NM1-62 Approved Closure/Post-Closure Plan April 15, 2026

Closure/Post-Closure Plan
Sundance Services West

Prepared for

Sundance Services West, Inc.

Prepared by

DBS&A
a Geo-Logic Company

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1. Introduction

Sundance Services West (Sundance West) is a commercial surface waste management facility for oil field waste processing and disposal services. The Sundance West facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD). The facility is designed in compliance with 19.15.36 NMAC, and was constructed and operated in compliance with a surface waste management facility permit issued by OCD. The facility is owned by and operated by Sundance Services West, Inc. (SSWI).

1.1 Purpose

The purpose of this closure/post-closure (C/PC) plan (the plan) is to comply with the requirements of 19.15.36.8.C.(9) and 19.15.36.18 NMAC. This plan describes the proposed procedures for closure and post-closure of the Sundance West facility, including a C/PC cost estimate sufficient to close the facility in a manner that will protect fresh water, public health, safety and the environment.

The oil field waste processing and disposal infrastructure was developed and operated in phases over a multi-year time period.

The infrastructure constructed at the site to date includes the following:

- 3 landfill cells (1A & 1B, 1C & 1D, 2A & 2B)
- A double-sided jet out facility with storage sump
- Stabilization and Solidification Area (approximately 4 acres)
- 3 sludge tanks (750 barrels [bbl] each)
- 2 gun barrel tanks (1,000 bbl each)
- 4 oil storage tanks (750 bbl each)
- 4 water storage tanks (750 bbl each)
- 10 evaporation ponds

This C/PC plan may be modified by SSWI to address changes in site or operating conditions, and submitted and approved by OCD 30 days prior to implementation of proposed change. This plan may also be amended at the request of OCD per 19.15.36.18.A.(5) NMAC.

1.2 Site Location

The Sundance West site is located approximately 3 miles east of Eunice, 18 miles south of Hobbs, and approximately 1.5 miles west of the Texas/New Mexico state line in unincorporated Lea County, New Mexico. The Sundance West site consists of a 320-acre ± tract of land located in the South ½ of Section 30, Township 21 South, Range 38 East, Lea County, New Mexico. Site access is provided via New Mexico Highway 18 (NM 18) and Wallach Lane. A site location map is provided as Figure 1.

1.3 Facility Description

The Sundance West facility is a commercial surface waste management facility that includes two main components: a liquid oil field waste processing area (80 acres ±), and an oil field waste landfill (180 acres ±). Oil field wastes are delivered to the Sundance West facility from oil and gas exploration and production operations in southeastern New Mexico and west Texas.

2. Closure Plan

2.1 Construction Schedule

In accordance with 19.15.36.18A(1-3) NMAC, Sundance West will notify OCD's Environmental Bureau at least 60 days prior to cessation of permanent operations at the Sundance West facility. Included in this notification will be a proposed schedule for closure and monitoring activities. Following receipt of this notification, OCD will review the current C/PC plan and coordinate the required site inspection with Sundance West. Within 60 days after the date of cessation of operations specified in the operator's closure notice, OCD will notify Sundance West if modifications to the C/PC plan or schedule are required for the protection of fresh water, public health, safety, or the environment. The OCD Director may, for good cause, extend the time for the OCD's response for an additional period not to exceed 60 days. Should OCD not notify Sundance West of modifications or additions to the C/PC plan, Sundance West will commence the following closure activities at the facility:

- Processing Area:
  - Liquids removal
  - Sludge/solids removal
  - Evaporation pond liner removal
  - Tank cleaning and removal
  - Excavation and disposal of jet wash facility, including sump
  - Excavation and disposal of mud management area
  - Site sampling
  - Regrading, including stormwater infrastructure
  - Final site closure, including seeding
  - Process area closure documentation
- Solid Waste Disposal Area:
  - Landfill closure construction
  - Final cover
  - Vegetation
  - Landfill closure documentation
- Miscellaneous Building and Structure Removal
- Final Land Use

2.2 Liquids Removal

Liquid remaining in tanks, the jet out facility, and sumps will be pumped or transported to the evaporation ponds. Liquids will be pumped through the tank battery for removal of oil and solids prior to discharge to the evaporation ponds. Evaporation will be conducted with or without the aid of a mechanical evaporation system. Fluids may also be transported via pipeline to an off-site disposal well.

2.3 Evaporation Pond Liner Removal

After all liquids at the processing area have been disposed of, any remaining sludge in the ponds will be allowed to dry to a consistency that lends itself to management and removal (i.e., paint filter test). Once solidification has been completed and the waste has been tested, the material will be disposed of at the solid waste disposal area (Sundance West Landfill). Although

highly unlikely, should the Sundance West Landfill not be in operation at the time of closure, remaining solids will be removed from the ponds and disposed of in an OCD-approved surface waste management facility as self-generated exempt waste in conformance with current operating standards.

Once the sludge has been removed, the high-density polyethylene (HDPE) liner system components will be thoroughly cleaned in accordance with 19.15.35.8 NMAC. Sundance West proposes to cut the HDPE liner material and geocomposite into manageable pieces and dispose of the materials in the Sundance West Landfill or to transport the materials to a New Mexico Environment Department (NMED) Solid Waste Bureau (SWB) approved recycling or disposal facility upon approval from OCD.

Based on evolving site needs, SSWI may in the future evaluate the potential for alternative uses of the evaporation pond footprint. In this case, all liquids will be disposed of through the pipeline to an off-site disposal well as described in Section 2.2.

2.4 Tank Removal

Upon closure, all tanks, piping, and equipment will be emptied and cleaned. Sundance West will dispose of the residual exempt oil field waste removed from the tanks and deposit it in the solidification area for processing prior to disposal in landfill. If the Sundance West Landfill is not in operation at time of closure, remaining solids will be removed and disposed of in an OCD-approved surface waste management facility capable of managing the exempt waste stream. Sundance West will reuse, recycle, or remove the tanks, infrastructure, and equipment from the site within 90 days of closure and notify OCD accordingly.

2.5 Mud Management Facility Closure

Closure of the mud management facility, which includes the Jet Wash Facility, associated sump, and the stabilization and solidification area, will consist of pumping out liquids as described in Section 2.2. Then any remaining sludge/solids will be allowed to dry to a consistency that lends itself to management and removal (i.e., paint filter test). Sundance West may introduce soils when sufficient evaporation has taken place to expedite solidification. Once solidification has been completed and the waste has been tested (paint filter), the material will be encapsulated at the solid waste disposal area (Sundance West Landfill). Although highly unlikely, should the Sundance West Landfill not be in operation at the time of closure, remaining solids will be

removed from this area and disposed of in an OCD-approved surface waste management facility as self-generated exempt waste in conformance with current operating standards.

The mud management facility is underlain by two different liner systems. Underneath the concrete, there is a leak detection system consisting of a geonet and a geomembrane liner. Underneath the leak detection system, there is a second liner system consisting of a geomembrane over a geocomposite clay liner (GCL). Due to the slope of the leak detection system to various collection points, the depth of soil between these two liner systems ranges from 2 to 10 feet. All material above the lower liner, including the lower liner components, soil, leak detection system, and concrete will be removed, and all contaminated materials will be disposed of as self-generated exempt waste in an OCD-approved surface waste management facility.

2.6 Site Sampling

Site sampling will occur at two locations:

- Evaporation ponds: after liner removal and before regrading
- Around the mud management facility: after liquids and solids removal, adjacent tank cleaning and removal, and excavation and disposal of everything above the liner

The site will be sampled in accordance with Chapter 9 of U.S. Environmental Protection Agency (EPA) publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. A typical sampling grid is provided as Figure 2, which illustrates the proposed sampling locations for the Sundance West processing area to document proper closure. Soil samples will be taken at selected locations in the areas used for treatment and storage, mud management area, and in the evaporation ponds. Independent soil samples will be collected at specific depth intervals within the in-situ soil from each of the 88 locations shown on Figure 2, including at least one from the first 12 inches of soil and at least one within 36 to 42 inches below the surface.

Soil samples will be screened in the field by a staff scientist or engineer for the presence of contaminants using visual methods (staining, odor, etc.) using the heated headspace method. Samples will be placed in a sealed container, such as a Mason jar, and heated to a minimum of 40°C (104°F). A photoionization detector (PID) will be used to puncture the seal and quantify levels of potential volatile contaminants. Soil samples will also be field screened for chlorides using Hach test strips or equivalent methods.

A maximum of one sample from each of the 88 proposed locations will be submitted for laboratory analysis. The chosen sample will be from the deepest interval yielding a PID reading above a value of 100 parts per million by volume (ppmv), as determined during field screening. If no samples at a specific location have PID readings exceeding 100 ppmv, the sample collected from the greatest depth or showing the greatest visual impact will be submitted to the laboratory.

Per 19.15.36.18(D)(4) NMAC, soil samples collected from below the evaporation ponds will be analyzed for the following constituents:

- Total petroleum hydrocarbons (TPH)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX)
- Metals and inorganics listed in Water Quality Control Commission (WQCC) 20.6.2.3103.A&B NMAC

Per 19.15.36.18(C)(1)(b) NMAC, samples pulled from below the mud management facility will be analyzed for the following constituents:

- TPH
- BTEX
- Major cations and anions
- Resource Conservation and Recovery Act (RCRA) metals

Sample results will be submitted to the OCD Environmental Bureau (Santa Fe). Provided the sample results indicate no contamination persists at the facility in excess of allowable levels, Sundance West will proceed with final site closure and post-closure activities.

If contamination above the values listed in 19.15.29 NMAC Table 1 is observed in any of the samples collected, Sundance West will notify OCD within 15 days per 19.15.29.10 NMAC, and will excavate contaminated materials and dispose of the soils in an OCD-approved landfill. The excavation walls and floor will be sampled at regular intervals until soil sampling indicates that remaining soil contamination is below the levels listed in 19.15.29 NMAC Table 1. The sample quantities shown in Appendix A include the points shown on Figure 2 plus 10 percent for additional sampling.

2.7 Final Site Closure – Processing Area

Upon OCD determination that no contamination is present at Sundance West at concentrations above regulatory thresholds, the processing area and evaporation ponds footprint will be regraded to the intended final use. The final grading in this area is shown in Figure 5. Activities to be conducted during this period include the following:

- Submittal of notice of intent (NOI) to EPA for a construction general permit (CGP) and stormwater pollution prevention plan (SWPPP) implementation
- Evaporation and sedimentation pond berm removal and backfilling
- Site grading and recontouring
- Site revegetation

Revegetation of the Sundance West site (equal to 70 percent of the nature perennial vegetative cover) will be conducted during the optimum planting period, whenever possible. Examples of seed types identified and recommended by the Natural Resources Conservation Service (NRCS) as acceptable cover for the local conditions are described in Table 1. The Closure Documentation Record (Appendix C), or a similar template, will be used to record the field activities specific to final site closure. A licensed New Mexico Professional Engineer, experienced in environmental engineering, will supervise closure construction and certify completion of closure activities.

Table 1. NRCS Recommended Seed Mix Sundance West

Grass Species	% of Mix	Rate (PLS/acre)	Weight (lb PLS/acre)
Bluegrama (Native)	40	1.5	1.2
Buffalograss (burs)	10	16	3.2
Green Sprangletop	10	1.7	0.34
Sand Dropseed	10	0.5	0.1
Sideoats (Vaughn)	20	4.5	1.8
Western Wheatgrass (Native)	10	8	1.6
Totals	100%	32.2	8.24

Lea County NRCS recommends doubling the seeding rate on critical area plantings.
These grasses are fairly shallow rooted; well adapted to Lea County; are available from area growers; and will aid in erosion control once established.
NRCS recommends that seeding a cover crop of sorghum in the spring at 8 pounds per acre (lb/acre) will stabilize the site initially.
Subject to change based on changes in NRCS requirements, new technology, etc.
PLS = Pure live seed

2.8 Solid Waste Disposal Area

It is anticipated that Sundance West Landfill will be the final area closed at the Sundance West facility due to the need for disposal of wastes from other on-site process units under premature or routine closure conditions. Final cover will be installed within one year of achieving the final waste elevations, or an intermediate grading plan approved by OCD under early closure. The overall final grading contours for the landfill are provided in the Permit Plans (Volume III.1 of the permit application). The final cover proposed for the Sundance West Landfill includes an alternative side slope cover configuration.

The alternative (evapotranspiration) cover for the landfill will consist of a 24-inch erosion layer, a 6-inch infiltration layer, and a 12-inch intermediate cover layer (k values as shown on Figure 3). Based on the results provided in Volume III.4 of the permit application (HELP Model), the proposed alternative final cover for the landfill is proven to provide superior performance in preventing liquid migration through the cover when compared to the prescriptive cap outlined in the regulations.

