



Deq submit <dwmrcsubmit@utah.gov>

# IWM Pinnacle Fuels Landfill Permit Modification

1 message


**Jon Peaden** [redacted] Wed, Jul 20, 2022 at 2:22 PM  
To: dwmrcsubmit@utah.gov, Doug Taylor <dwtaylor@utah.gov>, Russell Russell Sorensen [redacted] Mike Vorkink [redacted], Nate Robinson [redacted]

Doug,

Attached is the permit modification application for the IWM Pinnacle Fuels Landfill (Permit #2001). Please let me know that you received it and were able to access the document Please contact me if you have any question s

--  
Regards,

Jon Peaden, Environmental Regulatory and Compliance Specialist

cid:image001.jpg@01C991DD.D85C0900  
14425 Center Point Dr.  
Bluffdale, UT 84065  
Office: (801) 501 0583  
[redacted]  
<https://www.geostrata-llc.com>

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## 2 attachments

 **image001.jpg**  
3K

 **Pinnacle Fuel Landfill Permit Modification.pdf**  
12727K

**Integrated Water Management Pinnacle Fuels Landfill  
Permit Modification**

Prepared By:



GeoStrata Job No. 751-099

July 20, 2022

Prepared for:

**Division of Waste Management and Radiation Control  
Utah Department of Environmental Quality  
PO Box 144880  
Salt Lake City, Utah 84114-4880**

Attention: Dou Hansen, Director

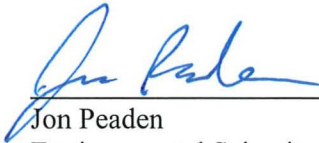
Prepared for:

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


**Landfill Permit Modification**

GeoStrata Job No. 751-099

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

July 20, 2022

**PERMIT MODIFICATION**  
**FOR**  
**INTEGRATED WATER MANAGEMENT PINNACLE FUELS LANDFILL**  
**Permit #2001**  
**DUCHESNE COUNTY, UTAH**

**Submitted by:**

**GeoStrata**

14425 SOUTH CENTER POINT WAY

BLUFFDALE, UTAH 84065

**July 20, 2022**

## **INTRODUCTION**

This application and technical report is an application to modify the existing permit under the Division of Waste Management and Radiation Control (DWMRC). The existing permit is the Integrated Water Management Pinnacle Fuels Iol and Gas Exploration & Production (E&P) landfill with a Permit number #2001 and was issued on September 11, 2020. This landfill has been constructed and is in operations at this time. The intent of this modification is to expand the landfill disposal area directly north of the existing landfill.

The facility is located approximately 6.5 miles north of Duchesne, Utah. The area to be permitted is located in Sections 6 of Township 3 South, Range 4 West of the Uintah Special Base and Meridian in Duchesne County, Utah. The location of the facility in relation to surrounding areas is presented on Plate A-1 in Appendix A.

This is a permit modification to the existing #2001 permit. Information provided in the original permit application is still applicable with the expansion of the existing landfill cell. This permit modification is segregated into 3 distinct parts, Part I includes the application form provided from the Utah Division of Waste Management and Radiation Control. 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 APPLICATION TO OPERATE AN E&P LANDFILL  
FOR  
INTEGRATED WATER MANAGEMENT  
DUCHESNE COUNTY, UTAH**

**PART I – GENERAL INFORMATION**



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

Office Location  
195 North 1950 West  
Salt Lake City, Utah 84116

Phone (801) 536-0200  
Fax (801) 536-0222  
[www.deq.utah.gov](http://www.deq.utah.gov)

# Utah Division of Solid and Hazardous Waste Solid Waste Management Program

## 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 Solid and Hazardous Waste  
Utah Department of Environmental Quality  
PO Box 144880  
Salt Lake City, Utah 84114-4880

(Note: When the Director has determined that the application is complete, two clean copies of the application as determined complete must be submitted to the Director. One copy is to be available at the Division offices and one copy will be available at a site near the facility for public viewing during the public comment period.)

## Utah Class III Landfill Permit Application Form

| <b>Part I General Information</b> APPLICANT: PLEASE COMPLETE ALL SECTIONS.                                    |   |                             |   |  |                |
|---|---|-----------------------------|---|--|----------------|
| <b>I. Landfill Type</b>   | <input type="checkbox"/> Class IIIa<br><input checked="" type="checkbox"/> Class IIIb | <b>II. Application Type</b> | <input checked="" type="checkbox"/> New Application<br><input type="checkbox"/> Renewal Application | <input type="checkbox"/> Facility Expansion<br><input type="checkbox"/> Modification |                |
| For Renewal Applications, Facility Expansion Applications and Modifications Enter Current Permit Number _____ |   |                             |   |  |                |
| <b>III. Facility Name and Location</b>  |   |                             |   |  |                |
| Name of Facility<br><b>Pinnacle Fuels Secure Storage</b>  |   |                             |   |  |                |
| Site Address (street or directions to site)   |   |                             |   | County<br><b>Duchesne</b>  |                |
| City <b>Duchesne</b>  |   | Zip Code                    |   | Telephone  |                |
| Township <b>3 S</b>   | Range <b>4 W</b>  | Section(s) <b>6</b>         | Quarter/Quarter Section <b>SW</b>   | Quarter Section <b>NE</b>  |                |
| Main Gate Latitude  | degrees 40  | minutes 15                  | seconds 6.134   | Longitude  | degrees -110   |
|   |   |                             |   | minutes 22   | seconds 36.359 |
| <b>IV. Facility Owner(s) Information</b>  |   |                             |   |  |                |
| Name of Facility Owner<br><b>Nate Robinson</b>  |   |                             |   |  |                |
| Address (mailing)<br><b>PO Box 430</b>  |   |                             |   |  |                |
| City <b>Altamont</b>  |   | State <b>Utah</b>           | Zip Code <b>84001</b>   | Telephone <b>435-454-4646</b>  |                |
| <b>V. Facility Operator(s) Information</b>  |   |                             |   |  |                |
| Name of Facility Operator<br><b>Nate Robinson</b>   |   |                             |   |  |                |
| Address (mailing)<br><b>PO Box 430</b>  |   |                             |   |  |                |
| City <b>Altamont</b>  |   | State <b>Utah</b>           | Zip Code <b>84001</b>   | Telephone <b>435-454-4646</b>  |                |
| <b>VI. Property Owner(s) Information</b>  |   |                             |   |  |                |
| Name of Property Owner<br><b>Nate Robinson</b>  |   |                             |   |  |                |
| Address (mailing)<br><b>PO Box 430</b>  |   |                             |   |  |                |
| City <b>Altamont</b>  |   | State <b>Utah</b>           | Zip Code <b>84001</b>   | Telephone <b>435-454-4646</b>  |                |
| <b>VII. Contact Information</b>   |   |                             |   |  |                |
| Owner Contact <b>Nate Robinson</b>  |   |                             | Title <b>Managing Director</b>  |  |                |
| Address (mailing)<br><b>PO Box 430</b>  |   |                             |   |  |                |
| City <b>Altamont</b>  |   | State <b>Utah</b>           | Zip Code <b>84001</b>   | Telephone <b>435-454-4646</b>  |                |
| Email Address <b>nrobinson@ie-cos.com</b>   |   |                             | Alternative Telephone (cell or other)   | <b>435-315-5946</b>  |                |
| Operator Contact <b>Nate Robinson</b>   |   |                             | Title <b>Managing Director</b>  |  |                |
| Address (mailing)<br><b>PO Box 430</b>  |   |                             |   |  |                |
| City <b>Altamont</b>  |   | State <b>Utah</b>           | Zip Code <b>84001</b>   | Telephone <b>435-454-4646</b>  |                |
| Email Address <b>nrobinson@ie-cos.com</b>   |   |                             | Alternative Telephone (cell or other)   | <b>435-315-5946</b>  |                |
| Property Owner Contact <b>Nate Robinson</b>   |   |                             | Title <b>Managing Director</b>  |  |                |
| Address (mailing)<br><b>PO Box 430</b>  |   |                             |   |  |                |
| City <b>Altamont</b>  |   | State <b>Utah</b>           | Zip Code <b>84001</b>   | Telephone <b>435-454-4646</b>  |                |
| Email Address <b>nrobinson@ie-cos.com</b>   |   |                             | Alternative Telephone (cell or other)   | <b>435-315-5946</b>  |                |



## Utah Class III Landfill Permit Application Form

| <b>Part I General Information (Continued)</b>  |  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
|--|--|---|---------------|--|--------------------------|--------------------------|--|--------------------------|--------------------------|---|--------------------------|--------------------------|----------------------------------|--------------------------|--------------------------|-----------------------------------|--------------------------|--------------------------|--------------------------------------|--------------------------|--------------------------|--|--|--------------------|-----|-------|--------------------|-----|-------|-----------------|--|--|------------|---|--|------------------|---------|--|-----------|---------|--|
| <b>VIII. Waste Types</b> (check all that apply)  | <b>IX. Facility Area</b>                                       |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <input type="checkbox"/> All types of non-hazardous industrial waste generated by the facility <b>OR</b> the following specific waste types<br><table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Waste Type</td> <td style="width: 33%;">Combined Disposal Unit</td> <td style="width: 33%;">Monofill Unit</td> </tr> <tr> <td><input type="checkbox"/> Construction &amp; Demolition</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Industrial</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" 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 type="checkbox"/> Other _____</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table> | Waste Type   | Combined Disposal Unit                                | Monofill Unit | <input type="checkbox"/> Construction & Demolition | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Industrial | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" 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 type="checkbox"/> Other _____ | <input type="checkbox"/> | <input type="checkbox"/> | <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">Facility Area.....</td> <td style="width: 10%; text-align: center;">161</td> <td style="width: 10%; text-align: right;">acres</td> </tr> <tr> <td>Disposal Area.....</td> <td style="text-align: center;">7.6</td> <td style="text-align: right;">acres</td> </tr> <tr> <td>Design Capacity</td> <td></td> <td></td> </tr> <tr> <td>    Years.....</td> <td style="text-align: center;">8</td> <td></td> </tr> <tr> <td>    Cubic Yards.....</td> <td style="text-align: center;">453,097</td> <td></td> </tr> <tr> <td>    Tons.....</td> <td style="text-align: center;">521,061</td> <td></td> </tr> </table> |  | Facility Area..... | 161 | acres | Disposal Area..... | 7.6 | acres | Design Capacity |  |  | Years..... | 8 |  | Cubic Yards..... | 453,097 |  | Tons..... | 521,061 |  |
| Waste Type   | Combined Disposal Unit   | Monofill Unit   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <input type="checkbox"/> Construction & Demolition   | <input type="checkbox"/>                                       | <input type="checkbox"/>                              |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <input checked="" type="checkbox"/> Industrial   | <input type="checkbox"/>                                       | <input type="checkbox"/>                              |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <input checked="" 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 type="checkbox"/> Other _____   | <input type="checkbox"/>                                       | <input type="checkbox"/>                              |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Facility Area.....   | 161  | acres   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Disposal Area.....   | 7.6  | acres   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Design Capacity  |  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Years.....   | 8  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Cubic Yards.....   | 453,097  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Tons.....  | 521,061  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Note: All waste types must be generated by the industry which owns the facility  |  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <b>X. Fee and Application Documents</b>  |  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Indicate Documents Attached To This Application <span style="float: right;"><input type="checkbox"/> Application Fee: Amount \$</span>   |  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <input checked="" type="checkbox"/> Facility Map or Maps   | <input checked="" type="checkbox"/> Facility Legal Description | <input checked="" type="checkbox"/> Plan of Operation |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <input checked="" type="checkbox"/> Ground Water Report  | <input checked="" type="checkbox"/> Closure Design             | <input checked="" type="checkbox"/> Waste Description |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| <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<br>_____<br>Russell Sorenson  |  | Title<br>Compliance Manager<br>Date<br>7-20-22        |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Name typed or printed<br>Russell Sorenson  |  | Address<br>PO Box 430                                 |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Email Address<br>rsorenson@ivm.utah.com  | Alternative Telephone (cell or other)<br>435-828-1251          |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Signature of Authorized Land Owner Representative (if applicable)<br>_____<br>_____  |  | Title<br><br>Date<br><br>                             |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Name typed or printed<br><br>  |  | Address<br><br>                                       |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Email Address<br><br>  | Alternative Telephone (cell or other)<br><br>                  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Signature of Authorized Operator Representative (if applicable)<br>_____<br>_____  |  | Title<br><br>Date<br><br>                             |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Name typed or printed<br><br>  |  | Address<br><br>                                       |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |
| Email Address<br><br>  | Alternative Telephone (cell or other)<br><br>                  |   |               |  |                          |                          |  |                          |                          |   |                          |                          |                                  |                          |                          |                                   |                          |                          |                                      |                          |                          |  |  |                    |     |       |                    |     |       |                 |  |  |            |   |  |                  |         |  |           |         |  |

## Utah Class III Landfill Permit Application Checklist

**Important Note:** The following checklist is for the permit application and addresses only the requirements of the Division of Solid and Hazardous Waste. Other federal, state, or local agencies may have requirements that the facility must meet. The applicant is responsible to be informed of, and meet, any applicable requirements. Examples of these requirements may include obtaining a conditional use permit, a business license, or a storm water permit. The applicant is reminded that obtaining a permit under the *Solid Waste Permitting and Management Rules* does not exempt the facility from these other requirements. Please take note of the heading of each section for the facilities that the section applies to.

