildlife Resources, 2001.

RESULTS

The proposed site at the Wonsit RNI Landfill Facility (further reported as Wonsit Landfill) is located between 25 miles (40 kilometers) south of Vernal, Utah. The ponds sit at approximately 4725 feet (1440 meters), above the White River and to the east of the Green River. A dirt road exist bordering the facility which allows access to the site. Larger roads border the south and partial east side, between the riparian areas and the Wonsit Landfill facility. The project area is generally a uniform slope and habitat type, and contains no permanent water or wetlands.

Vegetation was obtained from the Utah Division of Wildlife Resources (DWR) Dominant Vegetation GIS map 2001. The area surrounding the site is a *Ericameria nauseosa* (Rabbit Brush) dominated site, and includes *Atriplex confertifolia* (Shadscale), *Tetradymia glabrata* (Horsebrush), *Opuntia sp.* (Prickly Pear), and (Galleta) *Hilaria jamesii*. *Populus fremontii* (Freemont Cottonwood) occurs at the riparian area south of the site. The list of federally listed, proposed, and candidate species, which occur in Uintah county, are listed in Appendix A. Descriptions include status, habitat description, and the likelihood of occurrence. Neighboring critical habitat for threatened and endangered species, defined by the U.S. Fish and Wildlife Service, does exist near the site, but is greater than 300 feet (91.4 meters) away (Fig. 2, Fig. 3) for terrestrial and

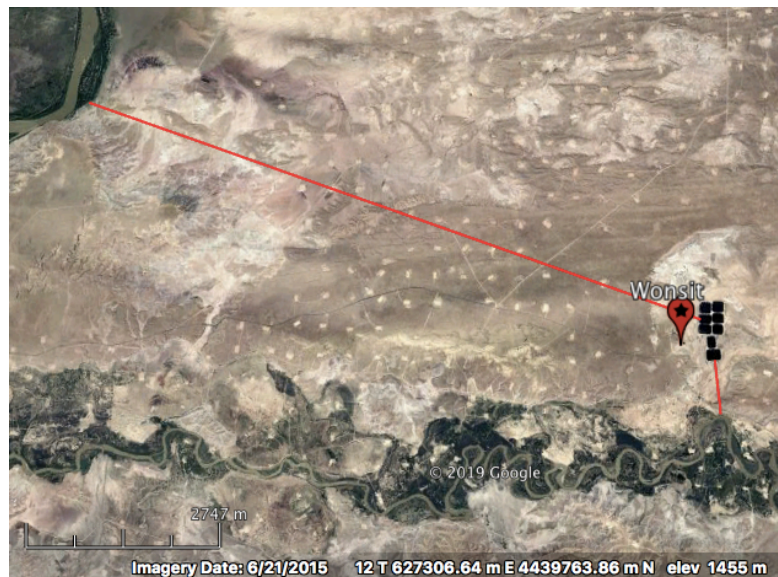


Figure 2: U.S.F.W.S. map Wonsit Landfill site with distance locators from Wonsit to the White River (0.5 miles away or 773 meters) and Green River (6.1 miles away or 9733 meters).



Figure 3: Highlighted (orange) areas of designated USFWS critical habitat.

aquatic species. As shown in the figures, critical habitat occurs nearby in riparian areas. Fig. 4 reports on the hydrological unit codes (HUC) for the Wonsit Landfill. This area feeds to the White River. The proposed landfill will have preventative measures to minimize the risk of water leaching from the landfill cell and protect



Figure 4: HUC for the Wonsit Landfill site are outlined in pink, which lead to the White River.

groundwater. As stated in the main report, the landfill is lined with a HDPE Primary Liner and a Clay secondary liner to isolate landfill waste from potential ground and surface waters. The liner also includes a leak detection system between the two liners that will be periodically monitored for leaks. There will also be three groundwater monitoring wells that will be installed within 500 ft of the landfill. The water in the monitoring wells will be sampled semiannually and tested for pollutants that may

be associated with the landfill. The landfill operations will have controls and /or procedures in place to prevent spills outside the permitted landfill, exclude unpermitted or hazardous wastes, conduct weekly inspections of the landfill cell integrity, and contain storm water on the landfill.

While native vegetation exists around the site, there is no natural vegetation at the Wonsit Landfill. All fourteen listed threatened and endangered species do not occur at the Wonsit Landfill. Official documentation is included as Appendix A. For mammals, the likelihood of Canada Lynx (*Lynx Canadensis*) and Black-Footed Ferret (*Mustela nigripes*) occurring at this site is none due to no suitable habitat at the site. There is no suitable nesting nor roosting habitat for the Mexican Spotted owl (*Strix occidentalis lucida*), Southwestern willow flycatcher (*Empidonax traillii extimus*), or the Yellow-Billed Cuckoo (*Coccyzus americanus*) at the site. Bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), and Razorback sucker (*Xyrauchen texanus*) are mapped as occurring in the White River below the site (0.5 miles) but preventative measures have been put in place to prevent leaching from the landfill. Four threatened plant species, Clay Reed-Mustard (*Schoenocrambe argillacea*), Pariette Cactus (*Sclerocactus brevispinus*), Shrubby Reed-Mustard (*Hesperidanthus suffrutescens* (formerly *Schoenocrambe*), and Ute ladies'-tresses (*Spiranthes diluvialis*) are not likely to appear at this site due to differing habitat types from the Wonsit Landfill. Habitat for the Uinta Basin Hookless Cactus (*Sclerocactus wetlandicus*) exists in lands surrounding the Wonsit Landfill, but no habitat exists at the site. In addition, the area to be permitted is already constructed as an evaporation pond and it will be refurbished without additional disturbance.

CONCLUSION

This project site is an existing constructed evaporation pond and will be refurbished without additional disturbance. No primary suitable habitat for thirteen of the fourteen threatened and endangered species exists within close proximity of the site. Habitat for the Uinta Basin Hookless Cactus exists in the surrounding areas but the area proposed in this permit is not designated as critical habitat. In addition, the Wonsit site is pre-existing and land areas that could potential house the cactus will not be disturbed. Designated Critical Habitat (in the riparian areas) is located greater than 300 feet away and groundwater precautionary measures have been put in place to ensure those areas will not be disturbed.

If RNI encounters or questions if an endangered species is on their facility or on the surrounding lands, contact the U.S. Fish and Wildlife Service (Assistant Regional Director for Ecological Services, Steve Small, stephen_small@fws.gov, 303-236-4210). By working at a certain time of year or making other project modifications, development projects usually proceed.

January 24, 2020

Chris Merritt, Antiquities Coordinator
Utah Division of State History
300 S. Rio Grande Street
Salt Lake City, Utah 84101
801-245-7263

Subject: Historical Preservation Survey

Dear Mr. Merritt,

GeoStrata is currently preparing a landfill permit on behalf of R.N. Industries (RNI) to be submitted to the Utah Division of Waste Management and Radiation Control (DWMRC). The landfill will be located at an RNI operated a waste disposal facility called Wonsit Disposal Facility located in the Uintah County. This landfill will be permitted to dispose waste that is related to the exploration and production of oil and gas. DWMRC requires a Historical Preservation Survey when permitting a new Utah Exploration and Production Waste Landfill (R315-304-4(2)(a)(iv)). At the request of RNI, GeoStrata conducted an evaluation of the proposed landfill site located at the Wonsit Disposal Facility. The facility is located at 374 East Chapita Grove Road, Uintah County, Utah. A USGS 7.5 Minute Topographic map with the location of the facility and the proposed landfill cells is attached to the end of this letter as Plate A-1 and a High Resolution Photo of the site from 2009 is also attached as plate A-2.

RNI is considering converting one of their evaporation ponds into a landfill that will be utilized for the permanent disposal of oil and gas production and exploration solid wastes meeting the definition of RCRA-Exempt, Exploration and Production (E&P) Waste. There will be some minor alteration to the size and shape existing evaporation pond when it is converted to the landfill pit however none of these alterations will affect any existing structures at the facility. The Wonsit Disposal Facility was granted approval to construct and operate disposal ponds by the Utah Division of Oil Gas and Mining (DOG M) in 2005. The pond that will be converted to a landfill is pond 6 and was constructed between 2005 and 2006.

The Area of Potential Effects for the proposed landfill will be minimal since there will be minimal construction associated with the conversion of the evaporation pond to a landfill. This location has already been disturbed through previous construction. Pond 6 was constructed with a single liner of 60 mil HDPE Geomembrane. The pond has been operating as a wastewater pond since it was constructed. The area of the pond to be converted to a landfill is approximately 6 acres. The ponds are currently drained of all wastewater and the liner configuration will remain intact for the operational use of the landfill. The landfill cell will have a waste staging area constructed to the south of the Landfill. This staging area will be used for parking heavy equipment and equipment storage, waste inspection and truck unloading. The

staging area will also have a waste mixing area to stabilize liquid wastes. Ramps will also be constructed to allow heavy equipment into the cell and to allow trucks to unload directly within the landfill.