Final slopes will be constructed in accordance with the Final Grading Plan. The side slopes will be no greater that 25 percent (4 horizontal to 1 vertical) and the top crown will be constructed at a design grade of 5 percent. Details for the final cover design are shown on the Permit Plans. The final cover, as well as other disturbed areas of the site, will be seeded with native vegetation. Vegetation on the site will be planted during the optimum planting period, whenever possible. Examples of seed types identified and recommended by NRCS as acceptable cover for the local climate and precipitation include, but are not limited to those listed in Table 1.

The Closure Documentation Record (Appendix C) or a similar template will be used to record the field activities specific to final site closure. Documentation of closure activities including, but not limited to, monitoring results, site inspection data, soil sampling, and maintenance procedures will be submitted to OCD in the final closure report. Closure construction activities will be supervised by a licensed New Mexico Professional Engineer experienced in waste facility technology, who will certify the closure.

2.9 Miscellaneous Building and Structure Removal

At this time, it is anticipated that the Sundance West facility site following closure will revert to open space or livestock grazing. Should an alternate land use be identified that could use the remaining structures and buildings, they will be cleaned and left in place with the exception of below-grade sumps. If not, all buildings and miscellaneous structures will be dismantled, and

where practical, recycled or reused. Non-recyclable material will be disposed of in the Sundance West Landfill, or other OCD-approved landfill. Once buildings and structures are removed, the areas will be inspected for contamination. Should contamination be discovered, the impacted area will be excavated and disposed of in the solid waste disposal unit, and the area will be tested until confirmed to meet regulatory standards as described in Section 2.6. If the Sundance West Landfill is not in operation at time of closure, remaining materials will be removed from the facility and disposed of in an OCD-approved surface waste management facility.

2.10 Final Land Use

At this time, Sundance West has not established a use for the facility after closure beyond open pasture. Should a specific use be determined, Sundance West will notify OCD and request approval to be released from the following post-closure activities provided there has not been a release to the vadose zone or groundwater pursuant to 19.15.30 and 19.15.29 NMAC.

3. Post-Closure Plan

3.1 Post-Closure Maintenance

3.1.1 Processing Area

Sundance West will conduct post-closure monitoring of the processing area for a period of no less than 3 years. Should deficiencies or discrepancies be discovered during the site inspections in these areas, Sundance West will conduct corrective measures. If there has been a documented release to the groundwater or vadose zone, Sundance West will comply with the requirements of 19.15.30 and 19.15.29 NMAC.

3.1.2 Landfill Area

Sundance West will monitor and provide post-closure maintenance for the landfill for a period of not less than 30 years. During the post-closure care period, Sundance West proposes to inspect and maintain the site at least quarterly, and immediately after a documented 24-hour, 25-year storm event, whichever is more frequent as defined on the Site Inspection Checklist (Appendix D). Upon successful revegetation efforts resulting in at least 70 percent coverage (not including noxious weeds) or other approved erosion control methods (gravel mulches, etc.), Sundance West plans to reduce the inspection frequency subject to OCD approval. Post-closure care inspections will typically include:

- Vegetative growth observation
- Erosion
- Differential settlement
- Vegetative stress (i.e., potential gas migration)

In addition, vadose zone monitoring will be performed and reported on an annual basis in accordance with the approved Vadose Zone Monitoring Plan.

3.2 Reporting

Reports of post-closure activities including, but not limited to site inspection data and maintenance procedures will be submitted to OCD within 45 days from the end of each calendar year or as otherwise required.

4. Financial Assurance

4.1 Closure/Post Closure Cost Estimate

The cost estimate (Appendix A) for the closure and post-closure activities described in this C/PC plan is presented in current dollars and conservatively assumes that third-party contractors will perform closure and post closure activities at the site, as required by 19.15.36.8.C.(9) NMAC. Preparation of the C/PC cost estimate also assumes that no contamination or remedial activities are required due to releases into the environment.

This estimate will be revised as requested by OCD as part of the annual report. Upon OCD approvals of the revised cost estimate, Sundance West will elect a financial assurance mechanism pursuant to 19.15.36.11.E NMAC and submit the appropriate documentation to OCD based on the estimates provided in this plan.

4.2 Release of Financial Assurance

Upon successful completion of closure activities for the entire Facility, or portions of the operation (i.e., sections of the landfill that have reached final grade; components of the process that have ceased operation) and after OCD concurrence, Sundance West will request the release of the financial assurance mechanism in-place for that component of closure of the facility. After the post-closure periods have expired (i.e., 3 years for waste processing pits/ponds and

30 years for the landfill), provided there is no contamination evident and the site has established revegetation in accordance with the regulations, Sundance West will request release from the remaining financial assurance requirements for the facility or portions that have been successfully closed.

Figures

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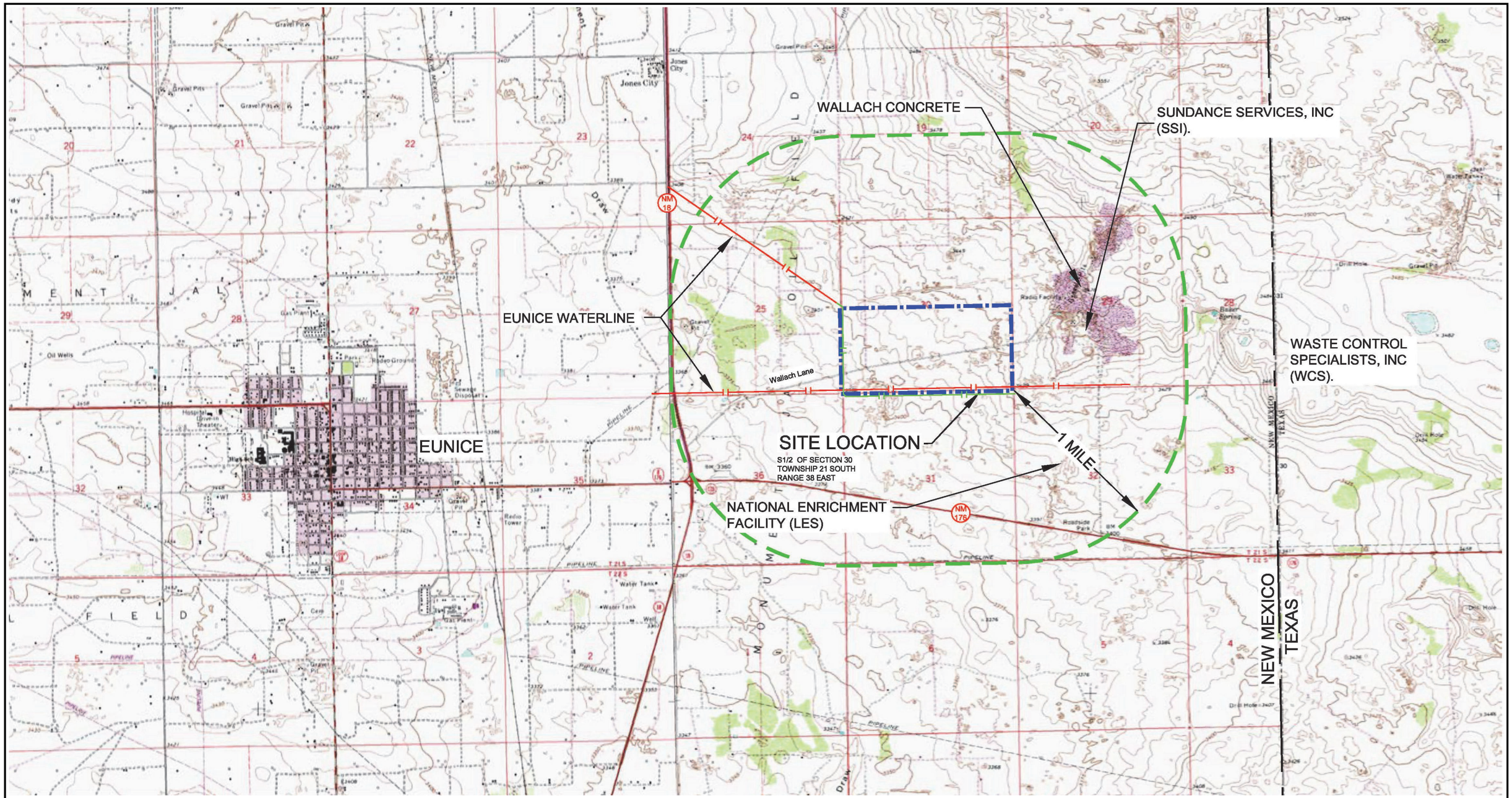

Source: Gordon Environmental permit application

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SUNDANCE SERVICES INC.
SURFACE WASTE MANAGEMENT FACILITY
Site Location Map

Figure 1

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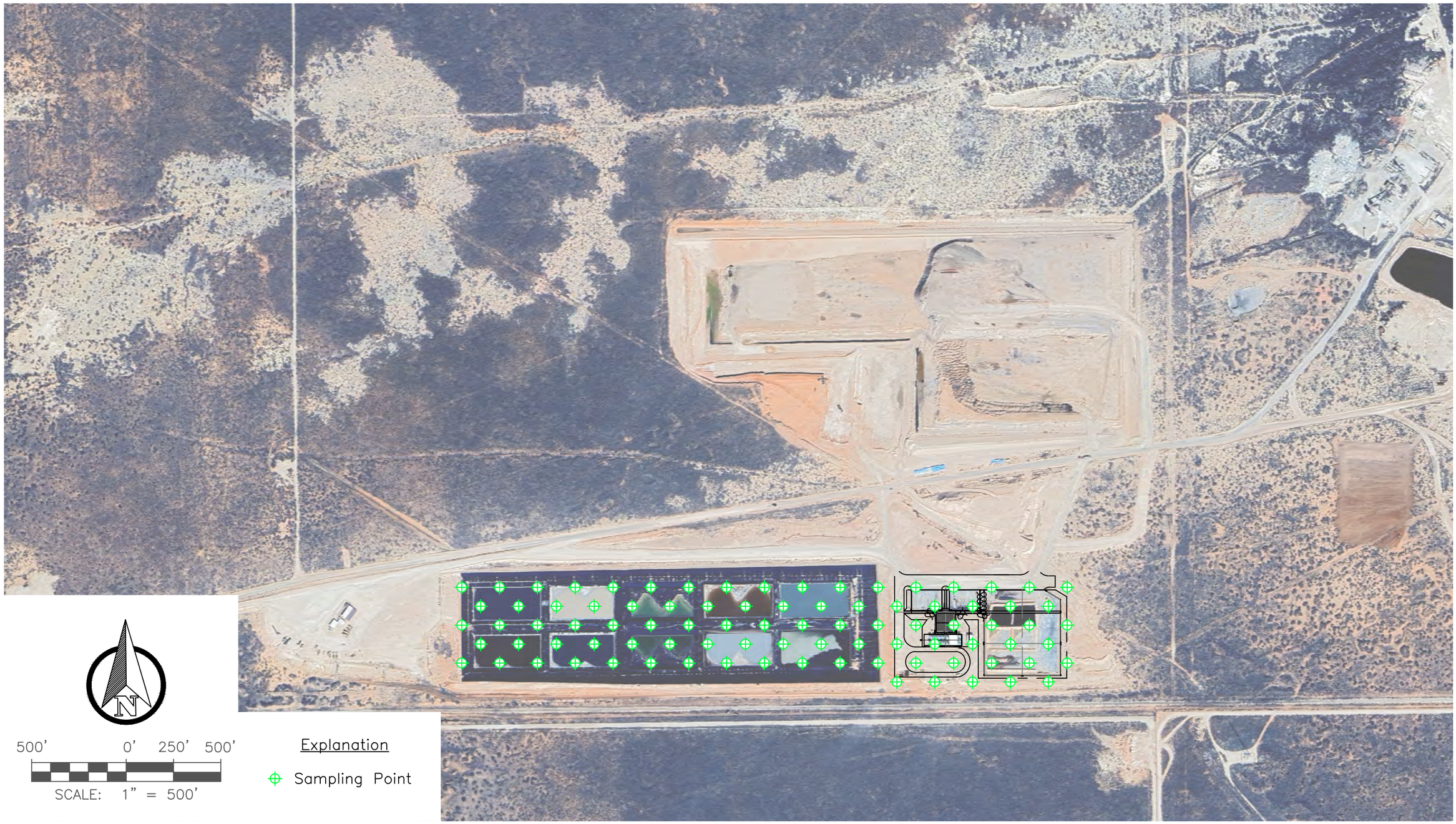

