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DEFINING QUALITY SINCE 1965

October 2020

C-147 Registration Package for Longfellow Energy Impound 24 Recycling Containment Section 24 T17S R28E

View to the South showing nearby power poles and vegetation that cover the area of the proposed recycling containment. The stake is the northwest corner of the recycling facility pad.

Prepared for:
Longfellow Energy
Addison, Texas

Prepared by:
Pettigrew and Associates
100 E. Navajo Drive, Suite 100
Hobbs, New Mexico

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To: **Attn: NMOCD District 2 - Artesia**
811 S. First Street
Artesia, NM 88210

From: David Roybal

Date: November 2, 2020

Subject: Longfellow Energy – Impound 24 C-147 Registration

On behalf of Longfellow Energy, Pettigrew and Associates submits the attached registration. Grading and compaction of the containment and liner foundation will be conducted during construction. No variances from the Rule are necessary and this submittal demonstrates compliance with all mandates of the Rule for the containment. Since the recycling facility meets the criteria of 19.15.34.9.B.7, the facility also requires a registration. Thus, the Rule does not require approval by OCD in advance of using the containment. However, we understand that OCD desires to track the containments in New Mexico that do not employ the specific words or values in the Rule. To that end, the C-147 shows that the "permit" box is checked as is the "variance" box.

This submission includes the following elements that, for the purpose of OCD statistics, would be listed as variances:

1. An equivalency demonstration written by experts for the proposed 40-mil HDPE secondary liner has been previously submitted and approved by OCD. We maintain that the language of the Rule is clear[1] and a variance is not required. For OCD statistics, this would be considered a variance. The previously submitted demonstration is lengthy and we can submit it under separate cover if requested by OCD.

2. OCD has approved the proposed Avian Protection Plan (Bird-X Mega Blaster Pro) for other containments. Thus, the plan meets the requirement of the rule that the "otherwise protective of wildlife, including migratory birds" and a variance is not required. For OCD statistics, this would be considered a variance. Specifications for the Mega Blaster Pro are provided in a separate transmission.

[1] Secondary liners shall be 40-mil LLDPE string reinforced or equivalent with a hydraulic conductivity no greater than 1 x 10-9 cm/sec

3. Using a 6-foot high chain link and/or game fence in lieu of a 4-strand barbed wire fence is not a variance. Because feral pigs, javelena and deer are present in the area, a fence is required in order to comply with Section 19.15.34.12 D.1 of the Rule[2]. The specification for fencing provided in 19.15.34.12 D.2 contradicts D.1 because pigs will move beneath the lower strand of a 4-strand, 4-foot high barbed wire fence and deer will jump over. Thus, compliance with D.2 results in a violation of D.1. We maintain that compliance with D.1 is the critical component of the Rule and operators need not be required to submit a variance request in order to follow Best Management Practices and comply with the Rule. For OCD statistics, employing a game fence or 6-foot high chain link fence would be considered a variance.

Site specific information demonstrates compliance with siting criteria for the location.

On this project an inspector (Engineer's Representative) from Pettigrew and Associates will be present on site during all the phases of construction. Construction will also be overseen by a Senior Project Manager with over 10 years of experience in construction and soil classification. Pettigrew & Associates will sample and test the properties of the soil throughout the construction process. While it is not anticipated, the Engineer will be notified immediately should existing conditions vary from design assumptions.

From the driller's log in Appendix F, it can be concluded that the water is encounter at approximately 160 feet below existing elevation, therefore it complies with Section 19.15.34.11.

Appendix A includes engineering design Longfellow Energy Impound 24 Recycling Containment. It is assumed that the in-situ material underlying the surface will be harvested for construction of roads and locations. As the construction progresses the in-situ material will be assessed. After construction of the liner foundation is complete, as-built drawings will be submitted to OCD.

Appendices B, C and D of this registration package are design/construction, operating and maintenance, and closure plans. These plans are verbatim from previously-approved containment submissions. Additionally we include a site survey and photographs of the proposed containment area in Appendix E. Appendix F presents driller's log from nearby water supply well.

In compliance with 19.15.34.10 of the Rule, this submission is copied to Longfellow Energy who is the surface owner of the private surface upon which the containment is constructed.

If you have any questions or concerns regarding this amendment to the registration or the attached C-147, please contact me.

Sincerely,

David Roybal, PE

[2] The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair.

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C-147

100 E. Navajo Drive Suite 100 Hobbs NM 88240 T 575 393 9827 F 575 393 1543 http:\\www.Pettigrew.us

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-147
Revised April 3, 2017

Recycling Facility and/or Recycling Containment

Type of Facility: ☒ Recycling Facility ☒ Recycling Containment*

Type of action: ☒ Permit ☒ Registration
☐ Modification ☐ Extension
☐ Closure ☐ Other (explain) _____

*** At the time C-147 is submitted to the division for a Recycling Containment, a copy shall be provided to the surface owner.**

Be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.

Operator: Longfellow Energy (For multiple operators attach page with information) OGRID #: 372210

Address: 16803 N. Dallas Parkway; Addison, TX 75001

Facility or well name (include API# if associated with a well): Longfellow Energy Impound 24 Recycling Containment

OCD Permit Number: _____(For new facilities the permit number will be assigned by the district office)

U/L or Qtr/Qtr NW/NW Section 24 Township 17 S Range 28 E County: Eddy

Surface Owner: ☐ Federal ☒ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.

☒ **Recycling Facility:**

Location of recycling facility (if applicable): Latitude 32.826171 N Longitude 104.135936 W NAD83

Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging *

The re-use of produced water may NOT be used until fresh water zones are cased and cemented

☐ Other, ***requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.***

☐ Fluid Storage

☐ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type_____

☐ Activity permitted under 19.15.36 NMAC explain type:_____ ☐ Other explain _____

☐ For multiple or additional recycling containments, attach design and location information of each containment

☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date:_____

3.

☒ **Recycling Containment, 1:**

☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)

Center of Recycling Containment (if applicable): Latitude 32.826171 N Longitude 104.135936 W NAD83

☒ For multiple or additional recycling containments, attach design and location information of each containment

☒ Lined ☒ Liner type: Thickness Primary 60 mil, Secondary 40 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____

☐ String-Reinforced, Secondary liner

Liner Seams: ☒ Welded ☒ Factory ☒ Other Field welds Volume: 1,212,472 bbl Dimensions: L 736 x W 504 x D 30.8

☐ Recycling Containment Closure Completion Date:_____

3.

☒ **Recycling Containment, 2:**

☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)

Center of Recycling Containment (if applicable): Latitude 32.826171 N Longitude 104.135936 W NAD83

☒ For multiple or additional recycling containments, attach design and location information of each containment

☒ Lined ☒ Liner type: Thickness Primary 60 mil, Secondary 40 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other

☐ String-Reinforced, Secondary liner

Liner Seams: ☒ Welded ☒ Factory ☒ Other Field Welds Volume: 1,212,472 bbl Dimensions: L 736 x W 504 x D 30.8

☐ Recycling Containment Closure Completion Date:

4.

Bonding:

☐ Covered under bonding pursuant to 19.15.8 NMAC per 19.15.34.15(A)(2) NMAC **(These containments are limited to only the wells owned or operated by the owners of the containment.)**

☒ Bonding in accordance with 19.15.34.15(A)(1). Amount of bond $ 1,272,010 **(work on these facilities cannot commence until bonding amounts are approved)**

☒ Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet

☒ Alternate. Please specify: Permanent 6-foot chain link fence with 3 strand barbed wire top

6.

Signs:

☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

Justifications and/or demonstrations that the proposed variance will afford reasonable protection against contamination of fresh water, human health, and the environment.

Check the below box only if a variance is requested:

☒ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval. If a Variance is requested, include the variance information on a separate page and attach it to the C-147 as part of the application.

If a Variance is requested, it must be approved prior to implementation.

8.
Siting Criteria for Recycling Containment

Instructions: The applicant must provide attachments that demonstrate compliance for each siting criteria below as part of the application. Potential examples of the siting attachment source material are provided below under each criteria.

General siting

Ground water is less than 50 feet below the bottom of the Recycling Containment. NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☒ No ☐ NA
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; written approval obtained from the municipality	☐ Yes ☒ No ☐ NA
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map	☐ Yes ☒ No
Within a 100-year floodplain. FEMA map	☐ Yes ☒ No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; aerial photo; satellite image	☐ Yes ☒ No
Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site	☐ Yes ☒ No

9.
Recycling Facility and/or Containment Checklist:
Instructions: Each of the following items must be attached to the application. Indicate, by a check mark in the box, that the documents are attached.

- ☒ Design Plan - based upon the appropriate requirements.
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements.
- ☒ Closure Plan - based upon the appropriate requirements.
- ☒ Site Specific Groundwater Data -
- ☒ Siting Criteria Compliance Demonstrations –
- ☒ **Certify that notice of the C-147 (only) has been sent to the surface owner(s)**

10.
Operator Application Certification:

I hereby certify that the information and attachments submitted with this application are true, accurate and complete to the best of my knowledge and belief.

Name (Print): Monte Bell Title: Facilities Manager

Signature: Monte Bell Date: 11/2/2020

e-mail address: monte.bell@riatagg.com Telephone: (405) 306-7989

11.
OCD Representative Signature: _____ **Approval Date:** _____

Title: _____ **OCD Permit Number:** _____

☐ OCD Conditions _____
☐ Additional OCD Conditions on Attachment

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Site Specific Information

100 E. Navajo Drive Suite 100 Hobbs NM 88240 T 575 393 9827 F 575 393 1543 http:\\www.Pettigrew.us

Location

The location of the Longfellow SWD is the NW/4 of Section 24, Township 17 South, Range 28 East, Eddy County, New Mexico. The GPS location at the center of the facility is 32.826171°N, 104.135936°W. The elevation at the center is 3,714 feet. Figure 1 is a location and vicinity map.

Geologic Setting of the Regional Fresh-Water Bearing Formation

Available groundwater in the area of the proposed facility is within the Roswell Artesian declared Groundwater Basin, by the New Mexico Office of the State Engineer (OSE). The Roswell Artesian basin contains three major water-bearing features including a deeper "artesian" carbonate system (San Andres and Chalk Bluff formations) and a shallower alluvial aquifer system. These aquifer systems are located in the area west of the Pecos River and are not available for groundwater withdrawal in the area of the facility.

In the vicinity of the proposed facility, a limited amount of groundwater is available from shallow wells completed mostly in alluvial fill in topographic depressions. Water is also available in permeable zones of consolidated material such as the sandstones or sandy clay in otherwise non-water bearing areas of gypsum, shale, dolomite or mudstone redbeds.

Distance to Groundwater

Information on groundwater wells within two mile of the proposed facility is provided in Table 1. Listings from the OSE, Ground-Water Report 3 and the US Geological Survey show up to seven wells. Figure 2 shows the OSE numbering system and the locations of the wells are mapped on Figure 3.

Some of the seven wells shown on the figure may not exist as there is no evidence of them on the most recent Google Earth photo and a field survey to verify locations was not performed. One location listed as a monitoring well was actually a pipeline soil boring, two others were submitted as placeholders for water rights acquisition, and one or maybe two may be a duplicate of the listed USGS well. Only three water levels were obtained with measurement dates ranging from 1948 to 2015. The average depth to water for the three wells was 60.7 feet. The depth to water from the closest well was 58 feet measured in September 2015.

Two of the three wells measured have measurement dates within the past 25 years. One of those two (the Key Livestock well) can definitely be located on a Google Earth map. However, when plotted on Google Earth, the USGS well has differing locations for both Lat/Long locations and OSE coordinates. Further, its location plots only 836 feet west of the stock windmill shown on the USGS topographic quadrangle map (Red Lake, 1:24,000). There are four measurement dates for USGS well with the earliest measurement date of May 1986. Latitude/longitude map location measurements made in 1986 before the availability of civilian GPS equipment in 2000 likely have coordinates not as accurate as are possible using today's equipment.

Depth to water and land surface elevations from the abandoned livestock well, RA-12307 livestock well and USGS 324855104093101, as shown in Table 1, were used to determine water level elevations at the measurement sites. A land surface elevation of 3,714 feet, which was taken at the center of the proposed facility, was used to calculate the depth to water elevations at the facility. Possible depths to water ranged from 167 to 215 feet below the existing surface elevation; as seen on Table 2 the average estimated depth was 187 feet. Using just the 2015 Key Livestock information, the expected depth to water at the proposed facility is 180 feet. The elevation's comparison and calculations can be seen more in depth in Table 2.

Table 2. Depth to Water Calculation

		A	B	C=A-B	D	E=D-A	F=B+E
Name or Identification	Type of Well	Surface Elevation at Well (feet)	Depth to Water (feet)	Water Level Elevation at Well (feet)	Surface Elevation at Site (feet)	Surface Elevation Difference (feet)	Calculated Depth to Water at Site (feet)
Abandoned	Livestock	3593.00	45.50	3547.5	3714.00	121.00	166.50
RA-12307	Livestock	3592.00	58.00	3534	3714.00	122.00	180.00
USGS 324855104093101	Unknown	3578.00	78.60	3499.4	3714.00	136.00	214.60
			Average Depth to Water: 187 feet				

Within the 2 mile radius searched, the only driller's log providing location, drilling and formation information was the Key Livestock well, RA-12307. That log is provided as an attachment.

Site Soils and Geology

Soils

Surface soils in the area of the proposed facility are classified by the Natural Resources Conservation Service (formerly the Soil Conservation Service) as representative of the Simona Series of soils. These are well drained, moderately dark colored sandy loams. Simona soils are calcareous and moderately coarse textured. They are shallow over indurated caliche. They occur on uplands scattered throughout the eastern part of the Eddy County survey area. They typically have a surface layer of brown sandy loam about 2 inches thick. The next layer is light-brown gravelly fine sandy loam about 17 inches thick. Below this is fractured, platy, indurated caliche.

A subset of the Simona soil series, Simona gravelly fine sandy loam (0 to 3 percent slopes), is present at the proposed site location. It is found on plains east of the Pecos River and differs in that it includes more small gravels than the Simona fine sandy loam. The soil has been slightly eroded by the wind and runoff occurs only after saturation by prolonged rainfall.

Some representative engineering properties of the soil are provided below.

- Depth to bedrock: 10 to 24 inches.
- Unified soil classification: SM, silty sands.
- Percentage passing No. 4, No. 10 and No. 200 sieves: 78, 76, 42.
- Permeability: 2.5 - 5.0 inches per hour.
- Shrink-swell potential: Low.
- Suitability as a source of topsoil: Poor, sandy
- Suitability as a source of road fill: Good 10-24 inches, hard caliche
- Foundations for low buildings: Good suitability if soil is confined.

Geology

The main geologic formations in the area of the proposed facility (from oldest to recent) are the Permian San Andres formation, the Permian Chalk Bluff formation, the Permian Salado formation, the Permian Rustler formation, the Triassic Dockum group and Quaternary Alluvium. The San Andres and Chalk Bluff formations, and the alluvium provide most of the groundwater west of the Pecos River and in the Artesia area. East of the river much less permeable formations are present and groundwater is sporadic and mineralized.

Figure 4 shows the geology in the vicinity of the proposed facility. In the immediate vicinity of the location, geological features below the topsoil and caliche are the Rustler formation and the Dockum group. Short descriptions of each follow together with their suitability for groundwater production.

The Rustler formation consists of anhydrite, gypsum, interbedded sandy clay and shale, and irregular beds of dolomite. It outcrops in areas east of the Pecos River and thickness is about 200 feet in the northern part of Eddy County. The Rustler overlies the Salado salt formation which is non-productive for groundwater. Throughout its outcrop area the Rustler is the only possible source of groundwater other than shallow alluvial depressions. The quality of the water in the Rustler is reported as generally impotable and unfit for livestock.

In the vicinity of the proposed facility, the Rustler transitions to the Dockum group eastward in a belt 10 to 20 miles wide to the county border. Sandstone beds in the Dockum group (and possibly in underlying redbeds) are the chief sources water. The depth to water in the belt area is generally less than 300 feet and quantity is usually sufficient for stock or domestic use. The quality of the water is reported as generally fair but locally impotable.

Distance to Surface Water[1]

The closest surface water is Red Lake that is located 2.4 miles west-northwest of the facility. The ephemeral lake includes several connected sections that contain runoff water when precipitation is frequent. The Google Earth photo from December 2019 show it containing water. A playa lake is shown nearby. These features are shown on Figure 5.