An application for a permit to construct and operate a landfill is the documentation that the landfill will be located, designed, constructed, operated, and closed in compliance with the requirements of Utah Administrative Code R315-301 through 320 (*Utah Solid Waste Permitting and Management Rules*) and Utah Code Annotated 19-6-101 through 123 (*Utah Solid and Hazardous Waste Act*). The application should be written to be understandable by regulatory agencies, landfill operators, and the general public. The application should also be written so that the landfill operator, after reading it, will be able to operate the landfill according to the requirements with a minimum of additional training.

Copies of the *Solid Waste Permitting and Management Rules*, the *Utah Solid and Hazardous Waste Act*, along with many other useful guidance documents can be obtained by contacting the Division of Solid and Hazardous Waste at 801-536-0200. Most of these documents are available on the Division's web page at [www.hazardouswaste.utah.gov](http://www.hazardouswaste.utah.gov). Guidance documents can be found at the solid waste section portion of the web page.

When the Director has determined that the application is complete, submit two paper copies of the application as determined complete by the Director, and an electronic copy of the application.

### **Part II Application Checklist**

| <b>I. Facility General Information</b>   |                         |
|--|-------------------------|
| Description of Item  | Location In Document    |
| <b><i>1a. General Information For All Facilities</i></b>   |                         |
| Completed Part I General information   | General Report 1.1      |
| General description of the facility (R315-310-3(1)(b))   | General Report 1.1      |
| Legal description of property (R315-310-3(1)(c))   |                         |
| Proof of ownership, lease agreement, or other mechanism (R315-310-3(1)(c))   | General Report 2.0      |
| A demonstration that the landfill is not a commercial facility (see Utah Code Annotated 19-6-102(3) for definition of Commercial)        | General Report 1.3, 1.7 |
| Waste type and anticipated daily volume (R315-310-3(1)(d))   | General Report 1.3, 3.1 |
| Intended schedule of construction (R315-302-2(2)(a))   | General Report 3.1      |
| <b><i>1b. General Information for New Or Laterally Expanding Class III Landfills</i></b>   |                         |
| Documentation that the facility has met the historical survey requirement of R315-302-1(2)(f) (R315-304-4(1)(a) or R315-304-4(2)(a)(iv)) | General Report 1.8      |
| Name and address of all property owners within 1000 feet of the facility boundary (R315-310-3(2)(i))                                     | Appendix J              |
| Documentation that a notice of intent to apply for a permit has been sent to all property owners listed above (R315-310-3(2)(ii))        | Appendix J              |
| Name of the local government with jurisdiction over the facility site (R315-310-3(2)(iii))   | General Report 1.9      |

## Utah Class III Landfill Permit Application Checklist

| <b>I. Facility General Information</b>   |                             |
|--|-----------------------------|
| Description of Item  | Location In Document        |
| <b><i>Ic. Location Standards for New Class IIIa Landfills (R315-304-4(1))</i></b>  |                             |
| <b>Geology</b>   |                             |
| Geologic maps showing significant geologic features, faults, and unstable areas  | Eng Report 2.2.1,2.2.2, A-3 |
| Maps showing site soils  | Eng Report 2.2.1,2.2.2, A-3 |
| <b>Surface water</b>   |                             |
| Magnitude of 24 hour 25 year and 100 year storm events   | Eng Rerport 2.4             |
| Average annual rainfall  | Eng Rerport 2.4             |
| Maximum elevation of flood waters proximate to the facility  | Eng Rerport 1.3             |
| Maximum elevation of flood water from 100 year flood for waters proximate to the facility  | Eng Rerport 1.3             |
| <b>Wetlands</b>  |                             |
| <b>Ground water</b>  |                             |
| <b>Historic Preservation Survey</b>  |                             |
| <b><i>Id. Additional Location Standards for New Class IIIa Landfills Not On Waste Generation Site</i></b>  |                             |
| Land use compatibility (R315-304-4(1)(a))  | Eng Report 1.5              |
| Maps showing the existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 feet of the site boundary   | Eng Report 1.5              |
| Certifications that no ecologically or scientifically significant areas or endangered species are present in site area   | Eng Report 1.6              |
| List of airports within five miles of facility and distance to each  | Eng Report 1.5              |
| <b><i>Ie. Location Standards for New Class IIIb Landfills</i></b>  |                             |
| Floodplains as specified in R315-302-1(2)(c)(ii) (R315-304-4(2)(a)(i))   | Eng Report 1.3              |
| Wetlands as specified in R35-302-1(2)(d) (R315-304-4(2)(a)(ii))  | Eng Report 1.4              |
| The landfill is located so that the lowest level of waste is at least ten feet above the historical high level of ground water (R315-304-4(2)(a)(iii))   | Eng Report 2.2.4            |
| Historical Preservation Survey (R315-304-4(2)(a)(iv))  | General Report 1.8          |
| <b><i>If. Plan of Operations for All Class III Landfills (R315-310-3(1)(e) and R315-302-2(2))</i></b>  |                             |
| Description of on-site waste handling procedures and an example of the form that will be used to record the weights or volumes of waste received (R315-302-2(2)(b) And R315-310-3(1)(f))                           | General Report 3.2.2        |
| Schedule for conducting inspections and monitoring, and examples of the forms that will be used to record the results of the inspections and monitoring (R315-302-2(2)(c), R315-302-2(5)(a), and R315-310-3(1)(g)) | General Report 3.3          |

## Utah Class III Landfill Permit Application Checklist

| <b>I. Facility General Information</b>   |                         |
|--|-------------------------|
| Description of Item  | Location In Document    |
| Contingency plans in the event of a fire or explosion (R315-302-2(2)(d))   | General Report 3.3.3    |
| Plan to control fugitive dust generated from roads, construction, general operations, and covering the waste (R315-302-2(2)(g))  | General Report 3.3.1    |
| Plan for letter control and collection (R315-302-2(2)(h))  | General Report 3.3.2    |
| Procedures for excluding the receipt of prohibited hazardous or PCB containing wastes (R315-302-2(2)(j))   | General Report 3.2.4    |
| Procedures for controlling disease vectors (R315-302-2(2)(k))  | General Report 3.3.2    |
| A plan for alternative waste handling (R315-302-2(2)(l))   | General Report 3.3.4    |
| A general training plan for site operations (R315-302-2(2)(o))   | General Report 3.3.5    |
| Any recycling programs planned at the facility (R315-303-4(6))   | General Report 3.2.1    |
| Any other site-specific information pertaining to the plan of operation required by the Director (R315-302-2(2)(p))  | NA                      |
| <b>Ig. Ground Water Monitoring for Class IIIa landfills</b>  |                         |
| Ground Water Monitoring Plan (R315-304-5(4)(a))  | Eng Report 2.2.6        |
| <b>II Facility Technical Information</b>   |                         |
| <b>Ila. Maps for All Class III Landfills</b>   |                         |
| Topographic map drawn to the required scale with contours showing the boundaries of the landfill unit, ground water monitoring well locations (if required), and the borrow and fill areas (R315-310-4(2)(a)(i))   | Drawings                |
| Most recent U.S. Geological Survey topographic map, 7-1/2 minute series, showing the waste facility boundary; the property boundary; surface drainage channels; any existing utilities and structures within one-fourth mile of the site; and the direction of the prevailing winds (R315-310-4(2)(a)(ii)) | A-7                     |
| <b>Ilb. Geohydrological Assessment for Class IIIa Landfills (R315-310-4(2)(b))</b>   |                         |
| Local and regional geology and hydrology including faults, unstable slopes and subsidence areas on site (R315-310-4(2)(b)(i))  | Eng Report 2.2.1, 2.2.2 |
| Evaluation of bedrock and soil types and properties including permeability rates (R315-310-4(2)(b)(ii))  | Eng Report 2.2.3        |
| Depth to ground water (R315-310-4(2)(b)(iii))  | Eng Report 2.2.4        |
| Quantity, location, and construction of any private or public wells on-site or within 2,000 feet of the facility boundary (R315-310-4(2)(b)(v))  | A-6                     |
| Tabulation of all water rights for ground water and surface water on-site and within 2,000 feet of the facility boundary (R315-310-4(2)(b)(vi))  | A-6                     |

## Utah Class III Landfill Permit Application Checklist

| <b>I. Facility General Information</b>  |                                     |
|---|-------------------------------------|
| Description of Item   | Location In Document                |
| Identification and description of all surface waters on-site and within one mile of the facility boundary (R315-310-4(2)(b)(vii))   | Eng Report 1.2                      |
| For an existing facility, identification of impacts upon the ground water and surface water from leachate discharges (R315-310-4(2)(b)(viii))   | NA                                  |
| Calculation of site water balance (R315-310-4(2)(b)(ix))  | Eng Report 2.4                      |
| <b>//c. Engineering Report - Plans, Specifications, And Calculations for All Class III Landfills</b>  |                                     |
| Unit design to include cover design; fill methods; and elevation of final cover including plans and drawings signed and sealed by a professional engineer registered in the State of Utah, when required (R315-310-3(1)(b)) | Appendix D                          |
| Design and location of run-on and run-off control systems (R315-310-5(2)(b))  | Appendix D                          |
| <b>//d. Engineering Report - Plans, Specifications, And Calculations for Class IIIa Landfills</b>   |                                     |
| Engineering reports required to meet the location standards of R315-304-4 including documentation of any demonstration or exemption made for any location standard (R315-310-4(2)(c)(i))                                    | No Exemptions to Location Standards |
| Anticipated facility life and the basis for calculating the facility's life (R315-310-4(2)(c)(ii))  | Appendix E                          |
| Equipment requirements and availability (R315-310-4(2)(c)(iii))   | General Report 1.5                  |
| Identification of borrow sources for daily and final cover and for soil liners (R315-310-4(2)(c)(iv))   | Add to 3.2.3                        |
| Run-off treatment and disposal and documentation to show that any treatment system being used has been reviewed by the Division of Water Quality (R315-310-4(2)(c)(v) and R315-310-3(1)(i))                                 | Eng Report 2.4                      |
| <b>//e. Closure Requirements for All Class III Landfills</b>  |                                     |
| Closure plan (R315-310-3(1)(h))   | Eng Report 3.0                      |
| Closure schedule (R315-310-4(2)(d)(i))  | Eng Report 3.1                      |
| Design of final cover (R315-310-4(2)(c)(iii))   | Eng Report 3.2                      |
| Capacity of site in volume and tonnage (R315-310-4(2)(d)(ii))   | Eng Report 3.3                      |
| Final inspection by regulatory agencies (R315-310-4(2)(d)(iii))   | Eng Report 3.4                      |
| <b>//f. Post-Closure Care Requirements for All Class III Landfills</b>  |                                     |
| Post-closure care plan (R315-310-3(1)(h))   | Eng Report 4.0                      |
| Changes to record of title, land use, and zoning restrictions (R315-310-4(2)(e)(v))   | Eng Report 4.2                      |
| Maintenance activities to maintain cover and run-on/run-off control systems (R315-310-4(2)(e)(iii))   | Eng Report 4.1                      |