500' 0' 250' 500'

SCALE: 1" = 500'

Explanation

Sampling Point

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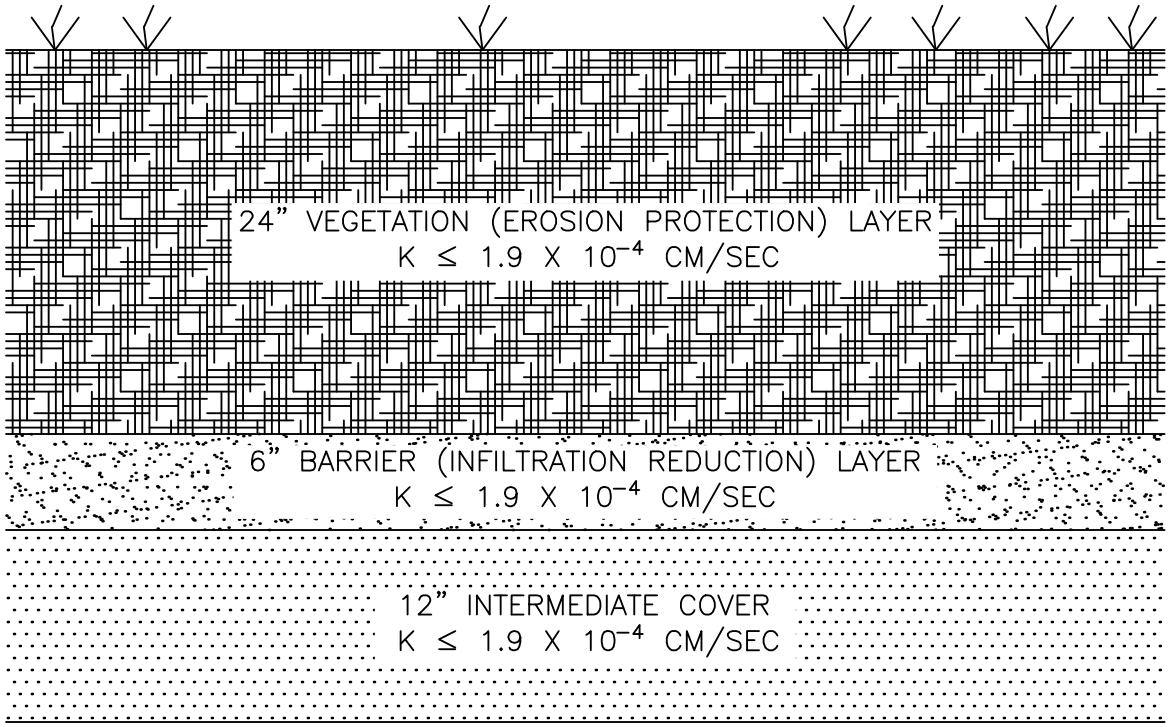
SUNDANCE SERVICES INC
SURFACE WASTE MANAGEMENT FACILITY
Sampling Points

Figure 2



FINAL COVER DETAIL

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SUNDANCE SERVICES INC
SURFACE WASTE MANAGEMENT FACILITY
Final Cover Profile

Figure 3

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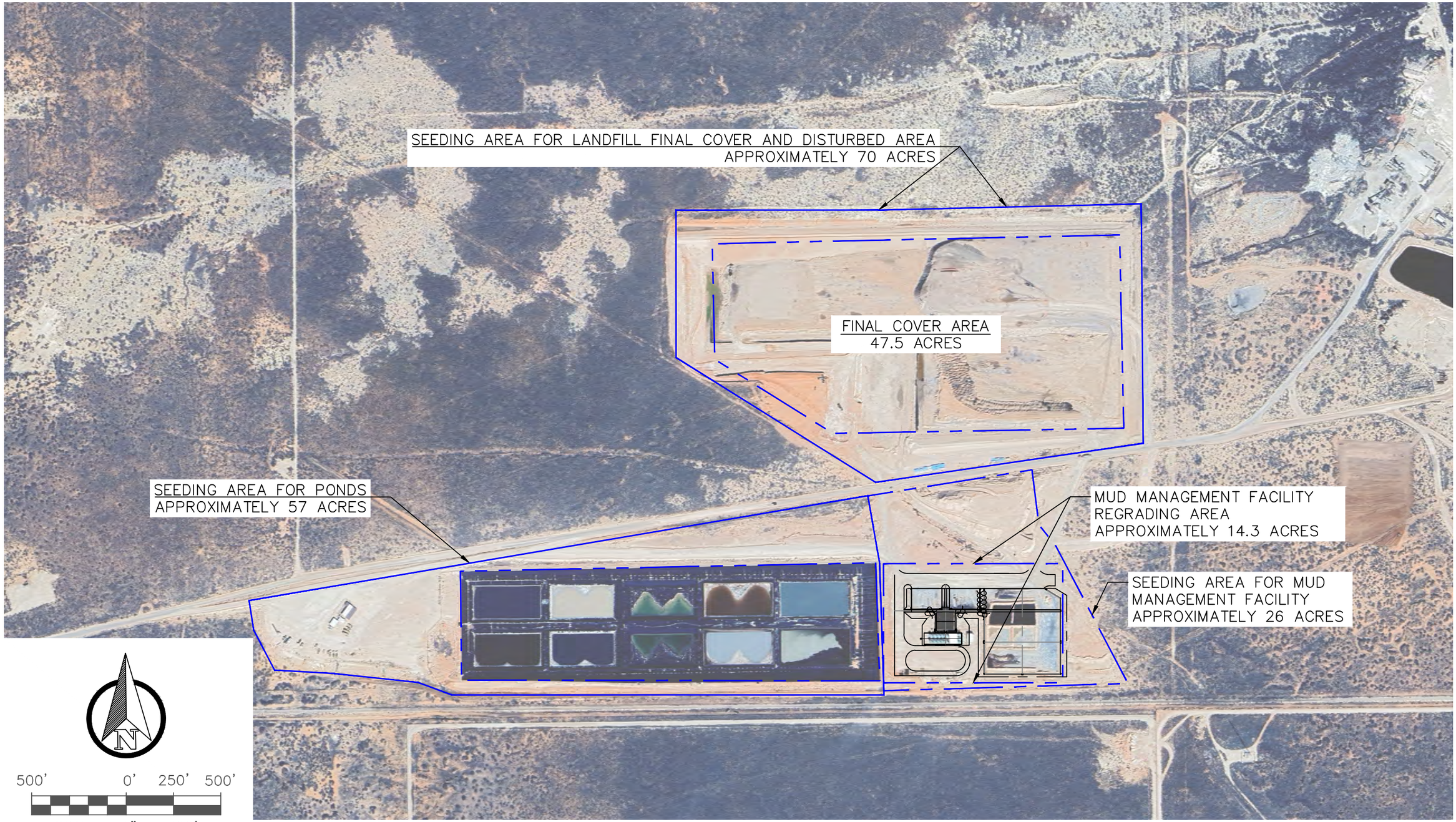

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SUNDANCE SERVICES INC
SURFACE WASTE MANAGEMENT FACILITY

Vegetation Areas

Figure 4

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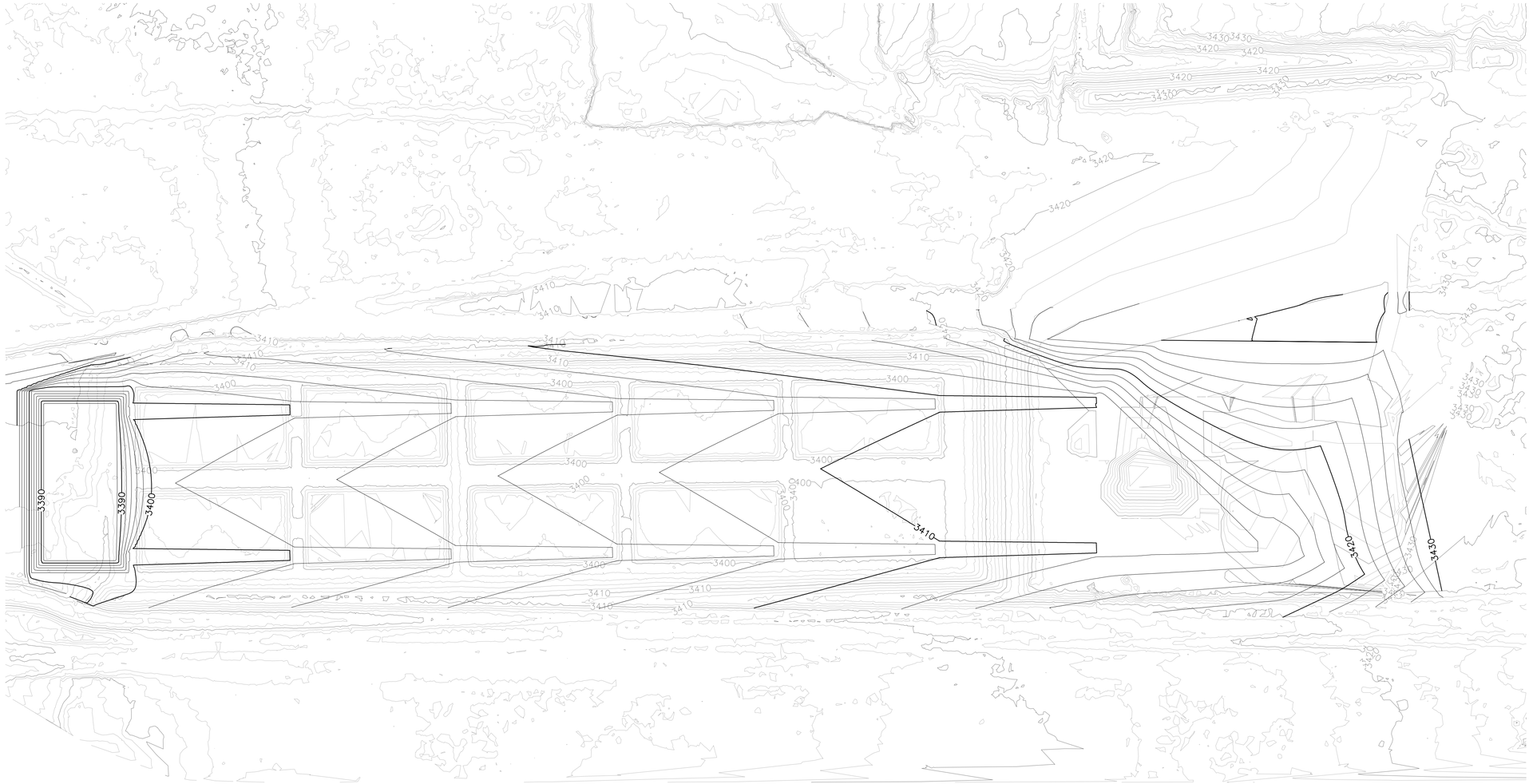

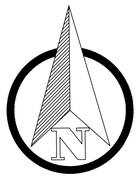

150' 0' 75' 150'

LEGEND

- 3400 — EXISTING 10' CONTOUR(1)
- EXISTING 2' CONTOUR(1)
- 3400 — PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR

QUANTITIES

MUD MANAGEMENT EXCAVATION VOLUME: 63,090 CY

REGRADING EARTHWORKS:
CUT: 373,739 CY
FILL: 369,011 CY
NET: 4,728 CY CUT

SW POND VOLUME: 22,272 CY

NOTES

1. REFERENCE AERIAL TOPOGRAPHY BASED ON MAY 8, 2025 AERIAL SURVEY COMBINED WITH MUD MANAGEMENT EXCAVATION GRADES.

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SUNDANCE SERVICES INC
SURFACE WASTE MANAGEMENT FACILITY

Processing Area and Evaporation Pond Final Grading

Figure 5

Appendix A

Cost Estimates

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Closure Cost Estimate Task Summary (Updated May 2025)

Task	Cost Estimate
1.0 Landfill Closure Construction	$1,145,281
2.0 Landfill Maintenance	$631,286
3.0 Environmental Monitoring	$458,067
4.0 Evaporation Pond Closure Construction	$2,269,349
5.0 Process Area Closure Maintenance	$554,201
6.0 Evaporation Pond and Treatment Plant Maintenance	$35,972
Total cost	$5,094,155