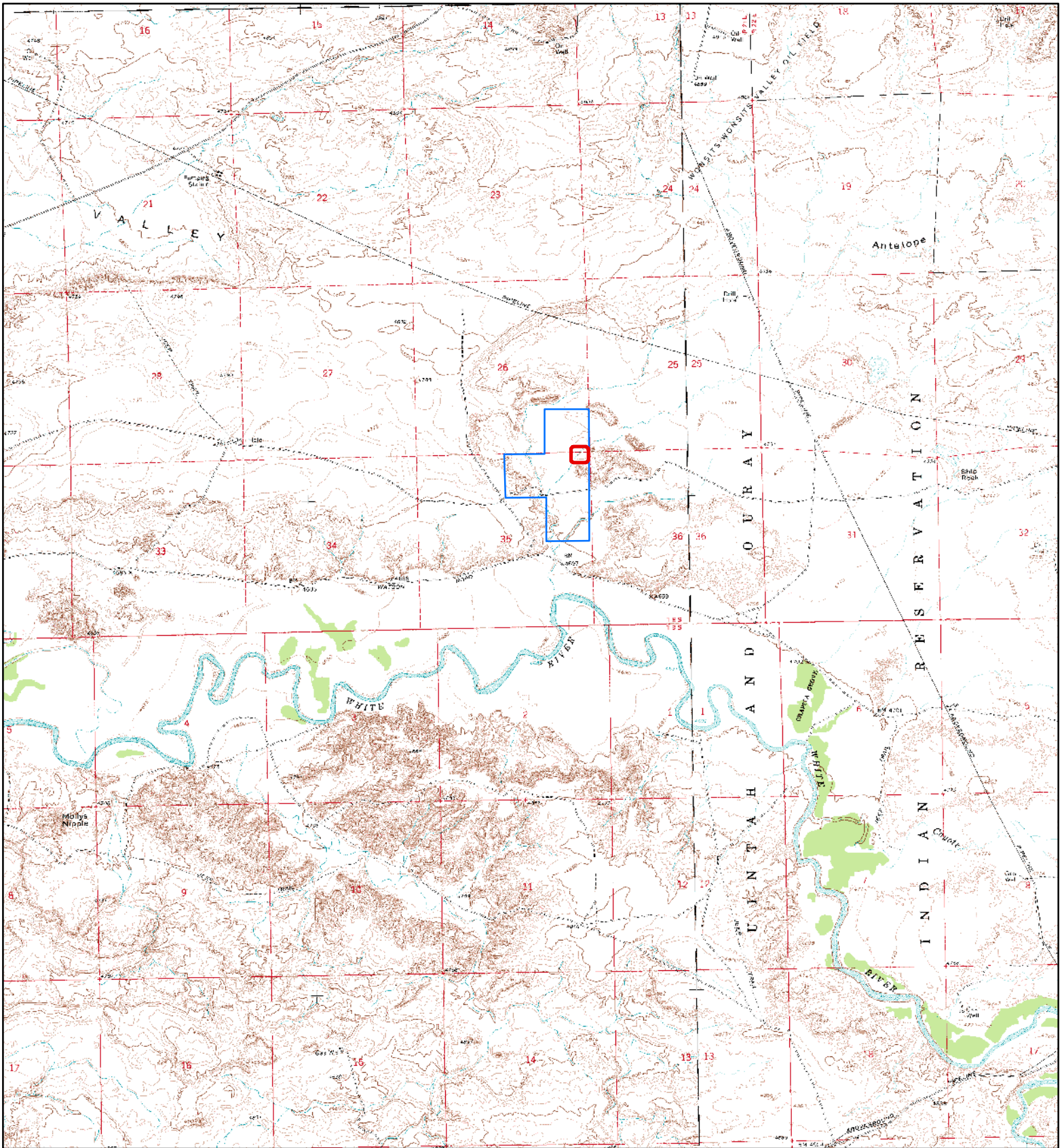
There are two buildings on the RNI Wonsit Disposal Facility that were constructed after 2006 and are not potentially eligible to be listed on the National Registry of Historic Places.

Based on our evaluation of the site and Area of Potential Effects from the permitting of the new landfill, the site has no historical properties or structures. None of the above-mentioned buildings will be impacted by the construction of the proposed landfill. If you have any questions or need any other information about our historical evaluation of the RNI property, please contact us at (801) 501-0583.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jon Peaden".

Jon Peaden
GeoStrata, LLC



0 1,000 2,000 4,000 6,000 8,000 Feet

1:48,000

GeoStrata
 Engineering & Geosciences
 Copyright GeoStrata, 2020



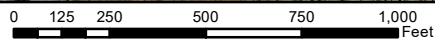
Legend

- Landfill Cell 2
- Site Boundary

Wonsit Landfill Cell 2
 RN Industries
 Project Number: 524-104

**Plate
 A-1**

Site Vicinty Map



1:6,000



Legend

-  Landfill Cell 2
-  Site Boundary

Wonsit Landfill Cell 2
 RN Industries
 Project Number: 524-104

Site Vicinty Map

**Plate
A-2**



Wonsit Class IIIb Landfill Permit Modification

GeoStrata Job No. 524-104

January 25, 2021

Prepared for:

Division of Waste Management and Radiation Control

Utah Department of Environmental Quality

PO Box 144880

Salt Lake City, Utah 84114-4880

Attention: Ty L. Howard, Director

Prepared for:

Ty L. Howard, Director
Doug Taylor, Permit Manager
Division of Waste Management and Radiation Control
Utah Department of Environmental Quality
PO Box 144880
Salt Lake City, Utah 84114-4880

Wonsits Landfill Permit Modificiation

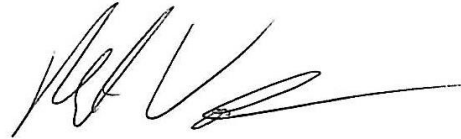
GeoStrata Job No. 524-104

Prepared by:



Jon Peaden
Environmental Scientist

Reviewed by:



Mike Vorkink, P.G.
Senior Geologist

GeoStrata
14425 South Center Point Way
Bluffdale, UT 84065
(801) 501-0583

January 25, 2021

PERMIT MODIFICATION OF THE WONSIT CLASS IIIb LANDFILL

FOR

RN INDUSTRIES

UINTAH COUNTY, UTAH

PART I – LANDFILL MODIFICATION FORM

INTRODUCTION

This operations plan and technical report are an application to modify the existing permit and operate a second cell at the Wonsit Disposal Facility which is operated by RN Industries (RNI). The proposed landfill cell is currently permitted as an evaporation pond for produced water from the oil and gas industry through the Utah Division of Oil Gas and Mining (UDOGM). The pond and associated liners were constructed in 2005 and have been in operation since that time.

The facility is located approximately 25 miles south of Vernal, Utah. The specific area is located in Section 26 and Section 35 of Township 8 South, Range 21 East of the Salt Lake Base and Meridian in Uintah County, Utah. The location of the facility in relation to surrounding areas is presented on Plate A-1 in Appendix A. This cell is the second landfill cell to be permitted at the Wonsit facility. This proposed landfill cell will be part of the existing Utah Division of Waste Management and Radiation Control (DWMRC) Permit Number 1302. This modification is not an expansion or modification of the existing landfill cell of the RNI Wonsit Class IIIb Oil and Gas Exploration and Production Waste Landfill (RNI Wonsit Landfill). This landfill will be identified as the Cell 2 RNI Wonsit Landfill.

This modification is segregated into 3 distinct parts, Part I outlines the general information pertaining to the landfill permit form. Part II is a general report that includes a facility description and proposed landfill operations and activities. Part III is an engineering technical report that provides details on the design of the facility, design of the site closure, describes details of closure and post closure activities and financial assurances as required by State Code.

**PERMIT MODIFICATION OF THE WONSIT CLASS IIIb LANDFILL
FOR
RN INDUSTRIES
DUCHESNE COUNTY, UTAH**

APPLICATION FORM AND CHECKLIST



**WASTE MANAGEMENT
& RADIATION CONTROL**

Division of Waste Management and Radiation Control

Solid Waste Management Program

Mailing Address Office Location
P.O. Box 144880
Salt Lake City, Utah 84114-4880

Phone (801) 536-0200
195 North 1950 West
Salt Lake City, Utah 84116

Fax (801) 536-0222
www.deq.utah.gov

APPLICATION FOR A PERMIT TO OPERATE A CLASS III LANDFILL

Please read the instructions that are found in the document, INSTRUCTIONS FOR APPLICATION FOR A PERMIT TO OPERATE A CLASS III LANDFILL. This application form shall be used for all Class III solid waste disposal facility permits and modifications. Part I, GENERAL INFORMATION, must accompany a permit application. Part II, APPLICATION CHECKLIST, is provided to assist applicants and, if included with the application, will assist review. Part II is provided to assist in preparation and review of a permit application; it is not required by rule. The text of the rule governs all permit application contents and should be consulted when questions arise.

Please note the version date of this form found on the lower right of the page; if you have received this form more than six months after this date it is recommended you contact our office at (801) 536-0200 to determine if this form is still current. When completed, please return this form and support documents, forms, drawings, and maps to:

Scott T. Anderson, Director
Division of Waste Management and Radiation Control
Utah Department of Environmental Quality
PO Box 144880
Salt Lake City, Utah 84114-4880

