Extraordinary
FROM THE ORDINARY:

Final 418 Acre Bond Release Showcases Luminant's Reclamation Practices

Monticello-Winfield Mine
Mt. Pleasant, Texas
Permit No. 34F

Luminant

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INTRODUCTION

LUMINANT HAS A LEGACY OF DEMONSTRATING superior environmental stewardship and reclamation excellence. Since mining began more than 50 years ago, Luminant has reclaimed more than 86,000 acres for use as pastures, forests, wildlife habitat, and water resources, and the company has already secured reclamation bond liability releases on over 45,000 acres, demonstrating that it meets or exceeds pre-mine standards.

Extending this outstanding record, Luminant and its environmental team are proud to achieve full performance bond release of the final 418 acres of H-area post-mine land at Monticello-Winfield Mine. Luminant's mining and reclamation practices used throughout the life of the mine have produced extraordinary and more sustainable post-mine land results than pre-mine conditions.

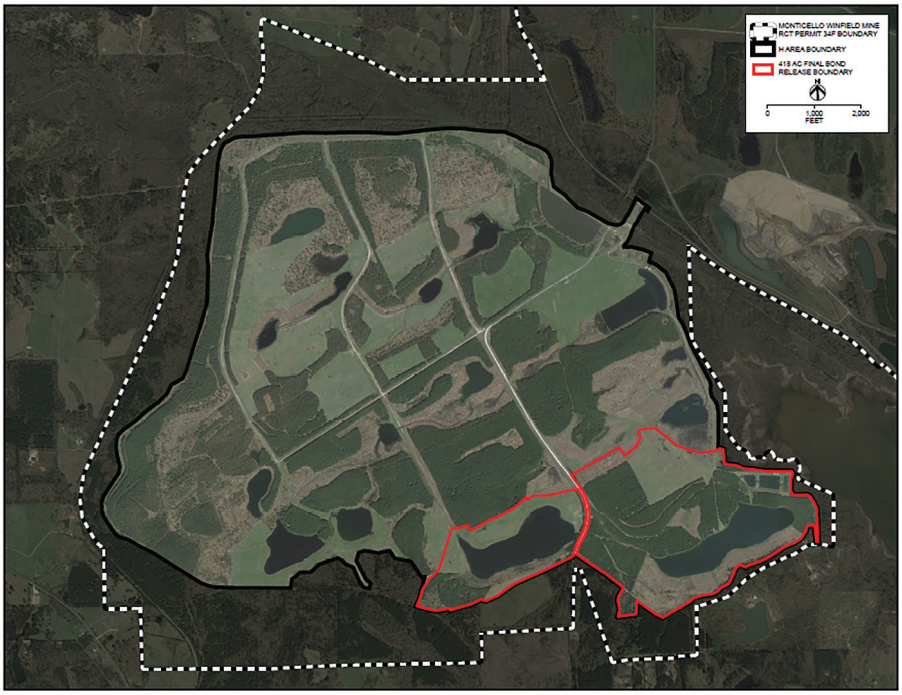
For more information on Luminant's approach to sustainability and corporate citizenship, please visit www.luminant.com.

HISTORY OF THE MONTICELLO-WINFIELD MINE

Mining activities began in 1974 at Monticello–Winfield Mine, near Mt. Pleasant, Texas, and continued until 2015. Over that time, more than 15,500 acres were mined and are in reclamation. In its 46–year history, Monticello–Winfield Mine produced an estimated 280 million tons of lignite for the now–retired Monticello Power Plant. The facility generated safe, reliable, and affordable electricity for Texans until ceasing operations in 2018. Following mining, the primary goal of Luminant's reclamation program is to return mined lands to productive post-mine uses and achieve full release of all regulatory reclamation obligations.

For years prior to the federal Surface Mining Control and Reclamation Act of 1977, Luminant demonstrated a commitment to responsible land reclamation and management. Monticello–Winfield Mine proudly continues this commitment and has a history of environmental and safety excellence, as evidenced by its outstanding compliance record. Over the years, Monticello–Winfield Mine has made positive contributions to the economy and provided support for numerous local community organizations and projects.

Above: Overlooking the final 418 acres of H-area released from bond in 2020.
Right: Final 418 acres (red) in the H-area of Monticello-Winfield Mine.