Task 1.0: Landfill Closure Construction Cost Estimate

Task 1.0	Unit	Unit Quantity	Unit Cost	Total Cost
1.1 Final Cover Installation				
1.1.1 Install and Compact 12" Intermediate Cover Layer[2]	CY	77,000	$3.09	$237,688
1.1.2 Install and compact 6" Barrier Layer[2]	CY	38,400	$4.11	$157,919
1.1.3 Install 24" Vegetative Layer[2]	CY	155,000	$3.09	$478,464
1.1.4 Landfill Area Seeding (Class A)[3]	AC	70	$1,542	$107,970
			Task Subtotal	$982,040
1.2 Final Cover Construction Quality Assurance (CQA)				
1.2.1 Inspection and Testing	LS	1	$51,412	$51,412
1.2.2 Certification	LS	1	$7,712	$7,712
			Task Subtotal	$59,124
			Task Total	$1,041,164
			Independent Project Manager & Contract Administration Cost (10% of Task Totals)	$104,116
			Total Cost	$1,145,281

Notes:

1. Closure costs are based on contracting with a qualified third party to complete and certify closure. The activities included in this cost estimate are based on current dollars, previous experience with landfills located in arid climates, and current subcontractor costs.
2. Final cover installation costs assume that:
   The greatest area requiring final cover is 47.6 acres +/-, see Figure 4 for landfill area requring final cover.
   All soils necessary for closure construction are available on-site from the substantial lease area outside BLM mineral acreage.
3. See Figure 4 for Disturbed Landfill Area to be Seeded
4. Costs include taxes.
5. CY = Cubic yard
   AC = Acre
   LS = Lump sum

Task 2.0: Landfill Maintenance

Task 2.0	Unit Quantity	Unit	Unit Cost	Total Cost per Year	Total Cost for 30 Years
2.1 Final Cover Inspection and Reporting					
2.1.1 Inspection	2	events/yr	$1,542	$3,085	$92,545.53
2.1.2 Recordkeeping and Reporting	2	events/yr	$720	$1,440	$43,195.96
			Task Subtotals	$4,525	$135,741
2.2 Final Cover Maintenance					
2.2.1 Cover Maintenance	1	AC/yr	$2,056	$2,056	$61,686.96
2.2.2 Vegetation	2	AC/yr	$1,542	$3,085	$92,546
			Task Subtotals	$5,141	$154,232
2.3 Leachate System					
2.3.1 Leachate Inspection/Repairs	1	LS	$1,029	$1,029	$30,859
2.3.2 Leachate Disposal	4	events/yr	$1,029	$4,114	$123,434
2.3.3 Leak Detection and Monitoring	1	LS	$1,029	$1,029	$30,870
			Task Subtotals	$5,143	$185,163
2.4 Surface Water Management System					
2.4.1 Inspection/Repairs	2	events/yr	$1,029	$2,057	$61,717
			Task Subtotals	$2,057	$61,717
2.5 Fencing					
2.5.1 Inspection/Repairs	2	events/yr	$617	$1,235	$37,042
			Task Subtotals	$1,235	$37,042
			Task Total	$18,101	$573,896
Independent Project Manager & Contract Administration Cost (10% of Task Totals)				$1,810	$57,390
			Total Cost	$19,911	$631,286

Notes:

1. Post-closure maintenance costs are based on contracting with a qualified third party to conduct post-closure care for the landfill. The activities included in this cost estimate are based on current dollars, previous experience with landfills located in arid climates, and current subcontractor costs.
2. Costs include taxes
3. AC = Acre

Task 3.0: Environmental Monitoring

Task 3.0	Unit Quantity	Unit	Unit Cost	Total Cost per Year	Total Cost for 30 Years
3.1 Landfill Gas Monitoring					
3.1.1 Field Services/Lab Analysis/Reporting	1	events/yr	$0	$0	$0
3.2 Monitoring Well[2]					
3.2.1 Field Services/Lab Analysis/Reporting	1	events/yr	$10,282	$10,282	$308,464.98
3.3 Vadose Zone Monitoring					
3.3.1 Field Services/Lab Analysis/Reporting	1	events/yr	$3,599	$3,599	$107,959.73
			Task total	$13,881	$416,425
Independent Project Manager & Contract Administration Cost (10% of Task Totals)				$1,388	$41,642
			Total cost	$15,269	$458,067

Notes:

1. Post-closure environmental monitoring costs are based on contracting with a qualified third party to conduct post-closure monitoring for the landfill. The activities included in this cost estimate are based on current dollars, previous experience with landfills located in arid climates, and current subcontractor costs.
2. Laboratory Analysis cost $825 per Sample (Hall Environmental), 4 wells on site
3. Assume no water in vadose zone wells (i.e., sampling and analysis costs not included)
4. LS = Lump Sum

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Task 4.0: Evaporation Pond Closure Construction

Task 4.0	Units	Unit Cost	Quantity	Total Cost
4.1 Evaporation Pond				
4.1.1 Liquids Transport/Disposal				
4.1.1.1 Transport Liquid[2]	BBL	$2.31	240	$ 555
4.1.1.2 Disposal Liquids[2]	BBL	$1.03	240	$ 246
4.1.1.3 Remove/Transport Sludge[3]	ton	$8.22	12,100	$ 99,522
4.1.1.4 Disposal Sludge [3]	ton	$18.51	12,100	$ 223,985
4.1.1.5 Liner Removal/Transport[4]	CY	$4.63	500	$ 2,313
4.1.1.6 Disposal Liner[4]	CY	$5.14	500	$ 2,569
			Task Subtotal	$329,189
4.1.2 Pond Excavation, Backfill and Contouring[5]				
4.1.2.1 Local cut[6]	CY	$1.03	373,800	$ 385,014
4.1.2.2 Soil On-Site	CY	$1.54	0	$ -
4.1.2.3 Place and Compact Soil	CY	$3.09	369,000	$ 1,139,052
			Task Subtotal	$ 1,524,066
4.1.3 Sampling[8]	EA	$1,029	66	$ 67,889
4.1.4 Seeding Ponds[9]	AC	$1,542	57	$ 87,918
			Task Subtotal	$ 155,807
			Pond Closure Subtotal	$2,009,062
4.2 Site Work				
4.2.1 Tank Removal			LS	$ 7,712
4.2.2 Building Removal			LS	$ 10,282
4.2.3 Process Equipment Removal			LS	$ 2,571
4.2.4 Earthwork			LS	$ 7,712
			Site Work Subtotal	$ 28,277
4.3 Engineering				
4.3.1 CQA/Certification	LS		$	25,705
	Engineering Subtotal		$	25,705
			Task Total	$2,063,045
			Independent Project Manager & Contract Administration Cost (10% of Task Totals)	$206,304.5
			Total Cost	$2,269,349

Notes:

1. Closure costs are based on contracting with a qualified third party to complete and certify closure.
2. Assume 1,000 gallons of residual water in each pond (10) transported up to 50 miles for disposal, 1 US Gallon = 0.024 Barrel.
3. Assume 6" of sludge remaining solids in ten ponds (bottom dimensions 348' * 128') at closure transported up to 50 miles for disposal and specific gravity of sludge is 1.7, 1 ton = 2,000 lb.
4. Pond liner system (2 layers of 60 mil HDPE, 200 mil Geonet) will be removed and disposed during pond closure, 1 cubic yard = 27 cubic feet
5. Soil amount is calculated based on grading shown in Figure 5 of the Closure Plan.
6. Unit Cost includes excavation of soils in evap ponds and processing area for use in grading these areas
7. Site sampling is conducted during the CQA phase
8. Per 19.15.36.18 D(4) and Hall Environmental analysis laboratory, unit cost per sample (sampling & testing) is $1,000. Quantity is samples shown on Figure 2 + 10%
9. See Figure 4 for Disturbed Pond Area to be Seeded
10. If contamination is found in the "Local Cut" soils, they will be removed and other onsite soils are available and will be sused to fill grade. If this is insufficient, SSWI will haul in soils from offsite.
11. Costs include taxes.
12. CY = Cubic Yard
    AC = Acre
    LS = Lump Sum
    EA = Each Acre
    BBL = Barrel (US)

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Sundance Services West, Inc.

Task 5.0: Processing Area Closure Construction

Task 5.0	Unit Quantity	Unit	Unit Cost	Total Cost
5.1 Jet-Out & Drying Pad				
5.1.1 Liquids Transport/Disposal				
5.1.1.1 Transport Liquid[2]	2,050	BBL	$2.31	$4,741
5.1.1.2 Disposal Liquids[2]	2,050	BBL	$1.03	$2,102
5.1.1.3 Remove/Transport Sludge[3]	65	ton	$8.22	$535
5.1.1.4 Disposal Sludge[3]	65	ton	$18.51	$1,203
5.1.1.4 Excavate and Dispose Concrete, Soil, Liner[4]	31,000	CY	$9.76	$302,560
			Task Subtotals	$311,141
5.1.2 Mud Processing Facility Regrading				
5.1.2.1 Local cut[4]	31,000	CY	$1.03	$31,794
5.1.2.2 Place and Compact Soil[5]	-	CY	$3.09	$0
			Task Subtotals	$31,794
5.1.3 Sampling[6]	33	EA	$1,029	$33,944
5.1.4 Seeding[7]	26	AC	$1,542	$40,103
			Task Subtotals	$74,047
			Mud Processing Facility Closure Subtotal	$416,982
5.2 Site Work				
5.2.1 Tank Removal	10	EA	$2,571	$25,710.44
5.2.2 Piping Removal		LS		$15,082
5.2.3 Process Equipment Removal		LS		$10,055
			Site Work Subtotal	$50,848
5.3 Engineering				
5.3.1 CQA/Certification		LS		$35,989
			Engineering Subtotals	$35,989
			TASK TOTAL	$503,819
			Independent Project Manager & Contract Administration Cost (10% of Task Totals)	$50,382
			Total Cost	$554,201

Notes:

1. Closure costs are based on contracting with a qualified third party to complete and certify closure.

2. Assume 5' of liquid (residual water) in each tank (13) is transported up to 50 miles for disposal; tank Diameter 15', see Figure 2 for 13 Tanks, 1 cubic feet = 0.178 Barrel.

3. Assume 6" of sludge remaining solids in each tank (13) at closure transported up to 50 miles for disposal and specific gravity of sludge is 1.7; tank Diameter 15', see Figure 2 for 13 tanks, 1 ton = 2,000 lb.

4. The volume to excavate down to the lower liner system under jet-out and mud management area is 62,000 CY, 50% is assumed to be contaminated requiring disposal (5.1.1.4), 50% is assumed clean and will be used for fill at evap ponds. Cost for excavation of clean fill included in 5.1.2.1, cost for placement of clean fill in Task 4 Item 4.1.2.3

5. As the processing areas and evaporation ponds will be graded to all drain to the same pond, these costs are in task 4.

6. Per 19.15.36.18 D(4) and Hall Environmental Analytical Laboratory, unit cost per sample (sampling & testing) is $1,000. Quantity is samples shown on Figure 2 + 10%

7. See Figure 4 for Disturbed Mud Management Facility Area to be Seeded

8. Costs include taxes

9. If contamination is found in the "Local Cut" soils, they will be removed and other onsite soils are available and will be sused to fill grade. If this is insufficient, SSWI will haul in soils from offsite.

10. CY = Cubic Yard
AC = Acre
LS = Lump Sum
EA = Each Acre
BBL = Barrel (US)

Task 6.0: Evaporation Pond and Treatment Plant Maintenance

Task 5.0	Unit Quantity	Unit	Unit Cost	Total Cost per Year	Total Cost for 3 Years
6.1 Surface Inspection and Reporting					
6.1.1 Inspection	2	events/yr	$1,542	$3,085	$9,254.55
6.1.2 Recordkeeping and Reporting	2	events/yr	$720	$1,440	$4,319.60
			Task Subtotals	$4,525	$13,574
6.2 Surface Maintenance					
6.2.1 Cover Maintenance	1	AC/yr	$2,056	$2,056	$6,169
6.2.2 Vegetation	2	AC/yr	$1,542	$3,085	$9,255
			Task Subtotals	$5,141	$15,423
6.3 Fencing					
6.3.1 Inspection/Repairs	2	events/yr	$617	$1,235	$3,704
			Task Subtotals	$1,235	$3,704
			TASK Total	$10,901	$32,702
Independent Project Manager & Contract Administration Cost (10% of Task Totals)				$1,090	$3,270
			Total Cost	$11,991	$35,972

Notes:
1. Pond and Treatment Plant closure maintenance costs are based on contracting with a qualified third party to conduct post-closure care maintenance. The activities included in this cost estimate are based on current dollars, previous experience with closures located in arid climates, and current subcontractor costs.
2. Costs include taxes
3. AC = Acre

ENR'S CONSTRUCTION COST INDEX

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2024	13515	13518	13532	13532	13532	13547						
2023	13175	13176	13176	13230	13289	13345	13425	13473	13486	13498	13511	13515

HOW ENR BUILDS THE INDEX: 200 hours of common labor at the 20-city average of common labor rates, plus 25 cwt of standard structural steel shapes at the mill price prior to 1996 and the fabricated 20-city price from 1996, plus 1.128 tons of portland cement at the 20-city price, plus 1,088 board ft of 2 x 4 lumber at the 20-city price.

