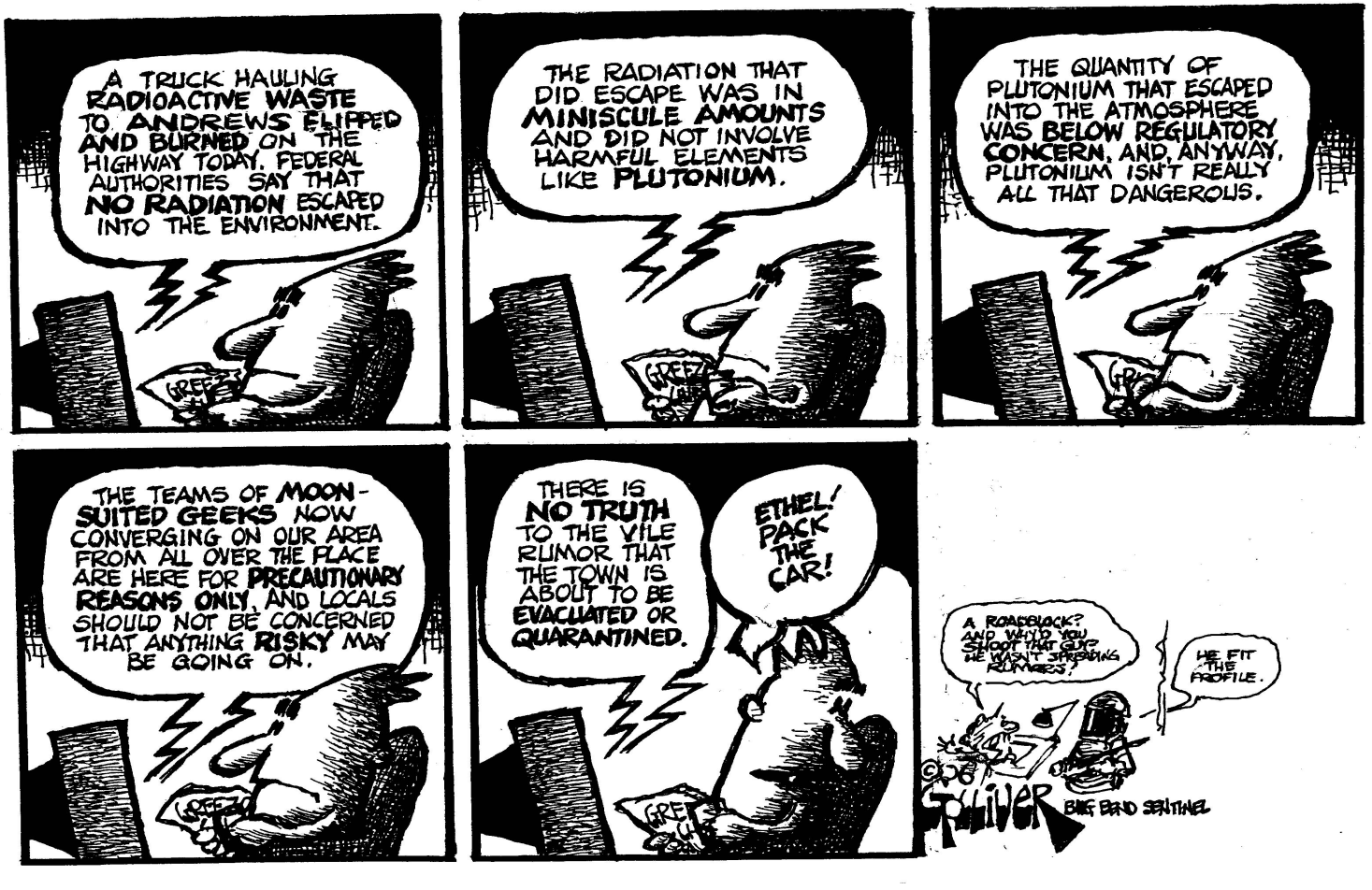
Issues with Radioactive Waste Legislation Why we oppose SB 1504

Testimony of

Tom "Smitty" Smith

April 4th 2011



Issues

- Do we have excess capacity for imports?
- What happens if the site leaks?
- Are we setting aside adequate funding for clean up?
- What happens if there is a transportation accident?
- Will the importation of waste reduce costs for Texas facilities?

Next Steps

Push the pause button on imports until:

- We have a capacity study completed
- We have analyzed the risk of a major leak
- We have analyzed the fiscal liability to the State of Texas for a major leak
- We have examined the transportation routes and the readiness of first responders and our ability to handle the costs of a transportation accident
- The legislature has had a chance to review the studies

What does low level waste include? Almost all of it is from reactors

- **Entire Nuclear Power Plants --** When decommissioned, everything from the entire reactor vessel (minus the spent fuel rods) to the concrete floor is considered "low-level" waste. A typical 1000 megawatt reactor building floor contains 13,000 cubic feet of contaminated concrete, and 1,400 cubic feet of contaminated reinforcing steel bar
- **Irradiated Components and Piping --** reactor hardware and pipes that are in continual contact with highly radioactive water for the lifetime of the plant. The metal becomes activated, or radioactive, by the bombardment of neutrons in the reactor area.
- **Control Rods --** from the core of nuclear power plants, these rods regulate and/or stop fission chain-reactions in the reactor by absorbing neutrons.
- **Poison Curtains --** also absorb neutrons, but from the water in the reactor core and the irradiated fuel pool
- **Resins, Sludges, Filters, and Evaporator Bottoms --** residues and cleaning wastes from the water that circulates around the irradiated fuel in the reactor vessel and in the fuel pool, which which holds the irradiated fuel when it is removed from the core.