On Sept. 23, 2020, the Railroad Commission of Texas approved the final Phase III bond release on the last 418 acres in the H–area of Monticello–Winfield Mine (Permit No. 34F). The release of the final 418 acres in H–area (final 418–acres) was the culmination of decades of reclamation and post–mine management and reflective of Luminant's typical and ordinary best management practices and techniques used in the H–area to produce extraordinary reclamation.

Located in Titus County, the H–area is in the southern portion of Monticello–Winfield Mine. The pre–mine landscape was typical of northeast Texas with gently rolling terrain to hilly topography with a mixture of pastureland and forested areas. The pre–mine land, contained within the Post Oak Savanah vegetational region of Texas, included improved or native pastures intermingled with patches of post oak woodlands, mostly with poor quality regenerative and cutover land.

Prior to mining, a post–mine land use plan was developed based on pre–mine and post–mine factors, including vegetational region, topography, soil type, and local economic trends. Mining began in the H–area in 1989 and concluded 14 years later (2003) in the final 418–acres. The approximately 2,438 acres reclaimed in H–area includes post–mine land use of pastureland, forestry, fish and wildlife habitat, and developed water resources.

AT A GLANCE

Location:
Titus County, TX

Mining Activity:
Lignite surface mining

H-area:
2,438 Acres

Post-Mine Use	Final 418 acres (ac)	H-area (ac)
Pastureland	92.3	569
Forestry	156.8	1081
Fish and Wildlife Habitat	86.3	546
Developed Water Resources	82.6	230
Total	418	2,426

821

Approximately 821 acres (34%) in the H-area are now considered prime farmland soils

(compared to 21% pre-mining)

50%

increase in pastureland production per acre, from 2.13 (pre-mine) to 3.18 tons of hay per acre

114K

An estimated 114,000 pine seedlings were planted in the final 418 acres, and a total of 785,000 pine trees in all of H-area

The approximately 2,438 acres reclaimed in H-area includes post-mine land use of pastureland, forestry, fish and wildlife habitat, and developed water resources.

The commitment to reclamation mitigation and the flexibility to respond to opportunities in the field, the H-area went from 35.83 acres pre-mine WOTUS to 226.71 acres

97%

ESTIMATED GROUND COVER

Productivity evaluation of the fish and wildlife land use in the final 418 acres estimates 97% groundcover (compared to 78% standard).

SOILS

The foundation of the extraordinary reclamation in the H–area began with an overburden and spoil handling plan. The soils in the H–area were categorized as poor and exhausted from years of farming and/or neglect with over 50% of the area having high clay content (+40% clay) 6–12" below the surface. The default method of suitable material placement for reclamation as described in the regulations is to salvage topsoil and subsoil separately prior to mining and to replace topsoil and subsoil on post-mine leveled ground. Luminant's environmental services team reviewed the practice of using the same poor–quality material for post–mine reclamation and began researching additional solutions.

The team evaluated the overburden geology and determined that using the mixed overburden as a substitute material would result in a surface post–mine soil that is physically and chemically superior to the original topsoil and subsoil. The texture of the overburden was more consistent and tended to be of a loamy nature. The pH values ranged between 6.5–7.5 and had no acid-forming characteristics. Not only was the soil surface quality better, but compaction was significantly reduced since the material was placed using the dragline. Regrading was also accomplished using low–ground pressure dozer equipment with minimal passes.

This selective handling of mixed overburden in H–area resulted in a surface post–mine soil that has excellent chemical and physical properties and saved over $24 million (2020 dollars) in production costs. In fact, Luminant worked with the Natural Resources Conservation Service (NRCS) in developing soil series for post–mine soils in northeast Texas. Two post–mine soil series – Gravar and Grayrock – were established at the Monticello–Winfield Mine and are considered prime farmland soils by the NRCS. In the H–area, approximately 821 acres (34%) are now considered prime farmland soils, with 72.3 acres in the final 418 acres. This is in comparison to the approximately 21% that were classified as prime farmland soils pre–mining.

Prime farmland soils, Grayvar (left) and Grayrock (right), created from mixed overburden.