Utah Class III Landfill Permit Application Form

Part I General Information APPLICANT: PLEASE COMPLETE ALL SECTIONS.					
I. Landfill Type	<input type="checkbox"/> Class IIIa <input checked="" type="checkbox"/> Class IIIb	II. Application Type	<input type="checkbox"/> New Application <input type="checkbox"/> Renewal Application	<input type="checkbox"/> Facility Expansion <input checked="" type="checkbox"/> Modification	
For Renewal Applications, Facility Expansion Applications and Modifications Enter Current Permit Number _____					
III. Facility Name and Location					
Name of Facility Wonsit Disposal Facility					
Site Address (street or directions to site) 374 East Chapita Grove Road				County Uintah	
City Vernal		Zip Code 84078		Telephone 435-722-2800	
Township 8 S	Range 21 E	Section(s) 26 & 35	Quarter/Quarter Section		Quarter Section
Main Gate Latitude degrees 40 minutes 49 seconds 59			Longitude degrees 109 minutes 31 seconds 15		
IV. Facility Owner(s) Information					
Name of Facility Owner RN Industries					
Address (mailing) PO Box 1168					
City Vernal		State UT	Zip Code 84078		Telephone 435-722-2800
V. Facility Operator(s) Information					
Name of Facility Operator RN Industries					
Address (mailing) PO Box 1168					
City Vernal		State UT	Zip Code 84078		Telephone 435-722-2800
VI. Property Owner(s) Information					
Name of Property Owner RN Industries					
Address (mailing) PO Box 1168					
City Vernal		State UT	Zip Code 84078		Telephone 435-722-2800
VII. Contact Information					
Owner Contact Austin Weddle			Title Operations Manager		
Address (mailing) PO Box 1168					
City Vernal		State UT	Zip Code 84078		Telephone 435-722-2800
Email Address aweddle@dalboholdings.com			Alternative Telephone (cell or other)		435-790-6690
Operator Contact Austin Weddle			Title Operations Manager		
Address (mailing) PO Box 1168					
City Vernal		State UT	Zip Code 84078		Telephone 435-722-2800
Email Address aweddle@dalboholdings.com			Alternative Telephone (cell or other)		435-790-6690
Property Owner Contact Austin Weddle			Title Operations Manager		
Address (mailing) PO Box 1168					
City Vernal		State UT	Zip Code 84078		Telephone 435-722-2800
Email Address aweddle@dalboholdings.com			Alternative Telephone (cell or other)		435-790-6690

Utah Class III Landfill Permit Application Form

Part I General Information (Continued)

VIII. Waste Types (check all that apply)	IX. Facility Area																																							
<input type="checkbox"/> All types of non-hazardous industrial waste generated by the facility OR the following specific waste types <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Waste Type</th> <th style="width: 30%;">Combined Disposal Unit</th> <th style="width: 30%;">Monofill Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Construction & Demolition</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Industrial</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Incinerator Ash</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Animals</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Asbestos</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Other E & P Wastes</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Waste Type	Combined Disposal Unit	Monofill Unit	<input type="checkbox"/> Construction & Demolition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Incinerator Ash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> Other E & P Wastes	<input type="checkbox"/>	<input type="checkbox"/>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Facility Area.....</td> <td style="text-align: right;">161</td> <td style="text-align: right;">acres</td> </tr> <tr> <td>Disposal Area.....</td> <td style="text-align: right;">5.5</td> <td style="text-align: right;">acres</td> </tr> <tr> <td>Design Capacity</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Years.....</td> <td style="text-align: right;">6.1</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Cubic Yards.....</td> <td style="text-align: right;">178,034</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Tons.....</td> <td style="text-align: right;">240,350</td> <td></td> </tr> </table>	Facility Area.....	161	acres	Disposal Area.....	5.5	acres	Design Capacity			Years.....	6.1		Cubic Yards.....	178,034		Tons.....	240,350	
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Years.....	6.1																																							
Cubic Yards.....	178,034																																							
Tons.....	240,350																																							
Note: All waste types must be generated by the industry which owns the facility																																								

X. Fee and Application Documents

Indicate Documents Attached To This Application Application Fee: Amount \$

<input checked="" type="checkbox"/> Facility Map or Maps	<input type="checkbox"/> Facility Legal Description	<input checked="" type="checkbox"/> Plan of Operation	<input checked="" type="checkbox"/> Waste Description
<input type="checkbox"/> Ground Water Report	<input checked="" type="checkbox"/> Closure Design	<input checked="" type="checkbox"/> Cost Estimates	<input checked="" type="checkbox"/> Financial Assurance

I HEREBY CERTIFY THAT THIS INFORMATION AND ALL ATTACHED PAGES ARE CORRECT AND COMPLETE.

Signature of Authorized Owner Representative		Title Operations Manager	Date
			1-25-21
Austin Weddle		Address PO Box 1168	
Name typed or printed			
Email Address aweddle@dalboholdings.com	Alternative Telephone (cell or other)		435-790-6690
Signature of Authorized Land Owner Representative (if applicable)		Title	Date
		Address	
Name typed or printed			
Email Address	Alternative Telephone (cell or other)		
Signature of Authorized Operator Representative (if applicable)		Title	Date
		Address	
Name typed or printed			
Email Address	Alternative Telephone (cell or other)		

PERMIT MODIFICATION TO OPERATE A CLASS IIIb LANDFILL

**FOR
RN INDUSTRIES
UINTAH COUNTY, UTAH**

PART II – GENERAL REPORT

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1.0 FACILITY DESCRIPTION

1.1 FACILITY GENERAL DESCRIPTION

The proposed site of the Cell 2 RNI Wonsit Landfill is located at the Wonsit Disposal Facility (Facility) operated by RN Industries (RNI). The entire facility is approximately 161 acres of land located approximately 25 miles southwest of Vernal, Utah. The area permitted as a landfill is in Sections 26 and 35 of Township 8 South, Range 21 East of the Salt Lake Meridian in Uintah County, Utah. The location of the landfill in relation to surrounding areas is presented on Plate A-1 in Appendix A with a USGS Topographic Map as a background map.

The site of the landfill is currently utilized as a wastewater disposal facility for water produced from oil and gas exploration and production. The water disposal facility, equipment and evaporation ponds are regulated through the Utah Division of Oil Gas and Mining (UDOGM). The facility includes a landfarm for the remediation of soils contaminated with hydrocarbons. The facility also has an existing landfill permitted through the Utah Division of Waste Management and Radiation Control (DWMRC). This landfill was permitted in 2013 as the RNI Wonsit Class IIIb Oil and Gas Exploration and Production Waste Landfill. The proposed additional landfill cell that is part of this permit modification will be identified as Cell 2 RNI Wonsit Landfill.

The proposed modification will consist of adding an additional cell that will be constructed by converting and existing a wastewater disposal pond. This pond was originally permitted and regulated by the UDOGM and will be closed for water disposal as the landfill is permitted. RNI has worked with officials at the UDOGM to have the pond properly closed for water disposal and removed from the UDOGM jurisdiction. A map of the current facility layout with proposed landfill boundaries and other waste processing components is provided in Appendix A as plate A-2. The pond that will be converted to a landfill cell is currently identified by RN Industries personnel and regulators at UDOGM as Pond 6. However, in some records obtained from the UDOGM the pond was originally identified as Evaporation Pit #3 when it was permitted in 2005. These records show the location of Pit #3 in the same location as what is currently identified as Pond 6. There are no available records that indicate exactly when or why the identification numbering was

altered or changed. For the purposes of this permit modification the existing evaporation pond proposed for conversion is identified as Pond 6 and will be renamed as Cell 2 Wonsit RNI Landfill.

The prevailing wind direction is from the west. The facility has several ephemeral stream channels crossing the site from the north and east to the south west. Some of the ephemeral streams appear to be distributary channels of Antelope Draw. The apparent primary stream channel of Antelope Draw is located approximately ¼ mile south of the proposed landfill. All other streams that are within a quarter mile of the landfill site are unnamed ephemeral or seasonal drainages and there are no other annual bodies of water. The White River is approximately ¾ mile south of the proposed landfill. Plate A-3 identifies structures within a quarter mile of the site, drainages within a quarter mile, and the prevailing wind direction.

1.2 AREA SERVED

RNI currently accepts Resource Conservation and Recovery Act exempt (RCRA) exempt oil and gas exploration and production (E&P) solid wastes as defined by the Division of Waste Management and Radiation Control (UDWMRC) at the Facility from clients located throughout the Uintah Basin in Utah, Colorado and Wyoming.

1.3 WASTE TYPES

As recommended by the DWMRC the proposed landfill will be permitted as a Class IIIb landfill. The Class IIIb landfill will receive non-hazardous oil and gas exploration and production waste. These wastes include but are not limited to drilling mud, frac sands, drill cuttings, hydrocarbon contaminated soils, etc. defined as E&P solid waste.

As required by the DWMRC standards for design the operator must minimize liquids admitted into the landfill by prohibiting waste that contains free liquids (R315-303-3(1)). All the waste will need to pass the paint filter test (EPA Method 9095B) to be accepted and disposed into the landfill.

1.4 FACILITY HOURS

Although the Wonsit Disposal Facility has an active water disposal operation that may be manned 24 hours a day and 365 days a year if necessary. The landfill cell will be fenced and gated so that it will only be accessible by customers when RNI personnel are on-site.

1.5 LANDFILL EQUIPMENT

The Facility currently has equipment to support the existing landfill and landfarm operations. This equipment will also be used for the Cell 2 landfill operations. This equipment includes a Caterpillar D6 Dozer, a Komatsu 290 Excavator, a Caterpillar 330C Excavator and a 20-yard rock truck. Additional equipment will be acquired to facilitate the operation of the proposed landfill to dry waste material, properly place waste material and maintain daily cover. This equipment may include a stationary mixing tank for drying waste, a conveyor system to distribute and place the E&P waste across the landfill area.

1.6 LANDFILL PERSONNEL

The RNI facilities are managed by Austin Weddle who has 8 years of experience managing wastewater disposal facilities. Table 1.1 lists the current staff assigned to the Facility, their current responsibilities. Additional duties relating to the new landfill cell will be incorporated into their respective assigned tasks. Other RNI employees assigned to work at the proposed landfill will receive direction from the managing staff.

Table 1.1 – RNI Managing Staff

Employee Name	Current Title	Years of Experience	Current Duties	Landfill Duties
Austin Weddle	Facilities Manager	8	Operations manager for all RNI Facilities	Operations manager
Kayden Memmott	Disposal Operator	3	Wastewater Disposal and Landfarm Equipment Operator	Landfill Equipment Operator
Jake Eddington	Disposal Operator	3	Wastewater Disposal and Landfarm Equipment Operator	Landfill Equipment Operator
Danny Sessions	Disposal Operator	1.5	Wastewater Disposal and Landfarm Equipment Operator	Landfill Equipment Operator

1.7 HISTORICAL PRESERVATION SURVEY

GeoStrata conducted a review of the proposed landfill site and prepared a letter for the State Historical Preservation Officer (SHPO). Based on our evaluation of the site and area of potential effects from the permitting of the new landfill, we found that the site has no historical properties or structures. We provided our findings to the SHPO in a letter report on January 24, 2020. The SHPO has sent a formal response to our report and findings and they concur with our assessment that there are no historical properties or structures at the Wonsit facility. A copy of the letter report prepared for the SHPO and their response are provided in this permit application in Appendix G.

