

# Mesteña Uranium, L.L.C.

**Texas Owned**

Texas Uranium

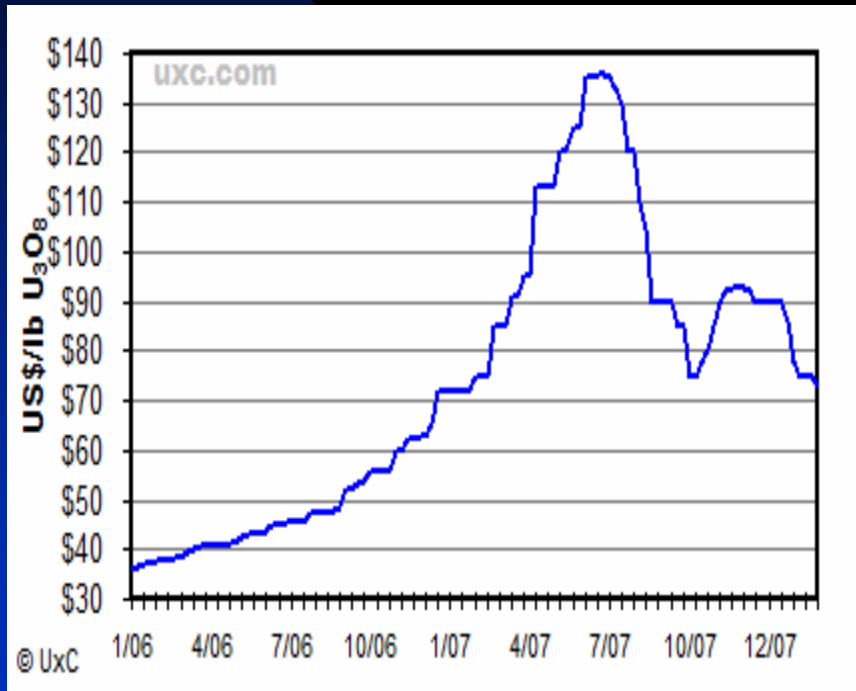
Achieving excellence in Health, Safety  
and Environmental Protection



***“URANIUM IS BECOMING THE NEW TEXAS GOLD”***

*- September 17, 2006 San Antonio Express News*

# Why is Uranium so Interesting?



- The price of uranium has increased over 1,000% over 2002 levels.
- Tremendous interest in producing uranium
  - ◆ Tight supplies after 10 years of very low prices
  - ◆ Excess inventories dwindled
  - ◆ Significant supply/demand imbalance for primary production.
- New production is slow to meet growing global demand.
- Mineral royalty owners will benefit directly from the price growth.

# Uranium Facts



*South Texas yellowcake product from the Alta Mesa facility.*

- Densest naturally occurring mineral in the world.
- 500 times more abundant than gold.
- Very low radioactivity
- Each drum of uranium has the energy equivalent of:
  - ◆ 16,000 bbls of oil
  - ◆ 77 million cu. Ft. of natural gas
  - ◆ 1 unit train of coal (10,000 tons of coal)