Change from			
August	2023	13473	**100.55%**
June	2024	13547	

Appendix B

Financial Assurance Documents

This appendix will be provided upon OCD concurrence of financial assurance estimate.

Appendix C

Closure Documentation Record

Appendix C
Closure Documentation Record (Typical)
Sundance West

Pond or Tank	Location		Location Closure				Revegetation			
			Liner		Tank					
Number	Lat. (Northing)	Lon. (Easting)	Removed	Tested	Cleaned	Removed	Installed	Date	Certified	Date

Date: _____ **Recorded By:** _____

Inspected By: _____ **Certified By:** _____

Comments: _____

Appendix D

Site Inspection Checklist

Appendix D
Post-Closure Site Inspection Checklist (Typical)
Sundance West

Page _____ of _____

Date: _____ **Inspector(s):** _____

Time: _____ _____

Weather:

Temperature _____ deg. F Precipitation (last 24 hours) _____ inches

Skies _____

Wind Speed _____ mph

Wind Direction _____ *(direction blowing from)*

NOTES:
"X" indicates that a Deficiency has been noted. "P" indicates that a Photograph has been taken. "S" indicates that a Sample has been collected. Complete descriptions of Deficiencies, Photographs, and Samples are provided on attached pages. Items are referenced by Location.

Vegetation Condition

Location	Item			
	Vegetation Stress	Vegetation Dieback	Vectors	Sample

Surface Water Management System

Location	Deficiency			Sample
	Erosion/ Siltation	Structural Defect	Flow Obstruction	

NOTES: _____

_____

Appendix E

Updated Stormwater Evaluation for Processing and Evaporation Areas

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Calculation Cover Sheet

Project Name SSWI Closure Plan Project Number DB18.1209

Calculation Number 001 Discipline Hydrology No. of Sheets 5

PROJECT: Sundance Services West Inc. (SSWI) Closure Plan Update
SITE: Sundance Services West Inc, Eunice, NM
SUBJECT: Update stormwater management design for mud management and evaporation pond design
SOURCES OF DATA: A. Gordon Environmental Inc. *Application for Permit Sundance West Volume III: Engineering Design and Calculations Section 3 Drainage Calculations*. August 2016 B. Autodesk CAD file "PRGRADE-SITE REGRADING 4.dwg" C. Daniel B. Stephens & Associates, Inc. *Laboratory Report Sundance West Stockpile Sampling* dated December 19, 2024
SOURCES OF FORMULAE & REFERENCES: 1. New Mexico Department of Transportation *Drainage Design Manual*. July 1028

☐ Preliminary Calculation ☒ Final Calculation Supersedes Calculation No. ___

Rev. No.	Revision	Calculation By	Date	Checked By	Date	Approved By	Date
0		EA	5/27/25	AB	6/13/25	KJ	6/13/25

Date

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB18.1209 Date June 11, 2025

Subject Revised Closure Plan Runoff Calculations Sheet 1 of 6

By KJ Checked By AB Calculation No. 001

1. Purpose

In the approved stormwater management plan, stormwater would be ponded on the evaporation ponds and mud management area. Since that approval, two changes have occurred:

- OCD's decision that stormwater can no longer be impounded over these areas
- Mud management facility design was changed from that shown in the permit

This calculation updates the calculated runoff and peak discharge for these areas to design a new stormwater system for this portion of the property. No changes are proposed to the landfill run-on or run-off management systems, which are separate from this area. Therefore, this report only addresses the mud management and evaporation pond footprints.

2. Given

The stormwater analysis provided for the approved permit[A] used the following assumptions:

- TR-20 runoff model
- 25-year, 24-hour rainfall of 4.93 inches with a NM Type IIA 60 storm distribution
- 2-year, 24-hour rainfall of 2.49 inches (used to calculate time of concentration)
- Curve number for vegetated areas is 77
- Manning's n in constructed channels is 0.032

As all these parameters are reasonable; the methodology and inputs summarized above are used in this analysis.

3. Method

Consistent with the previous analysis, Autodesk's Storm and Sanitary Analysis (SSA) software program - a combined hydrology and hydraulics analysis program frequently used in the design of culverts and channels for stormwater management systems - was used to calculate the runoff

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB18.1209 Date June 11, 2025

Subject Revised Closure Plan Runoff Calculations Sheet 2 of 6

By KJ Checked By AB Calculation No. 001

from the revised contributing areas and size the new drainage channel. SSA includes many different hydrologic calculations methods; per the previous modeling, SSA was used to run the TR-20 method.

In accordance with the NMDOT DDM, the time of concentration for each watershed was calculated with the Upland Method. This method calculates the travel time for different flow types in each watershed then sums each travel time to calculate the overall watershed travel time, also known as the total time of concentration. In these watersheds, there is sheet flow as water travels uniformly across the site's grading, then it gathers to form shallow concentrated flow, and ultimately it becomes channelized flow when it reaches the constructed channels. Per the NMDOT DDM, distances treated as sheet flow should not exceed 300 ft; all lengths surpassing this limit before reaching the constructed channel shall be treated as shallow concentrated flow for the purpose of this analysis. For sheet flow, DDM Equation 402-7 was used:

$$T_{t1} = \frac{0.007(nl)^{0.8}}{P_2^{0.5} S^{0.4}} \qquad (1)$$

where T_{t1} = time of concentration for sheet flow, hours

n = Manning's roughness coefficient (unitless) for sheet flow (DDM Table 402-7)

l = sheet flow length, ft

P_2 = 2-year, 24-hour rainfall, in

S = longitudinal slope, ft/ft

0.007 = unit conversion factor (unitless)

For shallow concentrated flow and channelized flow, velocities and flow lengths were used to calculate times of concentration using DDM Equation 402-5. The velocity of shallow concentrated flows were estimated using channel type and slope with DDM Figure 402-15. Velocity in channels was calculated using the Manning equation (in SSA). The equation for computing times of concentration for these segments is as follows:

$$T_{t2,3} = \frac{L}{3600V} \qquad (2)$$

where T_{t2} = time of concentration for shallow concentrated flow, hours

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB18.1209 Date June 11, 2025

Subject Revised Closure Plan Runoff Calculations Sheet 3 of 6

By KJ Checked By AB Calculation No. 001

T_{t3} = time of concentration for channelized flow, hours
L = flow path length, ft
V = average velocity, ft/s
3600 = unit conversion factor (unitless)

Total time of concentration is then:

$$Tc = T_{t1} + T_{t2} + T_{t3} \quad (3)$$

Time of concentration, watershed area, and curve number are used in SSA to calculate runoff volume and peak discharge. Additionally, SSA permits efficient evaluation of a variety of channel parameters such as channel width, depth, and materials of construction (i.e., channel roughness). A variety of friction methods are available through the software program; however, consistent with previous work Manning's equation was used for this analysis:

$$Q = \frac{C_m}{n} A R^{2/3} S_O^{1/2} \quad (4)$$

where C_m = unit conversion coefficient, 1.486 for English units (unitless)
n = Manning's roughness coefficient (unitless)
A = cross-sectional area (ft^2)
R = hydraulic radius (feet) = A/P
S_O = longitudinal slope (ft/ft)
Q = channel discharge (ft^3/s)

In the NMDOT DDM, the maximum permissible velocity in grass-lined channels is given in Table 605-2. Calculated velocities for the site soils is compared to the permissible velocity for compliance with the DDM.

4. Solution

This analysis focuses only on the mud management/evaporation pond area; no changes are proposed to the landfill runoff or run-on management systems. The area contributing run-on to the SSWI site is from the SSI site to the east. As discussed in the SSI closure plan, there is a channel to manage run-on that flows from the SSI site through the SSWI and discharges on the

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB18.1209 Date June 11, 2025

Subject Revised Closure Plan Runoff Calculations Sheet 4 of 6

By KJ Checked By AB Calculation No. 001

west side of the SSWI site back to its previous drainage (as called out in Figure III.3.3 in the permit). There is a small, undisturbed piece of property on the east side of the mud management area that is on SSI property that contributes run-on to the SSWI property. The stormwater from this area will be diverted to the run-on management channel through a small channel running north to south on the eastern boundary of the SSWI property.

SSA was used to model three watersheds on the SSWI site: the mud management area, north evaporation pond area, and south evaporation pond area. The area of each watershed was measured in AutoCAD. Watershed flow paths were measured in AutoCAD based on the final grading. The time of concentration was calculated for the watersheds following the methodology outlined in the NMDOT DDM for the Upland Method. An example calculation for the mud management area is provided below.

Sheet flow was calculated using Equation 1; n was taken from NMDOT DDM Table 402-7 for "range (natural)", P_2 was taken from previous work, length and slope were measured in AutoCAD:

$$T_{t1} = \frac{0.007(nl)^{0.8}}{P_2^{0.5} S^{0.4}} = \frac{0.007(0.13*300)^{0.8}}{(2.49)^{0.5}(0.033)^{0.4}} = 0.021\ hours$$

Travel time for shallow concentrated flow was calculated using Equation 2. The velocity was obtained from DDM Figure 402-15 for a slope of 0.01 ft/ft as 0.5 ft/sec:

$$T_{t2} = \frac{L}{v} = \frac{680}{3{,}600*0.70} = 0.27\ hours$$

The channelized flow travel time was also calculated with Equation 2, using Manning's n of 0.032 from previous work and length measured in AutoCAD:

$$T_{t3} = \frac{221}{3{,}600*2.45} = 0.03\ hours$$

The total time of concentration is 0.021+0.27+0.03 hours = 0.32 hours or 19 minutes. The time of concentration for both evaporation pond watersheds was calculated in the same manner to be 13 minutes for the north watershed and 10 minutes for the south watershed.

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Calculation Sheet

Project No. DB18.1209 Date June 11, 2025

Subject Revised Closure Plan Runoff Calculations Sheet 5 of 6

By KJ Checked By AB Calculation No. 001

In SSA, the model was set to use TR-20 methodology. The 25-year, 24-hour rainfall (4.93 inches) was set using the same storm distribution (NM Type IIA 60) as the previous work. Watershed areas, curve numbers, and time of concentration were input to SSA to calculate peak discharge and runoff volumes (see attached SSA output).

To determine the required stormwater pond volume, the design rainfall (25-yr, 24-hr) was applied to the area of the pond (approximately 250 ft by 450 ft) to account for the rainfall that will fall on the pond footprint, then this volume was added to the volume calculated by SSA for the other three watersheds, summarized in Table 1.

Table 1. Watershed Characteristics

Watershed	SSA ID	Area (acres)	Time of Concentration (min)	CN	Peak Discharge (cfs)	Total Runoff (cubic yards)
Mud Management	MudManagement	13.4	19	77	55	4,610
North Evaporation Ponds	NorthEvapPonds	16.9	13	77	83	5,810
South Evaporation Ponds	SouthEvapPonds	16.6	10	77	90	5,700
Detention Pond	N/A	2.6	N/A	100	N/A	1,710
Total				—	—	17,830

CN = Curve number
cfs = Cubic feet per second

The pond volume is 22,272 cubic yards, so it is adequately sized.

DBS&A a Geo-Logic Company

Calculation Sheet

Project No. DB18.1209 Date June 11, 2025

Subject Revised Closure Plan Runoff Calculations Sheet 6 of 6

By KJ Checked By AB Calculation No. 001

SSA was used to size the conveyance channels that will convey water from the mud management area and evaporation pond area to the stormwater basin. The south channel starts in the mud management area and continues through the evaporation pond area to the stormwater basin; the north channel mainly drains the north evaporation pond area. Manning's equation in SSA was used to iterate parameters to an acceptable configuration as summarized in Table 2. The channel is assumed to be vegetated (the channel footprint in included in the vegetation area figure of the closure plan). The channel configuration was iterated to provide adequate flow capacity, freeboard (in all cases, at least 0.5 ft), and acceptable velocity. Per NMDOT DDM Table 605-2, the maximum permissible velocity for a channel with mixed grass at a 0 to 5 percent slope is 4 ft/sec, so this channel design is acceptable.