WATER QUALITY

Luminant is committed to achieving outstanding water quality and exemplary compliance with state and federal regulations. As part of the company's water management program for the Monticello–Winfield Mine, Luminant obtained a wastewater discharge permit from the Texas Commission on Environmental Quality (TCEQ) to comply with the Clean Water Act and constructed sediment ponds to maintain water quality. All surface runoff and pumped water is directed to approved discharge points to ensure water is monitored and treated. Throughout the mining and reclamation of H–area, Luminant followed all water management best practices to ensure that the water quality was in compliance and superior to pre–mine water standards. This included designing sediment ponds to hold 10–year, 24–hour events to allow sediment to settle out. These ponds were actively managed to ensure sufficient capacity to maintain detention times during rainfall events. If needed, a polymer was added to flocculate the suspended solids so they would settle out prior to discharge offsite.

Since the beginning of mining in the H–area in 1989 and through the release of the final 418 acres in 2020, there have only been three water quality permit exceedances and no exceedances from the final 418 acres. The water quality leaving the H–area is better than the undisturbed water at the long–term monitoring station about two miles upstream of H–area discharge points.

Above: Water quality leaving the H-area is measurably better than undisturbed water. Right: Final discharge pond H-3. (No TPDES permit exceedances since construction.)

Average pH and Total Dissolved Solids from the Final Discharge Ponds and Undisturbed Stream Monitoring Station

Final Discharge Pond	pH (s.u.)	Total Dissolved Solids (mg/L)
H-1	7.4	133
H-3*	7.4	107
H-4*	7.3	157
H-5	7.1	209
Undisturbed Stream	6.8	214

* Ponds that are within the 418-acres

WATERS OF THE UNITED STATES

To mine the H–area, Luminant applied for and received authorization from the U.S. Army Corps of Engineers (USACE) to impact Waters of the U.S. (WOTUS), which include wetlands, ponds, and streams. Authorization requirements include the recreation of hydraulic features in post–mine to mitigate impacts. There was a replacement ratio of 2:1 for forested wetlands, 1.5:1 for emergent wetlands, and 1:1 for ponds and streams. Luminant placed a priority in establishing hydraulic features in reclamation as mining moved across the landscape. Mine environmental specialists were also given resources and flexibility to create aesthetically pleasing and innovative wetland and stream designs and the ability to plant a diverse mix of vegetation to create wildlife habitats.

The commitment to reclamation mitigation and the flexibility to respond to opportunities in the field, the H–area went from 35.83 acres pre–mine WOTUS to 226.71 acres, and the final 418 acres went from 9.94 acres to 96.97 acres. Not only have more WOTUS areas been created, but they are also of higher quality and functionality than pre–mine WOTUS. Also, a functionality assessment of post–mine WOTUS had a 10–point improvement over pre–mine WOTUS.

Above: Lacustrine fringe wetlands in H-area.

WOTUS

Impacts to Waters of the U.S. and Reclamation Mitigation in the Final 418 acres and H-area

	Final 418 acres		H-area	
TYPE	**Impacts (ac)**	**Mitigation (ac)**	**Impacts (ac)**	**Mitigation (ac)**
Forested Wetland	3.42	3.85	6.21	29.48
Emergent Wetland	0.27	7.46	1.24	32.01
Pond / Stream	6.25	85.66	28.38	165.22
Total	9.94	96.97	35.83	226.71

Left: Pre-mine WOTUS in the final 418 acres (9.94 acres) and in the H-area (35.83 acres).
Right: Post-mine WOTUS in the final 418 acres (96.97 acres) and in the H-area (226.71 acres).

VEGETATION

The revegetation of H–area has resulted in land that is more productive and more aesthetically pleasing than the pre–mine land.

Pastureland land use areas have been planted in Bermuda grass, vetch, and clover, in keeping with standard agronomic practices of the area. Productivity results throughout the H–area are higher than the calculated standards of pre–mine soils. Also, in the last productivity report for the final 418 acres, 3.18 tons of hay per acre were produced – compared to the pre–mine standard of 2.13 tons of hay per acre – achieving almost 50% greater production than the pre–mine land.

Forestry land use areas are planted in loblolly pine on 12-ft centers with an estimated 114,000 pine seedlings planted in the final 418 acres, and a total of 785,000 pine trees in all of H –area. The productivity evaluation of the forestry land use in the final 418 acres estimated 100% groundcover (standard is 78%) and 575 stems per acre (standard is 400 stems). The forestry land use also becomes a source of income for the mine, which usually goes back into reclamation funds. The initial thinning occurs approximately 10–11 years after planting and can bring in $250 per acre. A second thinning at around 17 years can bring in $350 per acre, and a final cut sometime after 25 years could bring in $1,800 per acre. Trees planted in the H–area are valued at $2.5 million over the life of the stand.