1.8 LOCAL GOVERNMENT WITH JURISDICTION

The local government with jurisdiction over the Facility is Uintah County. The mailing address is provided below:

152 East 100 North
Vernal, Utah 84078

2.0 LEGAL DESCRIPTION

A legal description of the property is provided in the original permit application. Please refer to the original application for the facility owner and legal description of the facility.

3.0 OPERATIONS PLAN

3.1 SCHEDULE OF CONSTRUCTION

The RN Industries Wonsit Disposal Facility was originally permitted and constructed as a wastewater disposal site in 2005 by RN Industries Inc. The original permit was for the construction of 6 evaporation ponds. Additional ponds were permitted, and authorization was given from UDOGM to construct the ponds in 2006 and 2009. Records of the original construction and certification of the evaporation pond were obtained from UDOGM. The available records from UDOGM included construction records, and documentation or certifications that are specific for Pond 6, however the documentation identified the pond as Evaporative Pit 3. Evaporative Pit 3 appears to be in the same location of what is currently identified by RN Industries as Pond 6. It is possible that the pond identification numbering that was used in 2005 has since been altered to the numbering system that is currently used by RN Industries and UDOGM today. For consistency of the current numbering system used by RNI, the proposed landfill will be references as Pond 6 throughout this application.

The correspondence from UDOGM referencing Evaporative Pit #3 (or Pond 6) contains the general requirements for evaporation ponds, approval to construct the pit, and design drawings of the pit. The design drawings include general details of the leak detections system that was submitted at the time of the UDOGM permit application for Evaporative Pit #3. The description of the design specifications includes a primary liner that is constructed with 60 mil HDPE liner keyed into an anchor trench and a secondary liner that consist of 12-inch layer of compacted native clay soil.

These drawings are not as built drawings since, the dimensions that were acquired from available post construction topographic data are significantly different. A site visit conducted at Pond 6 of the Wonsit facility confirmed that the pond was constructed with a single liner of 60 mil HDPE Geomembrane. There is also a leak detection system located at the south end of the pond. There are no records from UDOGM of water observed in the leak detection system. All records for the Wonsit Facility that were obtained from UDOGM are included in Appendix D.

GeoStrata conducted a survey of the HDPE liner to evaluate the integrity of the liner. The results of the liner integrity survey indicated that there were no detectable holes in the liner at the time of the survey. A summary of the liner integrity survey is included in Appendix D

The pond has operated as a wastewater disposal and evaporation pond since the time it was constructed. The pond will be drained of all wastewater before landfill construction and operations and the HDPE liner will remain intact for the operational use of the landfill. To the north and west of Pond 6 there are wastewater ponds that share adjoining berms and liners. These ponds are also constructed using 60 mil HDPE liner and the liners are welded together and are covering the earthen berm that separates the two ponds. The HDPE covered berm was used as a sprinkler pad for enhancing the evaporation of the wastewater. The construction of the landfill cell will require the removal of this pad.

As part of the landfill design a waste staging area will be constructed. This staging area will be used for parking heavy equipment and equipment storage, waste inspection and truck unloading. The staging area will also have a waste mixing area to stabilize any wastes that do not meet the requirements of waste disposal in Cell 2 RNI Wonsit Landfill. Ramps will also be constructed to allow heavy equipment into the cell and to allow trucks to unload directly within the landfill. A set of plans for the landfill cell is provided in Appendix B.

At the start of landfill operation, RNI anticipates that approximately 1 to 4 truckloads of E&P waste will be transported to the facility per day. Each truck load will have a volume of approximately 15 cubic yards. RNI anticipates that some waste accepted to the landfill will be from internal sources during the remediation of their facilities. Waste from outside and internal sources may consist of drilling mud and drilling fluid that will require processing prior to disposal. RNI is considering using several different techniques and processes to meet the states requirement of waste to be free of liquids and pass a paint filter test. Some of the techniques that RNI may utilize include but are not limited to a pugmill mixer or mixing basin where the waste may be combined with sawdust, fly ash, native soils or other components to stabilize the more liquid waste. Waste acceptance procedures and quality control of waste being disposed in the landfill are out lined in sections 3.2.1 and 3.2.2 of this report.

As the landfill is put into operation, waste acceptance and mixing processes will be further refined and modified throughout the life of the landfill based on available equipment and characteristics of the landfill waste. Adjustments to the design life of the landfill will be made based on adjustments made to the mixing process and characteristics of the waste. Adjustments may also be made to location of the access ramp into the landfill to accommodate the filling of landfill waste in the cell. As adjustments are made to the access ramps and road entering and exiting the landfill the HDPE liner will be protected with the liner cover soils.

Using the throughput assumptions described in the previous paragraph, the life duration of the landfill is defined assuming that half of the waste arriving at the landfill will be suitable for direct placement into the land fill and the remaining waste will be needing to be processed (drying or mixing) prior to placement in the landfill. Waste that will be mixed with additional material will need to reach a moisture content that corresponds with passing the paint filter test. It is assumed that mixing of native soils with waste at a ratio of approximately 1:0.5 will reach a waste moisture content that will pass the paint filter test. For example, every 1 ton of waste there will be approximately 0.5 tons of native soils added to reach a moisture content that will pass the paint filter.

Based on waste mixing assumptions described above and assuming waste throughput of 4 truckloads per day and a 10% growth rate over the life of the landfill, the projected life of the landfill is approximately 6 years. However, the projected life may increase or decrease based on the type of processing and or mixing methods utilized. A copy of the spreadsheet used to calculate this estimated life is included in Appendix E. All the assumptions presented in the previous paragraphs were used in the spreadsheet calculations.

3.2 DESCRIPTION OF WASTE HANDLING PROCEDURES

The following section describe the general procedures that will be followed under this permit application for accepting, disposing, recording and excluding landfill waste at the Cell 2 RNI Wonsit Landfill.

3.2.1 General Procedures

All off site waste will be hauled to the Cell 2 RNI Wonsit Landfill using commercial or independently owned trucks. Trucks will enter at the main gate and check in with the landfill office. Every truck load of waste will be inspected for liquids prior to disposal and a paint filter test will be performed on each load of waste. On site generated waste will be transported to the waste staging area for inspection. Waste that is free of liquids and passes the paint filter test will be directed to the landfill cell for direct placement in the landfill. Waste that has liquids and fails to pass the paint filter test will be placed in a temporary storage basin for further processing. The temporary storage basin will be constructed to ensure that the waste will be isolated from the underlying soils and liquids will collect at one end of the basin. The liner material for the storage basin will be composed of either concrete, clay, or an HDPE liner. Liquids that are collected in the temporary storage basin will be removed as needed and disposed at a proper facility for accepting RCRA exempt liquids. Collected liquids from the temporary storage are may also be mixed with sufficient dry soils or other materials as to allow them to pass a paint filter test.

Additional paint filter tests will be conducted every 15 cubic yards of waste that requires processing prior to being disposed into the landfill. Waste that fails the second paint filter test will remain in the temporary storage area and will be reprocessed by mixing with other materials and re-tested after mixing. Paint filter test procedures are included in the original permit application for the Wonsit Landfill.

After passing the paint filter test waste will be removed from the temporary storage area and then placed in the landfill using heavy equipment or a conveyor system. All Waste will then be placed in a uniform layer in the landfill as described in section 3.2.3 Waste Disposal.

3.2.2 Waste Shipment Records

The landfill manager will retain waste shipment records as part of the daily record keeping of disposal activities. Each truck load of E&P waste delivered to the RNI facility will have a waste shipment ticket completed. The waste shipment ticket will be completed by the truck driver and then verified by the landfill operating staff. An example of the waste shipment ticket is included in the original landfill permit application. The waste shipment ticket will include the following data for record keeping:

- Date and time of arrival
- Load ID number
- Quantity in cubic yards and estimated tons based on unit weight
- Type of waste
- Origin and generator of waste
- Name of trucking company and truck number
- Truck drivers name and signature

3.2.3 Waste Disposal

The E&P waste will be transported into the landfill cell by means of either direct placement by dumping from the delivery truck, placed by heavy equipment or a conveyor system. Waste will be deposited at the bottom of the landfill cell and will be placed in 12-inch-thick lifts. Lifts will be distributed by use of an onsite dozer and then compacted with the dozer and other truck traffic. Waste will be compacted to reach a firm and unyielding surface to maximize landfill capacity.

Waste deposited in the landfill will not come in contact with the HDPE liner. A protective 12-inch layer of fill material will be in place between the waste and HDPE liner. The 12-inch fill layer will be comprised of a free draining soil. The protective layer will be placed on all surfaces of the HDPE liner that will be covered with the landfill waste. All equipment moving in or on the landfill will not have contact with the liner and will remain on the fill layer. Waste will also be placed in such a way as to avoid puncturing liner during the compaction process.

RNI does not have any plans currently to introduce any recycling programs at the facility. In addition, due to the nature of the type of waste accepted at the facility it is unfeasible to recycle the waste that is generally accepted.