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Why we need a fresh volume study

LLRW Disposal Volumes have Increased over 200 percent between 1999 and 2003 says DOE – other factors may lead to reductions

WCS claims waste minimization gives them excess capacity to sell

DOE has found projections tended to significantly overestimate LLRW waste volumes:

- **Several reasons :**
  - the decay rate of known buried radioactive wastes have often been higher than expected disposal facilities;
  - contractors have become more innovative and skilled in sorting and segregating hazardous and mixed wastes from LLRW so that a higher percentage of wastes can be disposed of as hazardous or mixed wastes rather than LLRW;

Other factors may increase the volume

- Some Utilities are treating the whole reactor as Low Level Waste
  - The decommissioning operation at Zion, which began on Sept. 1, will skip one of the slowest, dirtiest and most costly parts of tearing down a nuclear plant: separating radioactive materials, which must go to a licensed dump, from nonradioactive materials.
  - The new idea is not to bother sorting the two. Instead, anything that could include radioactive contamination will be treated as radioactive waste.

After the Nuclear Plant Powers Down, **By MATTHEW L. WALD**

Published: November 22, 2010, New York Times

- Soil at Vermont Yankee is contaminated with tritium and will need to be disposed.

How much disposal capacity do we need? and is there any excess?

- The need:
  - 6 million cubic feet the Compact Commission
  - 2.3 million cubic feet- TCEQ
  - 1.2 million cubic feet- WCS

COMPACT COMMISSIONS ESTIMATE

- By no later than 180 days after all members of the commission are appointed under Section 3.01 of this article, establish by rule the total volume of low-level radioactive waste that the host state will dispose of in the compact facility in the years 1995-2045, including decommission waste.
- **Texas Administrative Code** The Commission estimates that ***Texas*** will dispose of Five Million (5,000,000) Cubic Feet of Low Level Radioactive Waste at a Compact disposal site to be established in Texas during the period from 1995 - 2045. (Vermont will add an additional 1 million cubic feet)
- **Source Note:** The provisions of this §675.1 adopted to be effective September 20, 2009, 34 TexReg 6339

TCEQ's estimate

Texas Compact Low-Level Radioactive Waste Generation Trends and Management Alternatives Study, Page 4-107

Table 4-39

Texas Compact Projections by State and Generator Type

State	Generator Type	Operational As-Generated Volume (cubic feet)	Operational As-Disposed Volume (cubic feet)	35-year Operational Radioactivity (curies)	35-year Operational Radioactivity at 300 Years (curies)	Decontamination & Decommissioning Volume (cubic feet)
TEXAS	Academic	91,000	93,000	500	10	0
	Medical	34,000	34,000	170	82	0
	Industrial	29,000	29,000	6,200	770	0
	Military	78,000	38,000	54,000	16,000	0
	Non-Utility	230,000	190,000	61,000	17,000	0
	Utility	770,000	330,000	22,000,000	110,000	1,800,000
	State Total	1,000,000	530,000	22,000,000	120,000	1,800,000
VERMONT	Academic	2,600	2,600	1	1	0
	Medical	120	120	0	0	0
	Industrial	0	0	0	0	0
	Military	1,100	530	750	220	0
	Non-Utility	3,800	3,300	750	220	0
	Utility	130,000	130,000	62,000	290	83,000
	State Total	130,000	130,000	63,000	510	83,000
MAINE	Academic	< 0.01	< 0.01	< 0.01	< 0.01	0
	Medical	0	0	0	0	0
	Industrial	6,200	6,200	1	0	0
	Military	3,600	1,700	2,500	730	0
	Non-Utility	9,700	7,900	2,500	730	0
	Utility	0	0	0	0	100,000
	State Total	9,700	7,900	2,500	730	100,000
Texas Compact	Academic	93,000	93,000	500	10	0
	Medical	34,000	34,000	170	82	0
	Industrial	35,000	35,000	6,200	770	0
	Military	83,000	41,000	58,000	17,000	0
	Non-Utility	250,000	200,000	65,000	18,000	0
	Utility	900,000	460,000	22,000,000	110,000	2,000,000
	Grand Total	**1,100,000**	**660,000**	**23,000,000**	**120,000**	**2,000,000**

Operational As-Disposed Volume	(cubic ft)
Texas	530,000
Vermont	130,000
Decontamination & Decommissioning	
Texas	1,800,000
Vermont	83,000
Total	2,543,000
Licensed for 2.31 million cubic ft	
Exceeds license by 233,000 cubic ft	

35 Year Operational Radioactivity	(Curies)
Texas	22,000,000
Vermont	63,000
Total	22,063,000
Licensed for 3.89 million curies	
Exceeds license by 18,173,000 curies	

WCS estimate from Dec 2010

The purpose of this report is to document the updated capacity needs for the Compact waste disposal facility (CWF).

