

Environmental and Fracking Concerns

Risks, Reality and Protecting Homeowners



Jack Huntress
Managing Director
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Environmental Data Resources



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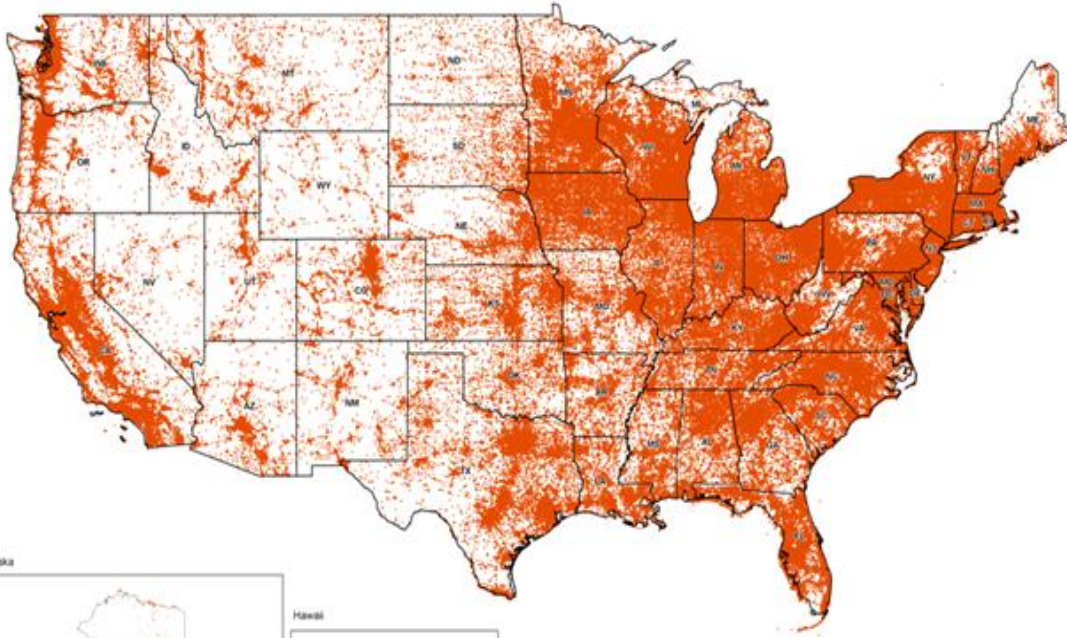
SEPTEMBER 12, 2012

Today's Webinar

1. Overview on Environmental Contamination
2. Vapor Intrusion – An Emerging Risk
3. Disclosure and Common Law
4. Fracking – Reality and Myth

PART 1: Environmental Contamination

Sites Across U.S.



- 23 million records of property contamination since 1990
- Includes:
 - Superfund sites
 - Brown fields
 - Old gas stations
 - Landfills
 - Meth labs
 - Spills
 - State hazardous waste sites
 - And more

Plume on the move

A trial now under way will determine whether the Orange County Water District can recover cleanup costs that could approach \$200 million from Northrop Grumman Corp., as well as other companies, for decades' worth of groundwater contamination. The plume of contaminants, some of them carcinogens, is gradually moving through the county's drinking-water aquifer underground.