[1] All distances are measured from the center of the proposed Longfellow location.

The closest permanent surface water is the Pecos River located 10.9 miles west of the proposed facility location.

Distance to Permanent Residence or Structures.

The closest residence is at a ranch complex shown on Figure 3 that is located 1.06 miles north of the facility. A business structure is located 2.3 miles southeast of the location and adjacent to US Highway 82. Numerous oil and gas wells, and tank batteries surround the location; these are shown in Figure 8.

Distance to Non-Public Water Supply.

A well serves the residence at the ranch located 1.06 miles north of the site. A livestock windmill is located 1.39 miles southwest of the facility location (Figure 3).

Distance to Municipal Boundaries and Fresh Water Fields.

The closest municipality is the City of Artesia located 15 miles west of the proposed facility. A conversation with a Water Department official (Aubrey Hobson) established that city wells are located within the city at distances from 15.5 to 21.7 miles west of the proposed facility.

Though the City of Carlsbad is located 28 miles south of the facility, it obtains a portion of its water via pipeline from the Ogallala aquifer caprock well field located 22 miles east of the location. The small community of Loco Hills (9 miles east) is served by pipeline from the caprock. Likewise, Maljamar, 22 miles east at the base of the caprock, receives water from the caprock.

Distance to Wetlands

The Red Lake ephemeral system 2.4 miles west northwest of the facility location provides wetland support when it contains runoff precipitation (Figure 5). Permanent wetlands are located adjacent to the Pecos River channel whose closest setting is 10.7 miles west of the proposed facility location.

Distance to Subsurface Mines

Though there are several caliche pits adjacent to US highway 82, the closest subsurface mines are in the potash mining area with the closest located approximately 14 miles southeast of the proposed location.

A lode claim for quartz and other minerals to be produced from pits and shafts was filed with the BLM in September 2019. The location lists the entirety of Section 29, T17S, R28E. However, that section has numerous oil and gas wells and related facilities located within the one square mile section. The center of the section is 3.9 miles southwest from the proposed Longfellow facility.

Distance to High or Critical Karst Areas

The proposed facility is located within a “low” potential karst area. An area of “medium” potential karst area is located one mile northeast of the facility The nearest potential “high” karst area is located approximately 2 miles northeast of the proposed facility. The Karst map is shown in Figure 6.

Distance to 100-Year Floodplain

The proposed facility is located in FEMA "Zone X, Area of Minimal Flood Hazard." Zone X represents locations that are defined as outside the 0.2% annual chance floodplain. The closest 100-year floodplain ("Zone A") is 10.6 miles west of the proposed facility in the Pecos River flood plain. The FEMA zone in the vicinity of the proposed facility is shown in Figure 7.

References:

- Soil Survey of Eddy Area, New Mexico, US Department of Agriculture, Soil Conservation Service, March 1971
- Geology and Ground-Water Resources of Eddy County, New Mexico, Ground-Water Report 3, New Mexico Bureau of Mines & Mineral Resources, 1952.

Table 1. Information on Groundwater Wells Within Two-Miles of Proposed Facility

		Location										
Name or Identification	**Applicant**	**Latitude/ Longitude**	**NM OSE Numbering* (T17S, R28E)**	**Other**	**Type of Well**	**Aquifer**	**Distance to Center of Site (miles)**	**Land Surface Elevation (feet)**	**Depth of Well (feet)**	**Depth to Water (DTW, feet)**	**Date Measured**	**Water Level Elevation (feet)**
Abandoned	Unknown	- -	22.23	- -	Livestock	Rustler or Dockum	1.5(?)	3,593 (?)	- -	45.5	12/01/1948	3,547.5
RA-08230[a]	Bogle Farms	32.815508°N, 104.165335°W	22	980'FSL, 2,110'FWL	Livestock	Shallow	1.86	3,585	- -	- -	- -	- -
RA-08231[b]	Bogle Farms	32.814598°N, 104.153219°W	23.33	- -	Livestock	Shallow	1.28	3,591	- -	- -	- -	- -
RA-12052	Centurion Pipeline L.P.	32.824992°N, 104.122692°W	23.224	- -	Monitoring (soil boring)	- -	0.77	3,705	- -	- -	- -	- -
RA-12307	Key Livestock	32.840939°N 104.139869°W	14.224	- -	Livestock	Shallow (Rustler or Dockum)	1.06	3,592	140	58	09/30/2015	3,534
USGS[c] 324855104093101	- -	32.815278°N 104.158611°W	22.34242[d]	- -	- -	Alluvium	1.52	3,578	95	78.6	01/13/1999	3,499.4
Stock Windmill[e]	- -	32.814983°N 104.155917°W	22.442	- -	Livestock	Shallow	1.39	3,578	- -	- -	- -	- -
								Average depth to water:		60.7 feet		

Notes:

* See attached figure for suffix numbering

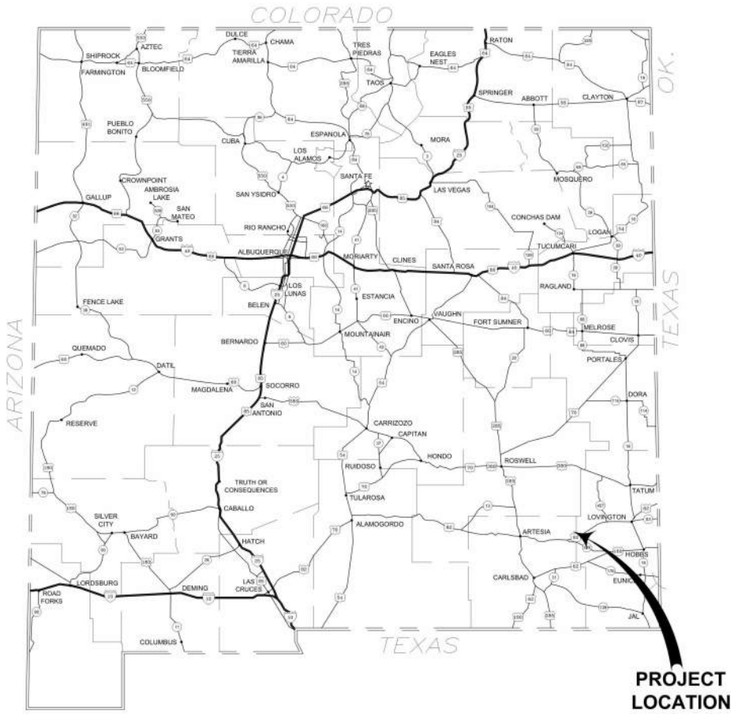
a. No well seen on topo quad or Google Earth, application date is 07/10/1991, well priority date is 1970.

b. No well seen on topo quad or Google Earth; application date is 07/10/1991, well priority date is 1914. Well is likely for existing stock windmill 800 feet west of reported location.

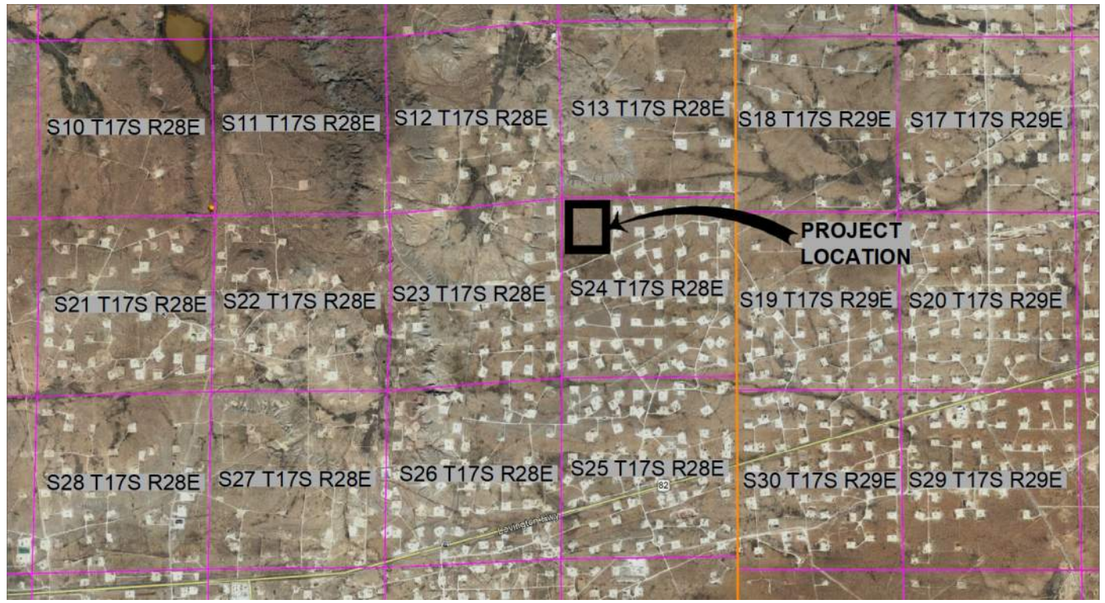
c. No well seen on topo quad or Google Earth. The actual elevation at the USGS coordinate location is 3,590 feet, but the reported elevation is 3,578 feet. The elevation and water information may be for the existing stock windmill 836 feet east of the USGS coordinate location.

d. The USGS Lat-Long location information does not match NM OSE numbering information. 1986 Lat-Long information is not as precise as information post 2000.

e. The stock windmill is likely the location of USGS groundwater record 324855104093001. The USGS Lat-Long shown is 836 feet west of the stock well at an elevation of 3,590 feet. However, the land surface elevation shown in the USGS record (3,578 feet) is the same elevation as shown for the stock windmill.



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

NORTH

PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

LOCATION AND VICINITY MAP

IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

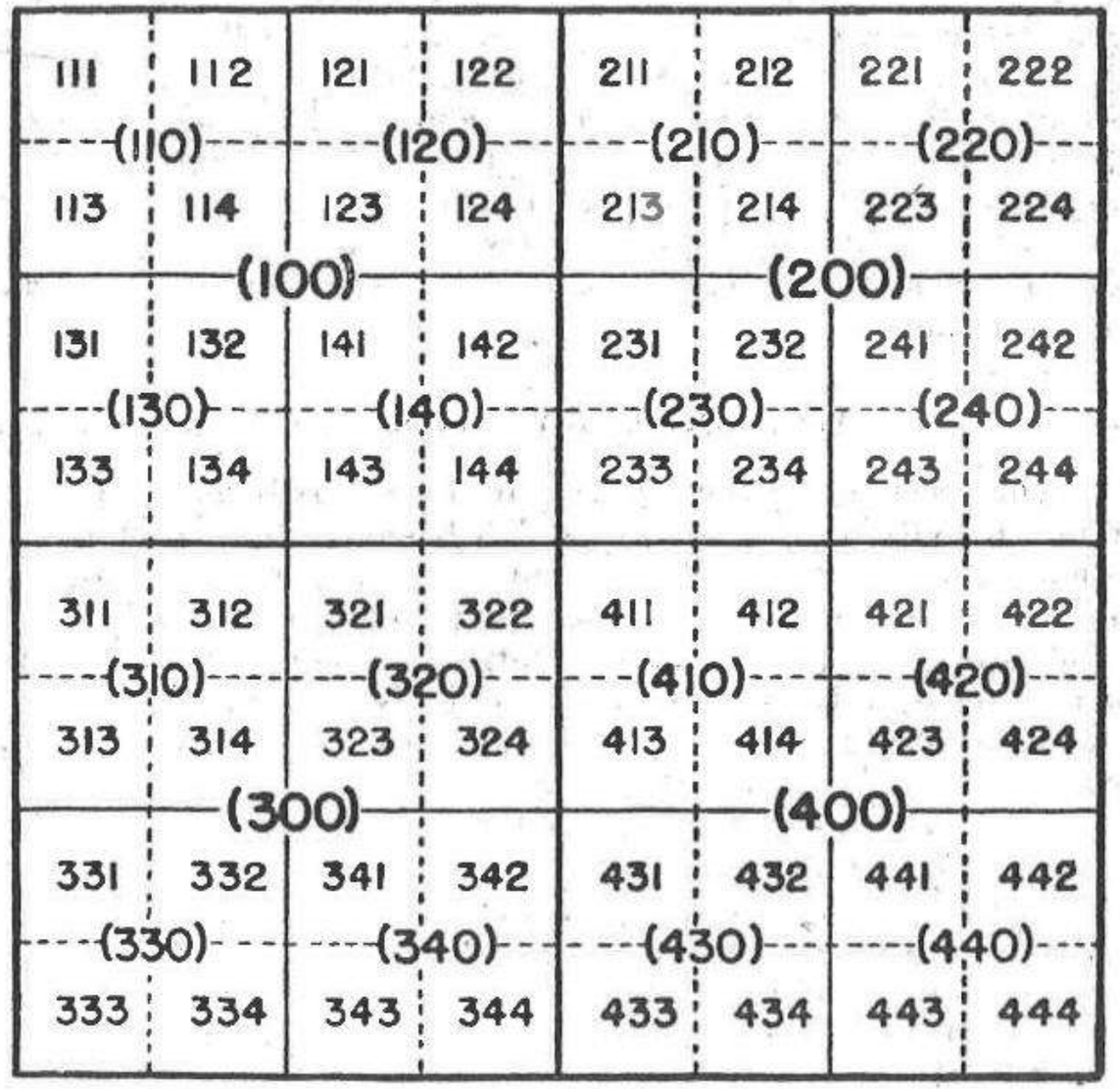
PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

PROJECT NUMBER: 2020.1212

SHEET FIGURE 1

Drawing1.dwg 10/23/2020 10:21 AM

Figure 2. New Mexico Office of the State Engineer, Well Numbering within a 640 Acre Section



NORTH

PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

NM OFFFICE OF STATE ENGINEER WELL NUMBERING

IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

PROJECT NUMBER: 2020.1212

SHEET FIGURE 2

Drawing1.dwg 10/23/2020 10:21 AM

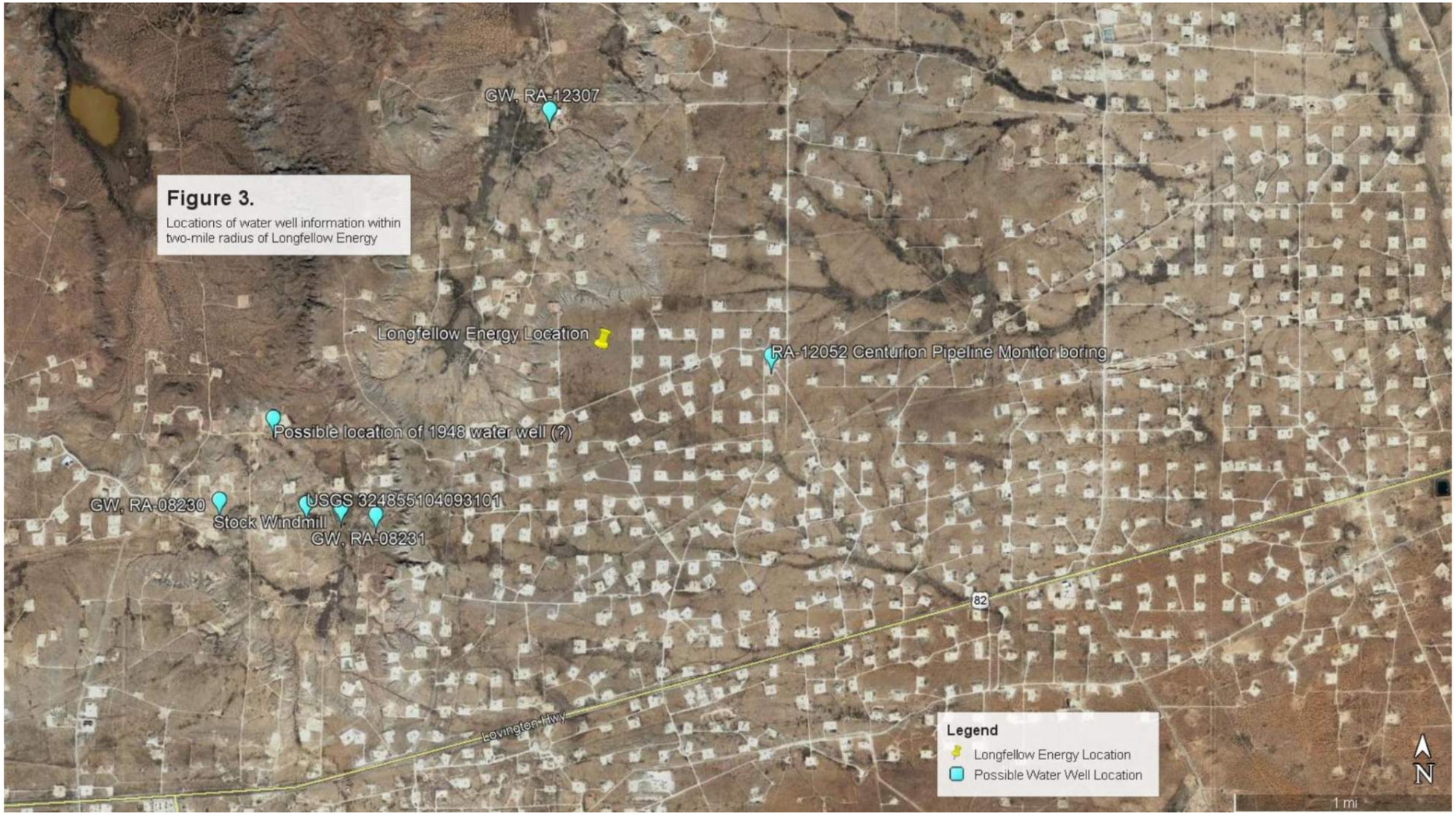


Figure 3.
Locations of water well information within two-mile radius of Longfellow Energy

PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

WATER WELL LOCATION MAP

IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

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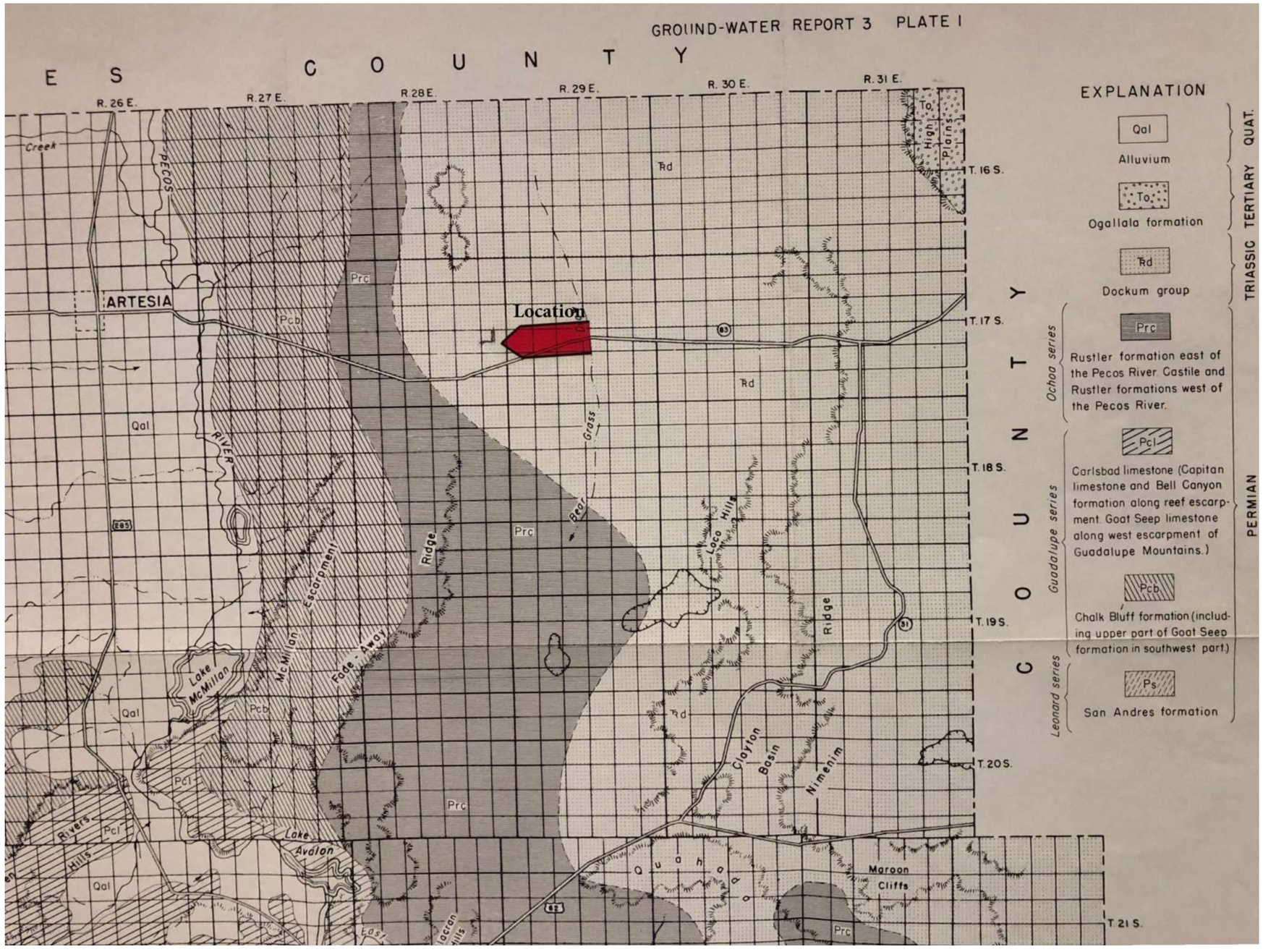
SHEET FIGURE 3

Drawing1.dwg 10/23/2020 10:21 AM



PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

GEOLOGIC MAP

IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

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PROJECT NUMBER: 2020.1212

SHEET FIGURE 4

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PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

NEAREST SURFACE WATER AND PLAYA MAP

IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

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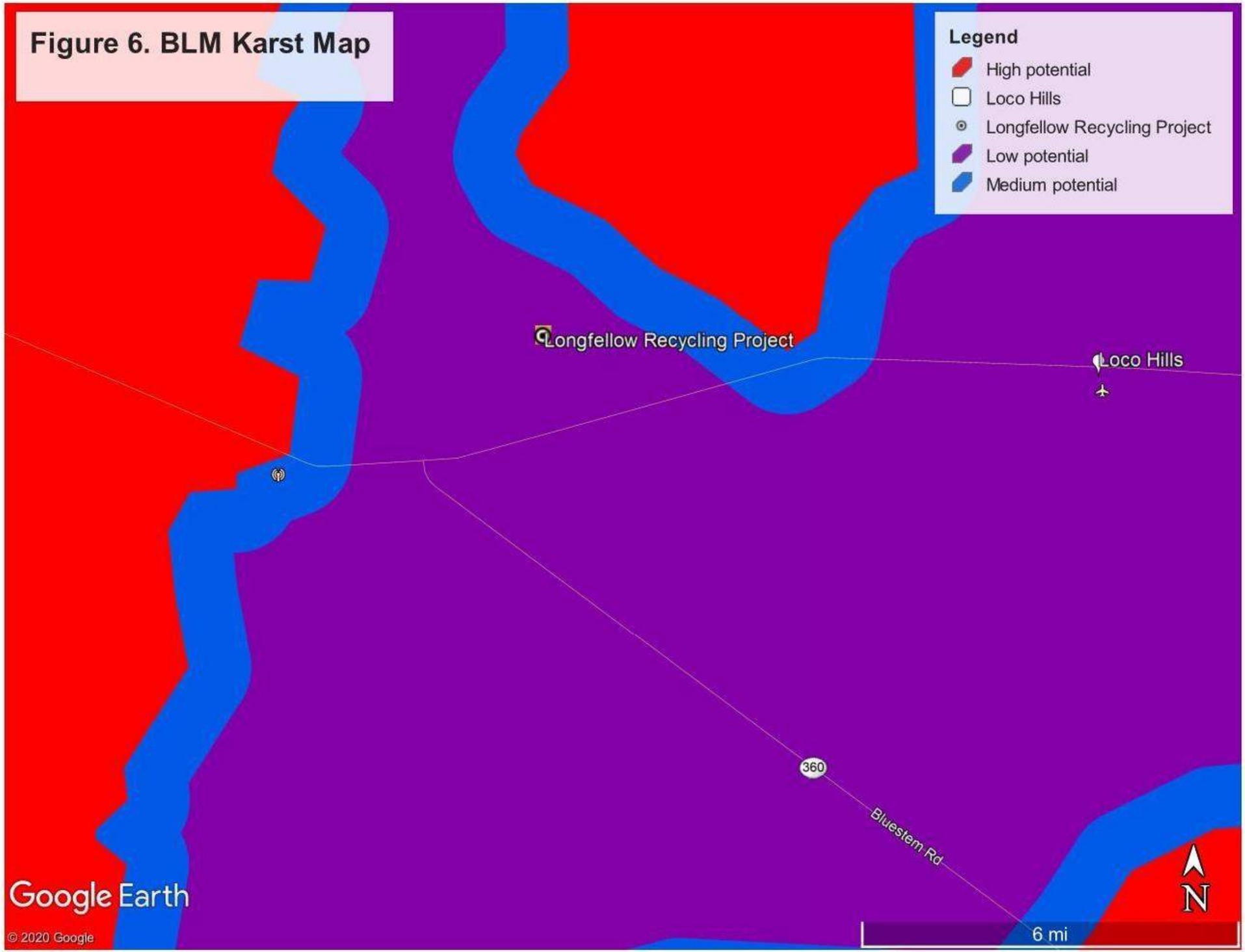
SHEET FIGURE 5

Drawing1.dwg 10/23/2020 10:21 AM

Figure 6. BLM Karst Map



PROJECT ENGINEER:	David Roybal, PE
PROJECT DESIGNER:	Juan C. Dominguez, EI
DRAWN BY:	Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

KARST
MAP

IMPOUND 24
RECYCLING
CONTAINMENT

LONGFELLOW ENERGY

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SHEET FIGURE 6

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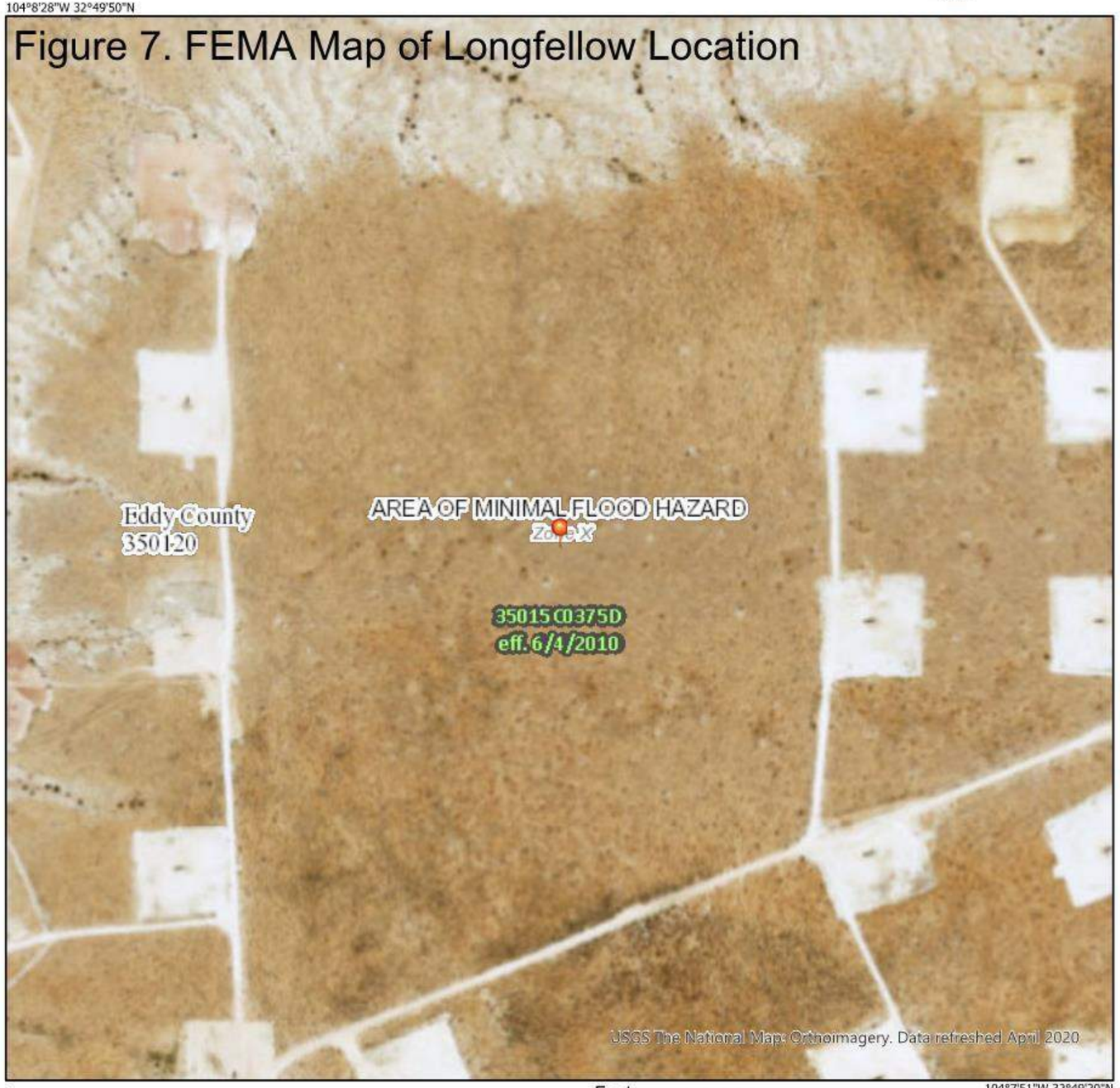
National Flood Hazard Layer FIRMette

FEMA

104°8'28"W 32°49'50"N

Figure 7. FEMA Map of Longfellow Location



0 250 500 1,000 1,500 2,000 Feet

1:6,000

104°7'51"W 32°49'20"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/30/2020 at 10:52 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

FEMA MAP

IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

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SHEET FIGURE 7

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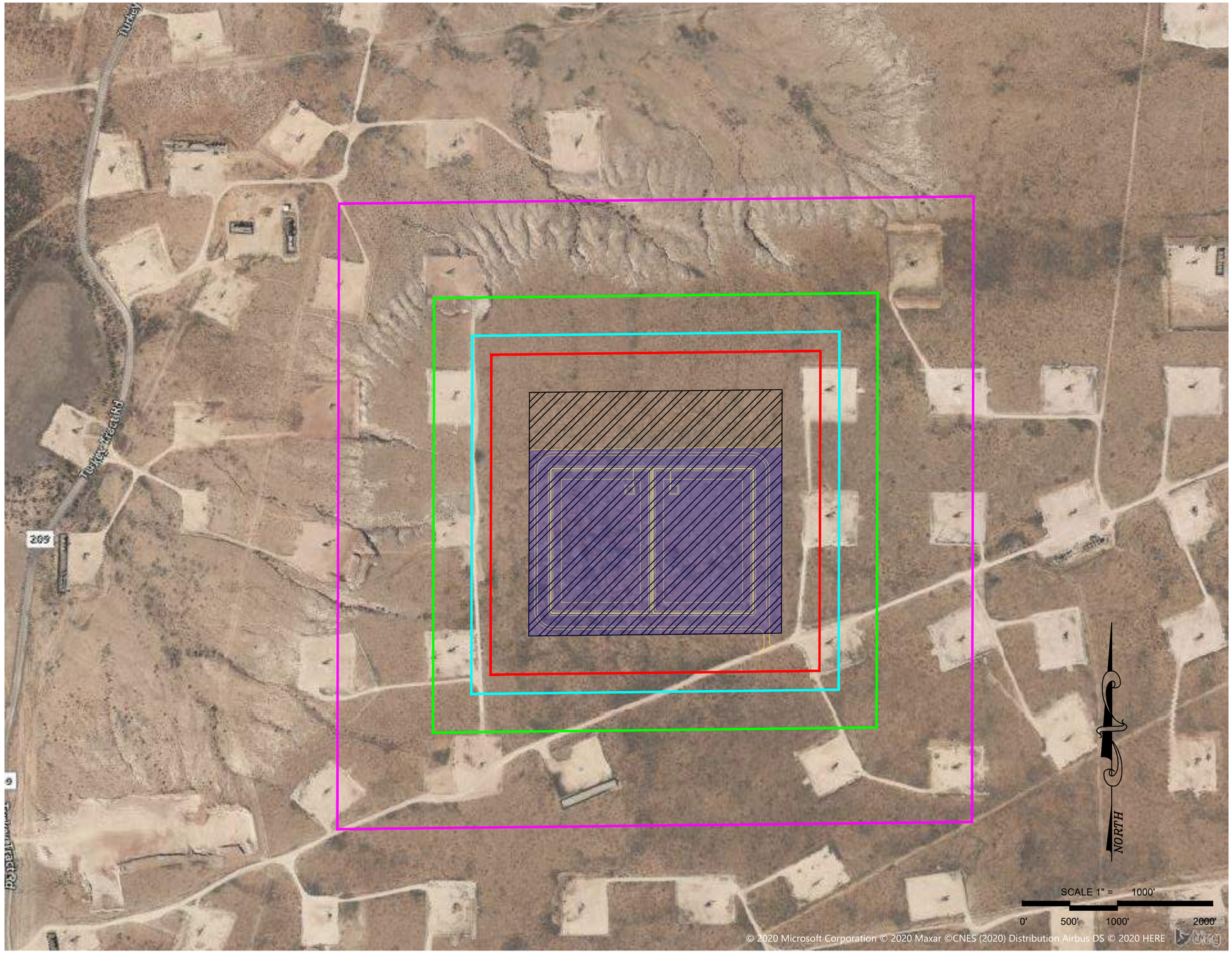

PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

LEGEND

DISTURBANCE AREA
CONTAINMENT

CONTAINMENT BUFFER
200 FEET
300 FEET
500 FEET
1,000 FEET

NEARBY STRUCTURES PLAN

IMPOUND 24
RECYCLING
CONTAINMENT

LONGFELLOW ENERGY

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DEFINING QUALITY SINCE 1965
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PROJECT NUMBER: 2020.1212

SHEET FIGURE 8

Z:\2020.1212\Environmental Permit\Figure 8.dwg 10/24/2020 9:22 AM

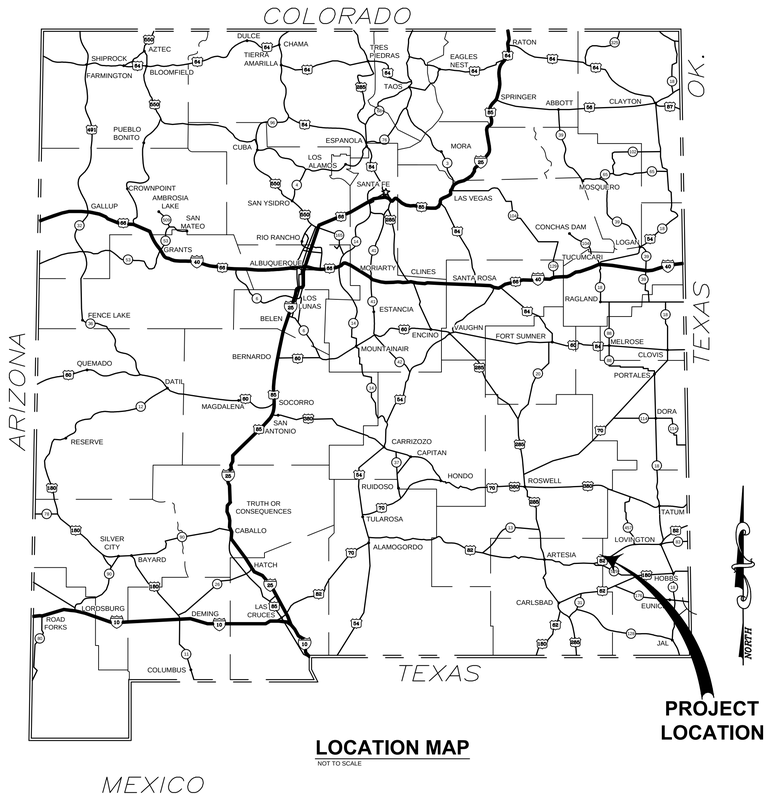
Appendix A

Design Specifications

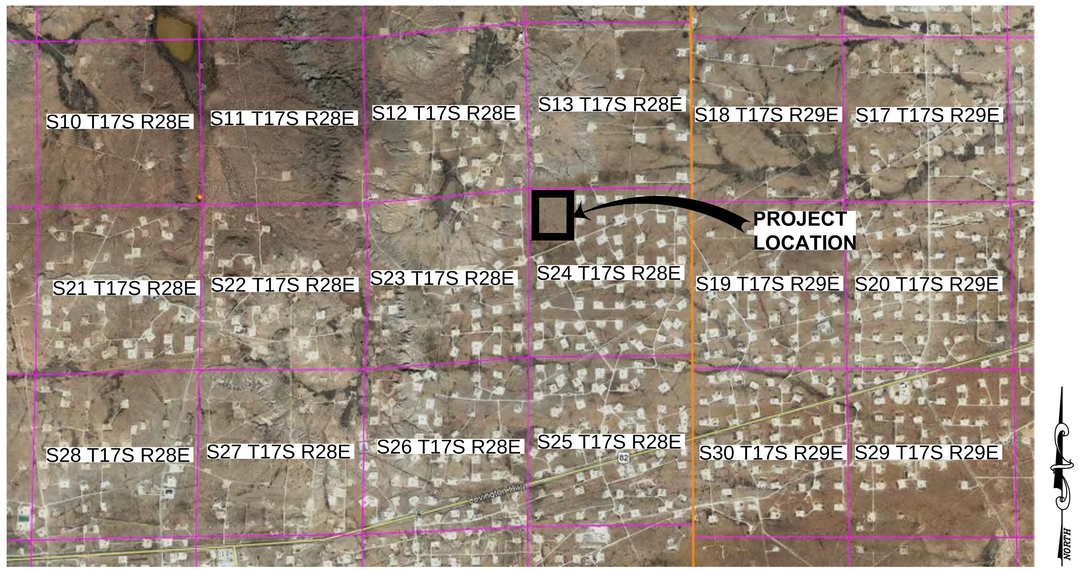
IMPOUND 24
RECYCLING CONTAINMENT
LONGFELLOW ENERGY
EDDY COUNTY, NEW MEXICO
S24 T17S R28E

OCTOBER, 2020

INDEX OF DRAWINGS



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

CONTACTS

OWNER
MONTE BELL
LONGFELLOW ENERGY
MONTE.BELL@RIATACG.COM

CIVIL ENGINEERING
PETTIGREW & ASSOCIATES, P.A.
100 E NAVAJO DRIVE, SUITE 100
HOBBS, NM 88240
(575) 393-9827
David Roybal, PE

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

FLOOD NOTE

THIS PROJECT IS LOCATED IN ZONE X AS DESCRIBED IN FEMA FIRM PANEL 35015C0375D, WITH EFFECTIVE DATE OF JUNE 4, 2010

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DAVID A. ROYBAL — NEW MEXICO — 23576 — PROFESSIONAL ENGINEER
10/14/2020

PROJECT ENGINEER:	David Roybal, PE
PROJECT DESIGNER:	Juan C. Dominguez, EI
DRAWN BY:	Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

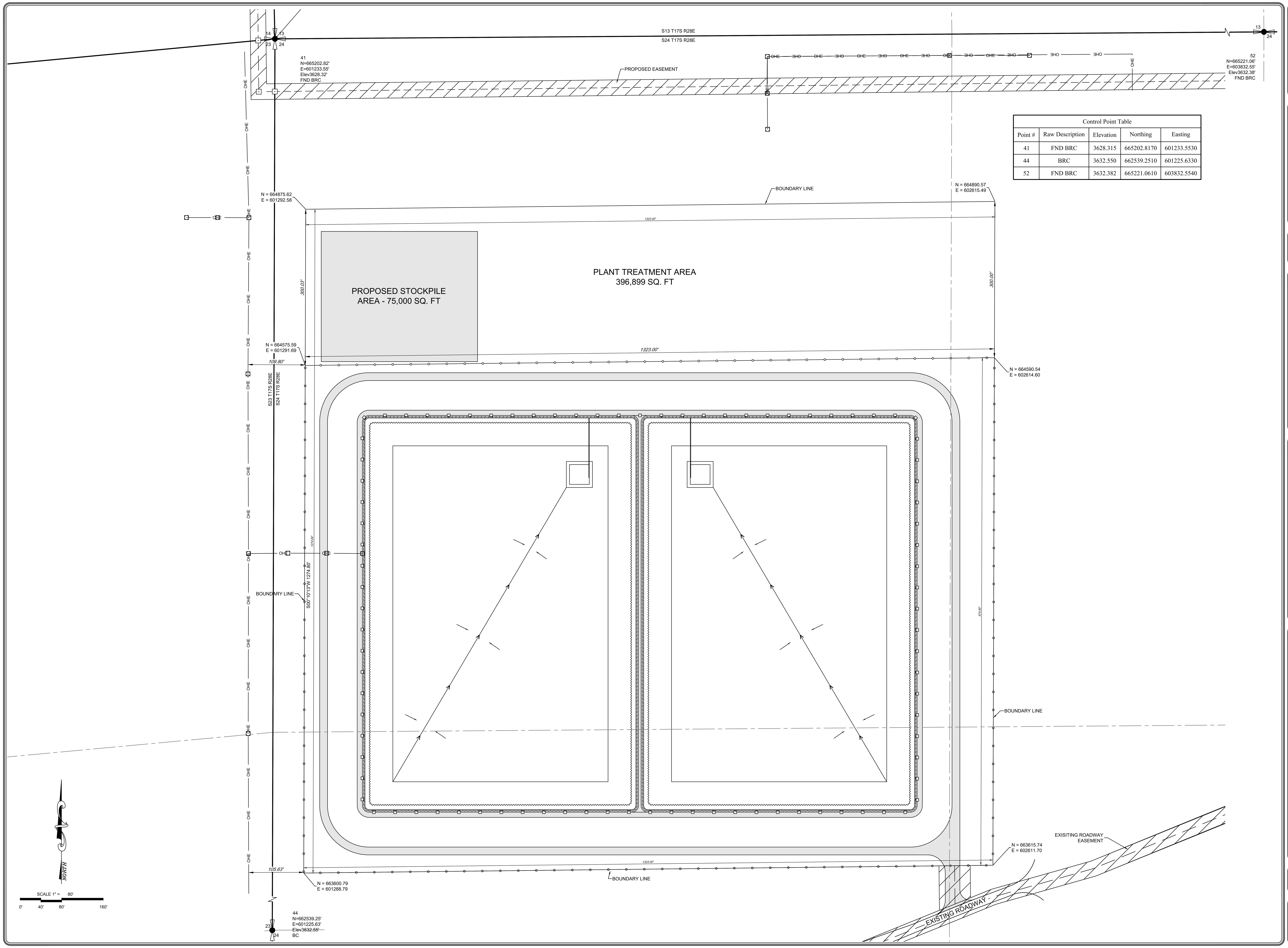
COVER SHEET

IMPOUND 24
RECYCLING
CONTAINMENT

LONGFELLOW ENERGY

PROJECT NUMBER:
2020.1212

SHEET:
C-001



Control Point Table

Point #	Raw Description	Elevation	Northing	Easting
41	FND BRC	3628.315	665202.8170	601233.5530
44	BRC	3632.550	662539.2510	601225.6330
52	FND BRC	3632.382	665221.0610	603832.5540

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DAVID A. ROYBAL NEW MEXICO 23576 PROFESSIONAL ENGINEER

10/14/2020

PROJECT ENGINEER: David Roybal, PE
PROJECT DESIGNER: Juan C. Dominguez, EI
DRAWN BY: Juan C. Dominguez, EI

LEGEND

- FINISH GRADE 1.0' CONTOUR
- FINISH GRADE 5.0' CONTOUR
- EXIST. GRADE 1.0' CONTOUR
- EXIST. GRADE 5.0' CONTOUR
- GRADING LIMITS
- FLOWLINE
- CONTAINMENT FENCE
- PERMANENT CHAINLINK FENCE
- FREEBOARD ELEVATION
- ANCHOR TRENCH
- PROPOSED EASEMENT

REVISIONS

No.	DATE	DESCRIPTION

SITE
LAYOUT
AND CONTROL

IMPOUND 24
RECYCLING
CONTAINMENT

LONGFELLOW ENERGY

PROJECT NUMBER:
2020.1212

SHEET:
CS-100

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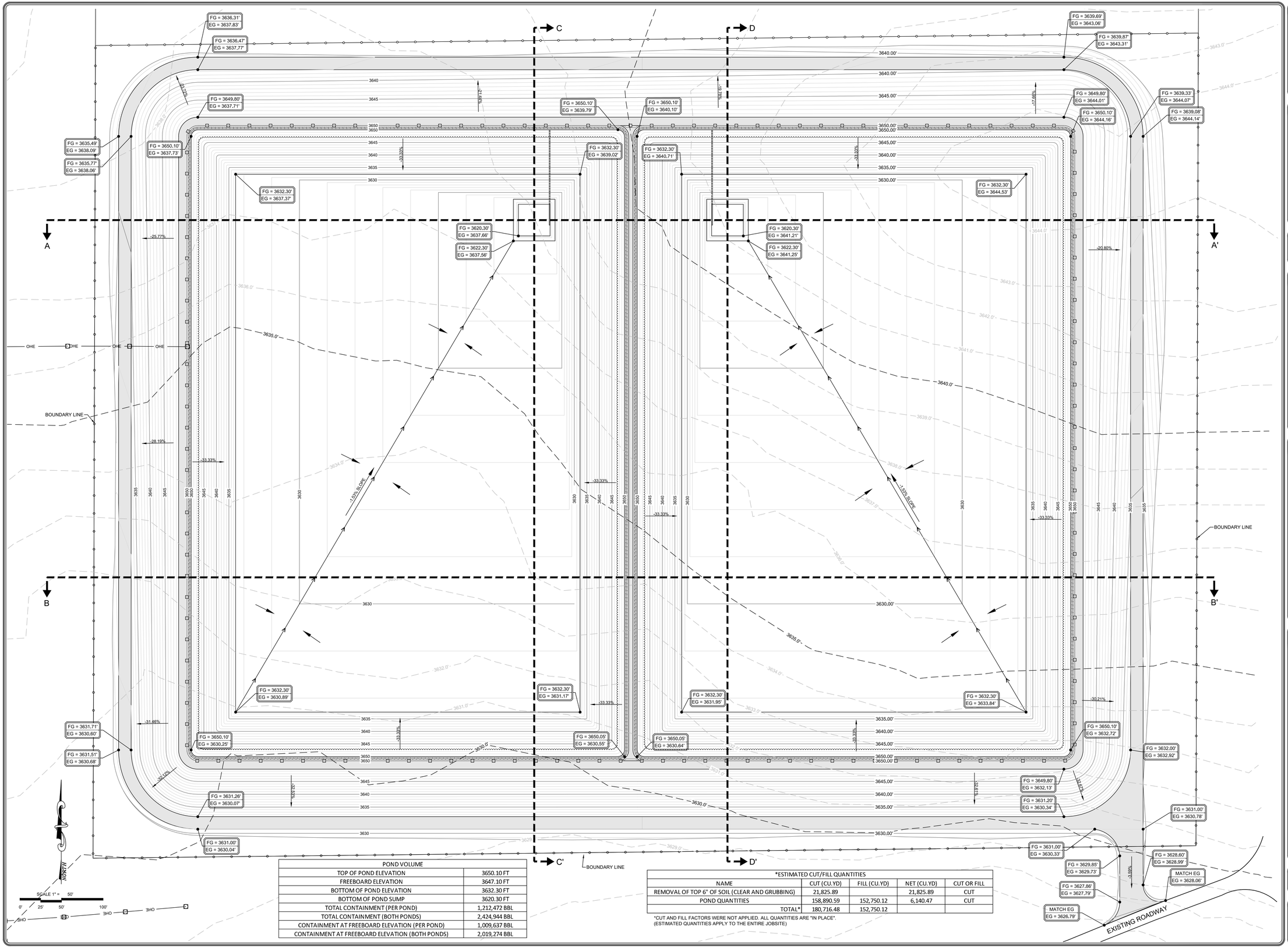

POND VOLUME	
TOP OF POND ELEVATION	3650.10 FT
FREEBOARD ELEVATION	3647.10 FT
BOTTOM OF POND ELEVATION	3632.30 FT
BOTTOM OF POND SUMP	3620.30 FT
TOTAL CONTAINMENT (PER POND)	1,212,472 BBL
TOTAL CONTAINMENT (BOTH PONDS)	2,424,944 BBL
CONTAINMENT AT FREEBOARD ELEVATION (PER POND)	1,009,637 BBL
CONTAINMENT AT FREEBOARD ELEVATION (BOTH PONDS)	2,019,274 BBL