3.2.4 Plans for Excluding Waste

RNI will maintain a comprehensive waste screening process prior to receiving waste from potential sources and waste generators. Non-E&P waste and waste that is not RCRA exempt will not be accepted at the Cell 2 RNI Wonsit Landfill. To ensure that waste meets this requirement, new waste generators or new waste sources will be vetted by conducting an initial waste profile assessment. This assessment will include completion of a waste characterization form and provide lab testing data of the waste or provide a representative sample of the waste for testing. This waste characterization process will determine the acceptability of the waste that is generated to be disposed under this permit application.

New waste generators will be required to complete a waste characterization form and provided a letter for each waste type that certifies that the material meets the requirements of RCRA Exempt E&P waste and that it contains no hazardous materials or other prohibited wastes such as PCBs. Generators will also be required to inform RNI when waste composition changes and resubmit a new waste characterization form with samples. An example of the Waste Characterization form is provided in the original permit application. RNI will not accept waste that has the risk of containing disease vectors.

3.3 WASTE FACILITY INSPECTION AND MONITORING

RNI personnel will inspect the facility to prevent malfunctions and deterioration, operator errors, and discharges which may cause or lead to the release of wastes to the environment that may be a threat to human health or other natural resources. Facility inspections will be conducted, at a minimum weekly, and results will be recorded using the weekly

inspection log. An example of these inspection logs is provided in the original permit application.

3.3.1 Fugitive Dust Control

As required in Utah Administrative Code R315-302-2(2)(g) RNI has prepared a plan for controlling fugitive dust as part of this permit application. As part of the daily operations of the RNI facility, fugitive dust will be monitored, and controls will be put in place as deemed necessary by the landfill operations manager.

During the construction and operational phases of the landfill, sources of dust within the landfill cell will be identified by the landfill operations manager. These sources of dust will be controlled by watering and proper placement of waste in the landfill. The RNI will have staff on site that are trained in monitoring opacity and will periodically check the facility for dust control issues. When opacity of the dust exceeds 10% watering controls will be put in place.

The landfill operations manager will also monitor dust on all haul roads on RNI property. Haul roads leading from the main gate to the landfill cell are all unpaved. Proper maintenance of haul roads, speed limit controls and watering when dust opacity exceeds 10% will aid in reducing fugitive dust emissions.

3.3.2 Plan for Litter Control

RNI does not anticipate accepting waste materials that will cause a wind-blown litter problem. RNI will complete a daily inspection of the landfill and surrounding area and identify any potential waste material that may escape the facility.

3.3.3 Contingency Plan for Fire or Explosion

In the event of a fire or explosion at the RNI facility, the landfill operations manager will be notified. The landfill operations manager will then contact local emergency authorities to initiate emergency response. A list of the local emergency responders is provided in Appendix D of this permit application.

3.3.4 Alternative Waste Handling Plan

In the event of a landfill closure due to an emergency or repairs, RNI will arrange to have the waste disposed at alternative RNI landfill facilities if necessary. If, in the case that Cell 2 RNI Wonsit Landfill must close due to an emergency, waste will be transported to the Wonsit landfill or the Bluebell Landfill that are owned and operated by RNI.

3.3.5 General Training Plan

As required in R315-302-2(2), each permitted landfill must have a detailed training program. RNI currently has a training program that educates their employees on how to handle E&P waste and how to operate the existing components of the waste facility. RNI will utilize the Personnel Training Program that is in place for the Wonsit Landfill. The site-specific training is modified for application to the Wonsit facility. A copy of the existing Personnel Training Program is part of this permit application and is included in the original permit application.

All personnel that will be working on the landfill are required to participate in monthly safety meetings and morning tailgate safety meetings held on site at RNI. All employees are to read and review semiannually this landfill permit. Annual refresher training of the above-mentioned training program will be conducted for all employees involved with the permitted landfill. Any new information relevant to the permitted landfill will also be covered in the annual refresher training. New employees that are assigned to work associated with the landfill will receive training during the first month of employment and will be trained by a supervisor that has completed the required training. Records of this training will be kept in the RNI training database.

3.4 RECORD KEEPING

During the operation of the landfill, the operator will maintain records of landfill activities as required by the Utah Admin. Code 315-302-2-(3). These records will be stored electronically in the RNI database at their main office in Vernal.

3.4.1 Daily Permanent Record

The landfill manager will record the following data daily and maintain the data in a permanent file:

- Waste shipment records as described in section 3.2.2
- The estimated weight in tons and volume in cubic yards of E&P waste received for the day
- The estimated weight in tons and volume in cubic yards of E&P waste that required treatment prior to disposal in the landfill cell.
- The estimated weight in tons and volume in cubic yards of material added to treat the waste and the total weight and volume of treated waste
- Number of trucks visiting the Landfill
- Type of E&P waste received
- Paint filter test results
- Deviations from the UDWMRC approved Operations Plan
- Staff training records and landfill specific training for all employees associated with the landfill
- Status of groundwater, leachate and gas monitoring
- A written report of daily activities at the landfill site

3.4.2 Other Records

The landfill manager will also include the following data in the permanent records:

- Design documentation of the placement or recirculation of leachate or gas condensate into the landfill
- Closure and post closure care plans and activities
- Cost estimates and financial assurance documentation

**PERMIT MODIFICATION OF THE WONSIT CLASS IIIb LANDFILL
FOR
RN INDUSTRIES
UINTAH COUNTY, UTAH**

**PART III
ENGINEERING TECHNICAL REPORT**

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1.0 LOCATION STANDARDS

1.1 GEOLOGIC FAULTS AND UNSTABLE AREAS

An engineering geologist with GeoStrata reviewed geologic maps and identified that the nearest Holocene fault is the Strawberry fault located approximately 80 miles west of the RNI Wonsit disposal facility (Quaternary Fault and Fold Database of the United States, 2014). The proposed landfill cell is not located in a subsidence area, a dam failure flood area, above an underground mine, above a salt dome, above a salt bed, or on or adjacent to geologic features which could compromise the structural integrity of the facility. Further details of the geologic setting are provided in the Engineering Report. A geologic map of the RNI facility and surrounding area is provided in this report in Appendix A as plate A-4.

1.2 SURFACE WATER

There are no year-round surface waters that are located on the Wonsit Disposal Facility. There are several minor ephemeral drainages that cross the site from the Northeast to the south. Some of the ephemeral drainages appear to be distributary channels of Antelope Draw. The apparent primary stream channel of Antelope Draw is located approximately $\frac{1}{4}$ mile south of the proposed landfill. Antelope Draw appears to be ephemeral with seasonal flow and is a tributary of the White River. All other streams that are within a quarter mile of the landfill site are unnamed ephemeral or seasonal drainages and there are no other annual bodies of water. The White River is approximately $\frac{3}{4}$ mile south of the proposed landfill. The magnitudes of the 24-hour, 25-year and 100-year storm events are 1.75 inches and 2.25 inches respectively. The average annual precipitation near the RNI facility is approximately 9.31 inches (NOAA Vernal Station).

1.3 FLOODPLAINS

The FEMA Flood hazard maps that cover the area of the RNI facility and the facility located in areas that are mapped as Zone X. Zone X is classified as areas of minimal flood hazard. Numerous ephemeral drainages are located near the Landfill cell. None of the ephemeral or intermittent drainages are restricted or significantly impacted by the existing landfill cell.

1.4 WETLANDS

A search of the National Wetland Inventory of the U.S. Fish and Wildlife Service indicated that there are no wetland areas located on the RNI facility (National Wetlands Inventory, 2019). Plate A-5 in Appendix A of this report contains an image of the location of the Wonsit Facility and mapped wetlands of the surrounding area. Based on a review of the maps, the proposed RNI Landfill cell is not located in a wetland. Further investigation into wetlands was also conducted during the Biological Assessment of the facility and determined that the proposed landfill contains no permanent water or wetlands. More details of this assessment are described in section 1.6 of the Engineering Technical Report and the Biological Assessment report in Appendix G.

1.5 LAND USE COMPATIBILITY

Plate A-3 shows the location standards requested for this permit application including existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 feet of the facility boundary. No parks, monuments, recreation areas or wilderness areas were identified within 1000 ft of the facility boundary. A single property owner was identified in a record search of the Uintah County Records property ownership database. The owner of the property was notified at the time of the original permit application and notifications are not required for a permit modification according to representative with DWMRC. The site has operated as a wastewater disposal facility for 15 years and any landowners nearby are likely aware of the nature of this facility.

There is one water-right point of diversions located within 2000 feet of the facility. The water right is for surface water and is identified as Water Right 49-1645. There are no private or public wells within 2000 feet of the facility.

The nearest airport is in Vernal, Utah approximately 24 miles North of the proposed landfill.

1.6 ECOLOGICALLY SENSITIVE AREAS

As required in R315-302-1(2)(a)(ii) no new facility shall be in ecologically and scientifically significant natural areas, including wildlife management areas and habitat for threatened or endangered species as designated pursuant to the Endangered Species Act of 1982. A survey of the RNI facility was conducted by Dr. Lindsey Nesbit on February 7, 2020 to assess the ecological attributes of the facility and surrounding area. Dr. Nesbit's letter is included in Appendix G of this permit application. The results of this survey

revealed that there is no primary suitable habitat for threatened or endangered species that may occur in near the area of the facility. The Uinta Hookless Cactus exists in the surrounding area, but the area proposed for the landfill is not designated as critical habitat. If any of the listed species in Dr. Nesbit's report is encountered on the facility in the future, RNI will contact the Utah Ecological Services Field Office for species identification and preservation.

2.0 ENGINEERING REPORT

2.1 CELL DESIGN

The new proposed cell of the Wonsit Landfill will consist of a single cell that will be designed and constructed using the existing layout of Ponds 6 of the wastewater disposal facility. The permit drawings in Appendix B show the proposed location in relation to the remaining site and surrounding land features. The pond has historically been used as produced water evaporation pond. The existing Pond 6 is approximately 509 feet long and 547 feet wide across the top. The pond is also approximately 12 feet deep with 3:1 (horizontal: vertical) interior slopes and exterior slopes.