The CWF is currently licensed for 2.3 million cubic feet and 3.89 million curies for a 15 year license term. These licensed volumes and radioactive source term have been thoroughly reviewed and are protective of human health and the environment.

The results of our analysis indicate more than adequate capacity for operational low-level radioactive waste (LLRW), reserve capacity for decommissioning LLRW, and excess capacity of approximately 1.1 million cubic feet and 1.5 million curies with full decommissioning reserve.

This estimate has never been adopted by rule.

WCS relies on waste minimization

Compact Waste Facility
Capacity Report
Facility Operating Years 2010 to 2045

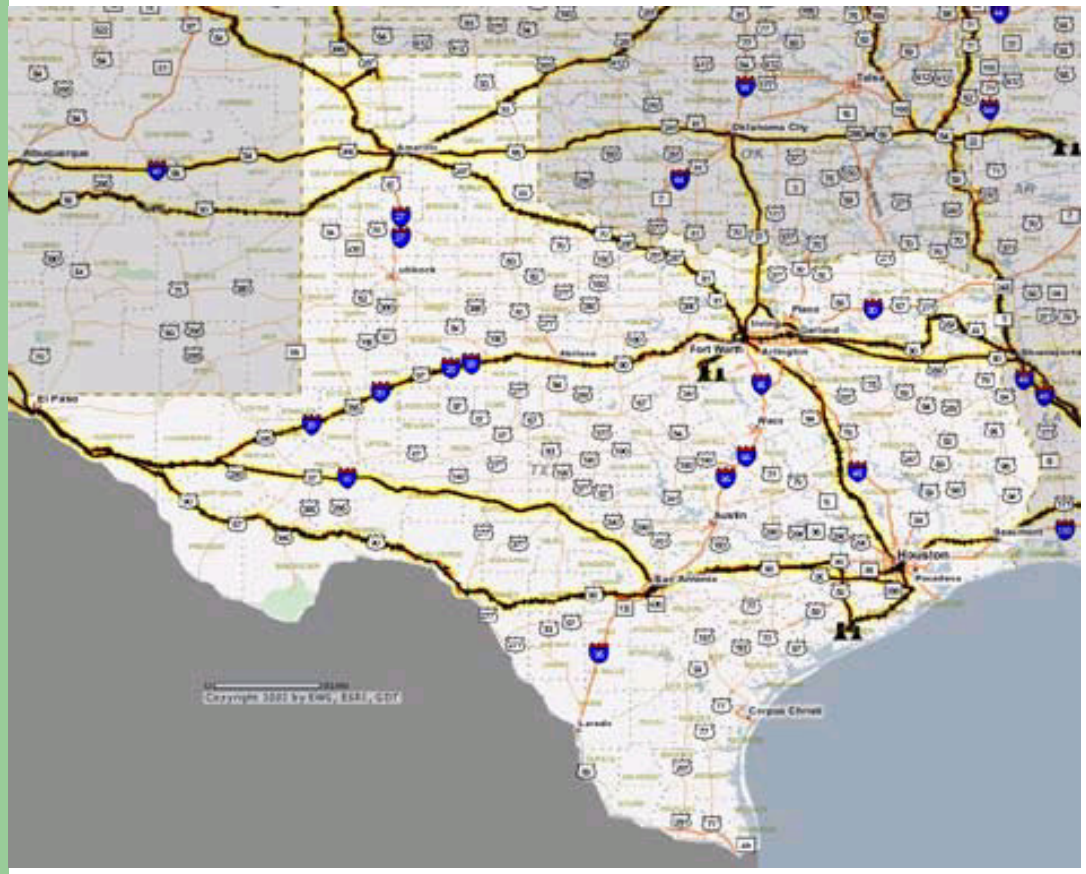
Entity	Generating Activity	Volume (cubic feet)	Source
South Texas Project	Operations	235,136	2009 STP Report to Compact Commission
	Decommissioning	319,232	2009 STP Report to Compact Commission
Comanche Peak	Operations	168,535	2009 CP Report to Compact Commission
	Decommissioning	233,984	2009 CP Report to Compact Commission
Non-Utility	Operations	184,706	2000 Report to TNRCC used in License App.
TEXAS TOTAL (2010 - 2045)		**1,141,593**	
State of Vermont (Vermont Yankee *)		460,000	Compact Commission rule adopted 1-3-2011 Allocating 20% of capacity to Vermont
TEXAS-VERMONT TOTAL **		**1,601,593**	
Licensed Capacity of Facility		2,300,000	15 year license, with two 10-year renewals
Excess Capacity		**698,407**	

* - Vermont Yankee 2009 report to Compact Commission cited need for 331,405 cubic feet for decommissioning, well below the 20 percent allocation guaranteed by the Compact Commission.

