

# Subtitle C Landfill Cell Liner Southeast Texas

## SR. PROJECT MANAGER

Clay Sturgeon

## CLIENT

Confidential Client

## PERFORMANCE PERIOD

November 21, 2008 – January 2, 2009

## CONTRACT VALUE

\$1,500,000



## SITUATION

GES was to install a six layer synthetic liner system in a new subtitle C landfill cell. The design of Cell 46 involved a difficult tie in to existing Cell 45. The new cell base line footprint was 500' by 500' making it nearly two times larger than the previous cell.

GES was tasked with completing the multi layer cell, involving 6 separate FML layers, leak detection, leachate collection, 1:1/2 side walls and a 2' floor elevation change required due to elevated ground water level, during the winter months typified by high winds and unpredictable rain events. The General Contractor (GC) completed the earthwork portion and handed the construction of the Cell 46 lining system to GES on November 21, 2008. Due to rapidly diminishing air space in the existing active cell, Cell 46 needed to be completed and accepted by early January, 2009 or the landfill operator would be unable to accept waste, effectively shutting down operations.

## PROJECT APPROACH

**Project:** Initially, the project was bid to be completed in 60 days utilizing an 8-10 man. This project approach would have forced the Client to scale back operations or stop accepting waste entirely until the expansion effort could be completed. Several planning and pre-construction meetings were scheduled and held involving GES, the Client, GC and Engineer to develop a distinct 3 phase approach to minimize or eliminate any disruption to landfill operations.

**Phase I -** GES mobilized to the site with a full 10 man crew to develop and refine methods to overcome installation challenges inherent in the project design. Specifically, to determine an efficient method to line nearly vertical side walls was of highest priority. The GES crew worked together in a concerted effort to develop and implement efficient methods and

procedures to increase the rate of liner installation.



**Phase II** – GES mobilized additional experienced professional technicians to join the team already in place, effectively doubling the crew size from phase I to 20 (excluding support and management staff). All but 2 of the crew were qualified Master Seamers (personally credited with 5,000,000 square feet of HDPE / LLDPE fusion installation). The additional costs related to assembling a team of over 20 professional installers, along with significant equipment and overhead increase was offset by the increased production from implementing the methods and procedures refined in phase I to



complete the FML installation in 35 days.

**Phase III** – As the installation of the FML layers progressed, other equally important aspects required simultaneous coordination. Fabrication and installation of leak detection piping, leachate collection piping, slope risers, valve vaults, dual contained transmission lines and trench line gravel beds for flow influence and direction had to be planned, scheduled and installed in conjunction with their respective liner counterparts. To facilitate this, GES brought in pipe and fabrication specialists, thus never interrupting the focus and production of the liner installation team specifically assembled for this project.

Concurrently, the GC planned and coordinated their related tasks involving gravel installation, access ramps, ongoing earthwork items, installation support, etc. to coincide with the rapid pace established by the liner crew.

On Friday, January 2, 2009, just 39 working days after the project officially started, the Engineer deemed Cell 46 complete and prepared the requisite endorsement letter for submittal to the State of Texas.

## RESULTS

By discussing previous installation approaches and designs with the site Operations Director, GES' project manager identified potential installation problems and recommended that previously installed PVC reducers on top of the slope risers be replaced with specifically designed HDPE blinds to improve functionality, accessibility, appearance and longevity while only slightly increasing cost.

Additionally, the size of the required valve vaults for the dual contained force main was increased to 48” in diameter. This structure was fabricated in GES' fabrication facility in Atlanta, Georgia, then rush delivered to the job site for installation.

Suggestions from site personnel resulted in the installation of a 6” threaded HDPE inspection port into the top of the flanged vault top to allow operations staff to inspect the vaults without having to remove as many as 16 bolts, nuts and washers. The result was an efficiently designed containment structure that requires little effort for inspection without negatively affecting the secondary containment aspect of the primary vault structure.

Detailed and specific testing and documentation required the full time efforts of two Greenleaf staff members. Additionally, the Engineer maintained a full time presence with two additional inspectors assuring that the specific and overall quality of the installation was continuously maintained at the highest level.

As confirmation of their efforts along with an overall commitment to quality and workmanship at the highest possible level, every destructive sample sent to an independent testing lab not only passed rigorous testing, but passed the tests by a significant margin overall.

Through dedicated coordination of efforts between the GC and Greenleaf Environmental's management and field personnel, the Owner has a state-of-the-art, State Certified system ahead of their planned expansion schedule.



# Evaporation Ponds Odessa, Texas

**PROJECT MANAGER**  
Clay Sturgeon

**PERFORMANCE PERIOD**  
March 2007

**CONTRACT VALUE**  
\$685,000

## SITUATION

GES was contracted to install 40-mil HDPE liner in three evaporation ponds at a power plant in Odessa, Texas.

## PROJECT APPROACH

**Project:** Initially, the project was quoted as 1.5 million square feet of 40 mil HDPE smooth liner. The project consists of 4 separate ponds:

- **Emergency Pond** - 31,000 s.f. emergency overflow pond for excessive storm waste water (complete)
- **Evaporation Pond 1A** - 573,000 s.f. evaporation pond -actual size – 630,000 s.f. (complete)
- **Evaporation Pond 1B** – 540,000 s.f. evaporation pond – actual size – 600,000 s.f. completed in June of 2007.

GES' project manager identified weak points in the proposed and designed installation methods. It was recommended that proposed boots utilizing neoprene, and stainless steel bands be replaced with pre-fabricated bootless penetrations.



Subsequent to design review, the Client directed GES to expedite fabrication and shipping of recommended structures. GES fabricated, shipped and subsequently installed these structures providing a superior transition at penetration points. The ultimate result is a monolithic installation without mechanical seals and connections within the HDPE lined areas.

This was a fast track project. Our letter of intent was confirmed February 15. Due to schedule and local weather constraints, GES was charged with the task of ordering and shipping liner, fabricating and shipping structures, mobilizing a full liner crew (10 men), and installing the Emergency Pond along with Pond 1A by March 15, 2007.

Crews arrived on site February 26, 2007. Initial phase was complete and crews were demobilized March 8.

Phase II (Pond 1B) required ordering of additional liner material to accommodate the increase in overall size.

**TETON INDUSTRIAL  
Odessa-Quail Run Evaporation Ponds  
Odessa, Texas**

Through a coordination of efforts between the Teton Industrial Construction and Greenleaf Environmental's management and field personnel, the end result is a state-of-the-art, State Certified system currently containing impacted waste water from a power generating facility which provides clean, environmentally sound power to the state of Texas.