Based on our engineering assessment, many of the pond features can be used to meet the E&P landfill requirements as presented in R315-303. Details of the existing features will be presented in subsequent sections of this report.

2.2 GEOHYDROLOGICAL ASSESSMENT

2.2.1 Regional Geology

As noted previously, the Wonsit facility is located approximately 25 Miles South of Vernal, Utah and approximately 9 miles east of the confluence of the White and Green Rivers. The facility is south of the Uinta Mountains that began uplifting in the Cretaceous, about 66 million years ago (Ma) and continued till the Eocene about 37 Ma (Hintze, 1988). Topographic basins formed on the north and south of the Uinta Mountains eventually accumulating up to 15,000 ft of sediment (Bradley, 1925; Fouch, 1985).

During the early Tertiary, these basins filled with sediments from alluvial, fluvial, and lacustrine deposits. The strata deposited in these alluvial (floodplain and delta) and inter fingered lacustrine (lake) deposits, are referred to as the Colton and Wasatch Formations. During this same time large freshwater lakes (Lake Flagstaff and Lake Uinta) occupied the Uintah basin. The depositional environment in and around these lakes consisted of open to marginal lacustrine and the rocks deposited in these environments are referred to as the Green River Formation. The Uinta and Duchesne formations are largely alluvial deposits that overlie the Green River formation and were in place by the end of the Oligocene (Hintze, 1988). The landscape during the Holocene has continued to be incised by streams as well as some glacial outwash deposits from the Uinta Mountains (Bryant, 1992).

2.2.2 Local Geology

The RNI facility is in the central portion of the Uinta basin. The facility is underlain by the Member C of the Uinta Formation (Tuc) and Mixed Alluvium and Colluvium deposits (Qac) (Plate A-3). The proposed landfill cell is located on the mapped Alluvium and Colluvium deposits. The Qac deposits are described as unconsolidated mud, silt, sand, and gravel in intermittent stream drainages. This is consistent with observations from site visits. The Tuc is an Eocene unit that consists of varicolored lithic Shale, mudstone, claystone with minor amounts of sandstone (Sprinkle, 2007).

2.2.3 Facility Soils

The observed soils of the facility are consistent with the description of the local surficial geology. Sample obtained by GeoStrata were tested for grain size distribution, Plasticity Index and permeability. Soils were classified by GeoStrata as Silty Sandy soils and Lean Clays with sand. GeoStrata performed backpressure permeability tests on two samples of the Lean Clay soils and the permeability of the site soils range from 1.34×10^{-7} cm/sec to 5.38×10^{-9} cm/sec. Results of lab testing are presented in Appendix C of this application.

2.2.4 Evaluation of Bedrock

The proposed landfill cell is underlain primarily by mixed Alluvium and Colluvium deposits (Qac). These deposits are likely less than 30 ft thick and due to the close proximity to observed surficial bedrock the landfill may also be underlain with the Member C of the Uinta Formation (Tuc). Six (6) test pits were advanced in the vicinity of the proposed landfill and no bedrock was encountered. The test pits were excavated 3 to 6 ft below the ground surface.

GeoStrata will advanced three borings in the vicinity of the proposed Landfill impoundment (Plate A-6) in an effort to characterize the geology of the site and install groundwater monitoring wells.

2.2.5 Ground Water

Three monitor wells are proposed for the landfill cell. Plate A-6 shows the locations of the proposed monitor wells. These wells will be used for characterizing the groundwater if encountered. These wells will be completed as the landfill modification is finalized by the DWMRC. An existing monitoring well is located east of the landfill cell and is completed to 25 ft below the ground surface. This well was measured multiple times in the winter and summer months and no water has been observed in the well. This well is identified as Well 1 and is presented on plate A-6.

Based on the geographic setting near surface ground water if present would likely flow to the South towards the White River. However Geologic Structure measurements show that bedrock in the general vicinity is near horizontal (Sprinkles 2007). No groundwater has been observed in well 1 at the Wonsit facility, groundwater likely greater than 5-feet below the lowest portion of the proposed landfill.

2.2.6 Surface Water

There are no mapped springs in the 7.5-minute USGS topographic map. As previously discussed, there are multiple ephemeral streams that are on or near the facility and there appears to be no perennial streams or water sources on site or within 2000 of the facility. A map locating these seasonal surface water drainages is provided in Appendix A as plate A-3. Landfill related activities are not expected to impact these drainages. According to the NOAA climate data online the average total annual rainfall for the general area of the landfills is approximately 9.31 inches.

2.2.7 Groundwater and Surface Water Monitoring Plan

Groundwater has not been encountered at the subject site in the single existing well. Three additional monitor wells are planned for construction as the modification is processed and finalized by DWMRC. If groundwater is encountered in the wells, RNI proposes to sample groundwater from the three monitor wells on a semiannual basis. Water will be analyzed for the following analytes as required in R315-308-4:

- Heavy Metals including Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc
- Inorganic Constituents including Ammonia, Carbonate/Bicarbonate, Calcium, Chemical Oxygen Demand (COD), Chloride, Iron, Magnesium, Manganese, Nitrate, pH, Potassium, Sodium, Sulfate, Total Dissolved Solids (TDS), Total Organic Carbon (TOC)
- Acetone, Acrylonitrile, Bromochloromethane, Bromodichloromethane, Bromoform, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Dibromochloromethane, 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, 1,2-Dichlorobenzene (ortho), 1,4-Dichlorobenzene (para), trans-1,4-Dichloro-2-butene, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2-Hexanone, Methyl bromide, Methyl chloride, Methylene bromide, Methylene chloride, Methyl ethyl ketone, Methyl iodide, 4-Methyl-2-

pentanone, Styrene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethylene, Trichlorofluoromethane, 1,2,3-Trichloropropane, Vinyl acetate, Vinyl Chloride

- Gasoline Range Organics (Method SW-846 8260C)

As required in R315-308-2(8) RNI will use a statistical method for determining whether a significant change has occurred as compared to background. To establish a background range of groundwater constituents, RNI will use the procedure as required in R315-308-2(5)(a) where eight independent samples will be collected from the upgradient well and four independent samples will be collected from down gradient wells. This sampling to establish background will occur in the first year of the landfill operation. Based on the sampling results after the first year, the 95% upper confidence interval will be calculated for each constituent. Resulting data will be normally distributed and will assume homoscedasticity.

During operations of the landfill semiannual samples will be collected and results of each constituent will be compared using a parametric analysis of variance. If concentrations of a constituent are greater than the 95% confidence interval, it will be considered an outlier and will be further evaluated to determine if it is a normal fluctuation in the groundwater or if it is a result of possible leachate or other contaminated water from the water disposal facility. A report of the data and outliers will be provided to the division and an appropriate response will be determined.

2.3 SLOPE STABILITY

GeoStrata has completed a geotechnical investigation for the proposed conversion of Pond 6 into a landfill cell for the Wonsit Landfill facility. Information concerning the nature of the improvements and the stability of proposed slopes of the landfill are discussed in a letter to RNI that is also provided in this application. The letter is provided in Appendix C. The results of the slope stability report have shown that the existing slopes of the landfill embankments and the future design slopes for the landfill waste are suitable for construction and use as a landfill.

2.4 EMBANKMENT AND LINER CONSTRUCTION

The existing embankments and liner were constructed in 2005. Records relating to the quality of the construction of the embankments were not found by DOGM. Permit

documentation is included in Appendix D. Results of our slope stability analysis have indicated that the existing embankments are suitable for use as the proposed Landfill. Results of the liner integrity survey conducted in December 2020 indicate that there are no holes in the liner at the time of the survey. Results of the integrity survey are proved in Appendix D

2.5 STORM WATER MANAGMENT

The original construction of the evaporation ponds is located away from existing drainages so that storm water would have minimal impact on the pond embankments. With the modified use of the pond embankments for landfill, run-on storm water is diverted around the embankments to minimize liquids admitted to the active landfill area and would meet the requirement of R315-303-3(c). The storm water is also diverted around the proposed staging area for landfill waste.

To minimize run-off waters from the active areas of the landfill as required by R315-303-3(d), the landfill has been designed to control run-off waters from the active area of the landfill resulting from a maximum flow of a 25-year storm. Once the landfill capacity has exceeded the height of the existing embankments, run-off water from the landfill will be diverted into the existing secondary containment basin located south of the proposed landfill. The secondary containment basin has a capacity of at least 440,000 Cubic Feet or 10.2-acre feet. The estimated run-off volume of water from the landfill in a 25-year storm event is approximately 15,500 cubic feet (0.35-acre feet) of run-ff. The volume of the secondary containment basin exceeds the potential 24-hour run-off volume of a 25-year storm event. Run-off storm water from a 25-year storm event will remain in the containment basin and will not be released off-site.

Run-off of storm waters was estimated using a site water balance calculation. This calculation was based on the soils and run-off curve number. Site soils are classified as Herbaceous soil that are in poor to fair hydraulic condition. Based on the National Resources Conservation Service (NRCS) the precipitation total for a 24-hour 25-year storm event is 1.75 inches. Using the curve number of 88 the estimated run-off is 0.77 inches.

3.0 CLOSURE PLAN

3.1 CLOSURE SCHEDULE

The Wonsit landfill cell will be closed in a single operation that includes the final grading of the waste material and the placement of the final cover. The expected duration of the land fill operation is approximately 6 years at a 10% growth rate. Sixty days prior to the expected final receipt of waste, RNI will notify the division of their intent to begin closure operations. RNI will begin its closure operations after the final receipt of waste is obtained. It is anticipated that the closure operation will take place over an anticipated duration of 90 to 120 days. During this period the landfill cell will be graded, covered and surveyed. As-built plans will be generated for reference for the final inspection by the division.