Ratio of volatile organic compounds (VOCs) to the maximum contaminant level

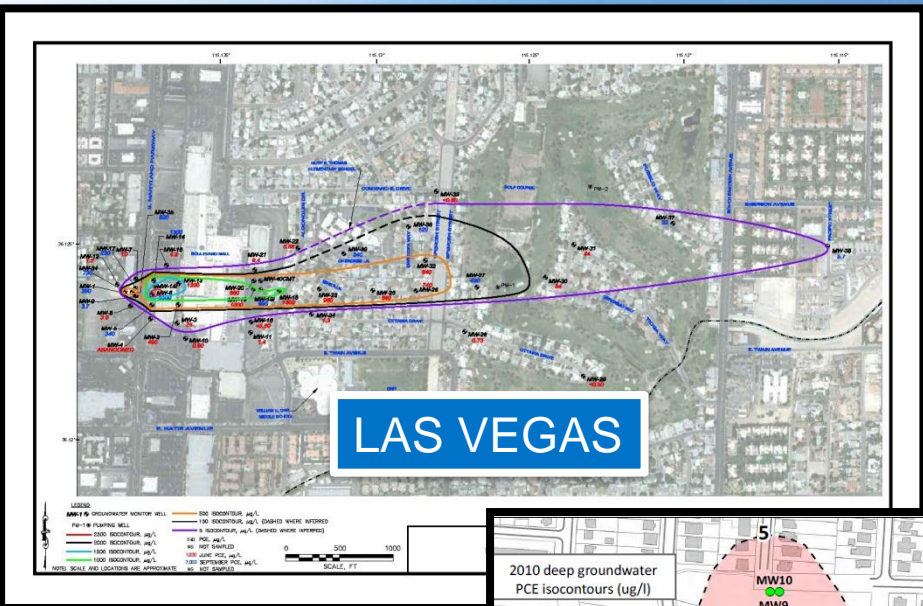
- VOCs at maximum level to five times higher
- VOCs at five to 10 times higher than maximum level
- VOCs 10 times the maximum level



PHOENIX

- | | | |
|-------------------------------|-----------------------|-------------------------|
| 1 Fullerton Manufacturing | 7 Gulton/Proust/EDO | 13 Moore Business Forms |
| 2 Raytheon | 8 Aerojet | 14 Northrop |
| 3 Chicago Musical Instruments | 9 Alcoa/Fairchild | 15 Arnold Engineering |
| 4 CBS (Fender) | 10 Microdot/Fairchild | 16 Crucible Materials |
| 5 MAG Aerospace/CBS | 11 Northrop | 17 Northrop |
| 6 American Electronics | 12 Kester Solder | 18 AC Products |

Source: Orange County Water District



LAS VEGAS

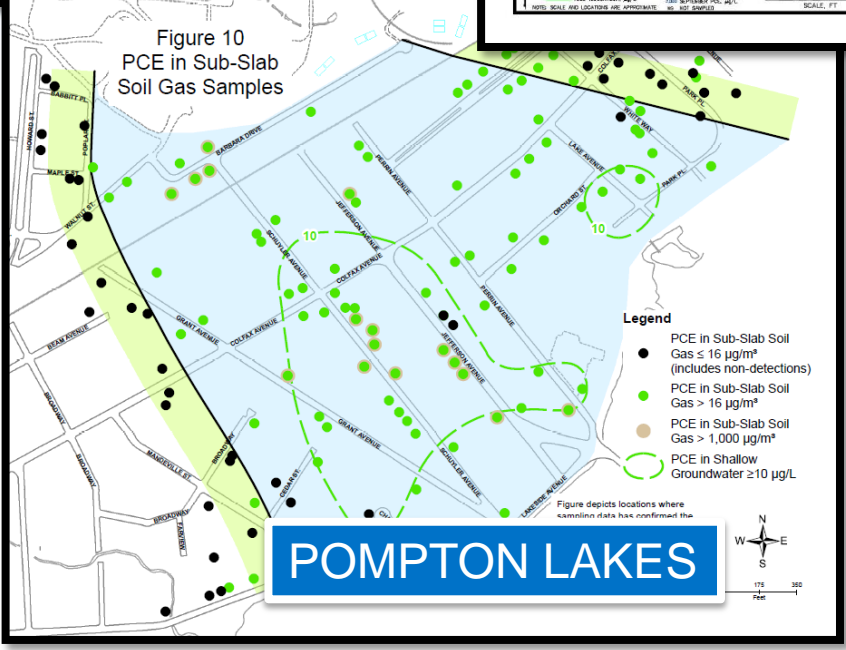
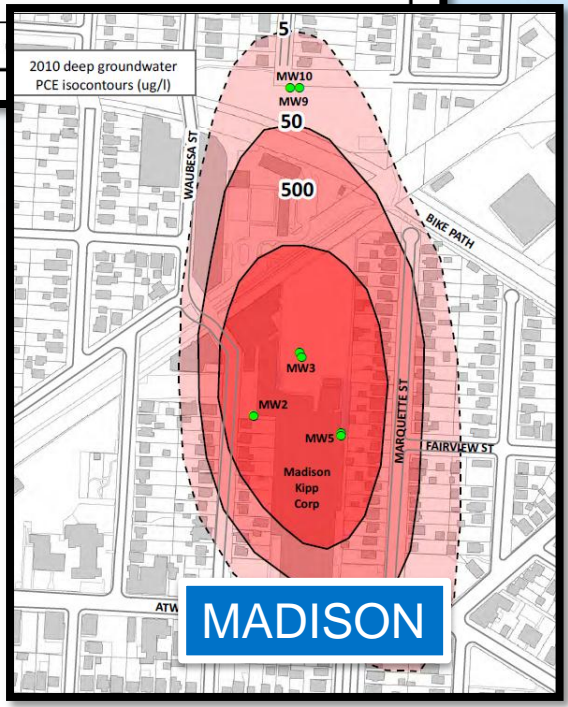