** - Texas-Vermont total is for Class A, Class B and Class C Low Level Radioactive Waste disposal needs from 2010 - 2045.

Transporting Radioactive Wastes
An accident waiting to happen?

Routes to WIPP – the Nearby Waste Isolation Pilot Plant in Carlsbad, New Mexi



The Federal government's minimum estimate for WIPP transports is 9 deaths and 48 injuries as a direct result of the transports (acknowledged fatalities)

Waste Transport Routes and Proximity to Texas Communities

- Many Texas highways would be used for the transportation of nuclear waste. Transport routes currently drive to New Mexico through large communities on I-10, I-20 including Dallas, Fort Worth, Abilene, Midland-Odessa and I-27 through Amarillo, Lubbock

Many people live next to the routes:

- 599 schools, 76 hospitals, and 2,336,290 people live within 1 mile of the interstates on the waste routes
- 1,414 schools, 142 hospitals, and 8,003,276 people live within 5 miles of the interstates used on the waste routes

Even WCS agrees

- "*there will need to be a transportation plan to move the low-level radioactive waste from cities to our remote location in West Texas.*"

Waste Transport Mishaps

- **Since 1971 there have been 53 accidents involving radioactive wastes**
- A transport of radioactive waste en route to a site were lost for nearly a month in 2001. It was later found abandoned on a North Texas cattle ranch, covered with dirt. The driver was nowhere to be found.
- In 2002, two collisions involving shipments of waste to the WIPP site occurred within a month.

Transports Vulnerable to Terrorist Attack

- Tests at the U.S. Army's Aberdeen Proving Ground and Sandia National Labs found spent fuel shipping containers to be vulnerable to shoulder-fired anti-tank missiles and high explosives.
- Terrorists would not have to steal radioactive material and smuggle it into a population center; they would only have to wait for the waste transports to drive by, since shipments could go through highly populated cities.

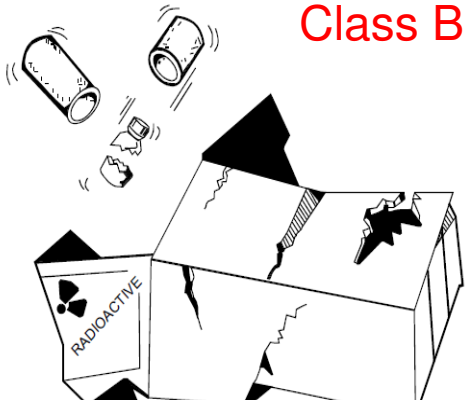
NRC reported:

Many packages containing radioactive materials have been involved in transport accidents. The statistics verify the degree of protection expected of each class of packaging.

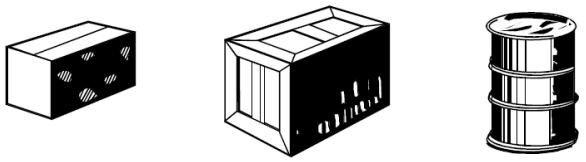
For strong tight containers, which do not have to pass any integrity tests, about 10% of those involved in accidents have failed. Of those, about 90% have released their contents.

For Type A packages, which must pass stringent tests, only 1% of those involved in accidents have failed. Of those, only 39% have released their contents.

Class B & C wastes are much better packaged



Type A



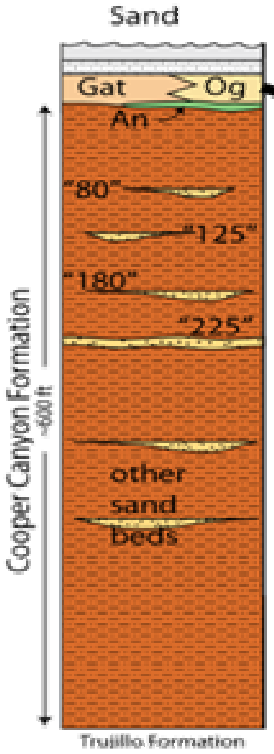
FIBERBOARD BOX WOODEN BOX STEEL DRUM

Transportation fund limited

- **Health and Safety Code**
  Sec. 401.052. RULES FOR TRANSPORTATION AND ROUTING.
- shall be suspended when the amount of fees collected reaches $500,000
- ***A study for the DOE estimated decontamination costs ranged from hundreds of dollars up to a billion dollars.***