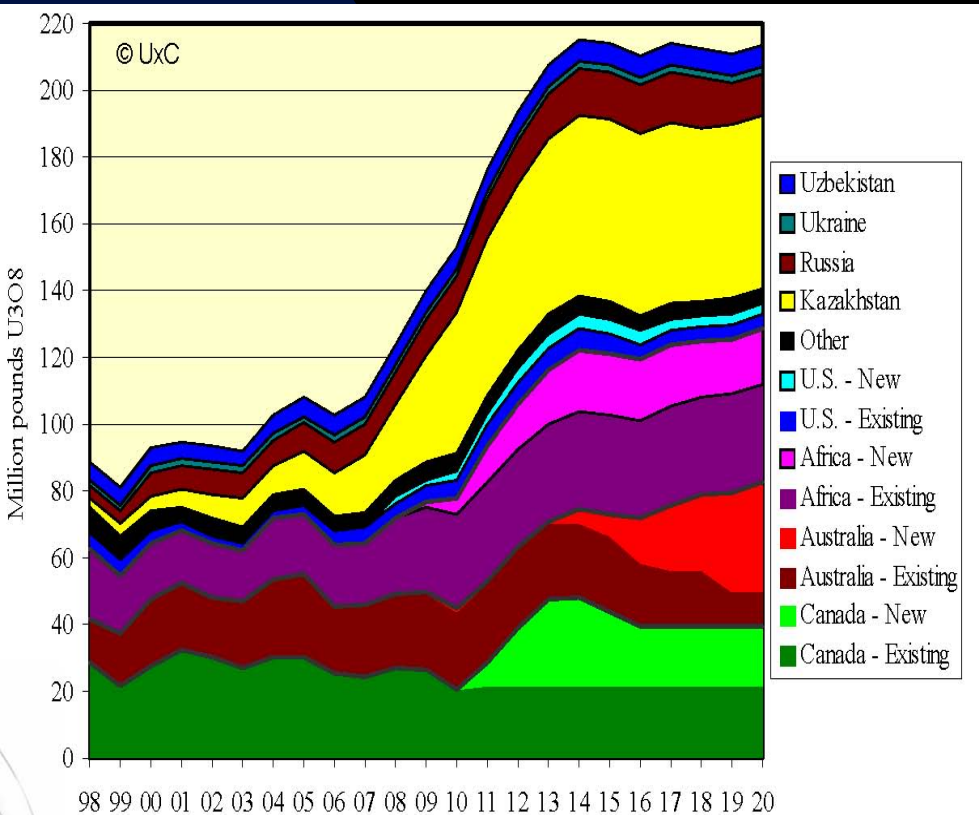
# Nuclear Energy



*Steam rising in at the Palo Verde Nuclear Generation facility located outside of Phoenix AZ.*

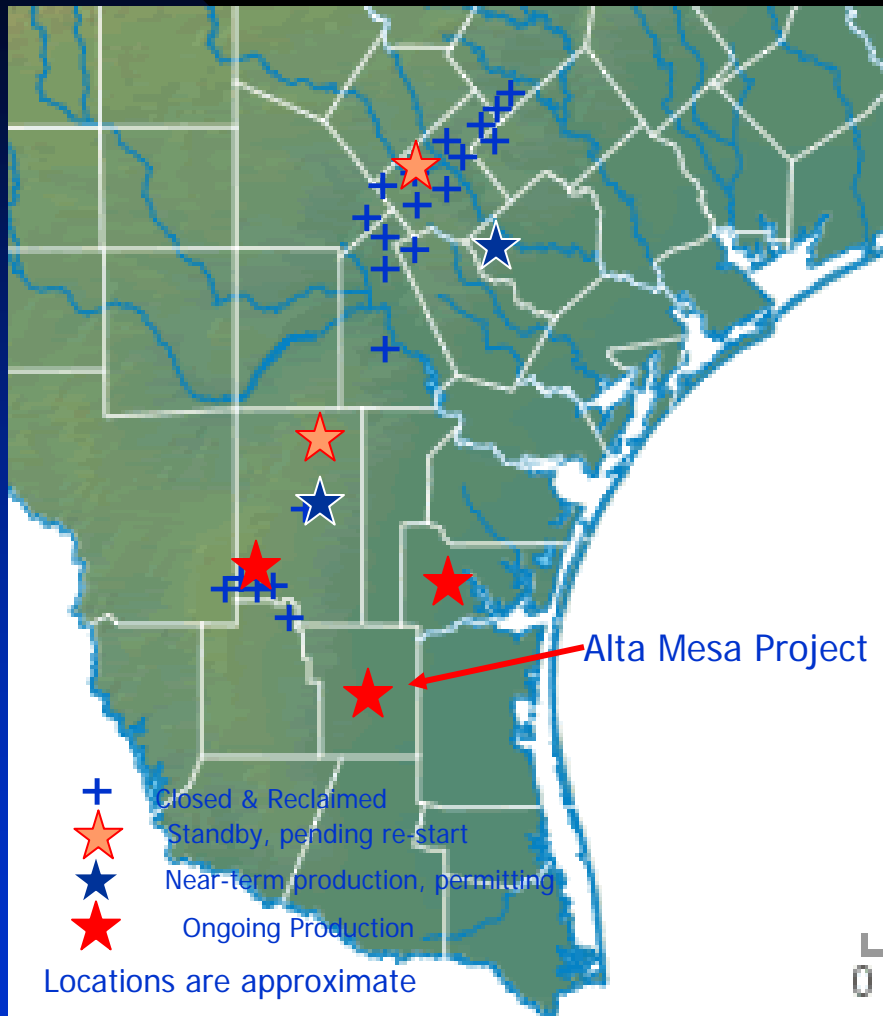
- 105 reactors operating in U.S.
- 31 proposed for construction
- 435 reactors across the globe.
- Nuclear Power provides 20% of the electricity in the U.S.
- The extremely low emissions place nuclear one of the best ways to address atmospheric CO<sub>2</sub>.
- In comparison
  - ◆ Each ton of coal produces 2.5 tons of ash and atmospheric emissions per ton of coal burned.
  - ◆ Each 1,000 lbs of uranium produces less than 20 lbs of solid waste and zero atmospheric emissions.