## Utah Class III Landfill Permit Application Checklist

| <b>I. Facility General Information</b>  |                      |
|---|----------------------|
| Description of Item   | Location In Document |
| List the name, address, and telephone number of the person or office to contact about the facility during the post-closure care period (R315-310-4(2)(e)(vi))                               | Eng Report 4.3       |
| <b><i>Ilg.</i> Financial Assurance Requirements for All Class III Landfills</b>   |                      |
| Identification of closure costs including cost calculations (R315-310-4(2)(d)(iv))  | Eng Report 5.0,      |
| Identification of post-closure care costs including cost calculations (R315-310-4(2)(e)(iv))  | Appendix H           |
| Identification of the financial assurance mechanism that meets the requirements of Rule R315-309 and the date that the mechanism will become effective (R315-309-1(1) and R315-310-3(1)(j)) | Eng Report 5.3       |

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**PERMIT MODIFICATION  
FOR  
INTEGRATED WATER MANAGEMENT PINNACLE FUELS LANDFILL  
Permit #2001  
DUCHESNE COUNTY, UTAH  
PART II – GENERAL REPORT**

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## **APPENDICES**

**Appendix A** – Maps and Figures

**Appendix B** – Updated Permit Modification Drawings

**Appendix C** – Landfill Capacity

**Appendix D** – Closure and Post-Closure Costs

## **1.0 FACILITY DESCRIPTION**

### **1.1 FACILITY GENERAL DESCRIPTION**

The site of the Pinnacle Fuels Secure Storage (proposed landfill) operated by Integrated Water Management (IWM) is located on 161 acres of land approximately 6.5 miles north of Duchesne City, just east of Highway 87. This permit modification is to include the expansion of the existing landfill that is located in Section 6, Township 3 South, Range 4 West of the Uintah Special Base and Meridian in Duchesne County, Utah. The location of the site in relation to surrounding areas is presented on Plate A-1 in Appendix A.

The landfill site is located approximately 1.4 miles south of the IWM main disposal facility. The site currently has no buildings or structures. The southwest corner of the proposed site has a plugged and abandoned oil production well; a newly completed but inactive injection well and pad for the disposal of wastewater; and a water well and associated water right (43-13048). The landfill is located north and east of the injection well and water well. The Injection well is regulated by the Utah Division of Oil Gas and Mining (UDOGM). The injection well is identified as the Plumb 5-6C4 injection well and is API Number 4301353726. The IWM facility disposal activities are generally regulated by UDOGM.

The proposed landfill expansion will be constructed with a double lined cell that will be surrounded with a berm that will reach a maximum height of up to 8 ft. above existing grade. The landfill will also cut into the ground surface up to 3 ft. A staging area will be located to the south of the landfill cell. A map with proposed landfill expansion boundaries, existing and proposed wells and other waste processing components is provided in Appendix A as plate A-2. A more detailed layout of the facility is provided in the Design drawings in Appendix D.

The prevailing wind direction is from the west. A single ephemeral stream crosses the site from the north to the south. There are several other ephemeral streams that are within a quarter mile of the landfill site. Plate A-4 identifies structures within a quarter mile of the site, drainages within a quarter mile, and the prevailing wind direction.

### **1.2 AREA SERVED**

IWM currently manages a produced water facility with clients throughout the Uintah Basin, Utah, Colorado, and Wyoming. IWM plans to provide additional services to

existing clients that have need of disposal of RCRA exempt Exploration and Production (E&P) wastes as defined by the Division of Waste Management and Radiation Control (DWMRC). As noted, the area to be served will generally be within the Uintah Basin, Colorado, and Wyoming areas.

### **1.3 WASTE TYPES**

The waste type that will be accepted to the proposed landfill expansion will remain unchanged from the existing permit. The landfill is permitted to receive nonhazardous forms of industrial solid waste as characterized by a Class IIb landfill. It is our understanding based on conversations from the personnel at the DWMRC that this landfill will be allowed to receive RCRA exempt E&P waste. Acceptable E&P waste will include but not limited to drilling mud, frac sands, drill cuttings, soils contaminated with hydrocarbons and other E&P solid wastes.

As required by the division's 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 deposited into the landfill.

### **1.4 FACILITY HOURS**

As originally permitted the landfill will accommodate waste disposal activities based on the needs of IWM clients/customers. IWM is prepared to operate the landfill on a 24-hours per day basis if needed. The existing Integrated Water Management Facility located 1.4 miles to the north of the site has an active water disposal well that is staffed 24 hours a day and 365 days a year.

### **1.5 LANDFILL EQUIPMENT**

The Pinnacle Fuels Landfill uses the following equipment to support the landfill operation:

1. Backhoe/front loader,
2. Skid steer,
3. Rock Truck
4. Dozer
5. Long Reach Excavator

## 6. Mini Excavator

Additional equipment will be acquired to facilitate the operation of the proposed expansion of the landfill to properly place waste material and maintain daily cover. This equipment may include a conveyor system to distribute and place the E&P waste across the landfill area, and a bulldozer to spread daily cover.

### 1.6 LANDFILL PERSONNEL

The IWM facilities are managed by Mr. Nate Robinson, Managing Director, who has more than 22 years of experience managing waste disposal facilities. The IWM staff currently has more than 15 full time employees. Table 1.1 lists the current managing staff of all IWM facilities, current responsibilities, and additional duties relating to the landfill that will be incorporated into their respective assigned tasks. Other IWM employees assigned to work at the proposed landfill will receive direction from the managing staff.

**Table 1.1 – IWM Managing Staff**

| <b>Employee Name</b> | <b>Current Title</b> | <b>Years of Experience</b> | <b>Current Duties</b>               | <b>Landfill Duties</b>                 |
|----------------------|----------------------|----------------------------|-------------------------------------|--|
| Nate Robinson        | Managing Director    | 25 years                   | Manages all IWM facility operations | Managing the operation of the landfill |
| Gary Brinkerhoff     | HS&E                 | 15 years                   | Safety                              | Safety over landfill facility          |
| Kaiden Memmott       | Operator             | 10 years                   | Land farm operator maintenance      | Land fill operator and Maintenance     |
| Russel Sorensen      | Operations Manager   | 20 Years                   | Oversees day to day operations      | Landfill duties manager                |

### 1.7 NON-COMMERCIAL EXCLUSION

The proposed landfill will accept RCRA exempt E&P waste as defined in Section 1.3 of this application. Verbal discussions with DWMRC personnel indicate that the proposed landfill will be considered a non-commercial landfill if and only if E&P waste as defined in Section 1.3 of this document is accepted into the landfill. The operational plan will define quality control steps to ensure the acceptance of only approved E&P waste in order to meet the requirements of a non-commercial landfill.

## **1.8 HISTORICAL PRESERVATION SURVEY**

GeoStrata conducted a review of the landfill construction site and prepared a letter for the State Historical Preservation Officer (SHPO) as part of the original application. The original application showed that the site has no historical properties or structures. A response from the SHPO indicates that they concur with our determination. A copy of the letter from the SHPO is provided in the original permit application.

## **1.9 LOCAL GOVERNMENT WITH JURISDICTION**

The local government with jurisdiction over the IWM proposed landfill is Duchesne County. The mailing address is provided below:

734 North Center Street  
PO Box 910  
Duchesne, Utah 84021

## **2.0 LEGAL DESCRIPTION**

A legal description of the property that will include the landfill is provided in the original permit application. IWM owns this property in fee. Proof documents presented in the original permit application include a tax record.

## 3.0 OPERATIONS PLAN

### 3.1 SCHEDULE OF CONSTRUCTION

The site of the proposed landfill expansion is directly north of the currently permit landfill cell. The landfill expansion will be constructed as a single cell that will extend the berms of the existing landfill north until they meet the ground surface elevation. Some grubbing and excavation will be needed to make the landfill cell appropriately sized for the landfill construction. The berm will be level surrounding the landfill site and have slopes no steeper than 33%. Berms will be constructed from existing site soils excavated from the landfill cell. Details of the landfill berms are included in the design drawing in Appendix B.

The landfill will be constructed similar to the existing landfill. The expansion will be lined with a 60 mil HDPE primary liner and a secondary liner that will be constructed with Geosynthetic Clay Liner (GCL) that will have a permeability rate that meets the states requirement of less than  $1 \times 10^{-7}$  cm/second. Details of the liner are included in the design drawings located in Appendix B.

At the start of landfill operations, IWM anticipates that approximately 100 Cubic Yards of E&P waste will be transported to the proposed landfill per day. IWM anticipates that some processing will be required to allow the imported waste to pass the paint filter test. IWM is considering using several different products and processes to stabilize the waste and to pass the paint filter test. Some of the products that may be used for mixing and stabilizing the waste include but are not limited to sawdust, native soils, lime, potash, or other suitable products. IWM may also process the waste to remove liquids by use of a filter press or drying the waste in the temporary storage area. Waste acceptance procedures and quality control of waste being disposed in the landfill are out line in sections 3.2.1 and 3.2.2 of this report.

Once the final process is defined adjustments to the design life of the landfill will be made. At this point the life duration of the landfill is defined assuming that half of the waste arriving at the landfill will be mixed with native soil material and the remaining waste will be processed using other equipment (mixing, drying, filter press) and then placed directly into 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. In

order to obtain an estimate for the mixing ratio, a preliminary waste assessment was conducted using samples of anticipated types of waste material and native soils that will be disposed in the IWM landfill under this permit application. During this assessment it was determined that mixing of native soils with waste when needed will be done at a ratio of approximately 1.5:1 respectively in order to reach a waste moisture content that will pass the paint filter test. In other words, for 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 when needed. Calculations used to estimate the mixing ratio are provided in Appendix C as plate C-1.

Based on waste mixing assumptions described above and assuming waste will be accepted 5 days per week and a 10% growth rate over the life of the landfill, the projected life of the landfill is approximately 8 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 C. All the assumptions presented in the previous paragraphs were used in the spreadsheet calculations.

### **3.2 DESCRIPTION OF WASTE HANDLING PROCEDURES**

The general procedures that will be followed under this permit modification will be same as what was prosed in the original permit application for the landfill waste at the Pinnacle Fuels Secure Storage. Please refer to the original permit application for the waste handling procedures.

### **3.3 WASTE FACILITY INSPECTION AND MONITORING**

IWM personnel will inspect the proposed expansion to the Pinnacle Fuels Landfill as proposed in the original application. These inspection and monitoring procedures are intended to prevent malfunctions and deterioration of the landfill liners, avoid operator errors, and discharges which may cause or lead to the release of wastes to the environment or to a threat to human health. Landfill inspections will be conducted weekly and will be recorded using the weekly inspection log. Some items will be monitored on a daily basis. 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) IWM has prepared a plan for controlling fugitive dust as part of the original permit application. Please refer to the original application for the guidance on fugitive dust control.

### **3.3.2 Plan for Litter Control**

IWM does not anticipate accepting waste materials in the landfill expansion that will cause a wind-blown litter problem. IWM will complete a daily inspection of the landfill and surrounding area and identify any potential waste material that may escape the landfill. In addition, IWM does not anticipate any type of waste will be accepted at the facility that would be considered a disease vector.

### **3.3.3 Contingency Plan for Fire or Explosion**

In the event of a fire or explosion at the Pinnacle Fuels landfill, 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 the original permit application.

### **3.3.4 Alternative Waste Handling Plan**

In the event of a landfill closure due to an emergency or repairs, IWM will make arrangements to have the waste transported to IWM's Landfill located approximately 1.4 miles to the north or the Duchesne County Landfill located at 20550 W and 2000 S. The Duchesne County Landfill is approximately 1.1 miles northeast of the IWM facility. This close proximity will allow a quick transition to the alternative facility if needed.