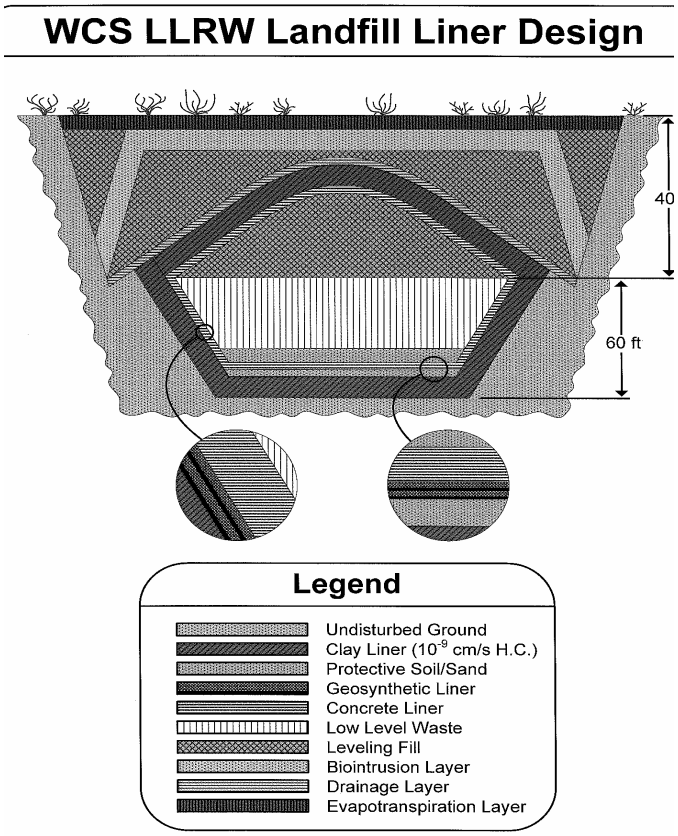
WCS' Geology Slide shows danger to aquifers

Two Hydrologic Units are Important to the WCS Site – *The OAG*



Thin veneer of silts, sands, and gravels - *Occupies erosional depressions on the Dockum Group*

Will the barriers at the site withstand 15,000 years worth of freezing, thawing, and rain?



The saturated zone is just 15O feet from the dump!

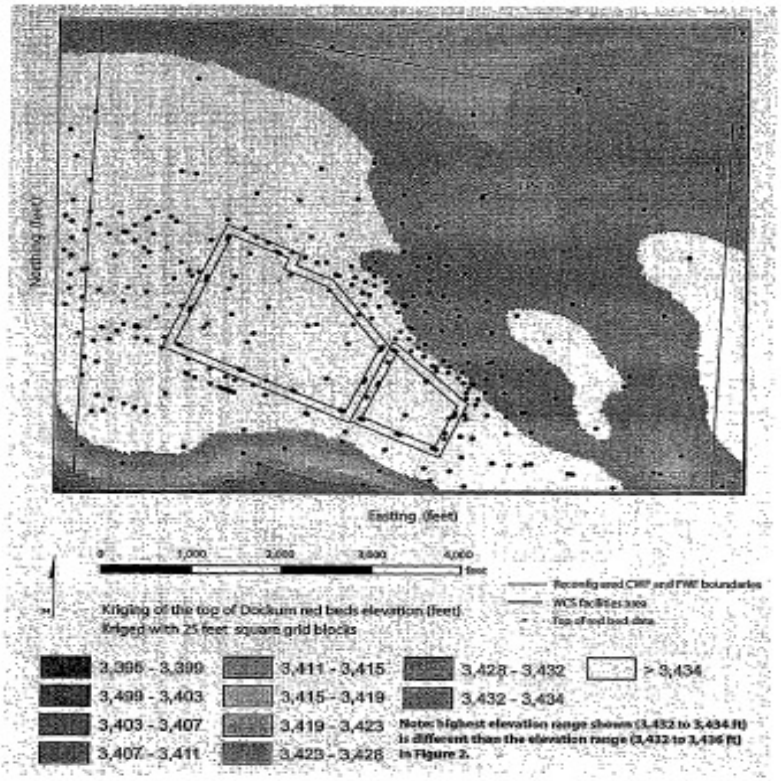


Figure 3 Reconfigured CWF and FWF boundaries in relation to region with top of Dockum kriged elevations below 3,434 ft AMSL.

What is the worst case scenario?

- Possible Contamination of an aquifer
  - Staff recommended against site because of concerns about water
  - Its below the Docum and the Ogallala, Antlers and Gartuna
    - The **Ogallala Aquifer**, also known as the **High Plains Aquifer**, is a vast yet shallow underground water table aquifer located beneath the Great Plains in the United States. One of the world's largest aquifers, it covers an area of approximately 174,000 mi² (450,000 km²) in portions of the eight states of South Dakota, Nebraska, Wyoming, Colorado, Kansas, Oklahoma, New Mexico, and Texas.
    - About 27 percent of the irrigated land in the United States overlies this aquifer system, which yields about 30 percent of the nation's ground water used for irrigation. In addition, the aquifer system provides drinking water to 82 percent of the people who live within the aquifer boundary.[2]

TCEQ Radioactive Material Licensing Team Interoffice Memorandum

TO: Susan Jablonski, P.E., Director, Radioactive Materials Division DATE: August 14, 2007
THRU: Devane Clarke, Manager, RML Team
FROM: Peter Lodde, P.E., RML Team
Bruce Calder, P.G., RML Team
Abel Porras, P.E., RML Team
Roger Dockerty, P.G., Waste Permits Division

SUBJECT: Groundwater intrusion into proposed LLRW facility

Analysis of the data submitted by Waste Control Specialists LLC, in its license application for near-surface disposal of radioactive waste, has resulted in the following conclusions:

- Groundwater is likely to intrude into the proposed disposal units and contact the waste from either or both of two water tables near the proposed facility. The Applicant has failed to demonstrate compliance with 30 TAC §336.728(f) which states "The disposal site shall provide sufficient depth to the water table so that groundwater, perennial or otherwise, shall not intrude into the waste."