3.2 DESIGN OF FINAL COVER

The final cover will consist of two soil layers. The lower layer will consist of a compacted clay soil liner which will be overlain by an upper layer of soil that will be seeded with native grasses. The construction of the lower layer portion of the final cover will be an Alternative Design that will achieve equivalent requirements as the Standard Design as prescribed in R315-303-3(4)(c)(i). The upper layer will follow the Standard Design requirements as explained in R315-303-3(4)(a)(ii). Cover soils will be constructed from soils that are available at the Wonsit Disposal site. All testing and calculations are based on samples of the native soils at the site.

The Utah regulation R315-303-3(4)(c)(i) requires that the alternative final cover of a soil liner must achieve an equivalent reduction in infiltration as achieved by the standard design. Standard design calls for at least 18 inches of compacted soil, or equivalent, with a permeability of 1×10^{-5} cm/sec or less, or equivalent. On site Soils used for the final cover are far less permeable than this requirement. The proposed lower layer will use 6 inches of clayey soils that have a permeability of no greater than 1×10^{-6} cm/s. Based on engineering calculations 6 inches of soils with a permeability no more than 1×10^{-6} cm/sec is equivalent to 18 inches of soils that are permeable up to 1×10^{-5} cm/second. The equivalency is based on calculated infiltration rates. These calculations are included as part of our mathematical model included in Figure 1 and explained in the following paragraph.

As part of the requirements of an alternative final cover design, expected performance of the alternative cover has been documented by use of a mathematical model as required in R315-303-3(4)(d). Line item 3 of the model includes a hydraulic conductivity test that was performed on a sample of cover soils obtained from the Wonsit facility. The lab test was performed in accordance with ASTM D5084 method C that resulted in a lab measurement

of 1.34×10^{-7} cm/second. This result exceeds minimum requirement of 1×10^{-5} cm/second of the standard design, i.e., the soil is less permeable. The mathematic model also includes other lab tests on the soil that demonstrate that the soil is non-dispersive (see line 1 of calculations). Lines 5 through 15 include the model that demonstrates the performance of the soils used for the alternative cover. Climatic conditions are referenced in line Item 5 and includes the normal precipitation and wettest 5 years on record as required in R315-303-3(4)(d)(i) and (ii). Using this data, we then calculated the annual soil erosion rate using the Revised Universal Soil Loss Equation that is commonly used by the EPA and NRCS. Using this equation, we are able to show that the proposed cover design would lose annually 0.009 inches of soil over the entire cap (line 14). Applying a factor of safety of 10, the unattended and unrepaired cover would lose half of the 6 inches of soil after 30 years. It is our engineering opinion that this alternative design is equivalent to the Standard Design.

In addition, R315-303-3(4)(a)(ii) also requires that a second layer of soil is to be use for reducing erosion consisting of at least 6 inches of soil capable of sustaining vegetative growth placed over the compacted soil cover and seeded with grass, other shallow rooted vegetation, or other native vegetation. Our proposed design follows the standard design requirements in that the compacted clay liner soils will be covered with a second soil layer that will be a minimum of 6 inches of soil as prescribed in R315-303-3(4)(a)(ii). This soil layer will be capable of sustaining vegetative growth and will be seeded with native shallow root vegetation or native vegetation to minimize erosion of the final cover. It is our understanding that locally available topsoil suitable for vegetative growth may be readily available to be utilized at the time of closure. These soils may be tested for organic content, permeability and cohesion prior to use as final cover soil.

The final cover for the landfill cell will be graded to a slope no steeper than 3:1 around the outer perimeter. The top elevation of the landfill cap will be rectangular and will have a slope of no less than 2%. To control the run-off of storm water and minimize erosion of the final cover material, it is intended that the final cover soils be seeded with native grasses and use other erosion controls as may be needed. The final cover may be reseeded as needed during the post closure phase of the landfill. The final cover plans of each landfill cell are included in Appendix B of this permit application.

Figure 1:

Alternative Closure Cap Equivalency to Standard Design prescribed by Rule R315-303-3(4)(c)
Infiltration and Erosion Equivalency

RN Industries proposes a six-inch thick Alternative Final Cover in place of Standard Design specified in Rule **R315-303-3 (4) (a) (i)**. Because Rule **R315-303-3(4)** does not provide a quantitative erosion standard, the equivalency of proposed Final Cover erosion will be demonstrated by showing geotechnical testing for and calculating annual erosion of the Alternative Final Cover Design. The following uses mathematical model based on the geotechnical testing to demonstrate equivalency as required in **R315-303-3(4)(d)**. This model will demonstrate that the alternative cover achieves an equivalent infiltration rate and protection from erosion as required in **R315-303-3(4)(c)(i and ii)**.

The Alternative Final Cover will be constructed from compacted soil native available in sufficient quantity at the Wonsit Disposal Site.

The following summary of soil test lab results, tables and narrative outline various geotechnical and agronomic characteristics of the Alternative Final Cover Design. These characteristics were chosen because they are parameters used both for geotechnical design of the Landfill and for USEPA/NRCS/USDA Revised Universal Soil Loss Equation.

References

- 1 EPA Stormwater Phase II Final Rule - EPA has updated its Rainfall Erosivity Factor Calculator to correct known problems and to use updated data from the Natural Resources Conservation Service's (NRCS) Revised Universal Soil Loss Equation, Version 2 (RUSLE2) database, 2012-09-26
- 2 Wischmeier, W. H., and Smith, D.D. 1978. Predicting rainfall erosion losses -- a guide to conservation planning. U.S. Department of Agriculture, Agriculture Handbook No. 537.
- 3 Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, coordinators. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE). U.S. Department of Agriculture, Agriculture Handbook No. 703, 404 pp.

Qualitative and Quantitative Effect of Erosion Computation Parameters Affecting RN Industries Alternative Landfill Cap Design					
Line	Erosion Computation Parameter	Alternative Design Final Cover			
1	ASTM D4647, Standard Test Methods for Identification and Classification of Dispersive Clay Soils Tests performed on sample compacted to optimum Proctor Density confirmed Bluebell soil of Interest is Non-Dispersive.	Soils were not tested for Dispersiveness			
2	ASTM D1557 - 12e2, Modified Test Methods for Laboratory Compaction Characteristics.	Proctor optimum is 110 lb/cf at 16.2% moisture.			
3	ASTM D5084 - Method C, Standard Test Methods for Measurement of Hydraulic Conductivity. Lab measured Conductivity 1.34 X 10 ⁻⁷ cm/sec	Site soil used to construct the Alternative Design was selected and compacted to its Standard Proctor Optimum Density. It had a lab measured K value of 1.34X 10 ⁻⁷ cm/sec. The lab measured conductivity is lower than 3.33 X 10 ⁻⁶ cm/sec required for Alternative Design infiltration equivalency. This meets the requirement of R315-303-3(4)(c)(i) .			
4	ASTM C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve.	Classification	Sieve Size	Sieve Size (in)	Passing (%)
		Cobble	100.0 mm	4"	100
			75.0 mm	3"	100
		Very Coarse Gravel	50.0 mm	2"	100
			37.5 mm	1.5"	100
		Coarse Gravel	25.0 mm	1"	100
			19.0 mm	3/4"	100
		Medium Gravel	12.5 mm	1/2"	100
		Fine Gravel	9.5 mm	3/8"	100
			4.75 mm	No. 4	100
		Very Fine Gravel	2.36 mm	No. 8	99
		Coarse Sand	2.00 mm	No. 10	99
			1.18 mm	No. 16	99
		Medium Sand	0.60 mm	No. 30	98
			0.43 mm	No. 40	96

	Fine Sand	0.30 mm	No. 50	94
	Very Fine Sand	0.15 mm	No. 100	80
	Silt & Clay	0.08 mm	No. 200	67

Five Wettest Year Total Precipitation & Average Annual Precipitation from USU Climatological Center for Vernal Station. Data used as required in R315-303-3(4)(d)(i) and (ii)					
5	9.31 Inches-Avg Annual Precip	Rank	Year	Precip	Ratio of Wettest Year to Average Year = 13.18 Inches / ##### = 1.42 To adjust Rainfall-Runoff Factor for the five wettest years, multiply Rainfall-Runoff Factor from NRCS Iso Erodant map by 1.42
		1	1938	13.18"	
		2	1941	14.78"	
		3	1983	11.47"	
		4	1997	12.01"	
		5	2016	13.03"	
6	The following calculation uses procedures and data from USDA Handbooks No. 537 and its later revisions used by EPA and NRCS. NRCS has updated the original research for Handbook No. 537 and 703. The equations are now listed as Revised Universal Soil Loss Equation or RUSLE. Both the original and ongoing research to update, calibrate and automate RUSLE calculations were performed by University of Indiana, College of Agriculture staff over the past 40 years.				
7	Rainfall/Runoff Factor (EI Parameter NRCS Fig 1)	= 10 from Fig 1, Isoerodant Map	R = 1.66 * 28 = 14 for 5 wettest Years		
8	Erodability Factor (NRCS Fig. 3 Nomograph)	using ASTM Gradation results	K = 0.56		
9	Topographic Factor (NRCS Slope-Length Nomograph)	Cap Slope = 3 on 1 or 33%	LS = 14		
10	Cover & Management Factor (NRCS Table 6)	using no cover and 80% mulch	S = 0.10		
11	Support Practice Factor (NRCS P Value limits for Contouring)	using 250 Ft slope length	C = 1.0		
12	Annual Soil Loss	A = R * K * LS * C (Tons/ Year)	A = 11.1 Ton/ Yr		
Erosion Equivalency					
13	Soil erosion equivalency is demonstrated by the applying the standard model for erosion assessment used by IIS EPA. It is based on the empirical Revised Universal Soil Loss Equation.				
Calculated Annual Soil Erosion					
Annual soil volume loss					
14	a.	The soil density determined by ASTM D4647 lab test is 126 Lb per CF			
	b.	The RUSLE equation estimates an annual soil loss of 11.1 Tons / Yr			
	c.	The corresponding volume of soil loss will be 176 CF / Yr			
	d.	Each proposed Landfill cap has a finished surface area of 241,000 SF			
	e.	The annual uniform soil loss over each entire cap will be 0.009 Inches			
Allowance for non-uniform soil loss and a reasonable Factor of Safety					
15	Applying a Factor of Safety of 10				
	The estimated uniform soil loss over the entire cap will increase to 0.1 Inch / Yr Unattended & unrepaired, the top half of the 6" thick cap has a life of about 30 Years				
Conclusions					
16	GeoStrata engineers submits that the above geotechnical tests showing non-dispersive soils and the subsequent erosion calculations support the claim of the equivalency of the proposed Alternative Design for Bluebell Landfill Cap to the Standard Cap Design prescribed in Rule R315-303-3(4)(a)(i and ii) . The infiltration rate in Line 3 and Erosion rate in Line 15 of this model demonstrate that the cover design meets the rerequirements of R315-303-3(4)(c)(i and ii) . Line 3 demonstrates that the infiltration rate is less than the standard design. Line 15 shows that the cover after 20 years without any maintenance will have only lost 6 inches of soil. The post closure plan will have cover soils replaced.				