### **3.3.5 General Training Plan**

IWM currently has a training program that educates their employees on how to manage E&P waste and how to operate the existing components of the IWM waste facility and landfill. As required in R315-302-2(2), each permitted landfill must have a detailed

training program. Prior to working in the proposed landfill, all employees are required to complete the following training program. This training program will consist of three parts including health and safety training, E&P waste handling, and landfill operations specific training. The training of each employee will be supervised and conducted by the IWM operations manager. Details of the training plan are included in the original permit application.

### **3.4 RECORD KEEPING**

During the operation of the landfill, the operations manager will maintain records of landfill activities as required by the division (315-302-2-(3)). These records will be stored electronically in the IWM database at their main facility.

#### **3.4.1 Daily Permanent Record**

The landfill operations 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 DWMRC approved Operations Plan
- Staff training records
- Status of groundwater and leachate monitoring
- A written report of daily activities at the landfill site

#### **3.4.2 Other Records**

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

- Design documentation of the placement or recirculation of leachate into the landfill
- Closure and post closure care plans and activities
- Cost estimates and financial assurance documentation
- Safety training and landfill specific training for all employees associated with the landfill

**PERMIT MODIFICATION  
FOR  
INTEGRATED WATER MANAGEMENT PINNACLE FUELS LANDFILL  
Permit #2001  
DUCHESNE 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 39 mile west of the Pinnacle Fuels Landfill (Quaternary Fault and Fold Database of the United States, 2006). The proposed IWM 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 proposed landfill cell and existing facility and surrounding area is provided in this report in Appendix A as plate A-3.

### **1.2 SURFACE WATER**

There are no surface waters on the IWM property. The closest surface water locality is the Duchesne River approximately 1.9 miles to the west. There are numerous ephemeral drainages that are identified near the facility. A map locating these drainages is provided in Appendix A as plate A-4. Landfill related activities are not expected to impact these drainages.

### **1.3 FLOODPLAINS**

The proposed IWM landfill is not located in a floodplain. FEMA has no available Flood hazard maps that cover the area of the IWM facility. Numerous ephemeral drainages are located near the Landfill cell. None of the ephemeral or intermittent drainages are restricted or significantly impacted by the proposed landfill cell. Please refer to the drainage study located in original permit application for further details of the Flood Hazard potential of the IWM facility.

### **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 IWM property. Based on an online search of National Wetlands Inventory the proposed IWM Landfill cell is not located in a wetland however there is an intermittent stream west of the landfill cell. The National Wetlands Inventory classifies this stream as a riverine intermittent streambed. Further investigation into wetlands was also conducted during the Biological Assessment

of the facility and determined that the IWM property contains no permanent water or wetlands. More details of this assessment are described in section 1.6 of the Engineering Technical Report and the complete report in the original permit application.

## **1.5 LAND USE COMPATIBILITY**

Plate A-4 shows the location standards requested for this permit application including existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 ft. of the facility boundary. No residences, parks, monuments, recreation areas or wilderness areas were identified within 1000 ft of the facility boundary. Plate A-6 is a map of all public and private wells within 2000 ft. of the facility. The only airport located within 5 miles of the proposed landfill is the Duchesne Municipal Airport. The Duchesne Municipal Airport is approximately 4 miles south of the proposed landfill.

## **1.6 ECOLOGICALLY SENSITIVE AREAS**

A survey of the IWM proposed landfill site was conducted by Dr. Lindsey Nesbit in September 2018 as part of the original permit application to assess the ecological attributes of the facility and surrounding area. Dr. Nesbit's letter is included in the original permit application. The results of this survey revealed that there is no critical habitat for threatened or endangered species at the subject site.

# **2.0 ENGINEERING REPORT**

## **2.1 CELL DESIGN**

The proposed additional cell of the Pinnacle Fuels Landfill will consist of a single cell located North of the existing landfill. The design drawings show the proposed location in relation to the property boundaries and surrounding land features. The proposed landfill is approximately 570 ft. long and 550 ft. wide across the active portion of the proposed landfill cell. The proposed design of the landfill cell will follow the grade of the existing ground surface after clearing vegetation and topsoil. Existing berms will extend to the north and will maintain 3:1 (horizontal: vertical) interior slopes and 3:1 (horizontal: vertical) exterior slopes.



## **2.2 GEOHYDROLOGICAL ASSESSMENT**

### **2.2.1 Regional Geology**

As noted previously, the proposed landfill is located approximately 6.3 Miles north of Duchesne, Utah on the south flanks of the Uinta Mountains. The Uinta Mountains 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 IWM facility is located in the northwestern portion of the Uinta basin. The facility is underlain by glacial outwash of the Pleistocene (Qgpb) Age (Plate A-3). The Qgpb consists of poorly sorted gravels and sand layers (Bryant, 1992). The glacial outwash is primarily underlain by Duchesne River and Uinta Formations.

### **2.2.3 Evaluation of Subsurface Soils and Bedrock**

The proposed landfill cell is underlain primarily by Quaternary glacial outwash deposits (Qgpb). GeoStrata observed and logged eight test pits in the general vicinity of the proposed landfill and part of the original permit application. These test pits were advanced up to 10 ft. in depth. Based on test pit site observations the upper 3.5 to 9 ft. of the glacial out wash deposits are comprised of unconsolidated fine-grained sands and silts. The fine-grained sands and silts are underlain by poorly sorted gravels, cobbles, and sands. It is

possible that the upper portion of the soils are more related to wind-blown deposits and the lower deposit of more gravelly soils are related to the glacial outwash.

In addition to the test pits, GeoStrata advanced four borings in the vicinity of the proposed Landfill impoundment (Plate A-2) to construct ground water monitoring wells. Drill cuttings from the borings were used to gather general characteristics of the bedrock and the geology of the site. In general, the poorly sorted gravel, sand and cobbles transitioned to caliche gravels between 49 and 55 ft. below the ground surface. The caliche gravel then transitioned to bedrock that consisted of interbedded layers of gray to dark gray shale, reddish brown claystones and siltstones.

GeoStrata preformed backpressure permeability tests on a sample from test pit 1. The sample was of the fine-grained soils in the upper 3.5 to 9 ft. of the sub-surface. The permeability was  $4.91 \times 10^{-4}$  cm/sec.

#### 2.2.4 Ground Water

Four monitoring wells have been installed in close proximity of the proposed landfill cell. Plate A-5 shows the locations of the monitor wells. There are two up gradient wells and two down gradient monitoring wells. Water levels have been measured and elevation data are included in table 2.2.4.a.

*Table 2.2.4.a*

| Well Identification | Depth to Water (DTW) From Top of Casing (TOC) (ft) | Casing Stick-Up Above Ground Surface (ft) | Total Depth (TD) of Well from Top of Casing (ft) | TD of Well from the Ground Surface (ft) | Ground Surface Elevation at Well Site (ft) | Elevation of Groundwater from Ground Elevation (ft) |
|---------------------|--|---|--|---|--|---|
| TJ-01               | 72.70  | 1.27                                      | 141.27   | 140.00                                  | 6031.24                                    | 5959.81   |
| TJ-02               | 67.12  | 2.75                                      | 142.75   | 140.00                                  | 6026.35                                    | 5961.98   |
| TJ-03               | 44.88  | 3.06                                      | 143.06   | 140.00                                  | 6009.68                                    | 5967.86   |
| TJ-04               | 116.48   | 2.54                                      | 142.54   | 140.00                                  | 6016.15                                    | 5902.21   |

The original application has boring logs and completion details for each of the monitoring wells. Plate A-2 and A-5 show the location these borings and monitoring wells.

Based on our finding of groundwater at the proposed landfill, groundwater is measured as being greater than 5-ft. below the lowest portion of the proposed landfill. Drawing B-4 of the original permit drawings contains cross sections of the proposed landfill and identifies the types of bedrock, soils under the proposed landfill. The data used to create these cross sections was obtained from the geologic map (plate A-3), subsurface exploration data (section 2.3.1) and ground water data provided in the table above.

### **2.2.5 Surface Water**

There are no surface waters on the IWM property. The closest surface water locality is the Duchesne River approximately 1.9 miles to the west. There are numerous ephemeral drainages that are identified near the facility. A map locating these drainages is provided in Appendix A as plate A-4. Landfill related activities are not expected to impact these drainages.

### **2.2.6 Groundwater and Surface Water Monitoring Plan**

The groundwater monitoring plan proposed in the original permit application will meet the requirements for ground water monitoring at the facility with the additional landfill cell. This ground water monitoring plan is currently in place and utilizes TJ-2 as an up-gradient monitoring well and wells TJ-3 and TJ-4 are used as the down gradient monitoring wells. Samples from these monitoring wells are collected semiannually as prescribed R315-308-2(5)(a). Water is 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

As required in R315-308-2(8) IWM has conducted a ground water analysis using a statistical method. This analysis has been provided to the Division for review and will be used for determining whether a significant change has occurred as compared to background. Please refer to the GeoStrata report *Integrated Water Management Pinnacle Landfill Groundwater Background Analysis* dated June 9, 2022 for further information on the groundwater monitoring plan and existing groundwater conditions.

### **2.3 SLOPE STABILITY**

The original permit application has a slope stability analysis for the original proposed landfill cell. the additional cell proposed in this modification is an expansion of the original cell and does not include any slopes that are greater than what has already been analyzed. Please refer to the original permit application for further information on the slope stability at the Pinnacle Fuels Landfill.

### **2.4 STORM WATER MANAGEMENT**

The magnitudes of the 24-hour 25 year and 100-year storm events are 1.67 inches and 2.14 inches, respectively. The average annual precipitation in the vicinity of the IWM facility is approximately 9.5 inches (NOAA Atlas 14 – Duchesne Station). In order to minimize liquids admitted into the active areas of the landfill and run-off waters from the active areas of the land fill as required by R315-303-3(c) and (d), the landfill has been designed to prevent run-on of surface waters into the active landfill and control run-off waters from the active area of the landfill resulting from a maximum flow of a 25-year storm. The total anticipated volume of run-off volume of water in a 25-year storm event is approximately 1500 cubic yards.

Stormwater from a 25-year storm event will be contained in the landfill cell and will be collected by use of the leachate collection system. When the landfill waste exceeds the height of the berms, storm water will be directed to the stormwater collection basin. Water will be detained in the basin and used for dust control of the landfill cell. This stormwater will not be released outside of the landfill cell. A preliminary design of the basin and

drainage channel are included in the permit design drawings. Calculations used to estimate the 25-year storm event volumes are included in this permit application the original permit application.

## **3.0 CLOSURE PLAN**

### **3.1 CLOSURE SCHEDULE**

It is anticipated that the proposed landfill 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 8 years at a 10% growth rate. Sixty days prior to the expected final receipt of waste, IWM will notify the division of their intent to begin closure operations. IWM 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 nearby Integrated Rock Products site. All testing and calculations are based on samples of the native soils at the site.

Details of the materials used, and the design of the final cover are included in the original permit application. Updated design drawings for the permit modification are include in Appendix B of this report. This permit modification does not include any modification to the proposed design other than extending the size of the landfill laterally. The proposed design will keep the originally proposed thicknesses, materials, and slopes

### **3.3 CAPACITY OF LANDFILL**

The estimated capacity of the landfill cell up to the final cover is 453,097 cubic yards. With an estimated dry density of 135 lb/cu-ft. based on the assumption of half the waste being mixed with additional material, the landfill will have an estimated total of 611680 tons of waste at the time of closure. A table with the projected life at 10 percent growth

rate for the landfill is provided in Appendix C as Plate C-1. The growth rate is defined as the number of trucks delivered to the site on an average daily basis. With an increase in the growth rate, the life of the landfill will be reduced.

### **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. IWM will notify the division of the anticipated date of completion and make arrangements for scheduling the inspection.