. . .Current Location of Two Nearby Water Tables

According to data submitted by the applicant, there appear to be two water tables. in the immediate vicinity of the proposed facility. The first is a water table present within the Ogallala, Antlers and Gatuna (GAG) materials which lie above the proposed FWF and CWF disposal units. While the data demonstrates that the GAG water table lies above the proposed facility, the precise lateral extent of the water table remains uncertain.

. . .Conclusion

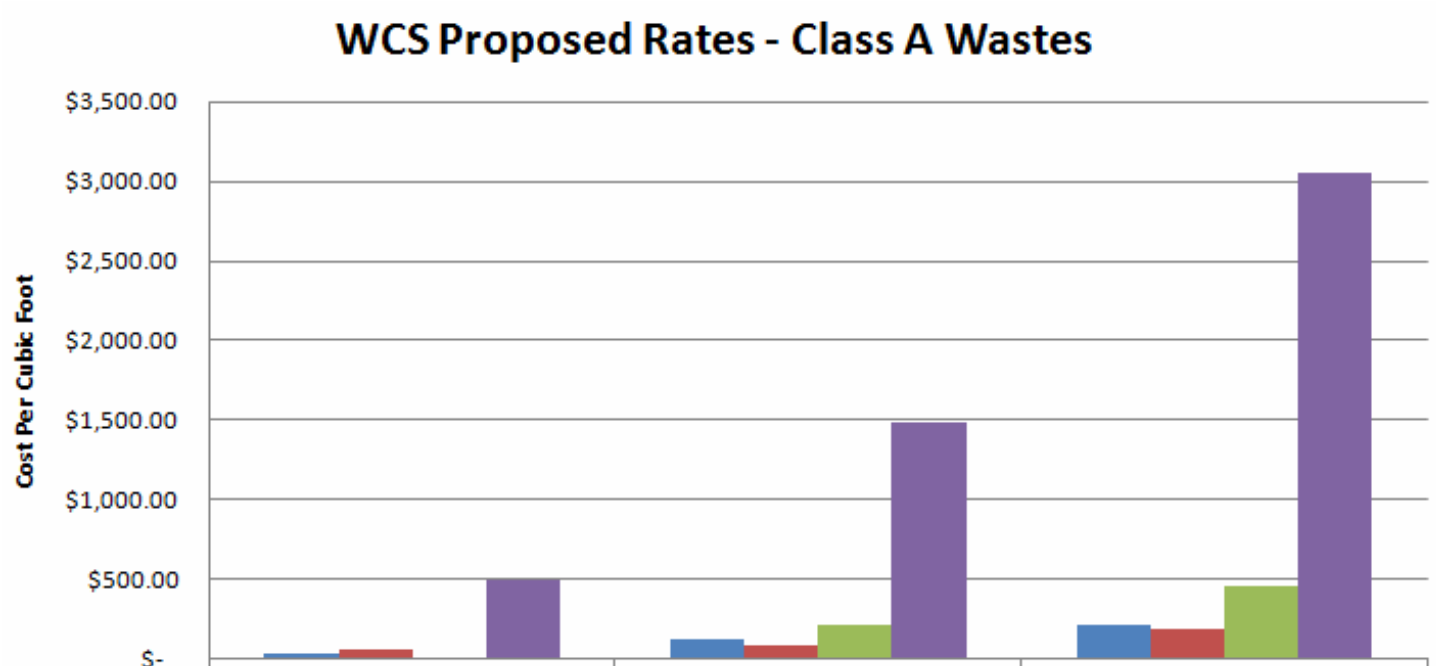
Analysis of available data shows that groundwater in the natural system already is unacceptably at or near the boundaries of the proposed disposal units. Predicted increases in rainfall are expected to drive the water tables into the proposed units. These conditions fail to meet the requirements of 30 TAC §336.728(f).

. . . The likelihood of such an event causes technical staff to conclude that **issuance of a license for the proposed facility cannot be recommended**.

What does it cost to clean up a small aquifer?

