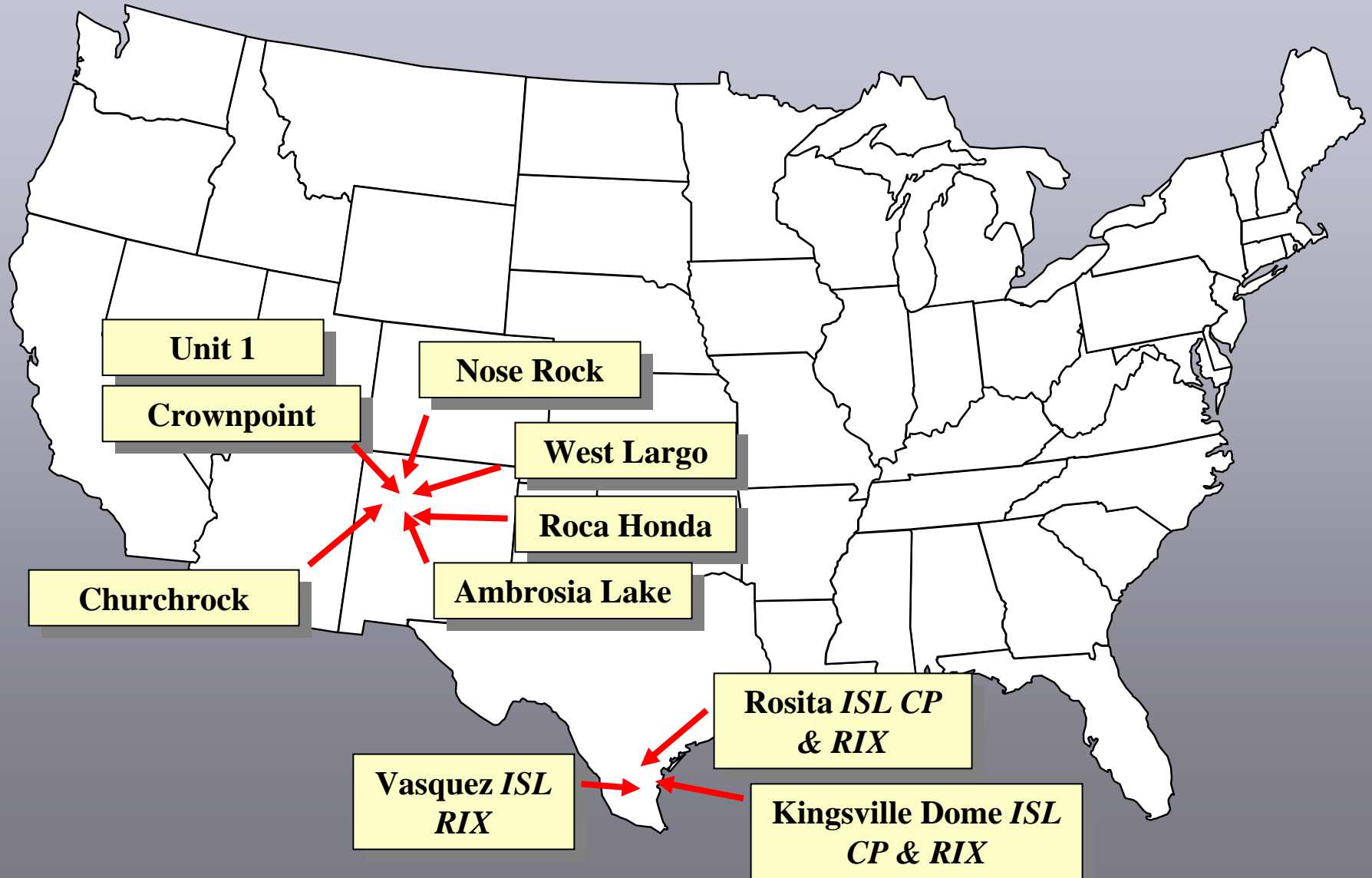# *Uranium Resources, Inc's Projects in the Grants Mineral Belt New Mexico*