## 4.0 POST CLOSURE CARE

The Pinnacle Fuels Landfill cell expansion will have a similar post closure care that was proposed in the original permit application. The following is a summary of 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 IWM 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:** The nearby IWM facility is operated 24 hours a day 7 days a week. IWM personnel will be onsite every day to monitor activities at the proposed landfill and restrict access to the landfill. Access to the proposed 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 IWM 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. IWM will ensure 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 and east of the landfill. IWM 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. A Utah certified groundwater sampler will complete all sampling. Sampling will take place every six months during the closure and 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 IWM will follow the guidelines in R315-308-2(13).

#### **4.2 RECORD OF TITLE, LAND USE, ZONING**

The Duchesne 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 Nate Robinson. His contact information is provided below:

Nate Robinson

Po Box 430

Altamont Utah 84001

Telephone: 435-454-4646

## **5.0 FINANCIAL ASSURANCES**

### **5.1 CLOSURE COSTS**

The IWM landfill is planned to close in a single operation when the waste reaches final design grade. The closure costs for the IWM landfill are based on the cost to construct the final cover. The final cover construction is to include the placement and grading of the 6-inch clay cover, 6-inch topsoil layer and seeding of topsoil. Estimated cost for the Closure tasks is estimated at \$133,628.99. Detailed financial assurance costs are presented in Appendix D 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 IWM E&P 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. The estimated cost of the post closure care tasks is approximately \$87,854. A detailed financial assurance cost estimate is provided in Appendix D.

### **5.3 FINANCIAL ASSURANCE**

This section of the permit describes compliance with Subsection R315-309, 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 in house personnel performing closure and post closure care.

The IWM team complies with financial assurance test requirements for private entities based on 1) acceptable bond ratings, 2) financial statements prepared in conformity with generally accepted accounting principles for private entities audited by independent CPA's

## WORKS CITED

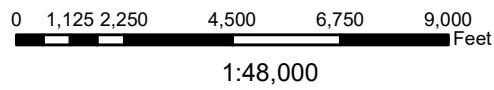
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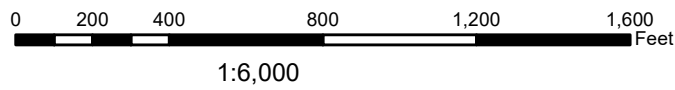
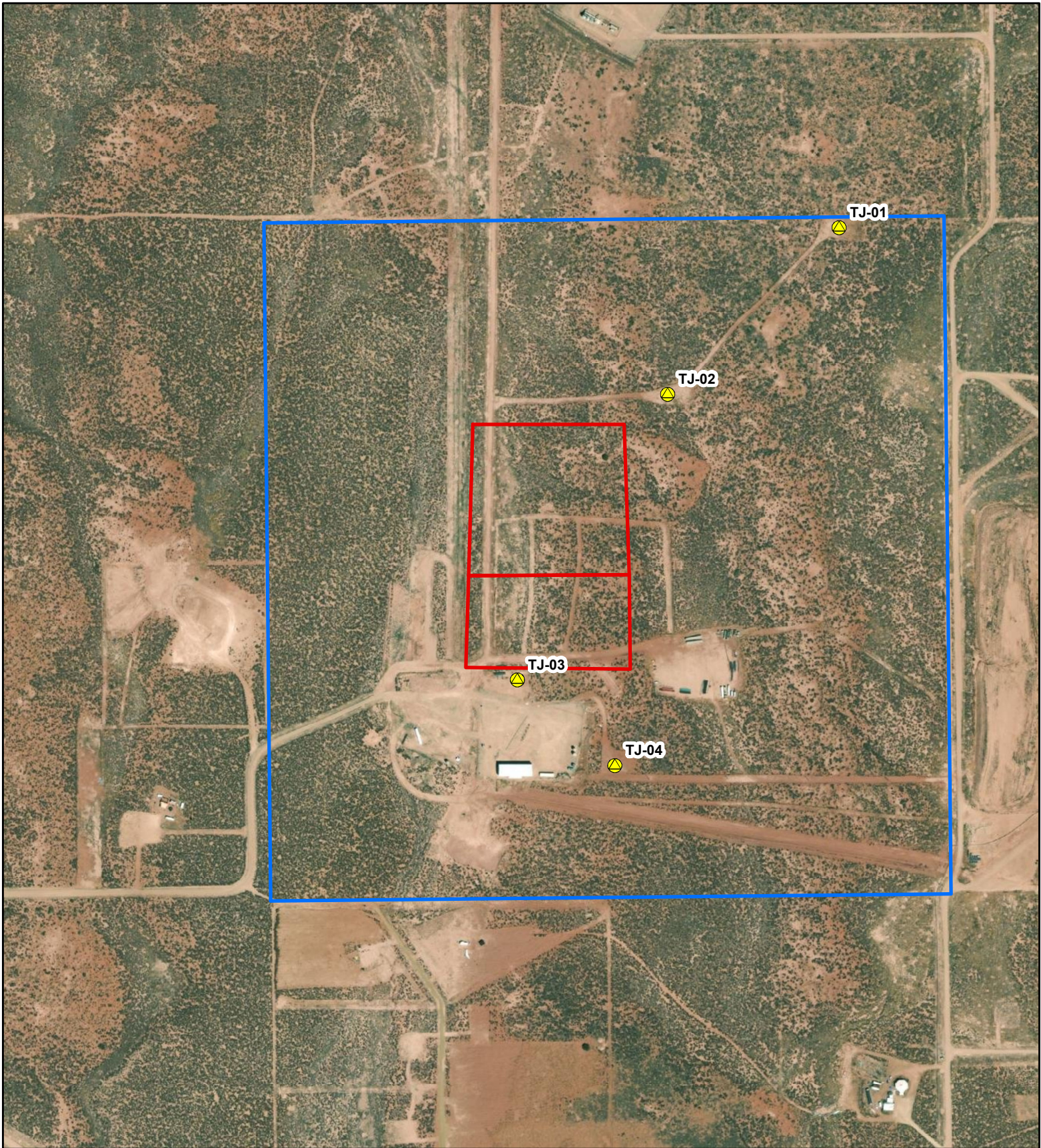
**Legend**

- Landfill Cell Foot-print
- IWM Property

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Integrated Water Management  
Duchesne, UT  
Project Number: 751-099

**Landfill Location Map**

**Plate  
A-1**



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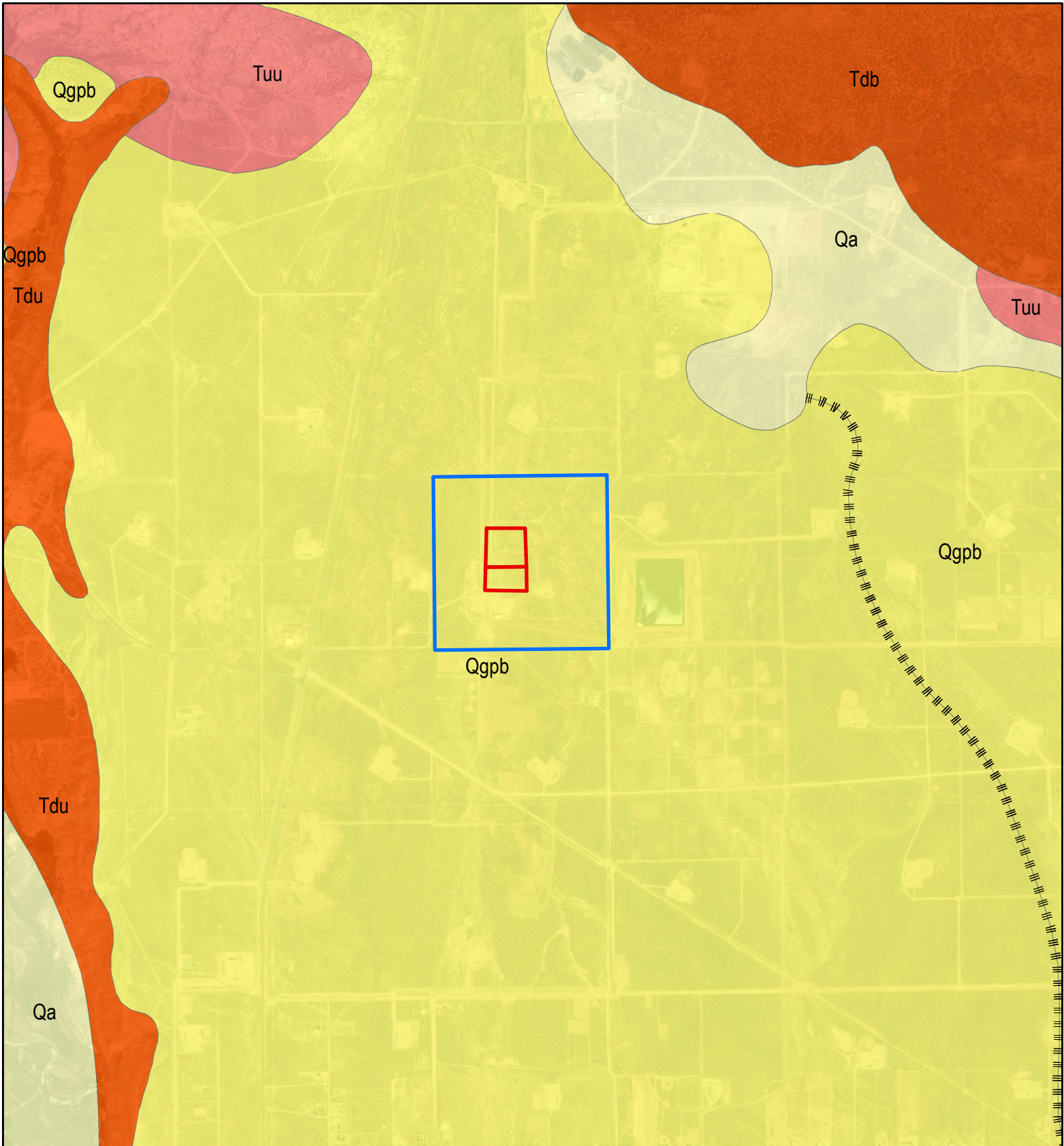
**Legend**

- Landfill Cell Foot-print
- ▲ Monitoring Well
- IWM Property

Permit Modification  
Integrated Water Management  
Duchesne, UT  
Project Number: 751-099

**Plate  
A-2**

**Landfill Site Map**



**Legend**

- Landfill Cell Foot-print
- IWM Property
- Terrace scarp

**GeologicUnits**

- Qa - Alluvium
- Qgpb - Glacial outwash of pre-Bull Lake age
- Tdb - Brennen Basin Member
- Tdu - Duchesne River Formation (undivided)
- Upper Member Uinta Formation

0 500 1,000 2,000 3,000 4,000 Feet

1:24,000

Base Map: USGS 7.5 Minute Topographic map,  
Talmage and Altamont Quadrangles obtained  
from the State of Utah AGRC