Table 2. Channel Characteristics

SSA ID	Slope	Manning n	Depth (feet)	Bottom Width (feet)	Side Slope	Maximum Velocity (ft/s)	Maximum Flow Depth (feet)
North channel	0.5%	0.032	2	25	4H:1V	3.4	0.8
South Channel	0.5%	0.032	2	25	4H:1V	3.7	1.1

Reference A

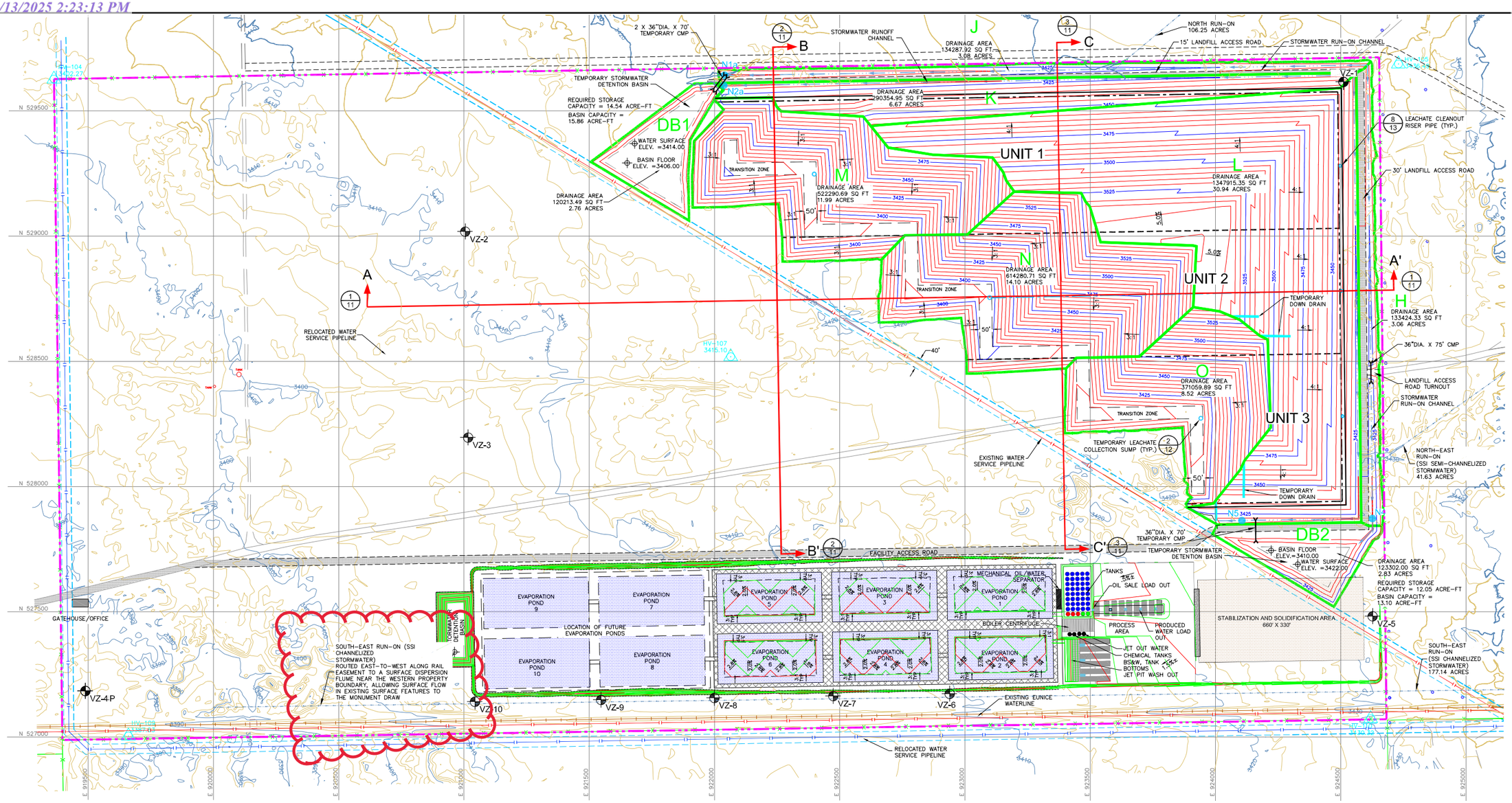
safety. The relevant information is presented in **Attachment III.3.C Pg. 26-28**; note that pages 29-31 relate to stormwater management on the SSI site and relevant run-on and retained is addressed in the SSI closure plan. All three basins are modeled such that the extremely conservative, i.e., significantly smaller than the real design, and are modeled such that there is no outflow. This design ensures that there will be substantial freeboard for the design storm for the true basin design. **Figure III.3.3** depicts the East Phase Development Drainage Plan.

6.0 LANDFILL COMPLETION SURFACE WATER SUMMARY

The completed landfill design for Sundance West involves one retention basin, eight subbasins contributing runoff, and two subbasins contributing run-on. Note that the run-on from the North is from a greater area than for the intermediate design, so there is additional runoff in the North run-on subbasin. Also included in the Final design, is the retention basin for the processing area, and three subbasins that potentially contribute to it. The subbasins that make up the drainage model for the final design, as well as their drainage basins, are summarized in **Table III.3.2**.

TABLE III.3.2
Landfill Completion Subbasin Summary
Sundance West

Sub-Basin ID	Area (acres)	Curve Number (CN)	Peak Discharge (cfs)	Volume (acre-ft)	Discharge To
Subbasin A	25.67	77.00	5.49	8.86	DB
Subbasin B	27.73	77.00	5.93	11.22	DB
Subbasin C	24.20	77.00	5.17	10.75	DB
Subbasin D	35.74	77.00	7.64	12.86	DB
Subbasin E	31.67	77.00	6.77	8.63	DB
Subbasin F	4.83	77.00	1.03	12.62	DB
Subbasin G	7.91	77.00	1.69	16.78	DB
Subbasin DB	10.20	77.00	2.18	63.72	(self-contained)
NorthRun-On	111.94	72.00	20.00	199.92	DB
ProcessingArea_'etc'	14.07	77.00	3.01	29.18	ProcAreaBasin
StabilizationArea	5.83	77.00	1.25	24.18	(self-contained)
Treatment_Ponds	24.42	100.00	10.03	231.34	(self-contained)
SSI-SouthCatchment-DrainsWest	169.17	72.00	30.23	97.69	West Flume
SSI-NorthCentralCatchment-100%Retention	40.72	78.30	9.09	201.15	(offsite)
SSI-NorthEastCatchment-100%Retention	100.19	76.20	20.83	420.48	(offsite)
SSI-NorthWestCatchment-DrainsWest	41.63	72.00	7.44	106.79	(offsite)



LEGEND

- FACILITY BOUNDARY
- LIMIT OF WASTE
- UNIT BOUNDARY
- 10' CONTOUR (EXISTING)
- 2' CONTOUR (EXISTING)
- 25' CONTOUR (DESIGN)
- 5' CONTOUR (DESIGN)
- 1' CONTOUR (DESIGN)
- TOP OF LANDFILL BERM
- FENCE
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- NEW UNPAVED ROAD
- LANDFILL ACCESS ROAD
- RAILROAD TRACKS
- RELOCATED WATER SERVICE PIPELINE
- EXISTING EUNICE WATERLINE
- PIPELINE EASEMENT
- DRAINAGE CHANNEL FLOW LINE
- LEACHATE COLLECTION RISER PIPES
- NEW CULVERT
- VADOSE ZONE MONITORING WELL
- POWER POLE
- OIL STORAGE TANK
- EXISTING BOX CULVERT
- SPOT ELEVATION
- DRAINAGE AREA & IDENTIFICATION
- DRAINAGE NODE
- DETAIL NUMBER SHEET NUMBER
- CROSS SECTION LOCATION
- SURVEY CONTROL POINT
- PRODUCED WATER TANK
- CRUDE OIL RECOVERY TANK
- OIL SALES TANK
- SITE GRID

NOTES

1) AERIAL SURVEY BY THOMAS R. MANN & ASSOCIATES AERIAL MAPPING SERVICES, 5115 COPPER NE, ALBUQUERQUE, NM 87108
   DATE OF SURVEY: 10-01-08
2) NO CATTLE GUARDS IN PROJECT AREA

NOT FOR CONSTRUCTION
Drawing:P:\acad 2003\530.06.01\PERMIT PLANS (RAI 1)\09 EAST DRAINAGE.dwg
Date/Time:Aug. 01, 2016-10:51:27

NORTH
0 200' 400'

I. KEITH GORDON, P.E.
N.M. PROFESSIONAL ENGINEER NO. 10984

All reports, drawings, specifications, computer files, field data, notes and other documents and instruments prepared by the Engineer as instruments of service shall remain the property of the Engineer. The Engineer shall retain all common law, statutory and other reserved rights, including the copyright thereto.

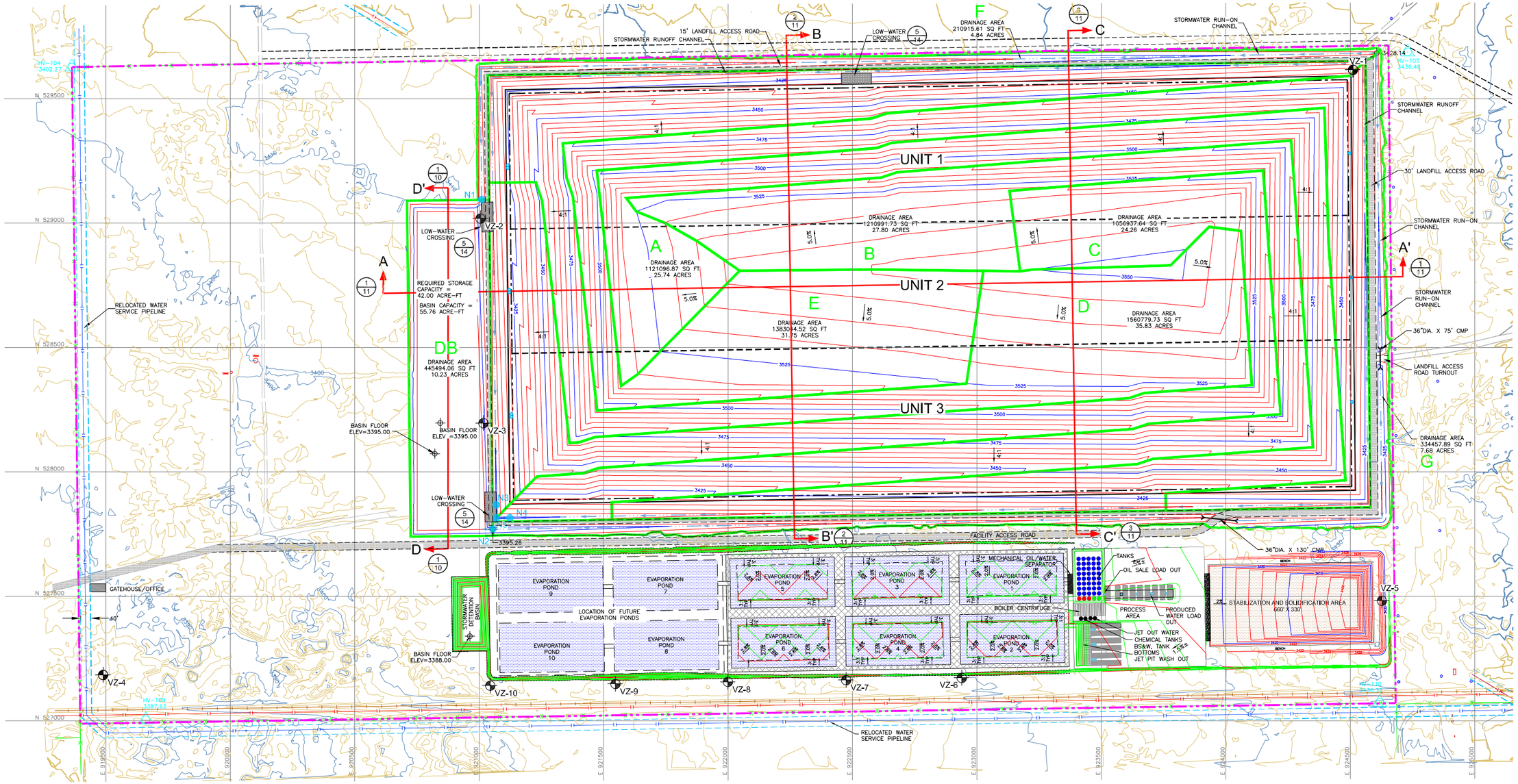
UPDATED: JULY, 2016

EAST PHASE DEVELOPMENT DRAINAGE PLAN

SUNDANCE WEST
SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

Gordon Environmental, Inc.
Consulting Engineers
213 S. Camino del Pueblo
Bernalillo, New Mexico, USA
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/26/2016	CAD: 09 EAST DRAINAGE.dwg	PROJECT #: 530.06.01
DRAWN BY: DMI	REVIEWED BY: CWF	FIGURE III.3.3
APPROVED BY: IKG	gel@gordonenvironmental.com	