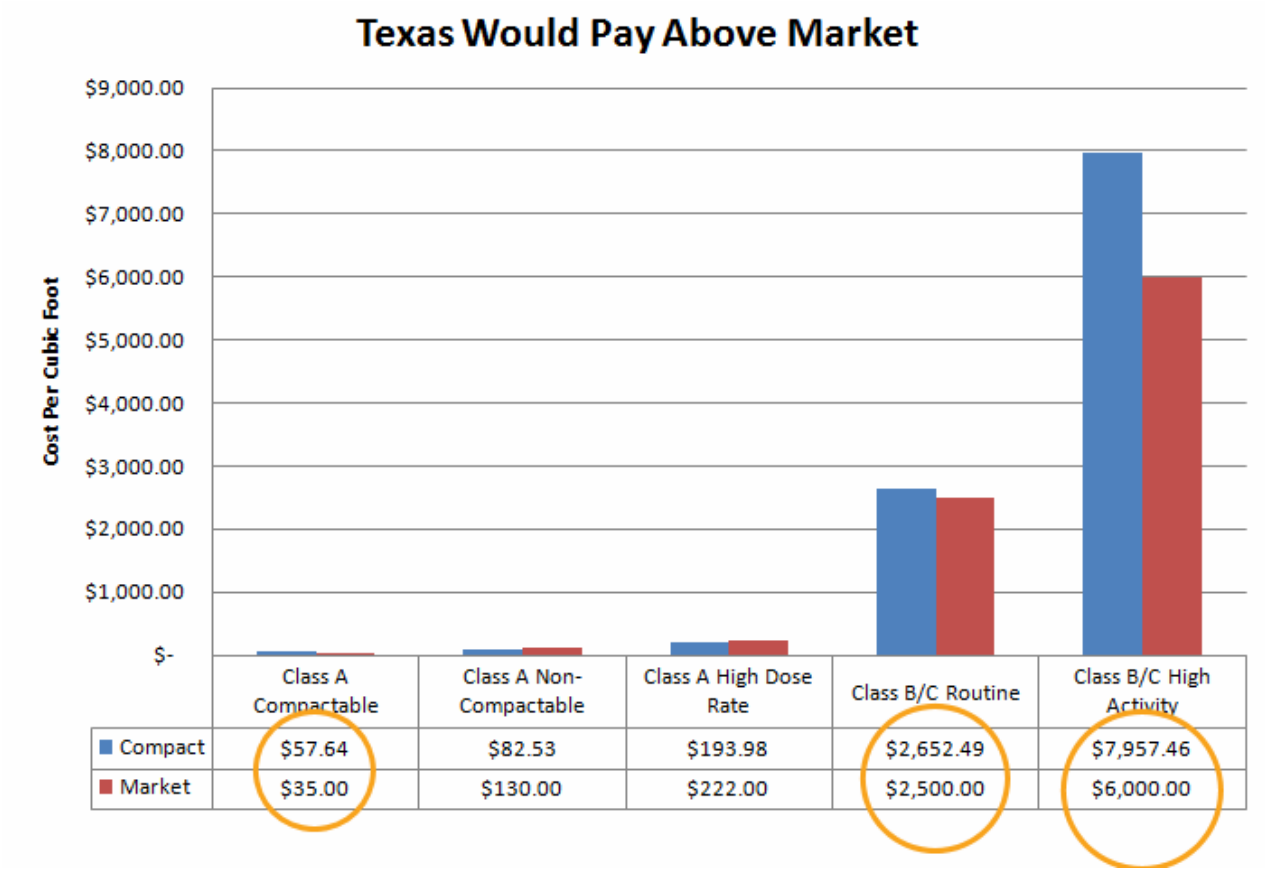
- Nuclear wastes that were far more toxic than permitted were dumped into Conoco's El Conquista strip mine pit near Falls City, Texas.
- At the nearby Susquehanna-Western Uranium site near Falls City the companies went bankrupt. It cost taxpayers $22 million in state and federal money **to cover up** that site. The aquifer is now contaminated. According to the DOE, hazardous and radioactive materials leached into the aquifer below the site and migrated at least 2,500 feet from the tailings piles.
- The DOE agreed to take responsibility for cleaning the aquifer, but balked at the price tag: **$384 million**

WCS Says We Need Imports to reduce costs but their own numbers disprove their assertion