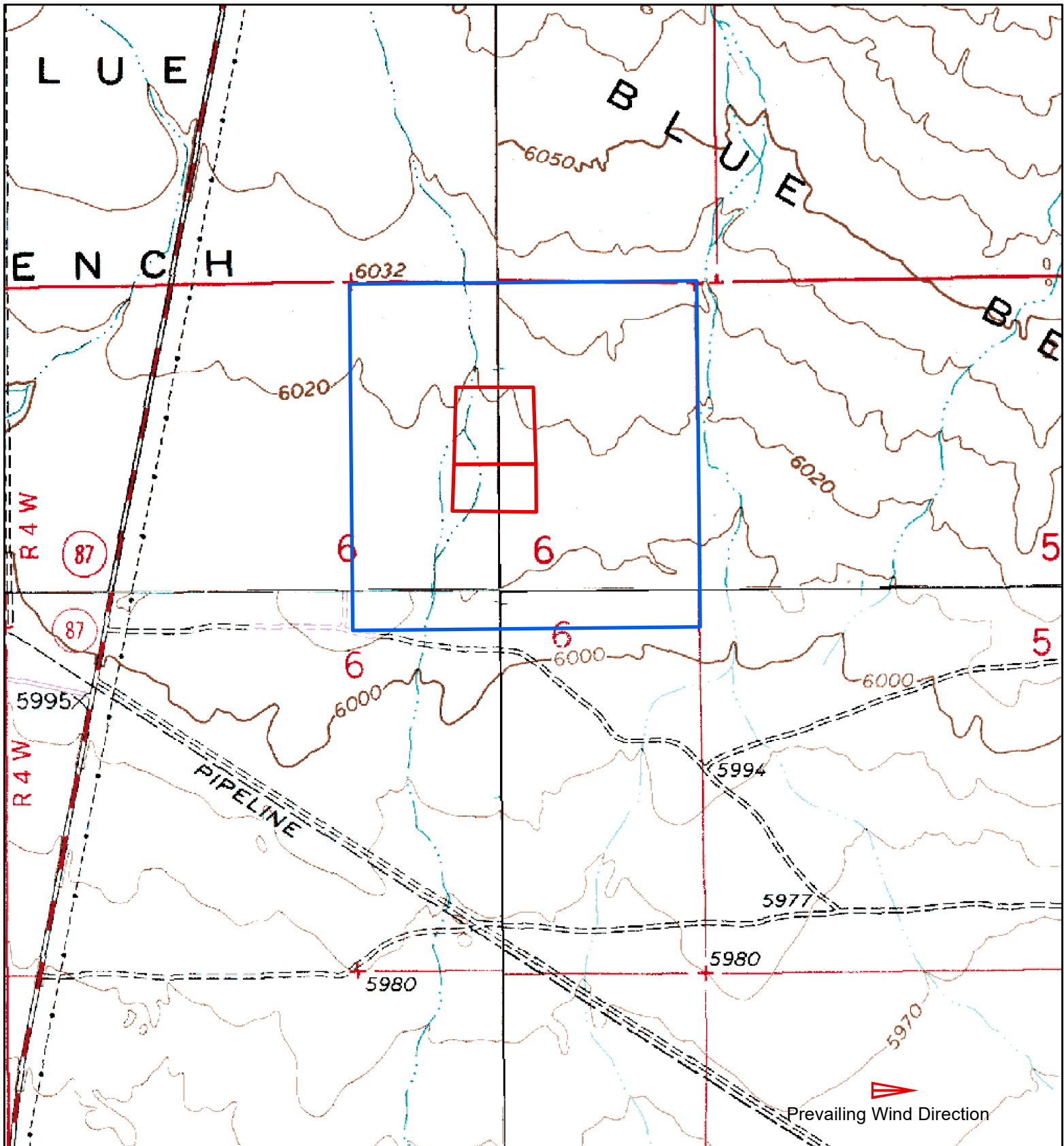


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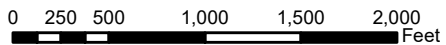
Permit Modification  
Integrated Water Management  
Duchesne, UT  
Project Number: 751-099

**Local Geology Of IWM Facility**

**Plate  
A-3**



All Locations are Approximate



1:12,000

Base Map: USGS 1:24K Topographic map,  
Duchesne County obtained  
from the State of Utah AGRC



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**Legend**

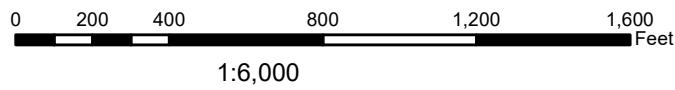
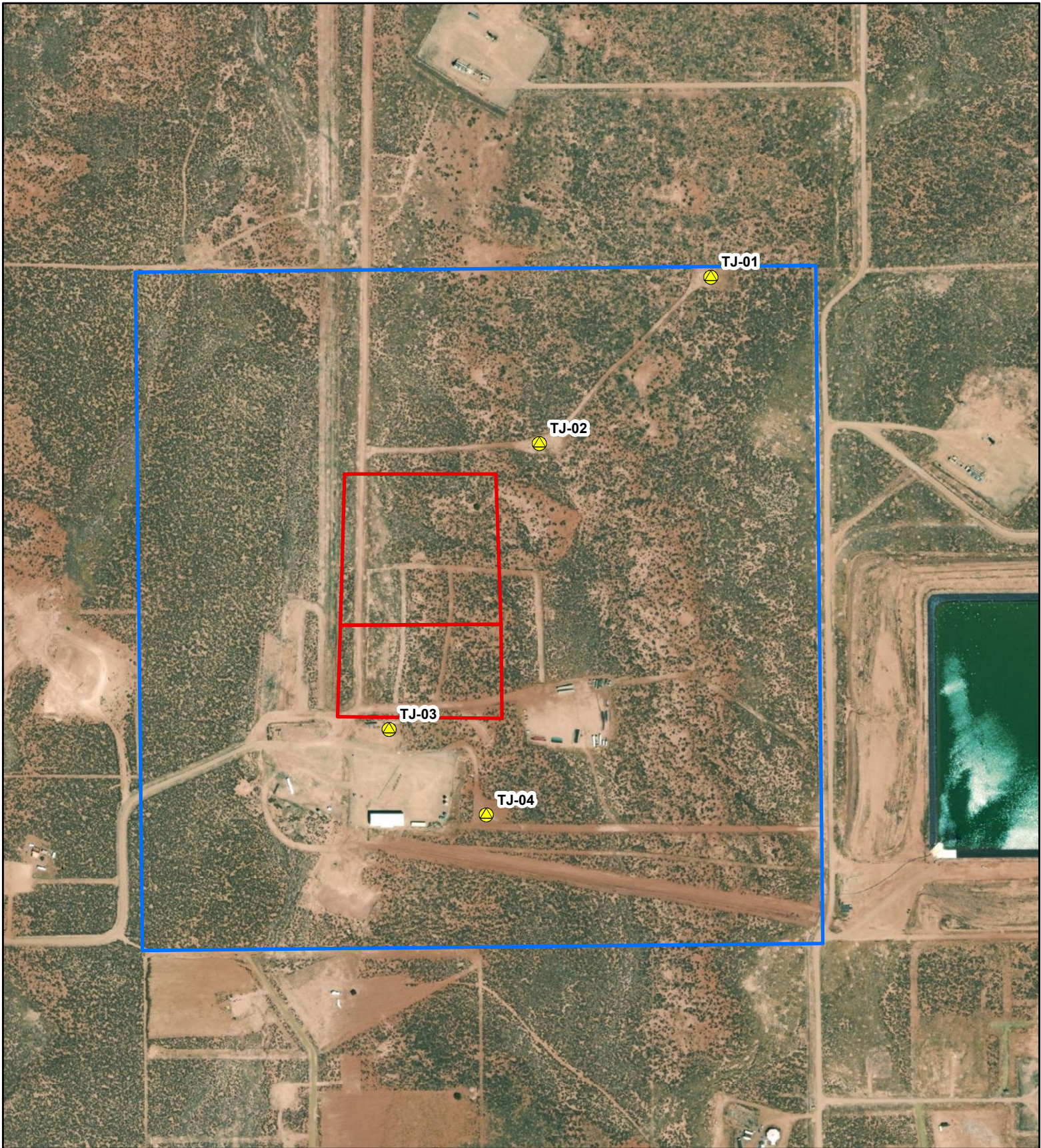
- Landfill Cell Foot-print
- Approximate Property Boudary

Permit Modification  
Integrated Water Management  
Duchesne, UT  
Project Number: 751-099

**Plate**  
**A-4**

**Land Use Map**





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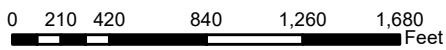
**Legend**

- Landfill Cell Foot-print
- ▲ Monitoring Well/Boring Location
- Test Pit
- IWM Property

Permit Application for E&P Landfill  
Integrated Water Management  
Duchesne, UT  
Project Number: 751-099

**Exploration Location Map**

**Plate  
A-5**





1:10,000

All Locations are Approximate

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**Legend**

-  Public/Private Wells
-  Landfill Cell Foot-print

Permit Modification  
Integrated Water Management  
Duchesne, UT  
Project Number: 751-099

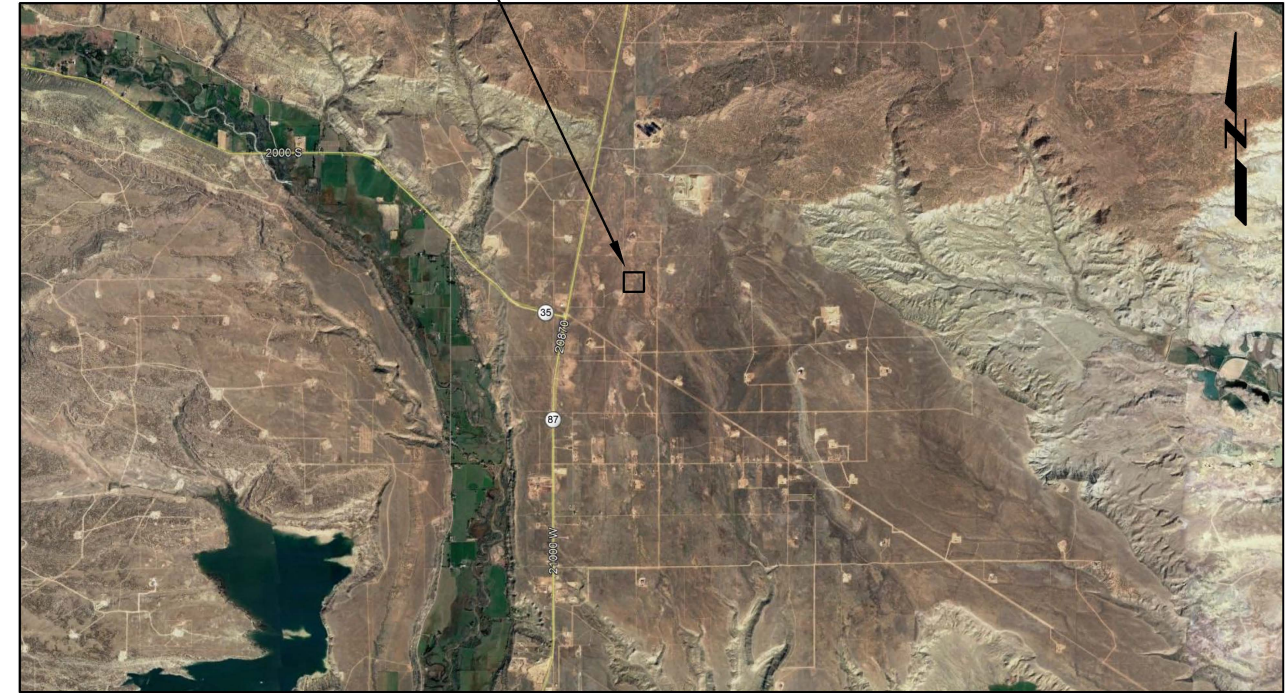
**Public and Private Well Location Map**

**Plate  
A-6**

CONTENTS

- B-1 PLAN
- B-2 SECTIONS
- B-3 TYP. BERM DETAILS
- B-4 LEACHATE DETAILS

PROPOSED LANDFILL LOCATION



ESTIMATED VOLUMES

EXTENSION CONSTRUCTION VOLUMES

|                    |           |
|--------------------|-----------|
| EXCAVATION         | 1629 CY   |
| BERM               | 22007 CY  |
| 6" PROTECTIVE SOIL | 9289 CY   |
| 6" LEACHATE SAND   | 9289 CY   |
| 60ML HDPE LINER    | 331438 SF |
| GCL (10^-12)       | 331438 SF |
| 6" GRADING SAND    | 5805 CY   |