*ESTIMATED CUT/FILL QUANTITIES

NAME	CUT (CU.YD)	FILL (CU.YD)	NET (CU.YD)	CUT OR FILL
REMOVAL OF TOP 6" OF SOIL (CLEAR AND GRUBBING)	21,825.89		21,825.89	CUT
POND QUANTITIES	158,890.59	152,750.12	6,140.47	CUT
TOTAL*	180,716.48	152,750.12		

*CUT AND FILL FACTORS WERE NOT APPLIED. ALL QUANTITIES ARE "IN PLACE".
(ESTIMATED QUANTITIES APPLY TO THE ENTIRE JOBSITE)

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DAVID A. ROYBAL
NEW MEXICO
23576
PROFESSIONAL ENGINEER
10/14/2020

PROJECT ENGINEER:	David Roybal, PE
PROJECT DESIGNER:	Juan C. Dominguez, EI
DRAWN BY:	Juan C. Dominguez, EI

LEGEND

- FINISH GRADE 1.0' CONTOUR
- FINISH GRADE 5.0' CONTOUR
- EXIST. GRADE 1.0' CONTOUR
- EXIST. GRADE 5.0' CONTOUR
- GRADING LIMITS
- FLOWLINE
- CONTAINMENT FENCE
- PERMANENT CHAINLINK FENCE
- FREEBOARD ELEVATION
- ANCHOR TRENCH

EG EXISTING GRADE
FG FINISH GRADE
EXISTING POWER POLE

REVISIONS

No.	DATE	DESCRIPTION

SITE GRADING PLAN

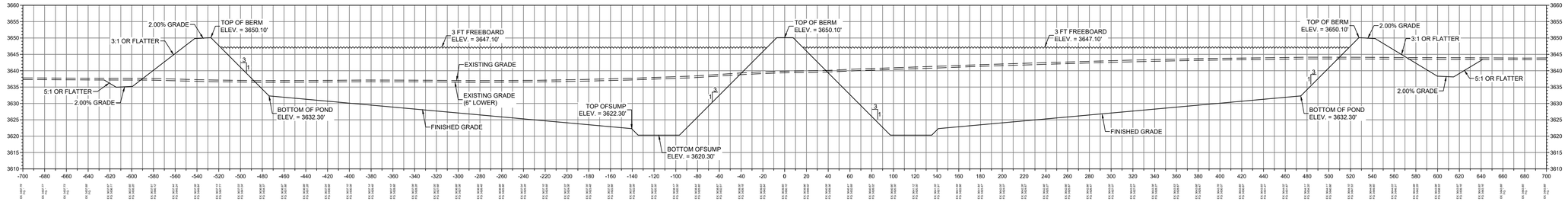
IMPOUND 24 RECYCLING CONTAINMENT

LONGFELLOW ENERGY

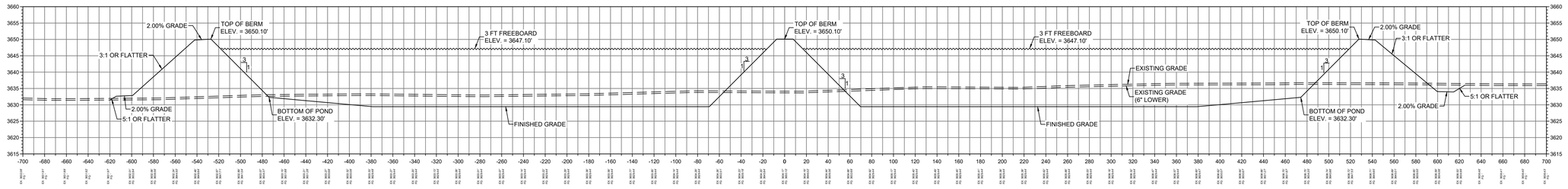
PROJECT NUMBER: 2020.1212

SHEET: CG-101

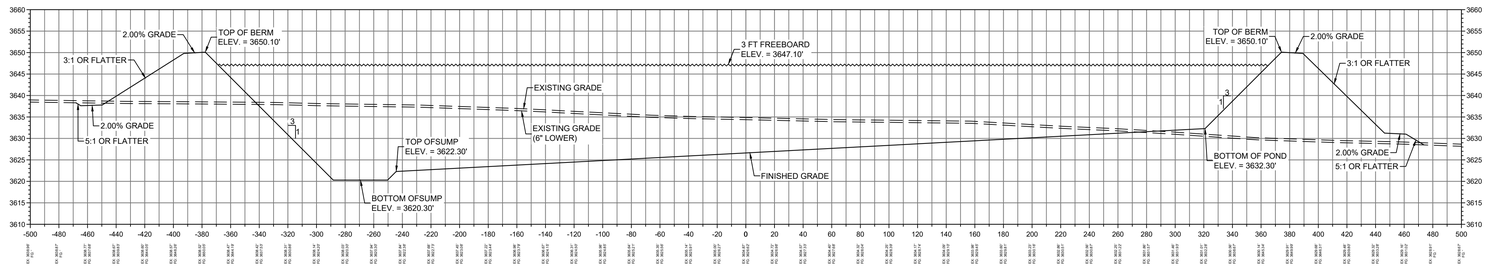
CROSS SECTION A-A'



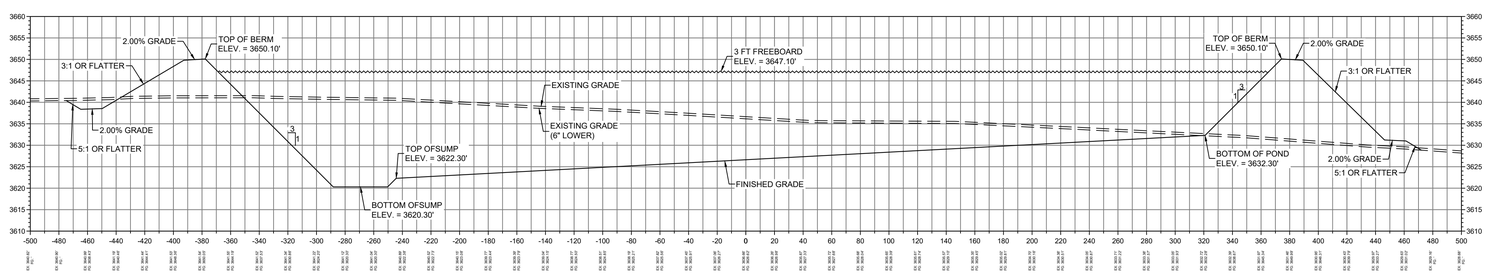
CROSS SECTION B-B'



CROSS SECTION C-C'



CROSS SECTION D-D'



VERTICAL SCALE:
HORIZONTAL SCALE:

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DAVID A. ROYBAL
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23576
PROFESSIONAL ENGINEER
10/14/2020

PROJECT ENGINEER:	David Roybal, PE
PROJECT DESIGNER:	Juan C. Dominguez, EI
DRAWN BY:	Juan C. Dominguez, EI

LEGEND

FREEBOARD ELEVATION

REVISIONS

No.	DATE	DESCRIPTION

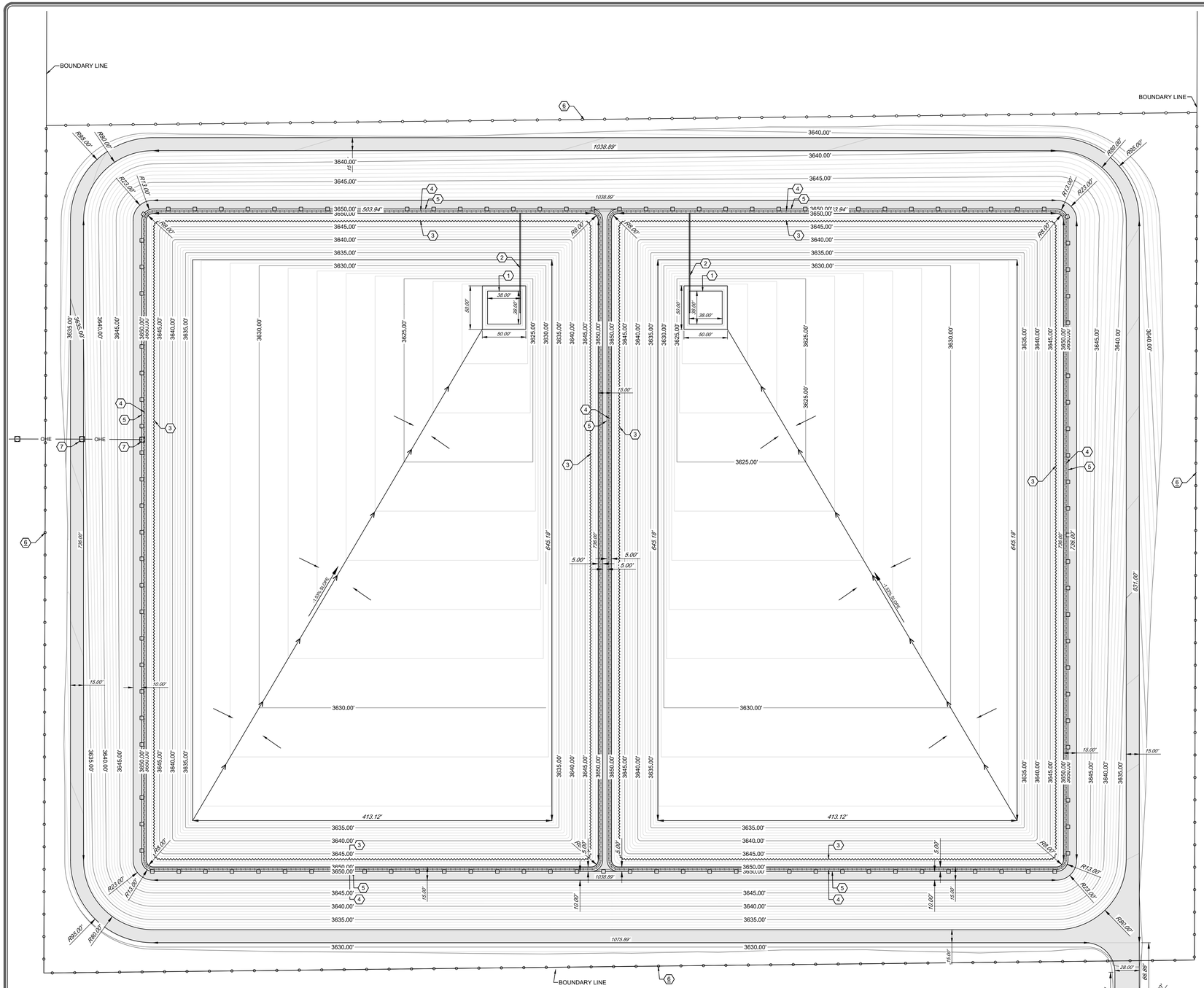
CROSS SECTIONS

IMPOUND 24
RECYCLING
CONTAINMENT

LONGFELLOW ENERGY

PROJECT NUMBER:
2020.1212

SHEET:
CG-301



GENERAL NOTES

1. THE PROPOSED DESIGN IS BASED ON TOPOGRAPHIC AND BOUNDARY INFORMATION OBTAINED FROM PETTIGREW & ASSOCIATES P.A. DATED 10/03/2020.
2. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT CONSTRUCTION PLANS OF THE REGISTRATION/PERMIT. NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION LATEST EDITION SHALL APPLY TO THIS PROJECT.
3. ALL DATA SHOWN HEREIN CONCERNING EXISTING PRIVATE AND/OR PUBLIC OWNED UTILITIES HAVE BEEN OBTAINED FROM THE OWNERS AND/OR FIELD OBSERVATIONS. THESE MAY OR MAY NOT BE ACCURATE. THE CONTRACTOR IS CAUTIONED THAT HE IS RESPONSIBLE FOR THE EXACT LOCATION AND PROTECTION OF ALL LINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING, IN ADVANCE OF HIS/HER CONSTRUCTION OPERATIONS, IF OVERHEAD UTILITY LINES, SUPPORT STRUCTURES, POLES, GUYS, ETC. ARE AN OBSTRUCTION TO CONSTRUCTION OPERATIONS. IF ANY OBSTRUCTION IS EVIDENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE APPROPRIATE UTILITY OWNER TO REMOVE OR SUPPORT THE UTILITY OBSTRUCTION. ANY COST ASSOCIATED WITH THIS EFFORT IS INCIDENTAL TO THE PROJECT.
4. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO SECURE AND SUPPLY WATER FOR THE PROJECT.
5. THE BOTTOM OF PIT SHALL BE SLOPED AT A MINIMUM 1.50% AS SHOWN.
6. THE PERIMETER OF THE SITE SHALL BE ENCLOSED WITH CHAINLINK FENCE AS PRESCRIBED BY DESIGN/CONSTRUCTION PLAN IN REGISTRATION/PERMIT APPLICATION.
7. STRIP AND STOCKPILE TOP SOIL FOR FUTURE CLOSURE USE. NEW MEXICO ADMINISTRATIVE CODE 19.15.34 AND (DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT IN REGISTRATION/PERMIT) SHALL APPLY TO THIS PROJECT.
8. THE RECYCLING CONTAINMENT SHALL HAVE A PROPERLY CONSTRUCTED FOUNDATION AND INTERIOR SLOPES CONSISTING OF A FIRM, UNYIELDING BASE, SMOOTH AND FREE OF ROCKS, DEBRIS, SHARP EDGES OR IRREGULARITIES TO PREVENT THE LINER'S RUPTURE OR TEAR. GEOTEXTILE IS REQUIRED UNDER AND OVER THE LINER WHEN NEEDED TO REDUCE LOCALIZED STRESS-STRAIN OR PROTUBERANCES THAT OTHERWISE MAY COMPROMISE THE LINER'S INTEGRITY.
9. AS DESCRIBED IN THE DESIGN/CONSTRUCTION PLANS OF THE REGISTRATION/PERMIT, ALL PRIMARY (UPPER) LINERS IN A RECYCLING CONTAINMENT SHALL BE GEOMEMBRANE LINERS COMPOSED OF AN IMPERVIOUS, SYNTHETIC MATERIAL THAT IS RESISTANT TO ULTRAVIOLET LIGHT, PETROLEUM HYDROCARBONS, SALTS AND ACIDIC AND ALKALINE SOLUTIONS. ALL PRIMARY LINERS SHALL BE 60-MIL HDPE LINERS. SECONDARY LINERS SHALL BE 60-MIL HDPE STRING REINFORCED OR EQUIVALENT WITH A HYDRAULIC CONDUCTIVITY NO GREATER THAN 1 X 10-9 CM/SEC. LINER COMPATIBILITY SHALL MEET OR EXCEED THE EPA SW-846 METHOD 9090A OR SUBSEQUENT RELEVANT PUBLICATIONS.
10. LINER SEAMS SHALL BE MINIMIZED AND ORIENTED UP AND DOWN, NOT ACROSS THE SLOPE.
11. EXPANSION WRINKLE SHALL BE INSTALLED IF NECESSARY INSIDE POND FOR THERMAL EXPANSION / CONTRACTION.
12. UNLESS DIFFERENTLY STATED IN THE CONSTRUCTION PLAN OF THE REGISTRATION PERMIT,THE OPERATOR SHALL ENSURE FIELD SEAMS IN GEOSYNTHETIC MATERIAL ARE THERMALLY SEAMED. PRIOR TO FIELD SEAMING, THE OPERATOR SHALL OVERLAP LINERS FOUR TO SIX INCHES. THE OPERATOR SHALL MINIMIZE THE NUMBER OF FIELD SEAMS AND CORNERS AND IRREGULARLY SHAPED AREAS. THERE SHALL BE NO HORIZONTAL SEAMS WITHIN FIVE FEET OF THE SLOPE'S TOE. QUALIFIED PERSONNEL SHALL PERFORM FIELD WELDING AND TESTING.
13. AT A POINT OF DISCHARGE INTO OR SUCTION FROM THE RECYCLING CONTAINMENT, THE OPERATOR SHALL INSURE THAT THE LINER IS PROTECTED FROM EXCESSIVE HYDROSTATIC FORCE OR MECHANICAL DAMAGE. EXTERNAL DISCHARGE OR SUCTION LINES SHALL NOT PENETRATE THE LINER.
14. THE OPERATOR SHALL POST AN UPRIGHT SIGN NO LESS THAN 12 INCHES BY 24 INCHES WITH LETTERING NOT LESS THAN TWO INCHES IN HEIGHT IN A CONSPICUOUS PLACE ON THE FENCE SURROUNDING THE CONTAINMENT. THE OPERATOR SHALL POST THE SIGN IN A MANNER AND LOCATION SUCH THAT A PERSON CAN EASILY READ THE LEGEND. THE SIGN SHALL PROVIDE THE FOLLOWING INFORMATION: THE OPERATOR'S NAME, THE LOCATION OF THE SITE BY QUARTER-QUARTER OR UNIT LETTER, SECTION, TOWNSHIP AND RANGE, AND EMERGENCY TELEPHONE NUMBERS.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT NEW MEXICO 811 (FORMERLY NEW MEXICO ONE CALL) A MINIMUM OF 48 HOURS BEFORE EXCAVATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL DESIGNATED UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
16. DURING CONSTRUCTION OF THE CONTAINMENT, THE CONTRACTOR WILL REPORT AND RESPOND TO ANY SPILLS OF HAZARDOUS MATERIALS SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS. TOXIC OR CORROSIVE SUBSTANCES, ETC. A SPILL IS DEFINED AS ANY RELEASE OF A CORROSIVE, HAZARDOUS, TOXIC OR RADIOACTIVE SUBSTANCE THAT MAY BE A THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT. REPORTS OF SPILLS WILL BE MADE IMMEDIATELY TO BOTH THE NEW MEXICO ENVIRONMENT DEPARTMENT EMERGENCY RESPONSE TEAM (505-827-9329 OR 866-428-6535). THE CONTRACTOR WILL BE RESPONSIBLE FOR REPORTING AND CLEANUP OF ANY SPILL ASSOCIATED WITH PROJECT CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR REPORTING ANY DISCOVERIES OF PAST SPILLS OR CURRENT SPILLS NOT ASSOCIATED WITH CONSTRUCTION.
17. CONTRACTOR MUST OBTAIN CLIENT PERMISSION BEFORE SALVAGING ANY ITEMS SPECIFIED FOR REMOVAL AND DISPOSAL AFTER COMPLETION OF CONSTRUCTION OF THE CONTAINMENT.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING DISPOSAL SITES THAT ARE ENVIRONMENTALLY SUITABLE FOR DISPOSAL OF ITEMS NOT SPECIFIED TO BE SALVAGED. THE CONTRACTOR IS EXPECTED TO ABIDE BY ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS IN OBTAINING THE NECESSARY PERMITS FROM ALL APPLICABLE AGENCIES AND/OR PRIVATE PROPERTY OWNERS. ALL COSTS ASSOCIATED WITH OBTAINING THESE PERMITS SHALL BE INCIDENTAL TO THE COMPLETION OF THE PROJECT AND NO DIRECT MEASUREMENT OR PAYMENT SHALL BE MADE THEREFORE. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH COPIES OF ALL PERTINENT INFORMATION, AGREEMENTS, AND PERMITS RELATED TO DISPOSAL SITES UTILIZED. BORROW MATERIAL, ROCK WASTE, AND VEGETATIVE DEBRIS SHALL NOT BE PLACED IN WETLANDS, ARROYOS, OR AREAS THAT MAY IMPACT THREATENED OR ENDANGERED SPECIES. ARCHEOLOGICAL AND ENVIRONMENTAL CLEARANCES MUST BE OBTAINED BEFORE DISPOSAL.
19. ALL MATERIALS SHALL BE APPROVED BY LONGFELLOW ENERGY CONSTRUCTION REPRESENTATIVES PRIOR TO PURCHASING AND SHALL BE DISCLOSED IN BID.
20. LINER INSTALLATION SHALL BE PERFORMED PER INDUSTRY BEST PRACTICES, STANDARDS AND APPLICABLE STATE GUIDELINES.
21. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH UTILITY COMPANY FOR POWER POLE REMOVAL.