# Energy Security



- 100% of the uranium produced is used in civilian nuclear reactor fleet.
- Currently 96% of the fuel burned for domestic use is imported.
- Currently 55% is from megatons to megawatts due to end in 2013
- Without significant growth in U.S. production.
  - ◆ U.S. nuclear fleet will be more dependent on imports.
  - ◆ As with oil, several potential suppliers may not have the interests of the U.S. as a priority.
- As nuclear power continues to grow in importance, the need for security of supply increases in importance.

# Texas Uranium



- Uranium Mining in Texas has been around for almost 40 years.
- From the late 1960's through the early 1990's most of the uranium was recovered using conventional mining.
  - ◆ Several relatively small surface mines
  - ◆ Four conventional mills
  - ◆ All are reclaimed and decommissioned
- Texas ISR Uranium
  - ◆ Over 10 companies had ISR operations
  - ◆ Most operations shut-in by early '90's due to low prices.
  - ◆ Almost all sites were restored and decommissioned since that time
- By 1999, all uranium recovery operations shut down
- 2004, the first new ISR operation started, followed by Alta Mesa and the restart of another ISR operation.

# Uranium Mining

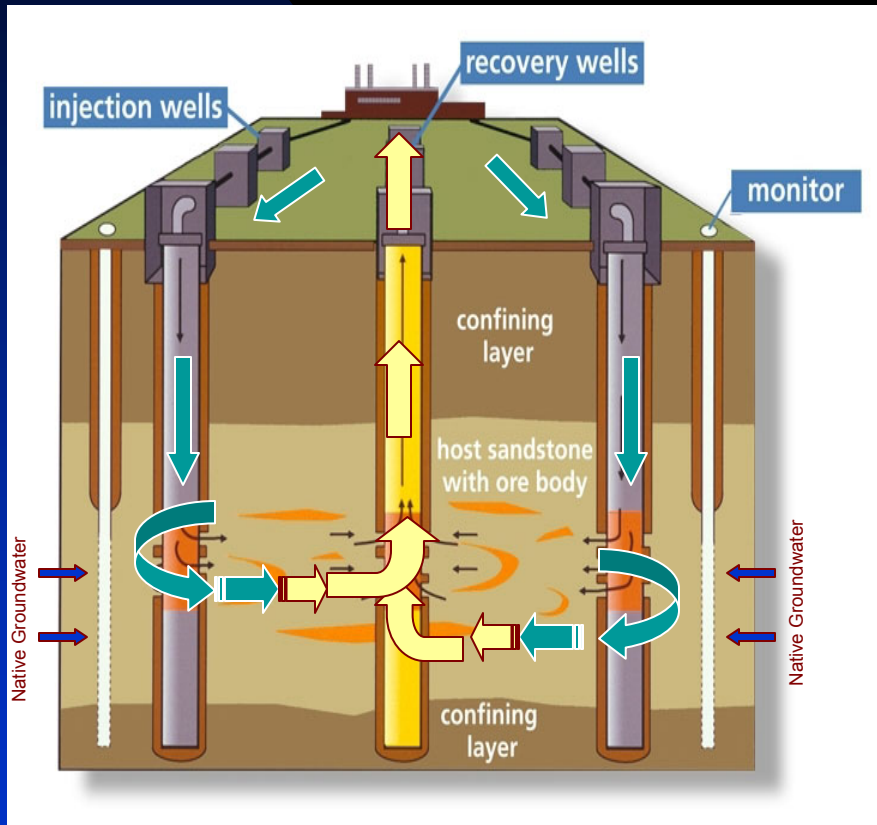
- Conventional Mining
  - ◆ Large surface disturbances
  - ◆ Tailings generation
  - ◆ Large discharges of groundwater
  - ◆ Air particulate emissions.
- In-Situ recovery
  - ◆ Minimal surface disturbance
  - ◆ No tailings
  - ◆ Minimal impact on groundwater
  - ◆ Minimal air emissions