3.3 CAPACITY OF LANDFILL

The estimated capacity of the Wonsit landfill cell up to the final cover is 223,107 cubic yards. With the assumptions of an average daily rate of 60 cubic yards of waste delivered at the site and half the waste being mixed with additional material and 10% growth every year, the combined life of the two landfills is estimated to be at least 6 years. A table with the projected duration for each landfill is provided in appendix E as Plate E-1. When the landfill cell reaches capacity limits RNI will initiate the closure process and notify the Division in advance as required.

3.4 FINAL INSPECTION

After the completion of the final cover, the final inspection of the landfill cell will be conducted by officials from DWMRC. RNI will notify the division of the anticipated date of completion and make arrangements for scheduling the inspection.

4.0 POST CLOSURE CARE

Immediately after the completion of construction for the final cover of the landfill cell, the post closure care plan will be implemented. As required in R315-302-3(5) the post closure care activities will take place for 30 years or as long as the Director determines is necessary for the facility or unit to become stabilized and to protect human health and the environment. A licensed engineer with the state of Utah will direct the post-closure care of the facility and will provide RNI with recommendations to properly maintain the landfill site and prevent any release of harmful substances. The engineer will also provide the division with documentation if he determines that the site is safe to reduce or discontinue site monitoring prior to the end of the 30-year period.

4.1 POST CLOSURE CARE PLANS

During the post closure period the following activities will take place:

Site Monitoring: Portions of the Wonsit facility are operated 24 hours a day, 7 day a week. RNI personnel may be onsite daily to monitor activities at the facility and restrict access to the landfill. Access to the landfill will be restricted with fencing and locked gates at the roadway entrance. Signs will be posted advising of the potential dangers associated with the landfill. Only authorized personnel of RNI will have access to the landfill site.

On a quarterly basis the landfill cover will be inspected to check for rutting and depressions that could result in rapid erosion. If rutting or depressions in the cover are identified, they will be repaired by grading and seeding the surface. Slopes of the final cover will also be inspected and maintained. RNI will check that a 2% slope will be maintained on the top of the cover and a 3:1 slope will be maintained around the perimeter of the landfill.

Run-off water from the final cover will be directed into the existing drainages to the south of the landfill cell. RNI will on a quarterly basis inspect the run-off collection system and ensure that they are properly diverting water into the existing storm water drainages. Repairs will be made as needed.

Surface and Ground Water Monitoring: Samples will be collected of groundwater from the monitoring wells on site. No samples of surface waters will be collected because there are no observed streams, springs, or other surface waters at the site of the proposed landfill. All samplings will be completed by a Utah certified groundwater sampler. Sampling will take place every six months during the post-closure care period. The water will be field tested for pH, water temperature, and water conductivity. Samples will also be collected for lab analysis, testing for heavy metals and organic constituents will be conducted as required in R315-308-4. The results of the water sample testing will be recorded and

statistically analyzed for significant changes in concentrations of constituents utilizing a parametric analysis of variance (ANOVA). If significant changes are detected, then RNI will follow the guidelines in R315-308-2(13).

4.2 RECORD OF TITLE, LAND USE, ZONING

The Uintah County Recorder will be notified during the closure period of the completion of the disposal site. The county recorder will be provided with documentation and plats of the location of the disposal site. Notification of the closure, and location of the land fill will also be sent to the county recorder and zoning changes will be made if necessary. Documentation of the history of the landfill will permanently appended to the title of record and land use restrictions will be put in place.

4.3 POST CLOSURE CONTACTS

The point of contact during the post closure care period for this facility is Austin Weddle. His contact information is provided below:

Austin Weddle (435) 790-6690

5.0 FINANCIAL ASSURANCE

5.1 CLOSURE COSTS

The landfill cell at the Wonsit facility is planned to close in a single operation when the waste reaches final design grade. The closure costs for the Wonsit landfill is based on the cost to construct the final cover. The final cover construction is to include 6 inches of clay liner placement, the placement and grading of the 6-inch topsoil cover, and the seeding of topsoil. Detailed financial assurance cost estimates are presented in Appendix F of this permit application.

5.2 POST CLOSURE CARE COSTS

Post closure care of inactive sections of the landfill will consist of maintaining the integrity of the final and vegetative covers. Any areas subject to erosion will be corrected and appropriate measures will be implemented to identify and eliminate the run-on source. No active or technical devices are proposed for at the RNI Wonsit Landfill. Best management practices will be implemented to minimize the infiltration and assure the integrity of the run-on/run-off system. Evaluation of the system will be made during the quarterly inspections and corrective measures if any will be implemented. All run-on and run-off from events smaller than the 25-year storm will be controlled through drainage design.

Leachate collection devices are proposed for the facility. The closed landfill will be inspected as part of the quarterly reviews performed by the landfill operator. The closed landfill will also be inspected as a part of the in-depth annual inspection. Any deficiencies will be repaired as soon as practical. For those failures which jeopardize the environmental integrity of the facility or permit, the uncontrolled infiltration of significant amounts of moisture, corrective measures will be initiated immediately.

Ground water monitoring is also proposed for the post closure care. Ground water will be sampled biannually and tested for the listed constituents provided in section 2.2.6 of this report. The results of this testing will be included in the in-depth annual inspections report.

Post closure care costs are estimated by the cost of maintaining the previously described activities for a 30-year period. A detailed financial assurance cost is provided in Appendix F.

5.3 FINANCIAL ASSURANCE

This section of the permit describes compliance with Subsection R315-309-2, Financial Assurance of the Administrative Rules for Solid Waste Permitting and Management. Cost estimates consider the most expensive option during the period and are based on a third-party performing closure and post closure care.

The RNI team complies with financial assurance test requirements for private entities based on 1) acceptable bond ratings, and 2) financial statements prepared in conformity with generally accepted accounting principles for private entities audited by independent CPA's. Financial Assurance funds will be put in place as required by the Division after the application process is complete.

WORKS CITED

- Bryant, B. (1992). Geologic map of the east half of the Salt Lake City 1 x 2 quadrangle (Duchesne and Kings Peak 30 x 60 quadrangles), Duchesne, Summit, and Wasatch Counties, Utah, and Uinta County, Wyoming. USGS.
- Bouwer, H. and R.C. Rice, 1976, A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, *Water Resources Research*, vol. 12, no. 3, pp. 423-428.
- Hintze, L. F. (1988). *Geologic History of Utah*. Brigham Young University.
- National Wetlands Inventory*. (2019). Retrieved 2019, from U.S. Fish and Wildlife Service: <http://www.fws.gov/wetlands/Data/Mapper.html>
- Quaternary Fault and Fold Database of the United States*. (2006). Retrieved 2019, from USGS: <http://earthquake.usgs.gov/hazards/qfaults/>



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March 17, 2021

Utah Division of Waste Management and Radiation Control
Attention: Mr. Brian Speer, Solid Waste Program Manager
195 North 1950 West
Salt Lake City, UT 84114-4880

Bluebell Disposal Final Cover Design Requirements
GeoStrata Project No. 524-081

**RE: Response to Comments
Wonsit Class IIIb Landfill Permit Modification**

Mr. Speer:

In a letter dated March 3, 2021, the Utah Division of Waste Management and Radiation Control reviewed the Wonsit Class IIIb Landfill Permit Modification. Several comments were included in the letter and that they should be addressed, and a correct version be provided to the Division. Attached to this letter is the corrected version of the application. All comments have been addressed in the updated permit modification documents.

Comment 8 in the letter requested that the closure costs for inspections, report, groundwater monitoring and topsoil be adjusted for inflation. Appendix F has been updated to include these cost adjustments. Comment 8 also included the following question: *Why has the topsoil grading been reduced to 19,111 SY from them 35,300 SY reported from a previous estimate?*

Response: The costs presented in Appendix F are for Cell 2 of the Wonsit Landfill. The 35,300 SQ YD of topsoil is the estimate for Cell 1.

We look forward to having the review of the permit application completed soon. Please feel free to contact us with any further questions at 801-501-0583.

Respectfully submitted,

Jon Peaden
Environmental Scientist