KEYED NOTES

1. POND SUMP PER DETAIL 1, SHEET CS-501
2. LEAK DETECTION SYSTEM PER DETAILS 1, 2 AND 3, SHEET CS-501
3. 3' FREEBOARD DEPTH (ELEV. 3647.10')
4. ANCHOR TRENCH PER DETAIL 5, SHEET CS-501
5. CONTAINMENT FENCE WITH NETTING (BY OTHERS)
6. PERMANENT 6' CHAINLINK FENCE PER DETAIL 6, SHEET CS-501
7. EXISTING POWER POLE TO BE REMOVED

LINER QUANTITIES

	PRIMARY LINER (SQ. FT.)	SECONDARY LINER (SQ. FT.)	GEONET (SQ. FT.)	GEOTEXTILE (SQ. FT.)
RECYCLING CONTAINMENT WEST	411,060.00	411,060.00	411,060.00	411,060.00
RECYCLING CONTAINMENT EAST	411,060.00	411,060.00	411,060.00	411,060.00
TOTAL	**822,120.00**	**822,120.00**	**822,120.00**	**822,120.00**
TOTAL + 5% CONTINGENCY	863,226.00	863,226.00	863,226.00	863,226.00

1. LINER QUANTITIES WERE CALCULATED TO THE EDGE OF THE ANCHOR TRENCH AS SHOWN IN DETAIL 5, SHEET CS-501.
2. QUANTITIES DO NOT INCLUDE MATERIAL INSIDE THE ANCHOR TRENCH.
3. QUANTITIES DO NOT INCLUDE LINER OVERLAPPING.

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DAVID A. ROYBAL
NEW MEXICO
23576
PROFESSIONAL ENGINEER
10/14/2020

PROJECT ENGINEER:	David Roybal, PE
PROJECT DESIGNER:	Juan C. Dominguez, EI
DRAWN BY:	Juan C. Dominguez, EI

LEGEND

- FINISH GRADE 1.0' CONTOUR
- FINISH GRADE 5.0' CONTOUR
- EXIST. GRADE 1.0' CONTOUR
- EXIST. GRADE 5.0' CONTOUR
- GRADING LIMITS
- FLOWLINE
- CONTAINMENT FENCE
- PERMANENT CHAINLINK FENCE
- FREEBOARD ELEVATION
- ANCHOR TRENCH

REVISIONS

No.	DATE	DESCRIPTION

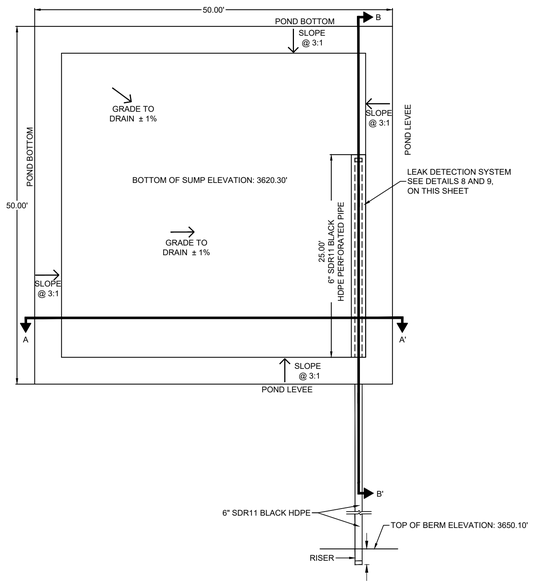
GENERAL SITE LAYOUT AND GENERAL NOTES

IMPOUND 24 RECYCLING CONTAINMENT

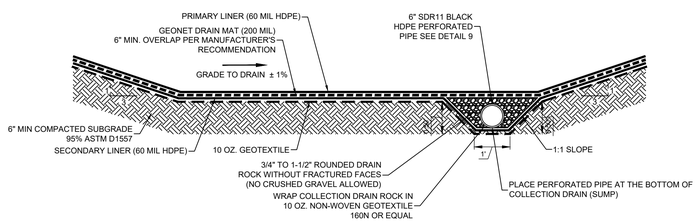
LONGFELLOW ENERGY

PROJECT NUMBER: 2020.1212

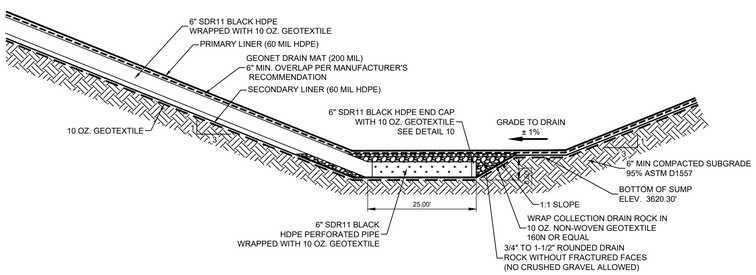
SHEET: CS-101



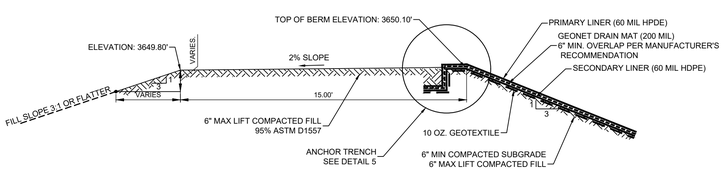
1 POND SUMP PLAN VIEW
SCALE: N.T.S.



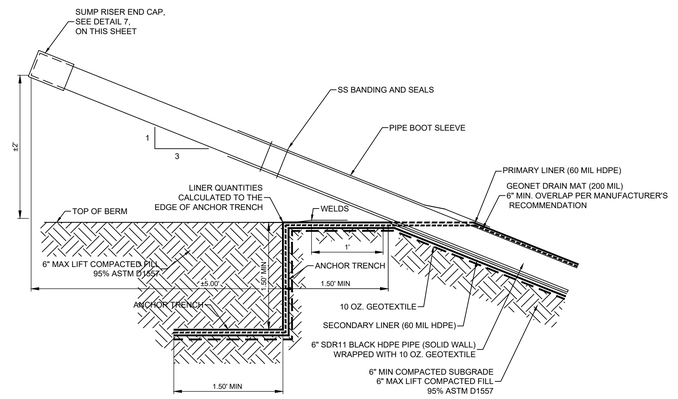
2 LEAK DETECTION SYSTEM SECTION A - A'
SCALE: N.T.S.



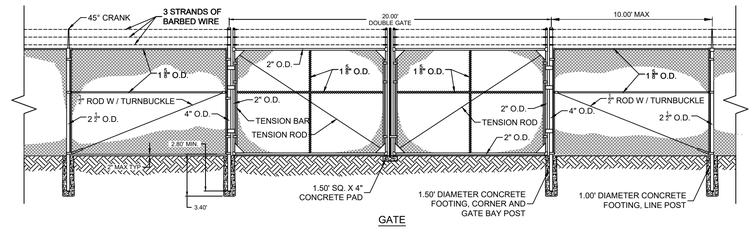
3 LEAK DETECTION SYSTEM SECTION B - B'
SCALE: N.T.S.



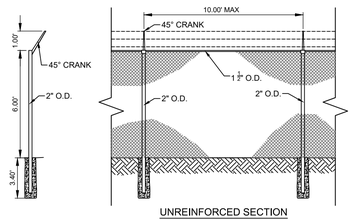
4 TYPICAL TOP OF BERM AND EDGE DETAIL
SCALE: N.T.S.



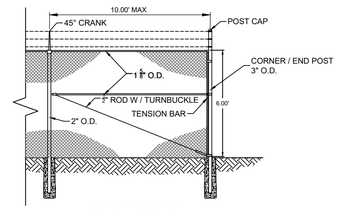
5 LEAK DETECTION SYSTEM TYPICAL ANCHOR TRENCH AND RISER DETAIL



GATE

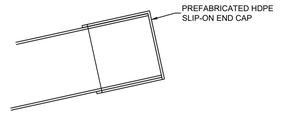


UNREINFORCED SECTION

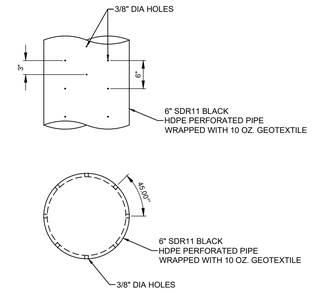


CORNER SECTION

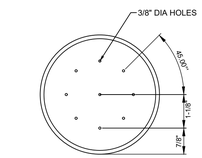
6 PERMANENT 6' CHAINLINK FENCE WITH BARBED WIRE DETAIL
SCALE: N.T.S.



7 SUMP RISER END CAP
SCALE: N.T.S.



8 LEAK DETECTION SYSTEM PIPE PERFORATION DETAIL
SCALE: N.T.S.



9 LEAK DETECTION SYSTEM PERFORATED END CAP DETAIL
SCALE: N.T.S.

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DAVID A. ROYBAL NEW MEXICO 23576 PROFESSIONAL ENGINEER
10/14/2020

PROJECT ENGINEER:	David Roybal, PE
PROJECT DESIGNER:	Juan C. Dominguez, EI
DRAWN BY:	Juan C. Dominguez, EI

REVISIONS

No.	DATE	DESCRIPTION

CIVIL DETAILS

IMPOUND 24
RECYCLING
CONTAINMENT

LONGFELLOW ENERGY

PROJECT NUMBER: 2020.1212

SHEET: CS-501

Z:\2020.1212\Engineering\Acad\CS-501.dwg 10/14/2020 12:53 PM

Appendix B

Construction Plan

100 E. Navajo Drive Suite 100 Hobbs NM 88240 T 575 393 9827 F 575 393 1543 http:\\www.Pettigrew.us

Applicable mandates in Rule 34 are underlined. This plan addresses construction of the Longfellow Energy operating Impound 24 Containment. Appendix A presents the specifications for construction which are similar to other designs in the area. Longfellow Energy will submit "as built" drawings of the Impound 24 Containment prepared prior to any storage of produced water.

Pettigrew and Associates is providing the design of the containment and will conduct a geotechnical evaluation of the liner foundation and levees for the operator. Stamped "as built" drawings showing all design elements will be submitted to OCD prior to storage of produced water.

Dike Protection and Structural Integrity

The design and operation provide for the confinement of produced water, to prevent releases and to prevent overtopping due to wave action or rainfall. Additionally, the design prevents run-on of surface water as the containment is surrounded by an above-grade levee (a berm) and/or diversion ditch (between the levee and the soil stockpile) to prevent run-on of surface water.

Stockpile Topsoil

Where topsoil was present, prior to constructing containment, the operator stripped and stockpiled the topsoil for use as the final cover or fill at the time of closure.

Signage

The operator will place an upright sign no less than 12 inches by 24 inches with lettering not less than two inches in height in a conspicuous place on the fence surrounding the containment. The sign is posted in a manner and location such that a person can easily read the legend. The sign will provide the following information:

- the operator's name,
- the location of the site by quarter-quarter or unit letter, section, township and range, and
- emergency telephone numbers

Fencing

The operator will provide for a fence to enclose the recycling containment in a manner that deters unauthorized wildlife and human access. The perimeter fence around the entire 40- acre parcel owned by Longfellow is 6-foot high chain link fence rather than a four foot fence that has at least four strands evenly spaced in the interval between one foot and four feet above ground level. Because feral pigs, javelena and deer are present in the area, a chain link or game fence is required in order to comply with Section 19.15.34.12 D.1 of the Rule[1]. The specification for fencing provided in 19.15.34.12 D.2 contradicts D.1 because pigs will move beneath the lower strand of a 4-strand, 4-foot high barbed wire fence and deer will jump over. Thus, compliance with D.2 results in a violation of D.1. Compliance with D.1 is the critical component of the Rule and operators need not submit a variance request in order to follow Best Management Practices and comply with the Rule. As stated in the O&M plan, the operator will ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.

[1] The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair.

Netting and Protection of Wildlife
The perimeter game fence will be effective in excluding stock and most terrestrial wildlife. If requested by the surface owner, the game fence can include a fine mesh from the base to 1 foot above the ground to exclude the small reptiles (e.g. dune sagebrush lizard).

The recycling containment will be protective of wildlife, including migratory birds through the implementation of an Avian Protection Plan, routine inspections and the perimeter fence.

The avian protection plan includes the use of a Bird-X Mega Blaster Pro[2] as a primary hazing program for avian species. The device will be equipped with sounds suitable for the Permian Basin environment. In addition to this sonic device, staff will routinely inspect the containment for the presence of avian species and, if detected, will use a blank cartridge or shell in a handgun, starter pistol or shotgun as additional hazing. Decoys of birds of prey may be placed on the game fence and other roosts around the open water to provide additional hazing.