Above: Aerial view of the Sweetwater open pit mine and mill  
Below: A photo of the wellfield during mining at Alta Mesa



# In-Situ Uranium Recovery Process

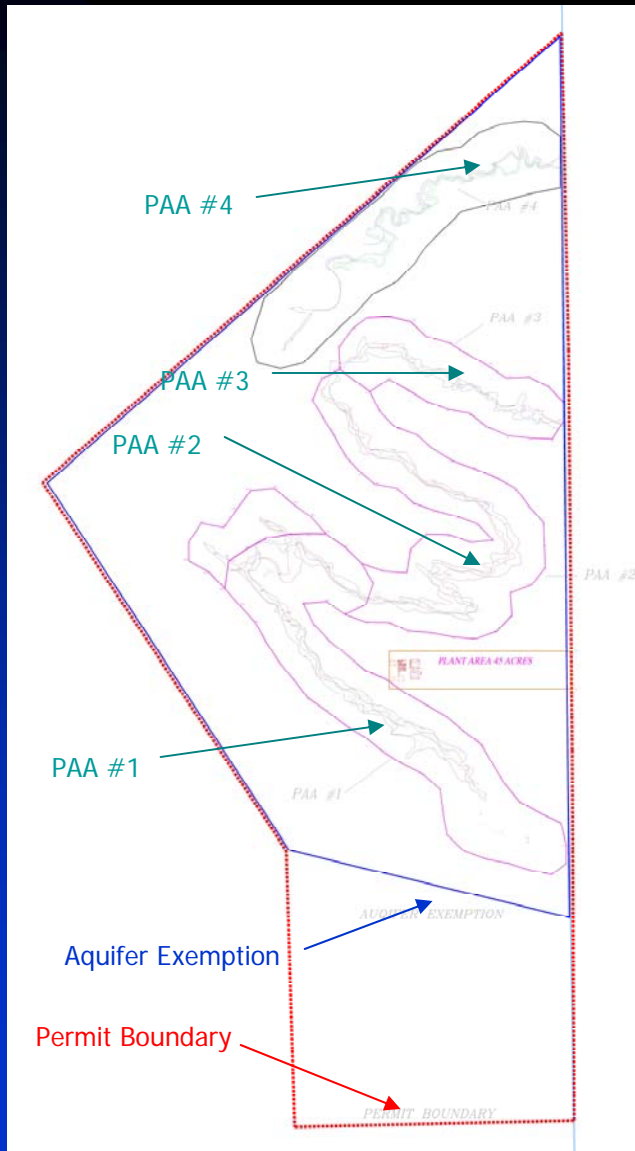


- Uses uranium's solubility and redox properties for recovery.
- Water and oxygen are injected into the formation.
- The oxidized water forces the uranium into solution.
- The uranium bearing water is recovered and pumped to the surface & transferred to the recovery plant.
- After the recovery plant, the barren water is returned to the field.
- Nearly all of the water used in the process is recycled.
- As a process control, slightly more water is produced than re-injected
  - ◆ Termed "process bleed"
  - ◆ Creates a pressure sink allowing native groundwater to flow into the wellfield and containing process solutions.