Figure 10
PCE in Sub-Slab
Soil Gas Samples

POMPTON LAKES



MADISON



Residential properties are routinely impacted by environmental contamination

SOURCES

Meth Labs
Landfills
Gas Stations
Dry Cleaners
Former Industrial Sites
Fracking

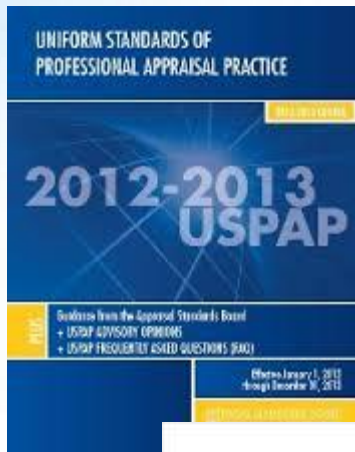
EXAMPLES

Pompton Lakes
Maryland Square
Middlefield-Ellis-Whisman

ISSUES

Vapor Intrusion
Soil contamination
Groundwater pollution
Meth contamination

Numerous references exist regarding the consideration of environmental contamination for residential properties



Uniform Residential Appraisal Report

File #

The purpose of this summary appraisal report is to provide the lender/client with an accurate, and adequately supported, opinion of the market value of the subject property.

Property Address _____ City _____ State _____ Zip Code _____
 Borrower _____ Owner of Public Record _____ County _____

Legal Description _____

Assessor's Parcel # _____ Tax Year _____ R.E. Taxes \$ _____
 Neighborhood Name _____ Map Reference _____ Census Tract _____

Occupant Owner Tenant Vacant _____ Special Assessments \$ _____ PUD HOA \$ _____ per year per month

Property Rights Appraised Fee Simple Leasehold Other (describe) _____
 Assignment Type Purchase Transaction Refinance Transaction Other (describe) _____

Lender/Client _____ Address _____
 Is the subject property currently offered for sale or has it been offered for sale in the twelve months prior to the effective date of this appraisal? Yes No
 Report data source(s) used, offering price(s), and date(s) _____

I did I did not analyze the contract for sale for the subject purchase transaction. Explain the results of the analysis of the contract for sale or why the analysis was not _____