The O&M plan calls for the operator to inspect for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.

Earthwork
The containment will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear. Geotextile may be placed under the liner when needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity.

Appendix A shows that, the proposed Containment will have the following design/construction specifications:

a) levee has inside grade no steeper than two horizontal feet to one vertical foot (2H: 1V).
b) levee outside grade is no steeper than three horizontal feet to one vertical foot (3H: 1V)
c) top of the levee is wide enough to install an anchor trench and provide adequate room for inspection and maintenance.
d) The containment floor design calls for a slope toward the sump in the corner as depicted on plans.

Liner and Drainage Geotextile Installation
The containment has a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.

The primary (upper) liner is a geomembrane liner composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salts and acidic and alkaline solutions. It is 60-mil HDPE. The secondary liner is 40-mil HDPE and is equivalent to 30-mil LLDPEr. Liner compatibility meets or exceeds a subsequent relevant publication to EPA SW -846 method 9090A.

[2] Website: https://bird-x.com/bird-products/electronic/sonic/mega-blaster-pro/

The recycling containment design has a leak detection system between the upper and lower geomembrane liners of 200-mil geonet to facilitate drainage. The leak detection system consists of a properly designed drainage and collection and removal system placed above the lower geomembrane liner in depressions and sloped to facilitate the earliest possible leak detection. The containment floor design calls for a slope toward the sump in the corner (as shown on plan). This slope combined with the highly transmissive geonet drainage layer provide for rapid leak detection.

The liners and drainage material will be installed consistent with the Manufacture's specifications. In addition to any specifications of the Manufacturer, protocols for liner installation include measures to:

i. minimizing liner seams and orient them up and down, not across, a slope of the levee.
ii. use factory-welded seams where possible.
iii. use field seams in geosynthetic material that are thermally seamed and prior to field seaming, overlap liners four to six inches.
iv. minimize the number of field seams and comers and irregularly shaped areas.
v. provide for no horizontal seams within five feet of the slope's toe.
vi. use qualified personnel to perform field welding and testing.
vii. avoid excessive stress-strain on the liner
viii. The edges of all liners are anchored in the bottom of a compacted earth-filled trench that is at least 18 inches deep

At points of discharge into the lined earthen containment the pipe configuration effectively protects the liner from excessive hydrostatic force or mechanical damage during filling.

The design shows that at any point of discharge into or suction from the recycling containment, the liner is protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines do not penetrate the liner.

Pumping from the containment to hydraulic fracturing operations is the responsibility of stimulation contractors. Typically, lines are permanently placed in the containment with floats attached to prevent damage to the liner system. The containment may be equipped with permanent HDPE stinger (supported by a sacrificial liner or geotextile) for withdrawal of fluid if the owner deems necessary during operations.

Leak Detection and Fluid Removal System Installation

The leak detection system, contains the following design elements

a) The 200-mil HyperNet Geonet drainage material between the primary and secondary liner that is sufficiently permeable to allow the transport of fluids to the observation ports (Appendix A).
b) The containment floor is sloped towards the monitoring riser pipe to facilitate the earliest possible leak detection of the containment bottom. A pump may be placed in the observation port to provide for fluid removal.
c) Piping will withstand chemical attack from any seepage; structural loading from stresses and disturbances from overlying water, cover materials, equipment operation or expansion or contraction (see Appendix A).

Appendix C

Operating and Maintenance Plan

Operating and Maintenance Procedures

The purpose of the lined earthen containment is to promote the recycling, reuse and reclamation of produced water originating from oil and gas wells in the area. During periods when water for E&P operations is not needed, produced water will discharge to one of the injection wells in the operator's SWD system. The containment will not be used for the disposal of produced water or other oilfield waste. The operator will operate the lined earthen containment in a manner to contain liquids and solids and maintain the integrity of the liner system in a fashion that prevents contamination of fresh water and protects public health and the environment as described below.

Operating Procedures

Produced water from oil and gas wells in the area will be delivered to a treatment system location as indicated in the C-147.

Post treatment, the produced water will be discharged into the containment.

The treated produced water will be removed from the containment to be used for E&P operations as approved by the NMOCD.

In the event the maximum fluid capacity of the containment is reached, treatment and discharge to the containment ceases (see Freeboard and Overtopping Plan, below).

The operator will maintain accurate records regarding the total volume of water received for recycling, the amount of fresh water received, and the total volume of water leaving the facility. A monthly report will be sent to the division using the C-148 form. The operator will also maintain accurate records identifying the sources and disposition of all recycled water. All records for the facility will be made available for review by the division upon request.

In compliance with 19.15.34.13 (C) NMAC - N, 3/31/2015; A, 10/13/2020, the containment will be deemed to have ceased operations if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use. The operator will report cessation of operations to the appropriate division district office. The appropriate division district office may grant an extension to this determination of cessation of operations not to exceed six months.

The operation of the lined earthen containment will follow the mandates listed below:

The operator will not discharge into or store any hazardous waste (as defined by 40 CFR 261 and NMAC 19.15.2.7.H.3) in the containments.

Should the containment's primary liner be compromised above the fluid's surface, the operator will repair the damage, or initiate replacement of the primary liner within 48 hours of discovery or seek an extension of time from the division district office.

Should the primary liner be compromised below the fluid's surface, the operator will remove all fluid above the damage or leak within 48 hours of discovery, notify the division district office, and repair the damage or replace the primary liner.

If any penetration of the containment liner that is confirmed by sampling of fluid in the leak detection system is found (see Monitoring, Inspection, and Reporting Plan; below), the operator will:

- Begin and maintain fluid removal from the leak detection/pump-back system,
- Notify the NMOCD district office within 48 hours of the discovery,
- Identify the location of the leak, and
- Repair the damage or, if necessary, replace the containment liner.
- The operator will install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release; and, the operator will remove any visible layer of oil from the surface of the recycling containment.
- The operator will report releases of fluid in a manner consistent with NMAC 19.15.29
- The containment will be operated to prevent the collection of surface water run-on.
- The operator will maintain the containment free of miscellaneous solid waste or debris.
- The operator will maintain at least three feet of freeboard for the containment and will use a free-standing staff gauge to allow easy determination of the required 3-foot of freeboard.
- As described in the design/construction plan, the injection or withdrawal of fluids from the containment is accomplished through hardware that prevents damage to the liner by erosion, fluid jets, or impact from installation and removal of hoses or pipes.
- The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.
- The operator will maintain the fences in good repair.

Monitoring, Inspection, and Reporting Plan

The operator shall inspect the lined earthen containment and all associated leak detection systems on a weekly basis when there is fluid in the containment.

The operator will create a log of the inspections which will be made available to the NMOCD for review upon their request.

Weekly inspections consist of:

- Reading and recording the fluid height of staff gauges,
- Recording any evidence that the pond surface shows visible oil,
- Visually inspecting the containment’s exposed liners, and
- Checking the leak detection system for any evidence of integrity loss of the primary liner.

Should liner integrity be compromised, or if any penetration of the liner occurs above the water surface, then the operator will notify the District office within 48 hours.

On a monthly basis, the operator will:

A. Inspect diversion ditches and berms around the containment to check for erosion and collection of surface water run-on.
B. Inspect the leak detection system for evidence of damage or malfunction and monitor for system leakage.
C. Inspect the containment for dead migratory birds and other wildlife. Within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.
D. Report to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use via form C-148.
E. Record sources and disposition of all recycled water.

The operator will maintain a log of all inspections and make the log available for the appropriate Division district office's review upon request. An example of the log is attached to this section of the permit application.

Freeboard and Overtopping Prevention Plan

The method of operation of the containment allows for maintaining freeboard with very few potential problems. When the capacity of the containment is reached (3-feet of freeboard), the discharge of treated produced water ceases and the produced water generated by nearby oil and gas wells is managed by an injection well(s).

If rising water levels suggest that 3-feet of freeboard will not be maintained, the operator will implement one or more of the following options:

A. Cease discharging treated produced water to the containment.
B. Accelerate re-use of the treated produced water for purposes approved by the Division.
C. Transfer treated produced water from the containment to injection wells.

The reading of the staff gauge typically occurs daily when treatment operations are ongoing and weekly when discharge to the containment is not occurring.

Protocol for Leak Detection Monitoring, Fluid Removal and Reporting

As shown in Appendix A the leak detection system includes a monitoring system. Any fluid released from the primary liner will flow to the collection sump where fluid level monitoring is possible at the monitoring riser pipe associated with the leak detection system.

Staff may employ a portable electronic water level meter to determine if fluid exists in the monitoring riser pipe. Obtaining accurate readings of water levels in a sloped pipe beneath a containment can be a challenge; therefore, an electrician's wire snake may be required to push the probe to the bottom of the port. The probe may be fixed in a 2-inch pipe "dry housing" to avoid false readings due to water condensation on the pipe. There are many techniques to determine the existence of water in the sumps – including low flow pumps and a simple small bailer affixed to an electrician's snake. The operator will use the method that works best for each containment.

If seepage from the containment into the leak detection system is suspected by a positive fluid level measurement, the operator will:

1. Re-measure fluid levels in the monitoring riser pipe, daily, for one week, to determine the rate of seepage.
2. Collect a water sample from the monitoring riser pipe to confirm the seepage is treated produced water from the containment via electrical conductivity and chloride measurements.
3. Notify NMOCD of a confirmed positive detection in the system within 48 hours of sampling (initial notification).
4. Install a pump into the monitoring riser pipe sump to continually (manually, daily, or via automatic timers) remove fluids from the leak detection system into the containment until the liner is repaired or replaced.
5. Dispatch a liner professional to inspect the portion of the containment suspected of leakage during a "low water" monitoring event.
6. Provide NMOCD a second report describing the inspection and/or repair within 20 days of the initial notification.

If the point of release is obvious from a low water inspection, the liner professional will repair the loss of integrity. If the point of release cannot be determined by the inspection, the liner professional will develop a more robust plan to identify the point(s) of release. The inspection plan and schedule will be submitted to OCD with the second report. The operator will implement the plan upon OCD approval.

Appendix D
Closure Plan

Recycling Facility Closure Plan

A. Upon ceased operations, as defined in 19.15.34.13 (C) NMAC - N, 3/31/2015; A, 10/13/2020, the operator will remove all fluids within 60 days; and, the containment will be closed within six months from the date the facility ceases containment use operations. If the facility desires to use the containment for another purpose other than recycling, the facility will seek permission or permitting from the division according to the appropriate rules.

B. After all fluids have been removed from the containment, the operator shall remove all of the containment contents, as well as the synthetic liners, and transfer these materials to a division approved facility.

C. The operator will test the soils beneath the containment for contamination with a five-point composite sample including stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in Table I below.

Table I
Closure Criteria for Recycling Containments

Depth below bottom of containment to groundwater less than 10,000 mg/I TDS	Constituent	Method*	Limit**
51 feet - 100 feet	Chloride	EPA 300.0	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1 ,000 mg/kg
	BTEX	EPA SW-846 Method 802 lB or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 802 lB or 8260B	10 mg/kg
> 100 feet	Chloride	EPA 300.0	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1 ,000 mg/kg
	BTEX	EPA SW-846 Method 802 lB or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 802 lB or 8260B	10 mg/kg

If all contaminant concentrations are less than or equal to the parameters listed in Table I, then the operator will backfill with non-waste containing, uncontaminated, earthen material.

D. The operator will submit a closure report on form C-147, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable within 60 days of closure completion. The closure report will certify that all information in the report and attachments are correct and that the operator has complied with all applicable closure requirements and conditions specified in division rules or directives.
E. Upon closing of the recycling containment, the operator will reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area. Top- soils and subsoils shall be replaced to their original relative positions and contoured as to achieve erosion control, proper stability, and preservation of surface water flow patterns. The disturbed area will be reseeded in the first favorable growing season following closure of a recycling containment. The operator will substantially restore the impacted surface area to the condition that existed prior to the construction of the recycling containment.
F. Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent of pre-disturbance levels and a total percent plant cover of at least seventy percent 70% of pre-disturbance levels, excluding noxious weeds. The re-vegetation and reclamation obligations imposed by federal, state trust land, or tribal agencies on lands managed by those agencies will govern the obligations of the operator, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.
G. The operator will notify the division when reclamation and re-vegetation are complete.

Appendix E

Site Inspection and Survey

LONGFELLOW ENERGY, LP
POND LEASE SURVEY

APPLICATION FOR LEASE

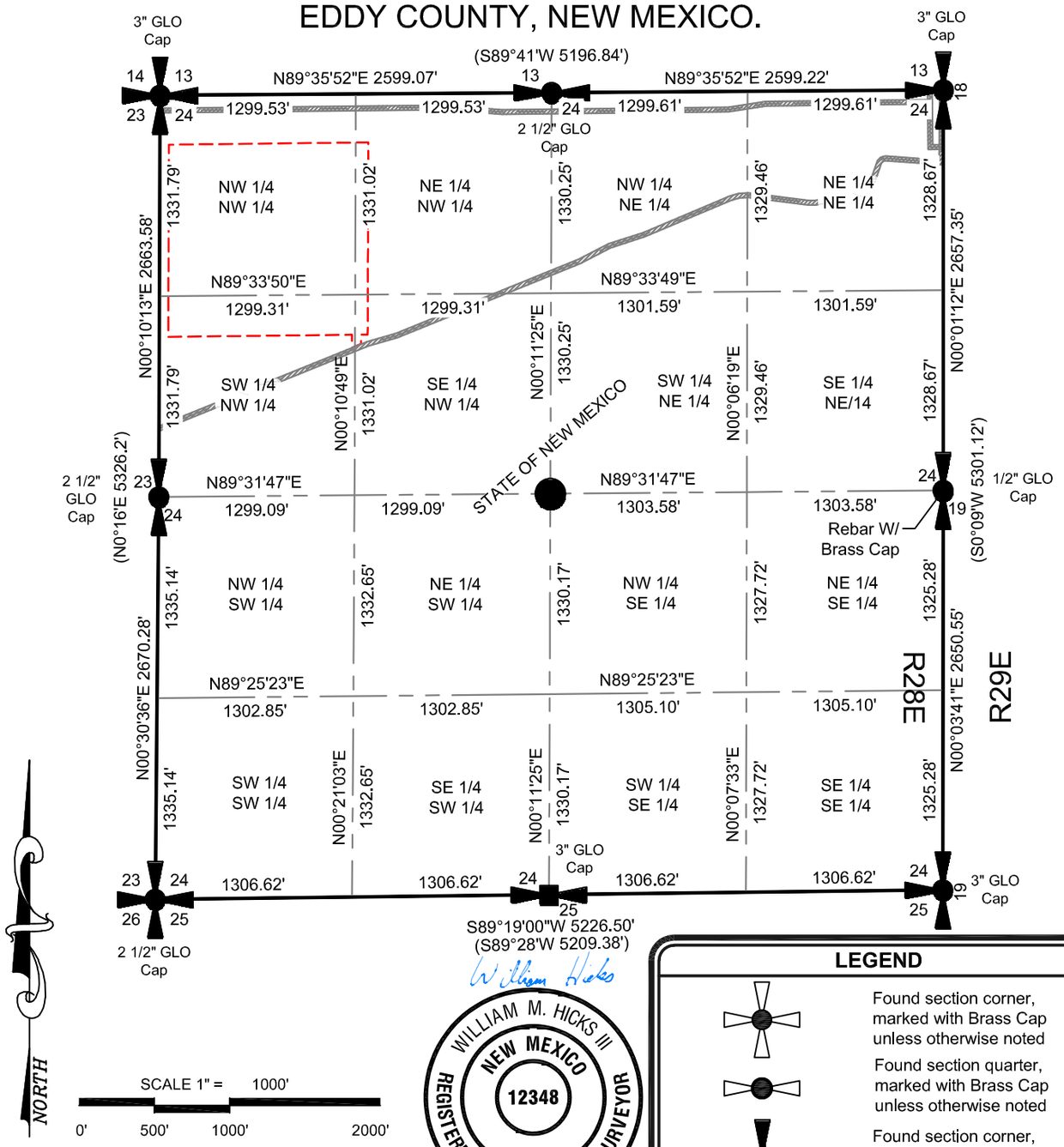
ACROSS STATE OF NEW MEXICO LAND

TOWNSHIP 17 SOUTH, RANGE 28 EAST N.M.P.M.
SECTION 24

EDDY, NEW MEXICO.