*A representation of in-situ uranium recovery.*

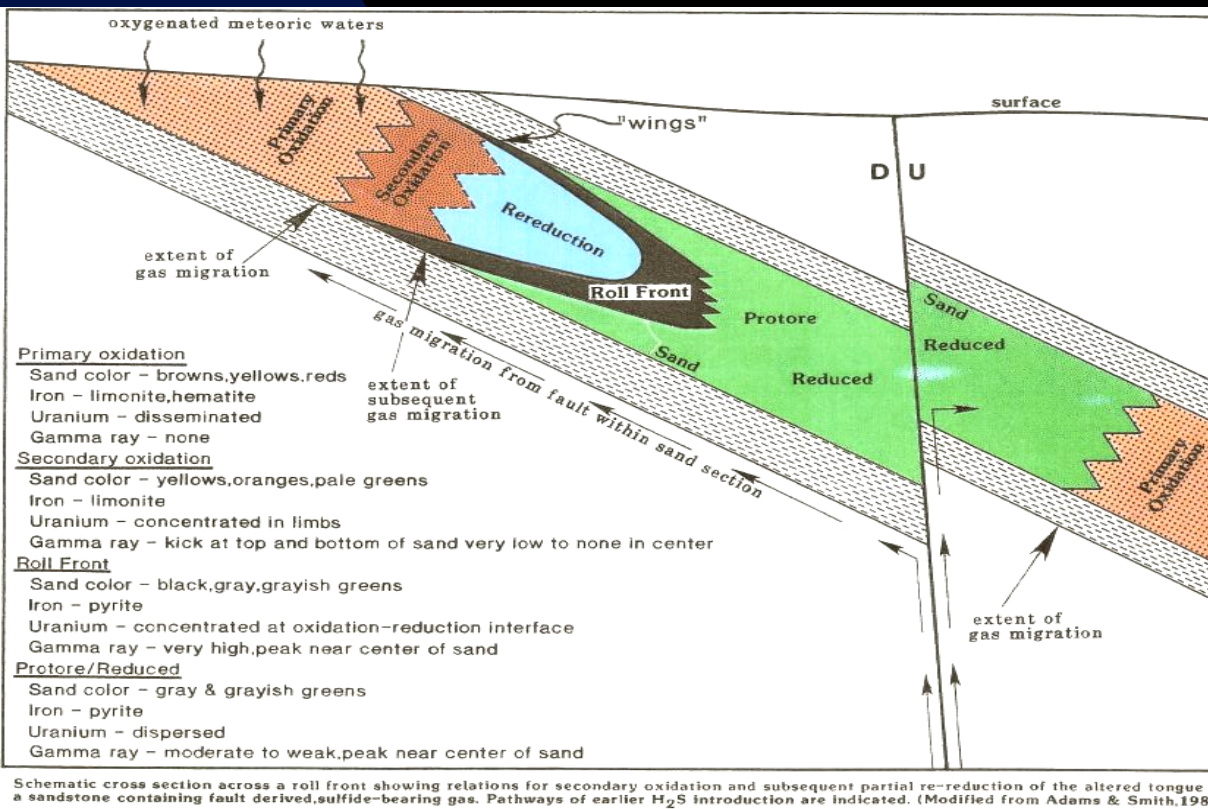


# Protecting Groundwater



- Each operator is required by law and its operating permits to protect groundwater, specifically underground source of drinking water.
- Most operators, including Mesteña use a three layered protection program.
  1. Process Controls
    - ★ Well by well balancing
    - ★ Production bleed
    - ★ Groundwater restoration
  2. Monitor wells
    - ★ Early detection of process solution excursion
    - ★ Detection requires immediate corrective action.
  3. Legal Boundaries (Aquifer Exemption)
    - ★ Prevents access to drinking water within exempted area.
    - ★ Requires protection of all sources of drinking water at Aquifer Exemption boundary.
- Finally, upon completion of production, the groundwater is restored to levels consistent with its prior use.
- This final act removes any potential source term to contaminating drinking water.

# Development of the ore body



- Ancient river delta system with uranium distributed through the original deposition.
- Groundwater flow to the southeast (toward the Gulf of Mexico).
- Post depositional faulting introduced gas and other reductants to create a localized geochemical cells.
- As groundwater continues to move through the system, uranium is redistributed and concentrated on the boundaries of these geochemical cells.
- The dynamics of the geochemical and hydrological system provides an ideal environment for the development of economic ore bodies.
- The active geochemical conditions creates disequilibrium between U (alpha emitter) and daughters (gamma emitters).