Freddie Mac Form 70 Fannie Mae Form 1004

Dimensions	Area	Shape	View
Specific Zoning Classification	Zoning Description		
Zoning Compliance	<input type="checkbox"/> Legal <input type="checkbox"/> Legal Nonconforming (Grandfathered Use) <input type="checkbox"/> No Zoning <input type="checkbox"/> Illegal (describe)		
Is the highest and best use of the subject property as improved (or as proposed per plans and specifications) the present use? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, describe			
Utilities	Public	Other (describe)	Public
Electricity	<input type="checkbox"/>	<input type="checkbox"/>	Water <input type="checkbox"/>
Gas	<input type="checkbox"/>	<input type="checkbox"/>	Sanitary Sewer <input type="checkbox"/>
FEMA Special Flood Hazard Area	<input type="checkbox"/> Yes <input type="checkbox"/> No	FEMA Flood Zone	FEMA Map #
Are the utilities and off-site improvements typical for the market area? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, describe			
Are there any adverse site conditions or external factors (easements, encroachments, environmental conditions, land uses, etc.)? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, describe			
General Description	Foundation	Exterior Description	Interior
Units <input type="checkbox"/> One <input type="checkbox"/> One with Accessory Unit	<input type="checkbox"/> Concrete Slab <input type="checkbox"/> Crawl Space	Foundation Walls	Floors
# of Stories	<input type="checkbox"/> Full Basement <input type="checkbox"/> Partial Basement	Exterior Walls	Walls
Type <input type="checkbox"/> Det. <input type="checkbox"/> Att. <input type="checkbox"/> S-Det/End Unit	Basement Area sq. ft.	Roof Surface	Trim/Finish
<input type="checkbox"/> Existing <input type="checkbox"/> Proposed <input type="checkbox"/> Under Const.	Basement Finish %	Gutters & Downspouts	Bath Floor

Attic None Heating PUA HWBB Radiant _____ Amenities Woodstove(s) # _____ Driveway Surface _____

Drop Stair Stairs Other _____ Fuel _____ Fireplace(s) # _____ Fence Garage # of Cars _____

Floor Soffit _____ Cooling Central Air Conditioning _____ Patio/Deck Porch Carport # of Cars _____

Finished Heated Individual Other _____ Pool Other _____ AR. Det. Built-in _____

Appliances Refrigerator Range/Oven Dishwasher Disposal Microwave Washer/Dryer Other (describe) _____

Finished area above grade contains: Rooms _____ Bedrooms _____ Bath(s) _____ Square Feet of Gross Living Area Above Grade _____

Additional features (special energy efficient items, etc.) _____

Describe the condition of the property (including needed repairs, deterioration, renovations, remodeling, etc.) _____

Are there any physical deficiencies or adverse conditions that affect the livability, soundness, or structural integrity of the property? Yes No If Yes, describe _____

Does the property generally conform to the neighborhood (functional utility, style, condition, use, construction, etc.)? Yes No If No, describe _____



Freddie Mac Single-Family Seller/Service Guide

Volume I, Section 44.15(i)

The appraiser **must** consider any known Contaminated Sites or Hazardous Substances that affect the property or the neighborhood in which the property is located. The appraiser **must** also note the presence of Contaminated Sites or Hazardous Substances in the appraisal report, make appropriate adjustments to reflect any impact on market value, and comment on the effect they have on the marketability of the subject property.

- Proximity of the property and/or its neighborhood to a Contaminated Site
- Proximity of the property to ground water contamination, chemical or petroleum spills or other Hazardous Substances that are expected to impact the area for more than one year

Why now?

- Greater scrutiny than ever before
- Consumer protection on all agencies radar
- Vapor intrusion a better understood risk
- Technology now allows for inexpensive screening/disclosure

PART 2: Vapor Intrusion – Emerging Risk

The screenshot shows a web browser window displaying the EPA website page for Vapor Intrusion. The browser tabs include Outlook, Chatter, and the current page: US EPA Vapor Intrusion | US EPA. The address bar shows www.epa.gov/oswer/vaporintrusion/. The page header features the EPA logo and navigation links: LEARN THE ISSUES | SCIENCE & TECHNOLOGY | LAWS & REGULATIONS | ABOUT EPA. A search bar is also present.

Vapor Intrusion

Vapor Intrusion

Soil Contamination
Contaminated Groundwater

This web site provides some key information on vapor intrusion for members of the public who may be interested in this topic, including teachers and students, homeowners, community leaders, and environmental professionals. On this website, you'll find **basic information about vapor intrusion**, technical and policy documents that may be used to support environmental investigations, and highlights of current and upcoming Agency activities related to vapor intrusion.

If you have concerns about vapor intrusion where you live or work, please contact your state health department.