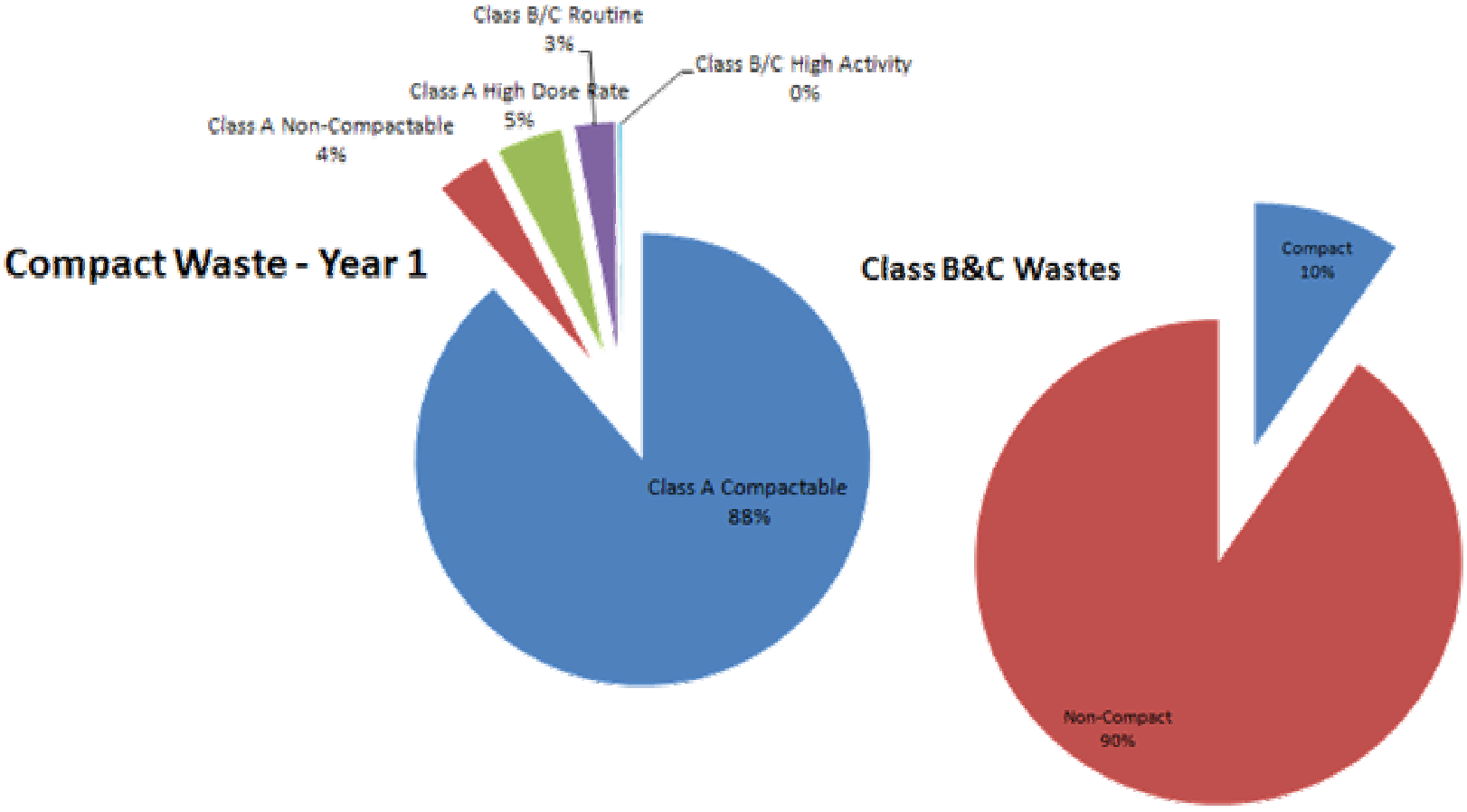


	Class A Compactable	Class A Non-Compactable	Class A High Dose Rate
Market	$35.00	$130.00	$222.00
Compact	$57.64	$82.53	$193.98
Non-Compact		$210.94	$457.38
No Import	$496.16	$1,488.47	$3,054.19

All Risk – No Reward



Why we need volume and curie limits



A B and C are not the same

2008 Volume and Activity by Disposal Facility

Disposal Facility	Volume (Cubic Feet)	Activity (Curies)
Clive	2,040,296	4,694
Barnwell	22,278	762,018
Richland	22,791	16,452
TOTAL	**2,085,366**	**783,164**

TOP

2007 Volume and Activity by Disposal Facility

Disposal Facility	Volume (Cubic Feet)	Activity (Curies)
Clive	2,492,385	3,901
Barnwell	38,067	1,096,214
Richland	96,679	13,706
TOTAL	**2,627,131**	**1,113,821**

TOP

2006 Volume and Activity by Disposal Facility

Disposal Facility	Volume (Cubic Feet)	Activity (Curies)
Clive	3,983,800	4,570
Barnwell	38,129	322,491
Richland	24,864	1,787
TOTAL	**4,046,794**	**328,848**

All This Risk For Only $8 Million in Revenue?

Estimated Two-year Net Impact to General Revenue Related Funds for HB2184, As Introduced: a positive impact of $8,000,000 through the biennium ending August 31, 2013.

The bill would make no appropriation but could provide the legal basis for an appropriation of funds to implement the provisions of the bill.

General Revenue-Related Funds, Five-Year Impact:

Fiscal Year	Probable Net Positive/(Negative) Impact to General Revenue Related Funds
2012	$2,000,000
2013	$6,000,000
2014	$5,000,000
2015	$3,000,000
2016	$3,000,000

All Funds, Five-Year Impact:

Fiscal Year	Probable Revenue Gain/(Loss) from *General Revenue Fund* 1
2012	$2,000,000
2013	$6,000,000
2014	$5,000,000
2015	$3,000,000
2016	$3,000,000

Welcome to the Headquarters of the Texas Low Level Radioactive Waste Compact Commission

1606 Far West Blvd, Suite 117 **(Box Number 294)**

Next Steps:

Push the pause button until:

- We have a new capacity study completed
- We have analyzed the risk of a major leak
- We have analyzed the fiscal liability to the State of Texas for a major leak
- We have examined the transportation routes and the readiness of first responders and our ability to handle the costs of a transportation accident
- The legislature has had a chance to review the studies