# Locating the uranium



Open hole logging of a drill hole. (above)

Typical cutting samples from drilling to 500 ft. (below)



- The Alta Mesa deposit was discovered using in-situ gamma surveys from shallow oil wells.
- Drill holes are the primary means for locating our mineral.
- Each drill hole is surveyed for physical geochemical changes.
- Wells are surveyed by wireline:
  - ◆ Spontaneous potential, resistivity, and gamma.
  - ◆ Cross-sections of logs are used to develop a geologic setting.
- To compensate for disequilibrium conditions, additional assays are required using coring or in-situ assays.
- Mesteña primary means for correcting for disequilibrium is in-situ assays using the pulsed fission neutron tool.
  - ◆ Mesteña maintains two of these wireline tools.
  - ◆ The PFN has allowed for more predictable assays of the uranium in a drill hole.
  - ◆ As a result, the resource estimates have been upgraded for the Alta Mesa project.
  - ◆ As an indirect means of assessing the effectiveness of the PFN tool, Mesteña has consistently met recovery expectations.

# In-Situ Recovery Performance

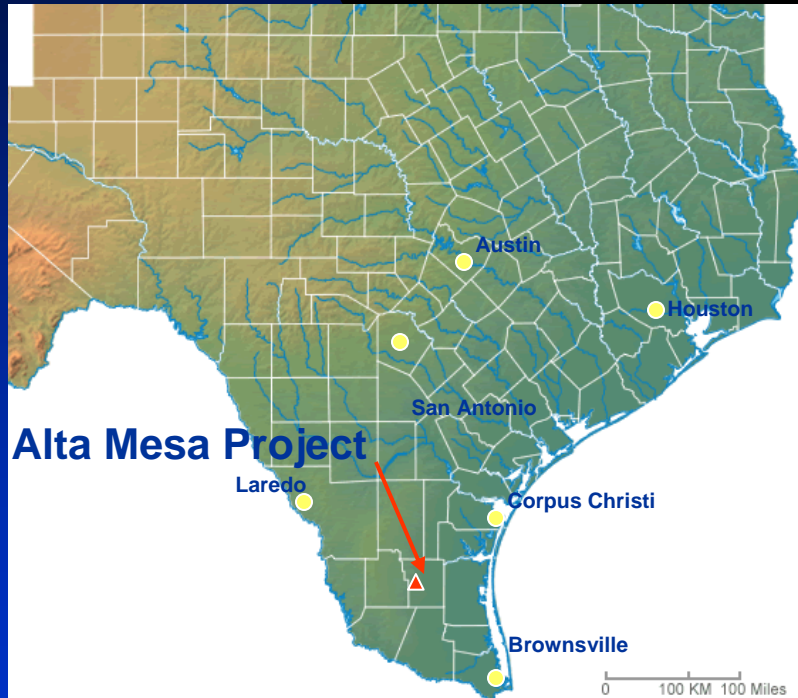


*A plant operator overseeing production activities*

- In Situ recovery of uranium has a well-documented performance history.
- Historically has been a significant economic factor in several South Texas counties.
- The recovery process used in the U.S. has proven to be safe, clean and efficient.
- Over 20 in-situ uranium recovery facilities have operated, produced, reclaimed and returned to the landowner.
  - ◆ No documented water wells or drinking water supplies have been effected.
  - ◆ Land returned to its prior use which in most cases was grazing and hunting.
  - ◆ Property values have increased due to improved infrastructure. (i.e. power lines, telephone, and roads)

# The Alta Mesa Project

- Largest known U reserves in Texas.
- Located in southern Brooks County.
  - ◆ Economically dependent on oil and gas and ranching.
- Discovered in the mid 1970's
- Four previous Lessees
- Mesteña Uranium LLC.
  - ◆ Assumed the project in 1999.
  - ◆ Completed licensing and permits in 2002.
  - ◆ Commenced project development in 2004.
- Brooks County
  - ◆ Median family income in the county is less than half of the median family income for the State of Texas
  - ◆ Mesteña is the largest private employer in the county.
  - ◆ Since 2005, our activities have significantly impacted the county economy in a positive way.
    - ★ Over 60% of the payroll is local to the County.
    - ★ Mesteña's average wage is nearly twice that for the County.