Fish and wildlife land use is land that has been planted with hardwoods and native grasses that are suitable for wildlife shelter and food. The trees planted in these areas include native oaks, hickories, and other tree and shrub species that provide foraging and cover for many wildlife species. Through reclamation efforts, an estimated 164,000 trees were planted in H-area and 26,000 in the final 418–acres for wildlife habitat purposes. The native grasses include Big and Little Bluestem, Kleingrass, Indiangrass, Sideoats Grama, and Switchgrass. These grasses are bunch grasses, which provide excellent habitat for quail, dove, and other small mammals that thrive in bunch grass habitat. The productivity evaluation of the fish and wildlife land use in the final 418 acres estimated a 97% groundcover (standard is 78%) with 239 stems per acre (standard is 100 stems). The species diversity and higher quality of trees and native grasses provide better conditions for wildlife than pre–mine land.

The productivity and beauty of the final 418 acres is a testament to Luminant's extraordinary efforts and reclamation excellence throughout the H–area.

HARDWOODS PLANTED

Green Ash

River Birch

Buttonbush

Bald Cypress

Water Hickory

Bur Oak

Black Oak

Cherrybark Oak

Live Oak

Nuttall Oak

Overcup Oak

Shumard Oak

Water Oak

White Oak

Willow Oak

Pecan

Persimmon

Loblolly Pine

Eastern Redbud

Sweetgum

Water Tupelo

Swamp Chestnut Oak

Blackgum Tupelo

ENVIRONMENTAL STEWARDSHIP COMMITMENT

Before mining its first ton of lignite – and before federal or state law required it – Luminant developed a plan to reclaim the land and quickly return mined land to productivity. The company utilized environmental research results and innovative approaches to develop successful and productive reclamation techniques. Those techniques produced short–term and long-term benefits and have been incorporated at all Luminant mines. The reclamation work completed over the last 46 years at Monticello–Winfield Mine has produced land that is more productive than pre-mine land and provides a valuable resource base for current and future land uses. Luminant is proud to be an innovative leader in the management of environmental resources. As such, company leadership remains focused on sustainability, while appropriately balancing the environmental, economic, and social needs of today, without sacrificing the interests of future generations.

Luminant has exhibited exemplary regulatory compliance at Monticello–Winfield Mine in the areas of air, water, and land resources throughout the life of the mine. The final 418 acres showcase the extraordinary results of reclamation practices throughout the H–area. The mixed overburden soil resulted in better soils to the point of increasing the amount of prime farmland soils. The water quality exceeds that of unmined areas, and the WOTUS exceed those impacted by over 10 times. Overall, post-mine land uses resulted in higher land productivity and quality than pre-mine. Luminant has demonstrated its commitment to high quality reclamation, and to creating sustainable and economic benefits beyond final bond release.

Luminant has a longstanding tradition of demonstrating superior environmental stewardship. Nowhere is this better displayed than with the release from bond of the final 418 acres of H-area at Monticello-Winfield Mine. Luminant's standard and ordinary best management practices during mining and reclamation used throughout the life of the mine have produced extraordinary results that are better and more sustainable than pre-mine conditions.

Stewardship

ABOUT LUMINANT

Luminant, a subsidiary of Vistra, is a competitive power generation business, including wholesale marketing and trading, mining, and development operations. With roots that stretch back more than 130 years, we have played an integral role in the evolution, growth and progress of states in which we operate, and today we are helping power some of the world's largest electric markets.

We are proud to provide reliable, affordable electricity to our consumers as we set new standards in environmental stewardship and innovation that will result in cleaner air, water and land. This mission requires thousands of dedicated employees and investment of billions of dollars in infrastructure and development.

Luminant has approximately 39,000 megawatts of generation across 12 states, powered by a diverse portfolio of natural gas, nuclear, coal, and solar facilities. The company has reclaimed over 85,000 acres of pastureland, forestland, and water resources, including 6,800 acres of wetlands, planted over 42 million trees, and received final bond release on over 42,000 acres.

Visit www.luminant.com for more information.

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