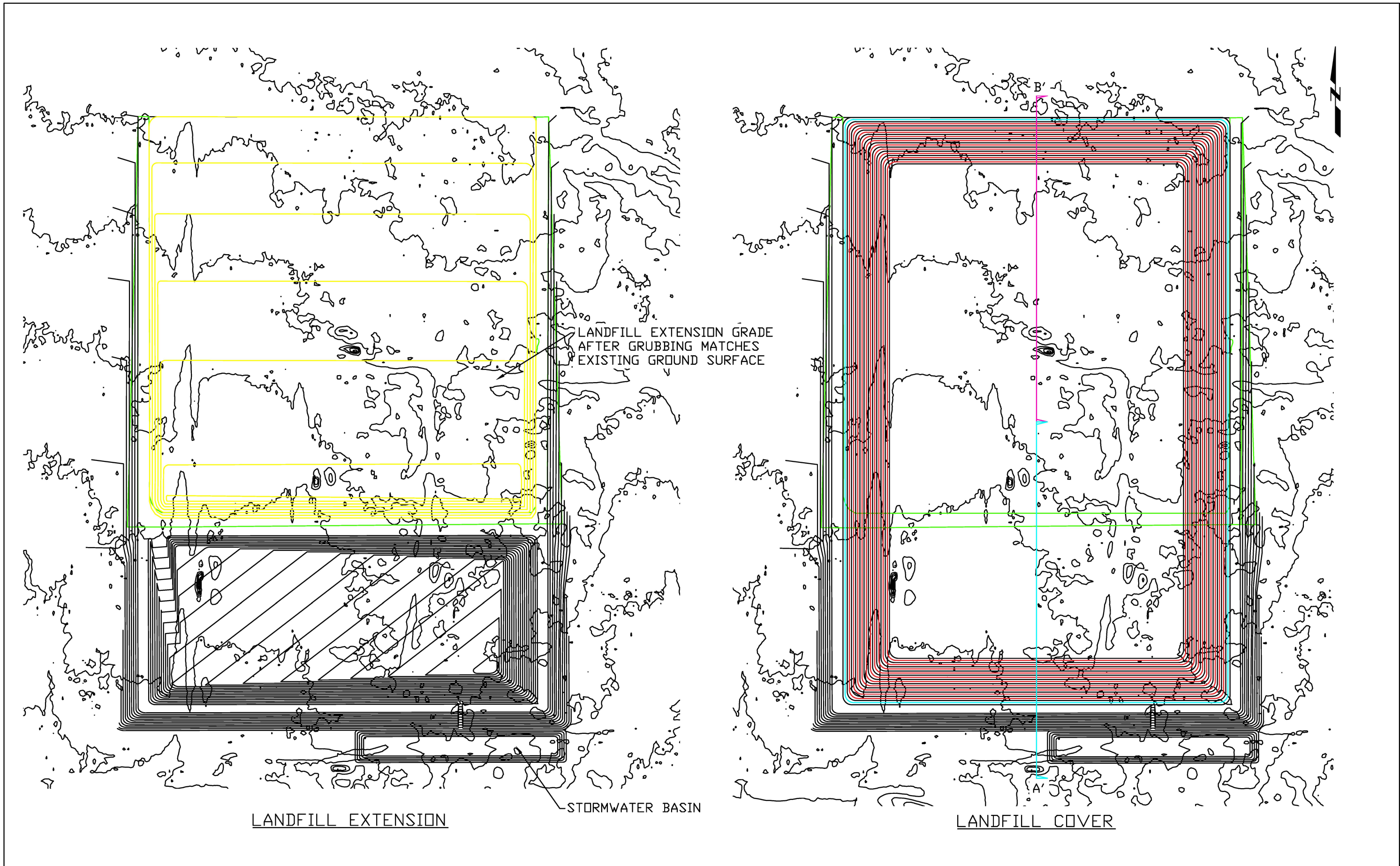
EXISTING CONSTRUCTION VOLUMES

|                    |           |
|--------------------|-----------|
| EXCAVATION         | 60174 CY  |
| BERM               | 45611 CY  |
| 6" PROTECTIVE SOIL | 2448 CY   |
| 6" LEACHATE SAND   | 2448 CY   |
| 60ML HDPE LINER    | 144860 SF |
| GCL (10^-12)       | 144860 SF |
| 6" GRADING SAND    | 2448 CY   |

COMBINED COVER/FILL VOLUMES

|                                      |           |
|--------------------------------------|-----------|
| FINAL TOPSOIL COVER 6'               | 8540 CY   |
| FINAL CLAY COVER 6'                  | 8540 CY   |
| EXPANSION LANDFILL FLOOR TO BERM TOP | 33387 CY  |
| EXISTING LANDFILL FLOOR TO BERM TOP  | 60174 CY  |
| STACKED WASTE TO 25 FT               | 359536 CY |
| TOTAL WASTE MATERIAL                 | 453097 CY |

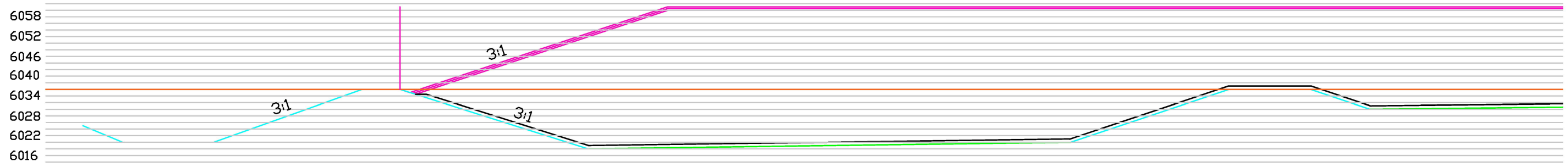
|     |      |    |                         |  |   |          |     |
|-----|------|----|-------------------------|--|---|----------|-----|
| REV | DATE | BY | DESCRIPTION             |  |  | LOCATION | NO. |
| -   | -    | -  | FOR PERMITTING USE ONLY |  |   | PROJECT  | B-0 |
|     |      |    |                         |  |   | TITLE    |     |



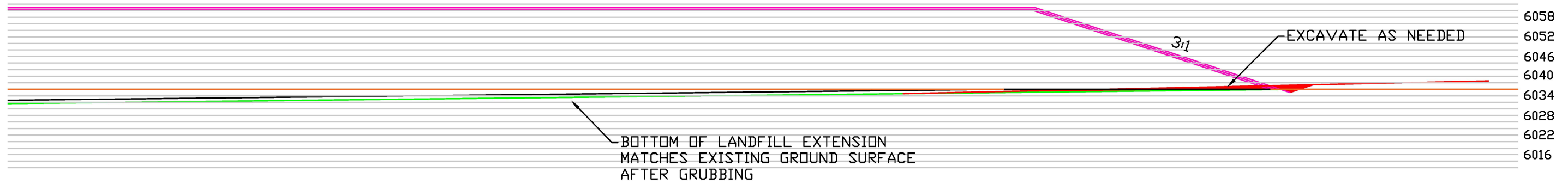
| REV | DATE | BY | DESCRIPTION             |
|-----|------|----|-------------------------|
| -   | -    | -  | FOR PERMITTING USE ONLY |
|     |      |    |                         |
|     |      |    |                         |



| LOCATION                         | NO.  |
|----------------------------------|------|
| PINNACLE FUELS SECURED STORAGE   |      |
| PROJECT                          | B-1  |
| PFSS LANDFILL PERMIT APPLICATION |      |
| TITLE                            | PLAN |



SECTION A



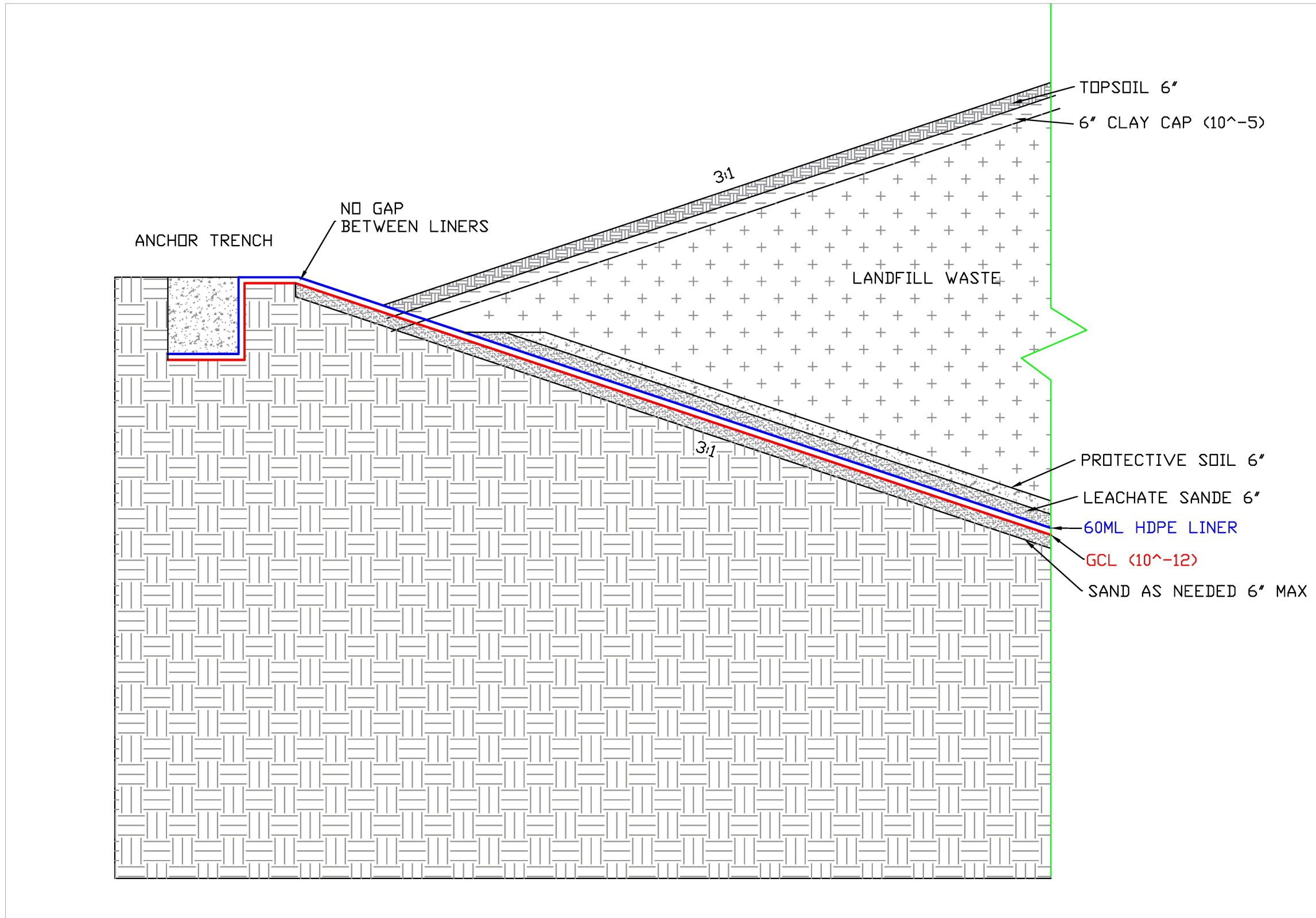
SECTION B

- BERM —————
- UNDISTURBED GROUND SURFACE —————
- BOTTOM OF LANDFILL —————
- TOP OF BERM LEVEL —————
- COMPLETED LANDFILL CAP —————
- TOP OF LINER AND PROTECTIVE SOIL —————

| REV | DATE | BY | DESCRIPTION             |
|-----|------|----|-------------------------|
| -   | -    | -  | FOR PERMITTING USE ONLY |
|     |      |    |                         |
|     |      |    |                         |



|   |                |
|---|----------------|
| LOCATION<br>PINNACLE FUELS SECURED STORAGE  | NO.<br><br>B-3 |
| PROJECT<br>PFSS LANDFILL PERMIT APPLICATION |                |
| TITLE<br>SECTION                            |                |