# Recovery Plant



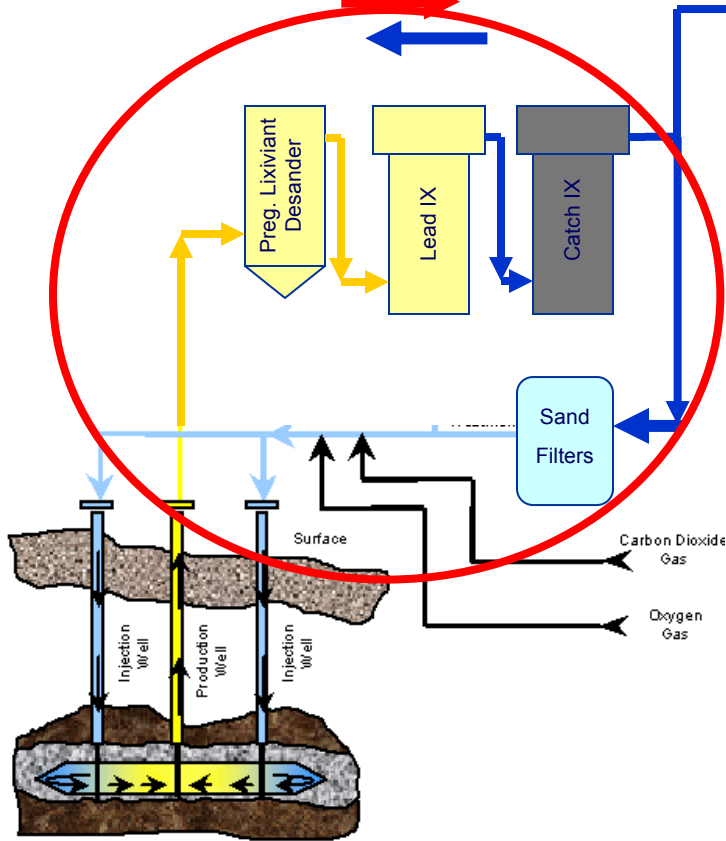
*A typical production pattern located near the recovery facility.*

- Central processing plant design.
- Uses ion exchange recovery.
- Proven up-flow Ion Exchange Technology.
- 1 million lb annual rate capacity.
- Expansion plans to 1.5 million lb/year rate underway.
- Reliable batch processing of yellowcake.
- Two zero-emission rotary vacuum dryers (2.5 million lb/year throughput capacity).
- Demonstrated consistent and predictable operations.