LEGEND

- FACILITY BOUNDARY
- LIMIT OF WASTE
- UNIT BOUNDARY
- 10' CONTOUR (EXISTING)
- 2' CONTOUR (EXISTING)
- 25' CONTOUR (DESIGN)
- 5' CONTOUR (DESIGN)
- 1' CONTOUR (DESIGN)
- TOP OF LANDFILL BERM
- FENCE
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- NEW UNPAVED ROAD
- LANDFILL ACCESS ROAD
- RAILROAD TRACKS
- RELOCATED WATER SERVICE PIPELINE
- EXISTING EUNICE WATERLINE
- PIPELINE EASEMENT
- DRAINAGE CHANNEL FLOW LINE
- LEACHATE COLLECTION RISER PIPES
- NEW CULVERT
- VADOSE ZONE MONITORING WELL
- POWER POLE
- OIL STORAGE TANK
- EXISTING BOX CULVERT
- SPOT ELEVATION
- DRAINAGE AREA & IDENTIFICATION
- DRAINAGE NODE
- DETAIL NUMBER SHEET NUMBER
- CROSS SECTION LOCATION
- SURVEY CONTROL POINT
- PRODUCED WATER TANK
- CRUDE OIL RECOVERY TANK
- OIL SALES TANK
- SITE GRID

NORTH

0 200' 400'

NOTES

1) AERIAL SURVEY BY THOMAS R. MANN & ASSOCIATES AERIAL MAPPING SERVICES, 5115 COPPER NE, ALBUQUERQUE, NM 87108
DATE OF SURVEY: 10-01-08

2) NO CATTLE GUARDS IN PROJECT AREA

NOT FOR CONSTRUCTION
Drawing:P:\acad 2003\530.06.01\PERMIT PLANS (RAI 1)\08 DRAINAGE PLAN.dwg
Date/Time: Aug. 01, 2016-10:50:06

I. KEITH GORDON, P.E.
N.M. PROFESSIONAL ENGINEER NO. 10984

All reports, drawings, specifications, computer files, field data, notes and other documents and instruments prepared by the Engineer as instruments of service shall remain the property of the Engineer. The Engineer shall retain all common law, statutory and other reserved rights, including the copyright thereto.

UPDATED: JULY 20, 2016

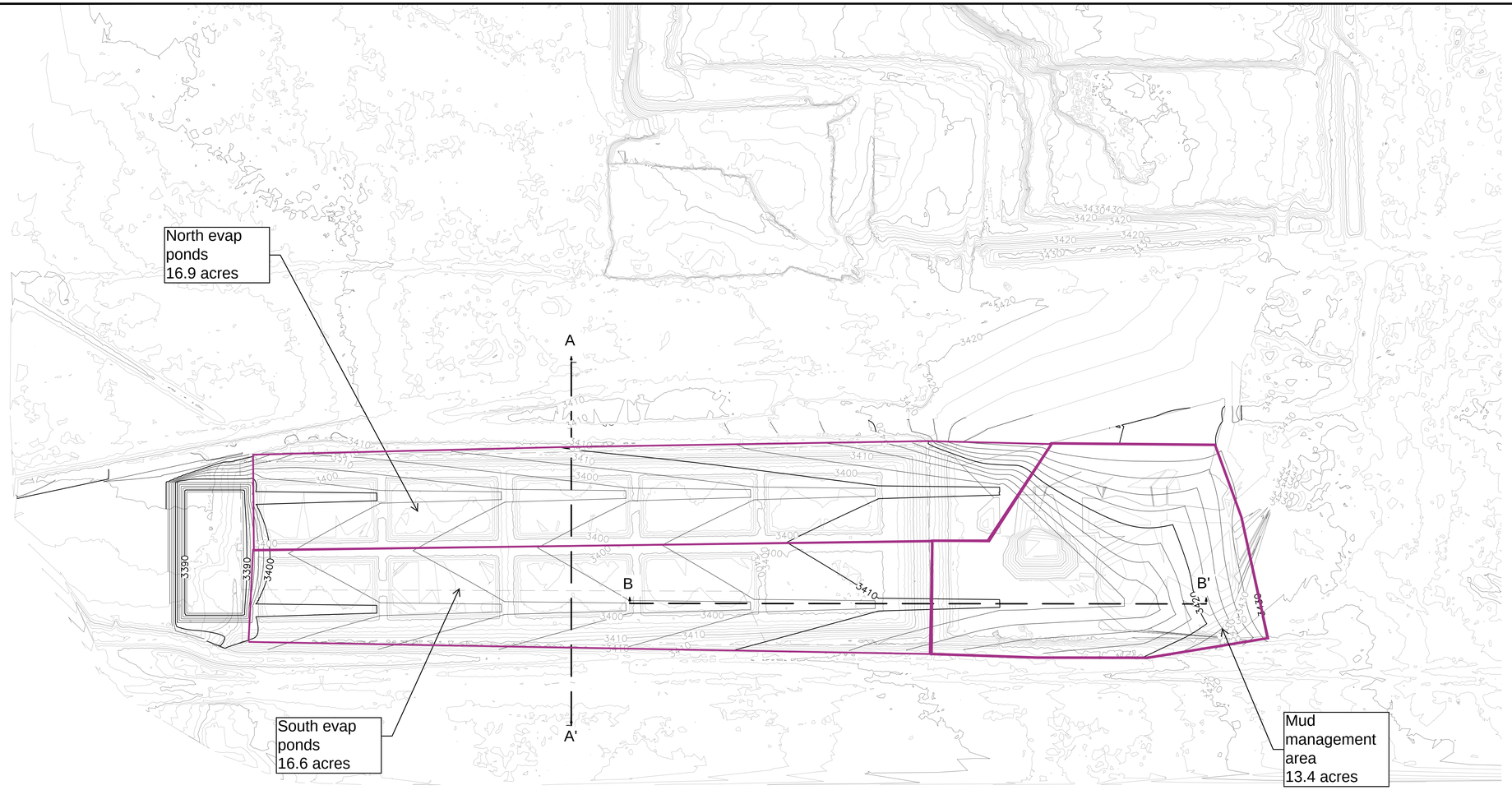
LANDFILL COMPLETION DRAINAGE PLAN

SUNDANCE WEST
SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

Gordon Environmental, Inc.
Consulting Engineers
213 S. Camino del Pueblo
Bernalillo, New Mexico, USA
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/22/2016	CAD: 08 DRAINAGE PLAN.dwg	PROJECT #: 530.01.01
DRAWN BY: DMI	REVIEWED BY: CWF	FIGURE III.3.4
APPROVED BY: IKG	gel@gordonenvironmental.com	

Reference B



B

200' 0' 100' 200' 400'

LEGEND

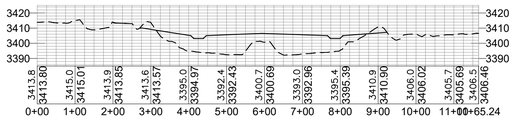
- 3400 — EXISTING 10' CONTOUR(1)
- EXISTING 2' CONTOUR(1)
- 3400 — PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR

QUANTITIES

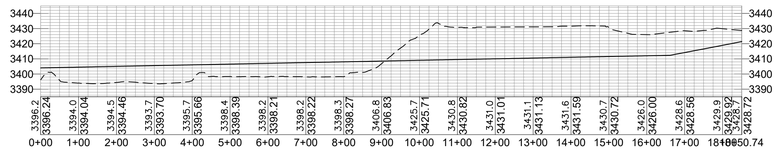
MUD MANAGEMENT EXCAVATION VOLUME: 63,090 CY

REGRADING EARTHWORKS:
CUT: 373,739 CY
FILL: 369,011 CY
NET: 4,728 CY CUT

SW POND VOLUME: 22,272 CY



A-A'



B-B'

NOTES

1. REFERENCE AERIAL TOPOGRAPHY BASED ON MAY 2025 AERIAL SURVEY COMBINED WITH MUD MANAGEMENT EXCAVATION GRADES. EXISTING STOCKPILES TO BE REMOVED PRIOR TO MUD MANAGEMENT FACILITY EXCAVATION.

SUNDANCE WASTE MANAGEMENT FACILITY

MUD MANAGEMENT AND EVAPORATION PONDS REGRADING

LEA COUNTY, NEW MEXICO

PROPOSED REGRADING

FIGURE NO. 1

PROJECT NO. DB18.1209

DATE OF ISSUE:	06/12/2025	DRAWN BY:	PLA	APPROVED BY:	KJ

Geo-Logic ASSOCIATES

Reference C

C

Laboratory Report
Sundance West Stockpile Sampling

Prepared for

Daniel B Stephens & Associates, Inc.

Prepared by

DBS&A Soil Testing & Research Laboratory
4400 Alameda Blvd. NE, Suite C
Albuquerque, New Mexico 87113
(505) 889-7752
www.dbstephens.com
DB18.1209.00 P5T1

December 19, 2024

Summary of Particle Size Characteristics

Sample Number	d_{10} (mm)	d_{50} (mm)	d_{60} (mm)	C_u	C_c	Method	USCS Classification	USDA Classification	
SP-1	0.00029	0.15	0.18	621	138	WS/H	Silty sand (SM)	Sandy Loam	(Est)
SP-2	8.0E-07	0.17	0.19	2.4E+05	8.0E+04	WS/H	Silty sand (SM)	Loamy Sand	(Est)
SP-3	0.0015	0.16	0.18	120	53	WS/H	Silty sand (SM)	Loamy Sand	
SP-4	0.013	0.17	0.19	15	5.8	WS/H	Silty sand (SM)	Loamy Sand	

Est = Reported values for d_{10}, C_u, C_c, and soil classification are estimates, since extrapolation was required to obtain the d_{10} diameter

$$C_u = \frac{d_{60}}{d_{10}}$$

$$C_c = \frac{(d_{30})^2}{(d_{10})(d_{60})}$$

DS = Dry sieve

H = Hydrometer

WS = Wet sieve

† Greater than 10% of sample is coarse material

d_{50} = Median particle diameter

Reference 1

Drainage Design Manual

New Mexico Department of Transportation

NMDOT

Prepared by:

Smith Engineering Company

SMITH ENGINEERING

Occam Engineers Inc.

Occam Engineers Inc.

Edited by:

New Mexico Department of Transportation

Drainage Design Bureau Staff

and

Thompson Engineering Consultants, Inc.

Thompson Engineering Consultants, Inc.

July 2018

402.9 Time of Concentration

402.9.1 The Upland Method

The Upland Method (also known as the Velocity Method) is used to estimate travel times for overland flow and shallow concentrated flow conditions. The Upland Method is used for the ungullied portion of the primary watercourse when the overland flow length is 300 feet or less.

The Upland Method was originally developed by the Soil Conservation Service (SCS), which is now the Natural Resource Conservation Service (NRCS). The Upland Method is described in Chapter 15 Time of Concentration of "Part 630 Hydrology, National Engineering Handbook" (NRCS, 2010). Note that in the current (2010) version of Chapter 15, the NRCS has renamed the "Upland Method" to the "Velocity Method." However, many documents still refer to it as the "Upland Method" and, therefore, the name "Upland Method" is used in this Drainage Design Manual.

The Upland Method is limited to use in watersheds that are less than 2,000 acres in size, or to the upper reaches of larger watersheds. For NMDOT projects the Upland Method may be used for computing the Time of Concentration when using the Rational Formula Method or the Simplified Peak Discharge Method on a largely un-gullied watershed. A watershed is considered un-gullied when 10% or less of the most hydraulically remote flow path exhibits gullying.

Sheet Flow

At the top to the watershed, sheet flow is generally the predominant flow regime. Sheet flow is defined as flow over plane surfaces. Sheet flow usually occurs in the headwaters of a stream near the ridgeline that defines the watershed boundary. Typically, sheet flow occurs for no more than 100 to 300 feet before transitioning to shallow concentrated flow (Merkel, 2001).