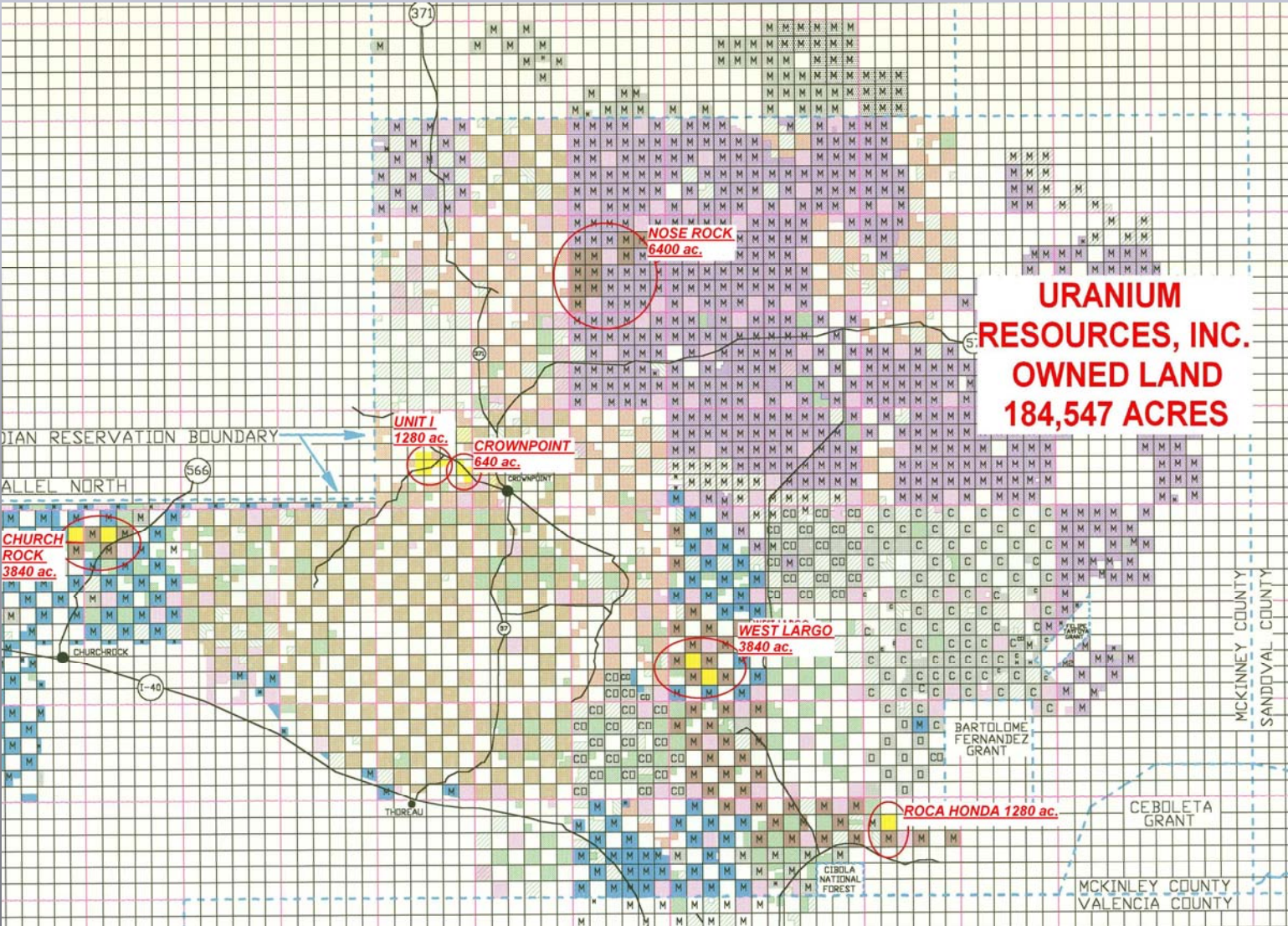**NRC/NMA Workshop Sidebar**
May 14 2007

OPERATIONS, PROJECTS, PROPERTIES

Unit 1

Nose Rock

Crownpoint

West Largo

Roca Honda

Churchrock

Ambrosia Lake

Rosita *ISL CP & RIX*

Vasquez *ISL RIX*

Kingsville Dome *ISL CP & RIX*

Uranium Resources

THE NEW MEXICO CHECKERBOARD`

Uranium Resources

CONVENTIONAL IX PROCESS

- Water from multiple mining areas are mixed, large process plant
- Larger deposits needed
- Longer pipeline runs may mean higher pressures - higher electrical costs

Uranium Resources

REMOTE ION EXCHANGE (RIX)

- Each wellfield is mined with its own water.
- Shorter pipeline runs equate lower electrical consumption.
- Instead of pumping water to the mother plant, the resin is loaded with uranium in the field and trucked.

- Individual RIX units have a small footprint, are semi portable, are of standard design and are low cost.
- Minimal environmental impact = faster licensing.
- Low cost = exploitation of small deposits.