# ISL Process

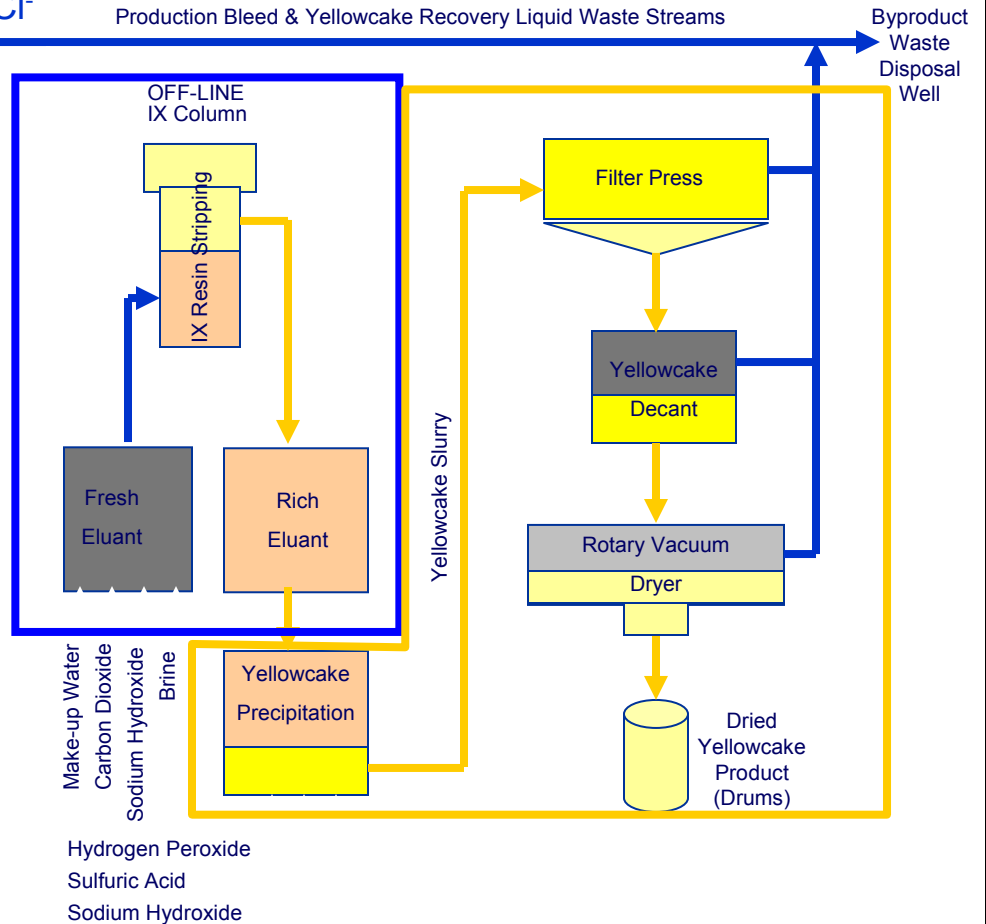
## URANIUM EXTRACTION

### Ion Exchange



## YELLOWCAKE RECOVERY

Production Bleed & Yellowcake Recovery Liquid Waste Streams



# Restoration Operations



- Groundwater restoration consists of the following:
  - ◆ Reverse Osmosis process removes most of the salts elevated during mining.
    - ★ Permeate water (99.5% pure water) is injected into the formation.
    - ★ Reject water, the remaining salts, is disposed in the disposal well.
  - ◆ The volume of reject water is replenished by native groundwater.
- The goal of this process is to return the groundwater quality to levels considered protective of drinking water sources at Aquifer Exemption boundary.
- Groundwater restoration of the depleted areas started 4Q2006.
- Our current restoration effort has been very successful



# Licenses & Permits



*A permitted Class I disposal well for process effluents*

## Current Permits & License

- Texas Commission on Environmental Quality
  - ◆ Class III UIC Permit
  - ◆ Three Production Area Authorizations
  - ◆ Two Class I injection well permits
  - ◆ Radioactive Materials License
- Railroad Commission of Texas
  - ◆ Uranium Exploration Permit
- Department of State Health Services
  - ◆ Sealed Source License

# Development Activities



*Wellfield Development drilling activities. (above)*

*Wellfield piping and instrumentation. (below)*



- 10 drill rigs are being used for development of the Alta Mesa Project.
- Wellfield Development
  - ◆ Installation and completion of wells
  - ◆ Piping and operational preparation.
- Project development
  - ◆ Delineation drilling
  - ◆ Monitor well installation to extend permit areas.
  - ◆ Development drilling of newly identified ore trends

# Exploration & Development



*Exploration drilling in Jim Hogg County*

- Locating additional and new uranium resources is a key part of sustaining development.
  - ◆ Extends known resource estimates.
  - ◆ Extends operational life.
  - ◆ Sustains workforce experience.
- Exploration drilling is regulated by the Railroad Commission of Texas.
  - ◆ Requirements for environmental protection.
  - ◆ Requirements for reclamation and closure.
- Mestehña Uranium is pursuing an extensive exploration program to extend the life of the Alta Mesa Project.

# Our Achievements



- For the last two years, the largest producer of uranium in Texas
- 2<sup>nd</sup> Largest producer of uranium in the U.S.
- Maintained an excellent compliance record.
  - ◆ Regular inspections with no significant issues.
  - ◆ No environmental releases.
  - ◆ A record of safe work for employees and contractors