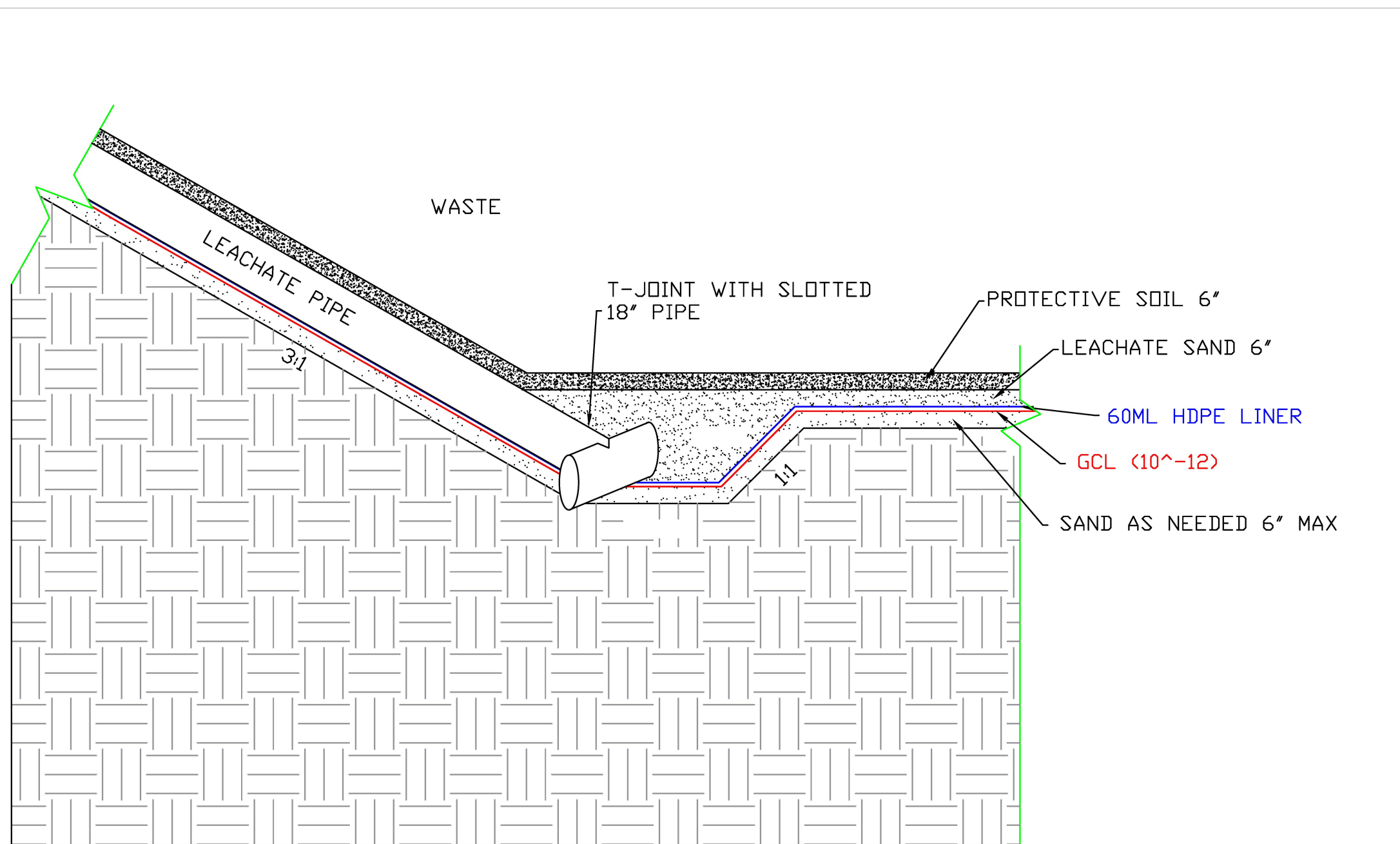


TYP. BERM DETAIL

| REV | DATE | BY | DESCRIPTION             |
|-----|------|----|-------------------------|
| -   | -    | -  | FOR PERMITTING USE ONLY |
|     |      |    |                         |
|     |      |    |                         |



| LOCATION                         | NO.          |
|----------------------------------|--------------|
| PINNACLE FUELS SECURED STORAGE   |              |
| PROJECT                          | B-3          |
| PFSS LANDFILL PERMIT APPLICATION |              |
| TITLE                            | BURM DETAILS |



LEACHATE DETAIL

| REV | DATE | BY | DESCRIPTION             |
|-----|------|----|-------------------------|
| -   | -    | -  | FOR PERMITTING USE ONLY |
|     |      |    |                         |
|     |      |    |                         |



|   |     |
|---|-----|
| LOCATION<br>PINNACLE FUELS SECURED STORAGE  | NO. |
| PROJECT<br>PFSS LANDFILL PERMIT APPLICATION | B-4 |
| TITLE<br>LEACHATE DETAILS                   |     |

## Landfill Capacity

453097 CY

## Average Daily Volume\*

|                 | Years |     |     |     |     |     |     |     |     |     |
|-----------------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Annual Growth % | 1     | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
| 10              | 100   | 110 | 121 | 133 | 146 | 161 | 177 | 195 | 214 | 236 |

## Cumulative Volume over 10 Years

|                 | Years |       |        |        |        |        |        |        |        |        |
|-----------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Annual Growth % | 1     | 2     | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| 10              | 36000 | 76150 | 120315 | 168897 | 222336 | 281120 | 345782 | 416910 | 495151 | 581216 |

\* - Assumes Mixing Ratio: 0.5 Cubic Yards of soil to 1 Cubic Yard of waste for a total of 100 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

Integrated Water Management  
 Landfill Permit  
 Duchesne, UT  
 Project Number: 751-099

**Plate  
C-1**



| Task               | Description                             | Unit Cost    | No. Units | Landfill #1 | Unit Type  | Total Cost           | Details  |
|--------------------|---|--------------|-----------|-------------|------------|----------------------|--|
| Engineering        | QCA (Laboratory/field Testing)          | \$ 15,779.38 |           |             | 1 Estimate | \$ 15,779.38         | 15% of construction Cost, includes design, lab testing and field engineering support |
|                    | Construction Surveying                  | \$ 1,500.00  |           |             | 1 Estimate | \$ 1,500.00          | Aerial drone imaging and processing  |
|                    | As built survey                         | \$ 2,000.00  |           |             | 1 Estimate | \$ 2,000.00          | GeoStrata As built survey and CAD drawing  |
|                    | Letter of notification of closure       | \$ 1,500.00  |           |             | 1 Estimate | \$ 1,500.00          | Letter to DWMRC and County   |
| Construction Cost  | Topsoil Material                        | \$ -         | 8540      |             | Cu Yd      | \$ -                 | Topsoil is available on site   |
|                    | Top Soil Testing                        | \$ 250.00    |           |             | 1 Estimate | \$ 250.00            | Soil sampling and testing to ensure top soil is adequate                             |
|                    | Topsoil Graded                          | \$ 0.16      | 66000     |             | Sq Yd      | \$ 10,560.00         | RS Means   |
|                    | Trucking Topsoil                        | \$ 1.00      | 8540      |             | Cu Yd      | \$ 8,540.00          | Top Soil is available on site  |
|                    | Clay Liner Soils and Hauling            | \$ 3.39      | 8540      |             | Cu yd      | \$ 28,950.60         | Imported Clay Soil From Integrated Rock Products                                     |
|                    | Clay Soils Compacted                    | \$ 0.80      | 8540      |             | Cu Yd      | \$ 6,832.00          | RS Means   |
|                    | Clay Soils Testing                      | \$ 500.00    |           |             | 1 Estimate | \$ 500.00            | Soil sampling and testing to ensure Clay liner is adequate                           |
|                    | Hydro Seeding with mulch and fertilizer | \$ 62.00     | 500       |             | 1000 Sq ft | \$ 31,000.00         | RS Means   |
|                    | Mobilization /Demobilization            | \$ 3,000.00  |           |             | 3 Each     | \$ 9,000.00          | \$1500 per mobilization per piece of quipment  |
| Contingency        | 10% of constuction cost                 | \$ 9,563.26  |           |             | 1 Each     | \$ 9,563.26          | GeoStrata Estimate   |
| <b>TOTAL COST:</b> |   |              |           |             |            | <b>\$ 125,975.24</b> |  |

| Inflation Adjustment |                  |                                      |
|----------------------|------------------|--------------------------------------|
| Year End             | Inflation Factor | Adjusted Total Bond for Closure Cost |
| 2020                 | 1.018            | \$ 128,242.79                        |
| 2021                 | 1.042            | \$ 133,628.99                        |

Engineers opinion of probable Costs

### Closure Cost Summary

| 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 | \$ 25.00  | 4         | hours     | 100.00     | 64                  | \$ 6,400.00        | 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 | \$ 25.00  | 2         | hours     | 50.00      | 64                  | \$ 3,200.00        | 4 reports/year for the first 2 years and then 2 reports/year for 28 years         |
| TOTAL for 30 yrs |  |           |           |           |            |                     | \$ 9,600.00        |   |

|                        |                              |             |   |         |         |    |              |  |
|------------------------|------------------------------|-------------|---|---------|---------|----|--------------|--|
| Groundwater Monitoring | Groundwater Sampling labor   | \$ 85.00    | 6 | hour    | 510.00  | 13 | \$ 6,630.00  | Annual monitoring for first 5 years, biennial for next 10 years, then monitoring every 5th year for final 15 years. Sampling from 2 monitoring wells for 13 rounds of sampling |
|                        | GRO                          | \$ 130.00   | 2 | sample  | 260.00  | 13 | \$ 3,380.00  |  |
|                        | Heavy Metals                 | \$ 178.00   | 2 | sample  | 356.00  | 13 | \$ 4,628.00  |  |
|                        | Inorganic Constituents/other | \$ 234.00   | 2 | sample  | 468.00  | 13 | \$ 6,084.00  |  |
|                        | Groundwater sampling report  | \$ 1,200.00 | 1 | report  | 1200.00 | 13 | \$ 15,600.00 |  |
|                        | Transport to lab             | \$ 100.00   | 1 | vehicle | 100.00  | 13 | \$ 1,300.00  |  |
| TOTAL for 30 yrs       |                              |             |   |         |         |    | \$ 37,622.00 |  |

|                  |                     |          |       |            |          |   |              |   |
|------------------|---------------------|----------|-------|------------|----------|---|--------------|---|
| Maintenance      | Re-grading top Soil | \$ 0.16  | 66000 | Sq Yd      | 10560.00 | 1 | \$ 4,775.00  | Assumes 100% of topsoil of final cover of both cells will have to be replaced over 30 years |
|                  | Soil replacement    | \$ 1.00  | 8540  | Cu Yd      | 8540.00  | 1 | \$ 8,540.00  |   |
|                  | Reseeding           | \$ 62.00 | 238   | 1000 Sq Ft | 14756.00 | 1 | \$ 14,756.00 | Assumes 1 total reseeding of final cover over 30 years                                      |
| TOTAL for 30 yrs |                     |          |       |            |          |   | \$ 28,071.00 |   |

|                            |  |  |  |  |  |  |              |  |
|----------------------------|--|--|--|--|--|--|--------------|--|
| TOTAL for all tasks 30 yrs |  |  |  |  |  |  | \$ 75,293.00 |  |
|----------------------------|--|--|--|--|--|--|--------------|--|

|             |                                 |  |  |  |  |  |             |  |
|-------------|---------------------------------|--|--|--|--|--|-------------|--|
| Contingency | 10% of total cost for all tasks |  |  |  |  |  | \$ 7,529.30 |  |
|-------------|---------------------------------|--|--|--|--|--|-------------|--|

|                         |  |  |  |  |  |  |              |  |
|-------------------------|--|--|--|--|--|--|--------------|--|
| TOTAL POST CLOSURE COST |  |  |  |  |  |  | \$ 82,822.30 |  |
|-------------------------|--|--|--|--|--|--|--------------|--|

0.324074074

| Inflation Adjustment |                  |   |
|----------------------|------------------|---|
| Year End             | Inflation Factor | Adjusted Total Bond for Post Closure Cost |
| 2020                 | 1.018            | \$ 84,313.10                              |
| 2021                 | 1.042            | \$ 87,854.25                              |

Engineers opinion of probable Costs



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### Post-Closure Care Cost Summary

Integrated Water Management  
Landfill Permit Application  
Duchesne, UT  
Project Number: 751-099

**Plate  
D-2**