Uranium Resources

SAME CENTRAL PLANT PROCESSING

Resin is eluted via brine & is loaded back into the trailer for the trip back to mine.
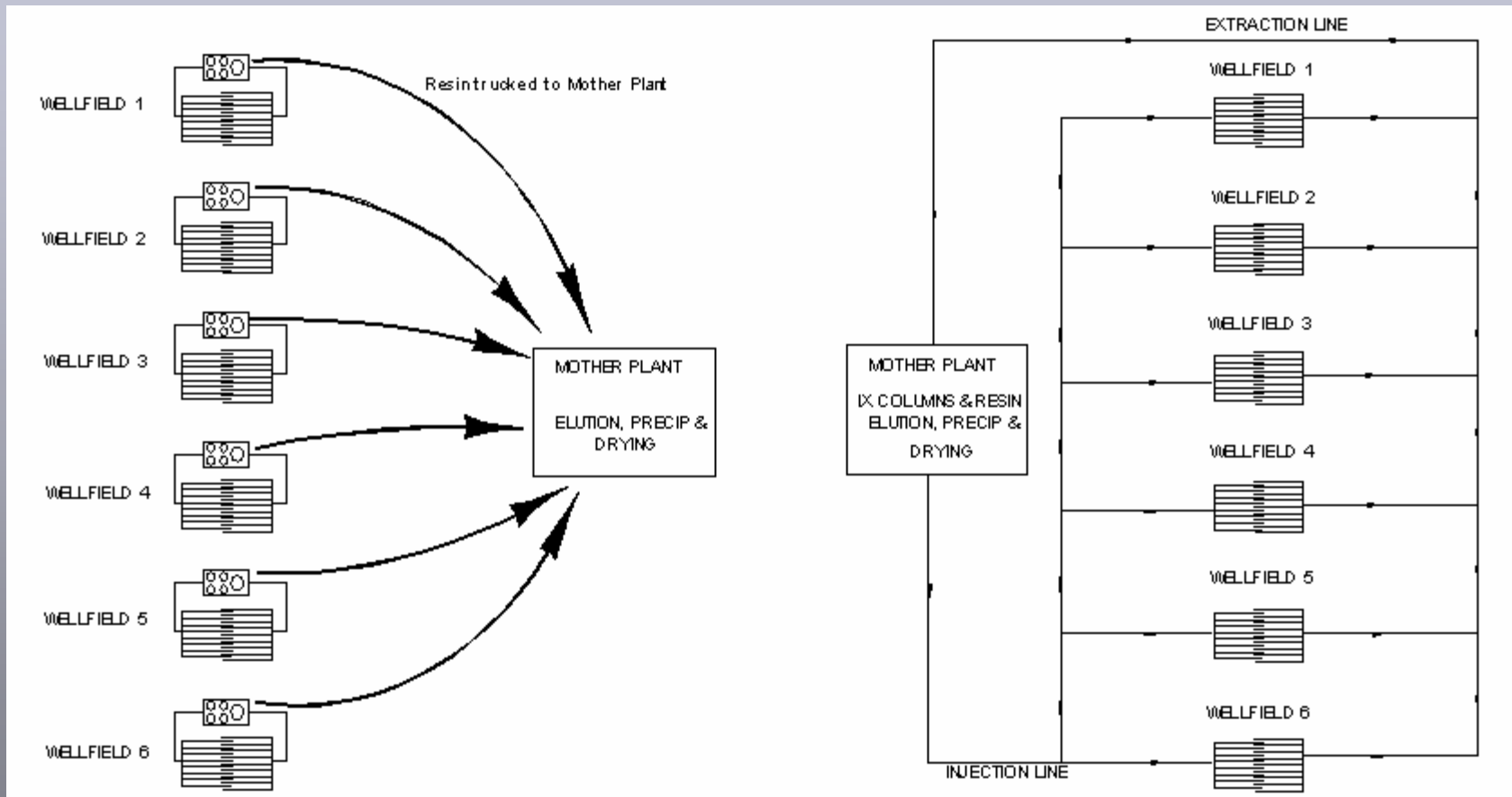
Uranium Resources

ISR WELLFIELD

Uranium Resources

ION EXCHANGE (IX)

$$Na_2UO_2(CO_3)_2 + 2RCl \rightarrow R_2\ UO_2(CO_3)_2 + 2NaCl$$

Uranium Resources

CONVENTIONAL VS. RIX

Uranium Resources

THE RIX

- Pregnant solutions from the wellfield are loaded onto ion exchange resin in columns at the mine.
- When fully loaded with uranium, the column is taken off line and the loaded resin is transferred from the column to a resin trailer.

- Clean resin that was brought from the mother plant is loaded into the column just emptied and the column is put back on line.
- The loaded resin is drained and hauled to the mother plant for stripping.

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RESIN TRANSFER FROM RIX

Uranium Resources

RESIN PREP FROM RIX

Resin that is delivered to the central plant also contains formation sand and scale.

The resin is physically clean by washing.

Uranium Resources

ELUTION/PRECIPITATION

$$R_2UO_2(CO_3)_2 + 2NaCl + Na_2CO_3 \rightarrow Na_4UO_2(CO_3)_3 + 2RCl$$

$$Na_4UO_2(CO_3)_3 + 6HCl \rightarrow UO_2Cl_2 + 4NaCl + 3CO_2 + 3H_2O$$

or

$$Na_2UO_2(CO_3)_2 + 4HCl \rightarrow UO_2Cl_2 + 2NaCl + 2CO_2 + 2H_2O$$

$$UO_2Cl_2 + H_2O_2 + xH_2O \rightarrow UO_4 \, xH_2O + 2HCl$$

Uranium Resources

FILTRATION

Uranium Resources

DRYING

Product is dried in zero emissions food-quality vacuum dryer.

Yields uranyl trioxide (yellowcake, U_3O_8).

Uranium Resources

PACKAGING

Yellowcake is packaged in 55 gallon drums and shipped to converter in exclusive use carriers.

Uranium Resources