EXHIBIT "A"

SECTION 24, T17S, R28E, N.M.P.M., EDDY COUNTY, NEW MEXICO.



WILLIAM M. HICKS III
NEW MEXICO
12348
REGISTERED PROFESSIONAL SURVEYOR

10-15-2020

LEGEND

	Found section corner, marked with Brass Cap unless otherwise noted
	Found section quarter, marked with Brass Cap unless otherwise noted
	Found section corner, marked with Brass Cap unless otherwise noted
	Calculated section quarter
	Lease boundary
	Section line
	Ownership line
	Section quarter line
	Easement
XX°XX'XX" XX.XX'	Measured bearing and distance
(XX°XX'XX" XX.XX')	Record bearing and distance

BASIS OF BEARING

The basis of bearing for this survey is Grid North based on the New Mexico State Plane Coordinate System. East Zone, as determined by GPS/GNSS observations. Ground coordinates were obtained by applying a combined grid to ground scale factor of 1.0001676810 at control point located at N665202.817, E601233.553 (ground). True North can be obtained by applying a convergence angle of 0°06'20.6" at the 3" Brass Cap being the northwest corner of Section 24 Township 17S Range 28E.

INDEXING INFORMATION FOR COUNTY CLERK

OWNER:
Longfellow Energy, LP

LOCATION:
T17S, R28E, Section 24
Eddy County, New Mexico

EASEMENT SURVEY

OF

Longfellow Pond Lease

FOR

Longfellow Energy, LP

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo - Suite 100, Hobbs New Mexico 88240
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Pettigrew.us

REVISIONS		
No.	DATE	DESCRIPTION

PROJECT SURVEYOR: B. Shafer

DRAWN BY: N. Eidsmoe

PROJECT NUMBER: 2020.1212

SHEET 1 of 3

SU - 101

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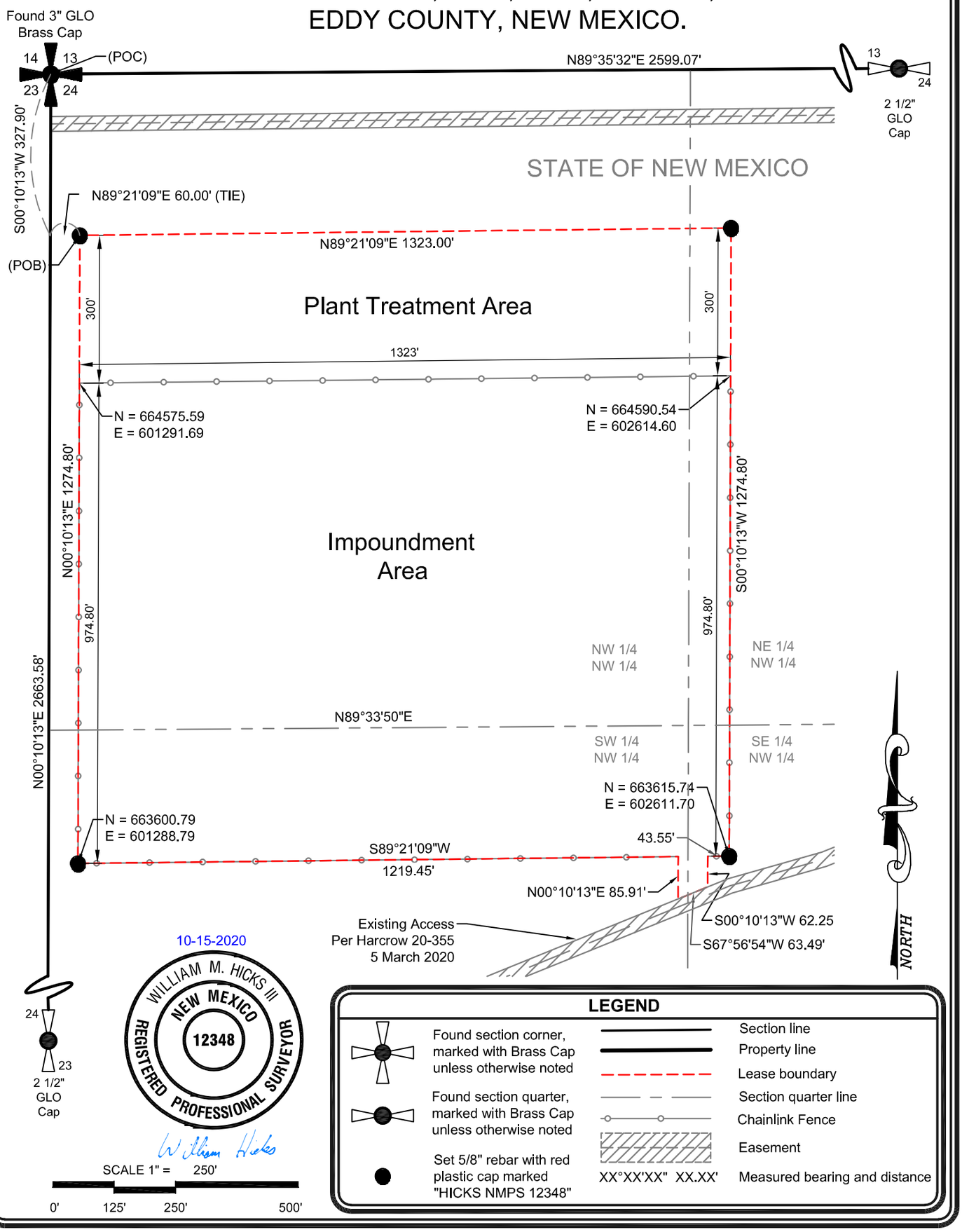
EXHIBIT "A"

SECTION 24, T17S, R28E, N.M.P.M., EDDY COUNTY, NEW MEXICO.



LEGEND

- Found section corner, marked with Brass Cap unless otherwise noted
- Found section quarter, marked with Brass Cap unless otherwise noted
- Set 5/8" rebar with red plastic cap marked "HICKS NMPS 12348"
- Section line
- Property line
- Lease boundary
- Section quarter line
- Chainlink Fence
- Easement
- XX°XX'XX" XX.XX' Measured bearing and distance

INDEXING INFORMATION FOR COUNTY CLERK

OWNER:
Longfellow Energy, LP

LOCATION:
T17S, R28E, Section 24
Eddy County, New Mexico

REVISIONS

No.	DATE	DESCRIPTION

EASEMENT SURVEY

OF

Longfellow Pond Lease

FOR

Longfellow Energy, LP

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo - Suite 100, Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

PROJECT SURVEYOR: B. Shafer

DRAWN BY: N. Eidsmoe

PROJECT NUMBER: 2020.1212

SHEET 2 of 3 SU - 101

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EXHIBIT "A"

POND LEASE DESCRIPTION

DESCRIPTION OF POND LEASE IN SECTION 24, TOWNSHIP 17 SOUTH, RANGE 28 EAST, NEW MEXICO PRINCIPAL MERIDIAN, EDDY COUNTY, NEW MEXICO.

TRACT OF LAND #1 Owned by the State of New Mexico, located in the Northwest Quarter of Section 24 Township 17 South, Range 28 East, N.M.P.M., Eddy County, New Mexico and being more particularly described as follows:

Commencing at a found 3" GLO Brass Cap, being used as the northwest corner of Section 24; thence S00°10'13"W 327.90 feet along the west section line of Section 24 to a point; thence N89°21'09"E 60.01 feet to a set 5/8" rebar with red plastic cap marked "HICKS NMPS 12348" being the Point of Beginning (POB);

Thence N89°21'09"E 1323.00 feet to a set 5/8" rebar with red plastic cap marked "HICKS NMPS 12348"; thence S00°10'13"W 1274.80 feet to a set 5/8" rebar with red plastic cap marked "HICKS NMPS 12348"; thence S89°21'09"W 43.55 feet to a point; thence S00°10'13"W 62.25 feet to a point which lies on the north line of easement as described on exhibit "B" of access road plat for Antelope Water Management, Harcrow Surveying LLC, file #20-355, dated March 10, 2020; thence S67°56'54"W 63.49 feet to a point; thence N00°10'13"E 85.91 feet to a point; thence S89°21'09"W 1219.45 feet to a set 5/8" rebar with red plastic cap marked "HICKS NMPS 12348"; thence N00°10'13"E 1274.80 feet to the Point of Beginning.

Said tract contains 38.815 acres, or 1690836.394 square feet, more or less.

Area Breakdown		
Quarter Quarter	Lease Area	Square Footage
NW 1/4 of NW 1/4	28.632 acres	1247244.969
NE 1/4 of NW 1/4	1.935 acres	84276.702
SW 1/4 of NW 1/4	7.673 acres	334250.110
SE 1/4 of NW 1/4	0.575 acres	25064.613
Total	38.815 acres	1690836.394

CERTIFICATE OF SURVEY

I, William M. Hicks, III New Mexico Professional Surveyor, hereby certify that this Easement Survey was prepared from an actual ground survey performed by me or under my supervision, that this survey is true and correct to the best of my knowledge and belief. That this Easement Survey and the field survey upon which it is based meet the Minimum Standards for Surveying in New Mexico, and that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act.

William Hicks

William M. Hicks, III NMPS #12348

10-15-2020

Date

INDEXING INFORMATION FOR COUNTY CLERK

OWNER:

Longfellow Energy, LP

LOCATION:

T17S, R28E, Section 24
Eddy County, New Mexico

REVISIONS

No.	DATE	DESCRIPTION

EASEMENT SURVEY

OF

Longfellow Pond Lease

FOR

Longfellow Energy, LP

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo - Suite 100, Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

PROJECT SURVEYOR: B. Shafer

DRAWN BY: N. Eidsmoe

PROJECT NUMBER: 2020.1212

SHEET 3 of 3

SU - 101

Pettigrew & Associates

Longfellow Recycling Containment

Southwest Corner looking North

Southwest Corner looking East

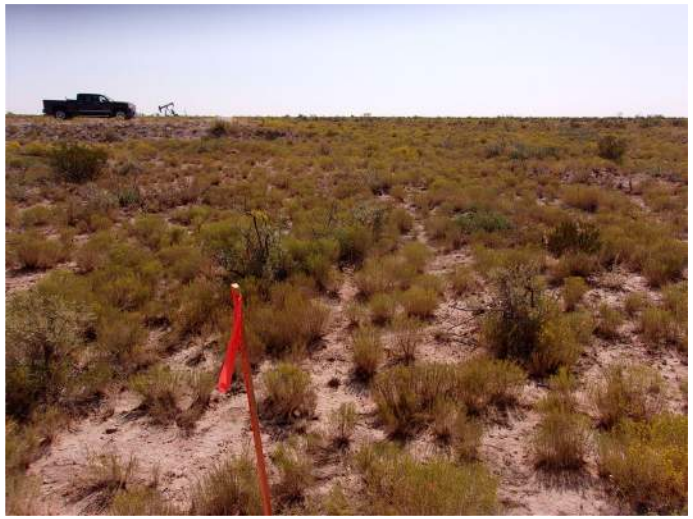
Southeast Corner looking West

Southeast Corner looking North

Pettigrew & Associates

Longfellow Recycling Containment

Northeast Corner looking West



Northeast Corner looking South

Northeast Corner looking Southwest

Northwest Corner looking South

Pettigrew & Associates

Longfellow Recycling Containment

Northwest Corner looking Southeast

Northwest Corner looking South

Northwest Corner looking Northwest

Northwest Corner looking North

Pettigrew & Associates

Longfellow Recycling Containment

Northwest Corner looking West

Utility line coming onto the property from the West

Appendix F

Driller's Log of Nearby Water Well

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2015 OCT -7 AM 11:53

		OSE FILE NUMBER(S): RA 12307
WELL OWNER NAME(S): KEY LIVESTOCK, LLC		PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 1012 E 2ND ST	CITY: ROSWELL	STATE: NM ZIP: 88201

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	50	27.38	N
	LONGITUDE	104	08	23.53	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE:

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1058	CLINTON KEY	KEYS DRILLING & PUMP SERVICE INC.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
09-28-15	09-30-15	140	140'	80'

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT): 58'

DRILLING FLUID: ☑ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	20	14"	STEEL		10-3/4"	1/4"	
0	120	12-3/4	PVC	SPLINE	4-1/2"	SCH40	
120	140	12-3/4"	PVC	SPLINE	4-1/2"	SCH40	.030

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	20	14"	CEMENT		HAND
20	140	12-3/4"	VEALMORE PEA GRAVEL		HAND

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	RA-12307	POD NUMBER	1	TRN NUMBER	574454
LOCATION	17S.28E.14.2.2.4			STOCK	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	20	20	TOP SOIL	☐ Y ■ N	
20	60	40	RED SAND STONE W/RED SANDY CLAY	☐ Y ■ N	
60	80	20	RED SAND STONE W/COURSE SAND	☐ Y ■ N	
80	100	20	GREY SHELL	■ Y ☐ N	
100	110	10	RED CLAY	☐ Y ■ N	
110	120	10	RED SANDY CLAY	■ Y ☐ N	
120	140	20	GYPSON	■ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
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				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ■ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 30+

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

CLINTON KEY

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

GARY KEY — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

10-07-2015 — DATE

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	RA-12307	POD NUMBER	1	TRN NUMBER	574454
LOCATION	17S.28E.14.2.2.4			STOCK	PAGE 2 OF 2

Appendix G

Bond – Closure Cost Estimates

Trinity Oilfield Services & Rentals, LLC.
8426 N. Dal Paso
Hobbs, NM 88242

Estimate

Date	Quote #
10/28/2020	1784

Name / Address
Longfellow Energy LP 16803 N Dallas Parkway Addison, TX 75001

Company Rep	Location
Monte Bell	Impoundment 24 Reclaim

Item	Description	Qty	Rate	Total
Reclamation	Back fill and level area - per day	30	10,800.00	324,000.00T
Reclamation	Replace top soil from stored top soil pile - per day	15	10,800.00	162,000.00T
Re-Seed	Per acre	30	250.00	7,500.00T

Subtotal	$493,500.00
Sales Tax (5.9583%)	$29,404.21
Total	$522,904.21

All bids are subject to add ons if required by a company representative and not included in the scope of work listed above. If hard rock or inclement weather is encountered, rate and time will be charged for work under these conditions.

Signature_____

Quote
#203461
10/30/2020
Impound 24 Recycling Containment (Liner Removal)

Job Site Address

Ordered By	Exp. Close	Est. Project Start Date	Sales Rep
Trinity Oilfield Services : Todd	10/26/2020		David Smelser

Notes:

Thank you for the opportunity to provide pricing for this project!

* Invoice will reflect actual time/materials required.
* Stand-by time will be billed at an hourly rate.
* Applicable state and local taxes will be added to the invoice.
* Quote is valid for 30 days from date issued unless otherwise noted.

203461

Quote
#203461
10/30/2020
Impound 24 Recycling Containment (Liner Removal)

Job Site Address

Ordered By	Exp. Close	Est. Project Start Date	Sales Rep
Trinity Oilfield Services : Todd	10/26/2020		David Smelser

Item Details:

Quantity	Units	Item	Rate	Amount
918,000	Sq. Ft.	**9044-services-Misc Services Misc. Services - Other** Removal and Disposal of 10oz. Textile	$0.20	$183,600.00
918,000	Sq. Ft.	**9044-services-Misc Services Misc. Services - Other** Removal and Disposal of 40mil Liner	$0.20	$183,600.00
918,000	Sq. Ft.	**9044-services-Misc Services Misc. Services - Other** Removal and Disposal of 200mil GeoNet	$0.20	$183,600.00
918,000	Sq. Ft.	**9044-services-Misc Services Misc. Services - Other** Removal and Disposal of 60mil Liner	$0.20	$183,600.00
9,450	Sq. Ft.	**9044-services-Misc Services Misc. Services - Other** Removal and Disposal of 60mil Liner - Rub Sheet	$0.20	$1,890.00
5,088	LF	**9044-services-Anchor Trench Anchor Trench** Anchor Trench Dug Per Linear Foot	$2.00	$10,176.00
24	Hours	**9066-freight-Trucking Trucking of Equipment/ Materials** Trucking of Equipment/Materials	$110.00	$2,640.00

Subtotal	$749,106.00
Tax (6.25%)	$0.00
Total	$749,106.00

203461