A simplified version of the Manning's Kinematic Equation may be used to compute travel time for sheet flow. This simplified form of the Kinematic Equation presented here was developed by (Welle and Woodward,1986) after studying the impact of various parameters on the estimates.

$$Tt = \frac{0.007(n\,l)^{0.8}}{(P_2)^{0.5}\,S^{0.4}} \qquad \textbf{402-7}$$

(NRCS, 2010, "Part 630 Hydrology, National Engineering Handbook, Chapter 15 Time of Concentration", Eq. 15-8, p. 15-6)
http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=27002.wba

where:

Tt	=	travel time, hr
n	=	Manning's roughness coefficient (**Table 402-7**)
l	=	sheet flow length, ft
P_2	=	2-year, 24-hour rainfall, in.
S	=	slope of land surface, ft/ft

This simplification is based on the following assumptions:

- Shallow steady uniform flow
- Constant rainfall excess intensity (that part of a rain available for runoff) both temporally and spatially
- 2-year, 24-hour rainfall assuming standard NRCS rainfall intensity-duration relations apply (Types I, II, and III)
- Minor effect of infiltration on travel time

Table 402-7 Roughness Coefficients (Manning's "n") for Sheet Flow

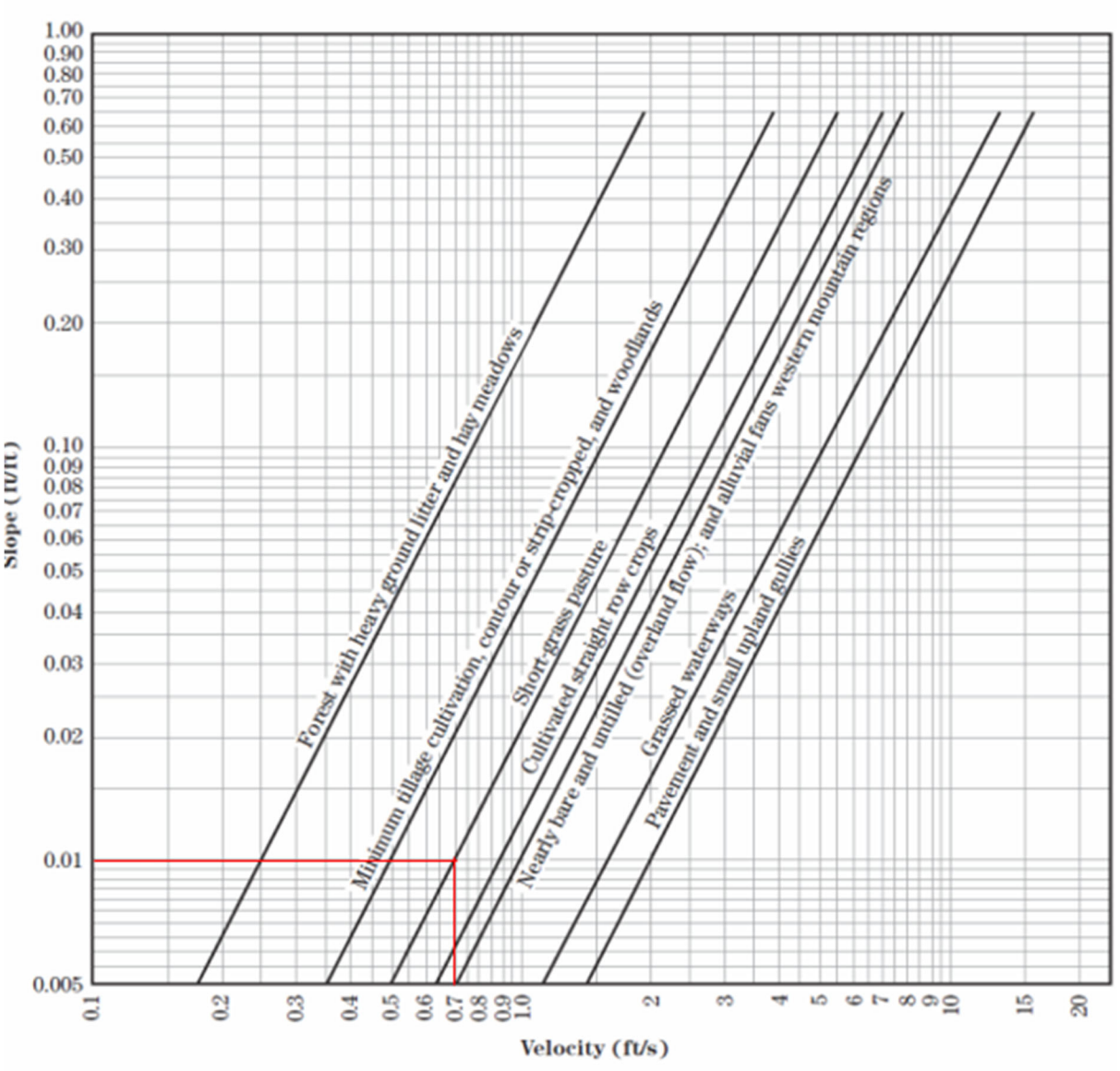
Source: NRCS, 2010, "Part 630 Hydrology, National Engineering Handbook, Chapter 15 Time of Concentration", Table 15-1, p. 15-6.
http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=27002.wba

Surface description	"n" 1/
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	0.
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses 2/	0.24
Bermuda grass	0.41
Range (natural)	0.13
Woods: 3/	
Light underbrush	0.40
Dense underbrush	0.80

1/ The "n" values are a composite of information compiled by Engman (1986).
2/ Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
3/ When selecting "n", consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

Shallow Concentrated Flow

After approximately 100 to 300 feet, sheet flow usually becomes shallow concentrated flow collecting in swales, small rills, and gullies. Shallow concentrated flow is assumed not to have a well-defined channel and has flow depths of 0.1 to 0.5 feet. It is assumed that shallow concentrated flow can be represented by one of seven flow types. **Figure 402-15** presents curves as Velocity versus Slope for Shallow Concentrated Flow and these curves were used to develop the information in **Table 402-8**. To estimate shallow concentrated flow travel time, velocities are developed using **Figure 402-15**, in which average velocity is a function of watercourse slope and type of channel (Kent, 1973). For slopes less than 0.005 feet per foot, the equations in **Table 402-8** may be used. After estimating average velocity using **Figure 402-15**, use **Equation 402-5** to estimate travel time for the shallow concentrated flow segment.



Source: NRCS, 2010, "Part 630 Hydrology, National Engineering Handbook, Chapter 15 Time of Concentration", Figure 15-4, p. 15-8.
http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=27002.wba

Figure 402-15 Velocity Versus Slope for Shallow Concentrated Flow

For that portion of the flow path that is channel flow, use Manning's Equation (**Equation 402-10**) to calculate the velocity. The approach outlined in **Section 402.9.5** should be followed to determine the average velocity for the channel reaches.

Once the reach lengths and flow velocities for each defined reach along the flow path have been calculated as described above, the Tc for each of the segments are added together to find the total Tc.

Table 605-2 and **Table 605-3** list permissible velocities for grass and earth-lined channels, respectively. The permissible velocities listed in **Table 605-3** were compiled based on data from canals. Therefore, the values provided are applicable only to channels with mild slopes.

Table 605-2 Permissible Velocities for Grass-Lined Channels

Source: NRCS, August 2007, Part 654 National Engineering Handbook, Stream Restoration Design, Table 8-4, p. 8-7.
https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17784.wba

Cover	Slope Range Percent	Permissible Velocity (ft/s)	
		Erosion-Resistant Soils	Easily Eroded Soils
Bermuda grass	0-5	8	6
	5-10	7	5
	>10	6	4
Buffalo grass, Kentucky blue grass, smooth brome, blue grama	0-5	7	5
	5-10	6	4
	>10	5	3
Grass mixture	0-5	5	4
	5-10	4	3
	>10	Not recommended	Not recommended
Lespedeza sericea, weeping lovegrass, ischaemum (yellow bluestem), kudzu, alfalfa, crabgrass	0-5	3.5	2.5
	5-10	Not recommended	Not recommended
	>10	Not recommended	Not recommended
Annual – used on mild slopes or as temporary protection until permanent covers are established, common lespedeza, Sudangrass	0-5	3.5	2.5
	5-10	Not recommended	Not recommended
	>10	Not recommended	Not recommended

SSA Output Tables

SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Total Drop (ft)	Average Slope (%)	Channel Type	Channel Height (ft)	Channel Width (ft)	Channel Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	MMChannel	StartChannel	SouthEvapChannel	221.00	3410.00	3409.00	1.00	0.4500	Trapezoidal	2.000	41.00	0.0320	0.5000	0.5000	52.14	0 06:12	2.45	1.50	280.93	0.19	0.38	0.00	0.76	Calculated
2	NorthEvapChannel	NorthEvapChannel	NorthToPond	2394.00	3410.00	3398.00	12.00	0.5000	Trapezoidal	2.000	41.00	0.0320	0.5000	0.5000	64.96	0 06:17	3.35	11.91	295.68	0.22	0.40	0.00	0.80	Calculated
3	SouthEvapChannel	SouthEvapChannel	SouthToPond	2170.00	3409.00	3398.00	11.00	0.5100	Trapezoidal	2.000	41.00	0.0320	0.5000	0.5000	112.36	0 06:15	3.74	9.67	297.35	0.38	0.56	0.00	1.09	Calculated

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Maximum HGL Elevation Attained (ft)	Maximum HGL Depth Attained (ft)	Maximum Surcharge Depth Attained (ft)	Minimum Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Maximum HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	NorthEvapChannel	3410.00	3412.00	2.00	3410.00	0.00	3412.00	0.00	0.00	81.74	81.74	3410.96	0.96	0.00	1.04	3410.07	0.07	0 06:10	0 00:00	0.00	0.00
2	NorthToPond	3398.00	3400.00	2.00	3398.00	0.00	3400.00	0.00	0.00	64.96	0.00	3398.84	0.84	0.00	1.16	3398.07	0.07	0 06:17	0 00:00	0.00	0.00
3	SouthEvapChannel	3409.00	3411.00	2.00	3409.00	0.00	3411.00	0.00	0.00	130.14	81.47	3410.26	1.26	0.00	0.74	3409.09	0.09	0 06:10	0 00:00	0.00	0.00
4	SouthToPond	3398.00	3400.00	2.00	3398.00	0.00	3400.00	0.00	0.00	112.36	0.00	3399.15	1.15	0.00	0.85	3398.09	0.09	0 06:15	0 00:00	0.00	0.00
5	StartChannel	3410.00	3412.00	2.00	3410.00	0.00	3412.00	0.00	0.00	52.48	52.48	3410.77	0.77	0.00	1.23	3410.06	0.06	0 06:10	0 00:00	0.00	0.00

SN	Element ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	Rain Gage-01	Time Series	TS-01	Cumulative	inches	New Mexico	Lea	25	4.93	NM Type IIA 60

SN	Element ID	Area	Drainage Node ID	Weighted Curve Number	Rain Gage ID	Total Precipitation	Total Runoff	Peak Runoff	Time of Concentration
		(acres)				(inches)	(inches)	(cfs)	(days hh:mm:ss)
1	MudManagement	13.40	StartChannel	77.00	Rain Gage-01	4.93	2.57	54.73	0 00:19:00
2	NorthEvapPonds	16.90	NorthEvapChannel	77.00	Rain Gage-01	4.93	2.57	82.85	0 00:13:00
3	SouthEvapPonds	16.60	SouthEvapChannel	77.00	Rain Gage-01	4.93	2.57	89.72	0 00:10:00

State of New Mexico
Energy, Minerals and Natural Resources Department

BY ELECTRONIC MAIL ONLY

April 24, 2026

Mr. Tariq Mussani
Sundance Services West, Inc.
1006 6th Street
Eunice, New Mexico 88231
MussaniUK@hotmail.com

RE: Closure/Post-Closure Plan, Sundance Services West, Inc. NM1-62

Dear Mr. Mussani:

The Oil Conservation Division (OCD) received revisions submitted by Sundance Services West, Inc.(SSWI) on April 15, 2026 to the Closure/Post Closure Plan (CPCP) for surface waste management facility NM1-62. The OCD has reviewed the revisions and grants approval of the CPCP.

SSWI must submit replacement Financial Assurance (FA) in the amount of $5,094,155, as stated in the CPCP, in accordance with Permit NM1-62, Condition 1.H-Financial Assurance. Upon receipt of the replacement FA, OCD will release the current Cash Bond 826622011.

Please be advised that this approval does not relieve SSWI of liability should operations result in pollution of surface water, groundwater, or the environment. Nor does approval relieve SSWI of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 549-5583 or Joseph.Kennedy@emnrd.nm.gov.

Respectfully,

Joe Kennedy
Senior Environmental Scientist

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 474037

CONDITIONS

Operator: Sundance Services West, Inc. PO Box 1737 Eunice, NM 88231	OGRID: 371811
	Action Number: 474037
	Action Type: [C-137] Non-Fee SWMF Submittal (SWMF NON-FEE SUBMITTAL)

CONDITIONS

Created By	Condition	Condition Date
joseph.kennedy	Please see approval letter emailed to Mr. Mussani of SSWI on 4/24/2026.	4/24/2026