Top Questions/Tasks

1. What is Vapor Intrusion?

Contact

Rich Kapuscinski,
kapuscinski.rich@epa.gov,
(703) 305-7411
Office of Solid Waste Emergency
Response (OSWER)
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Ave, N.W.
Mail Code: 5204P
Washington, D.C. 20460

Important Links

- Basic Information
- Events
- Related Links
- Contact Us
- OUST's Vapor Intrusion Compendium.

EPA Plans to Issue Final Subsurface Vapor Intrusion Guidance

EPA has made substantial progress during the past year in preparing its final guidance for the vapor intrusion pathway. EPA has extensively engaged stakeholders and considered extensive and substantive public comments received in 2011 and 2012. EPA is working to complete its work expeditiously and issue final Subsurface Vapor Intrusion Guidance so that it can be applied in forthcoming decisions. Comments can be viewed at Regulations.gov (EPA-HQ-RCRA-2002-0033).

[Register for email updates about the development of the final guidance.](#)

EPA Guidance Documents That May Be Helpful

In 2002, EPA released the **OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils** (Subsurface Vapor Intrusion Guidance) - This document presents technical and policy recommendations of the Office of Solid Waste and Emergency Response for evaluation subsurface vapor intrusion. EPA expects to issue a final version of its vapor intrusion guidance by November 2012. In the interim, we recommend using the 2002 draft and other available sound scientific information to address vapor intrusion.

In August 2010, EPA released its **Review of the 2002 Draft OSWER Subsurface Vapor Intrusion Guidance** PDF (7 pp, 79K, [About PDF](#)).

The Brownfields and Land Revitalization Technology Support Center has developed a primer for lead-contaminated sites.

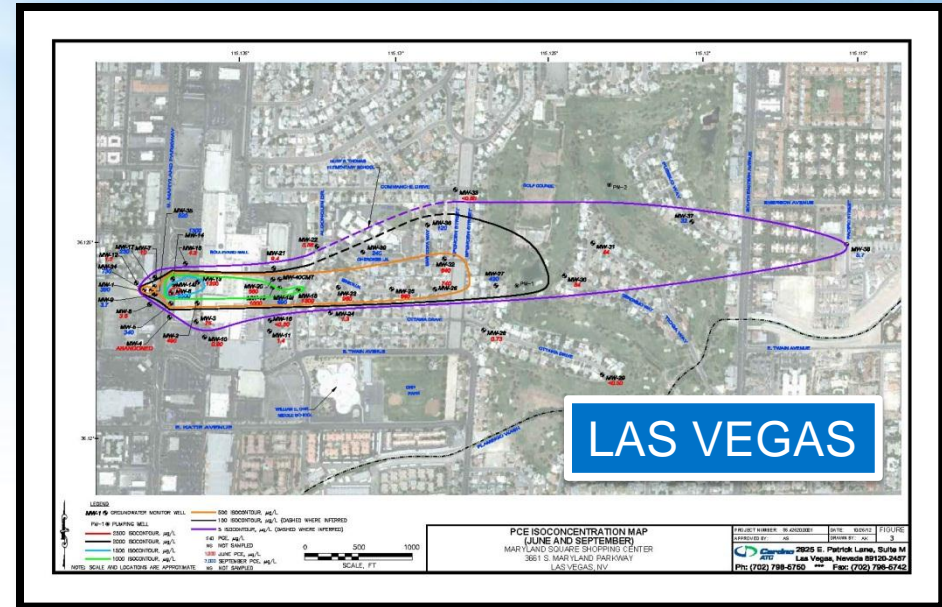
EPA Technical Documents and Tools Prepared to Support Guidance Development

Vapor Intrusion

- Pathway means that “city water” does not give free and clear
- Exposure and therefore risk even when people are on city water
- Mitigation can be similar to that of radon (air handling)
- Petroleum hydrocarbons and chlorinated solvents the common culprits
- Plumes can be extensive – hundreds of homes at a time impacted

Case Study #1 – Maryland Square

- Dry cleaner release
- Plume over 1 mile long
- Under affluent residential neighborhood



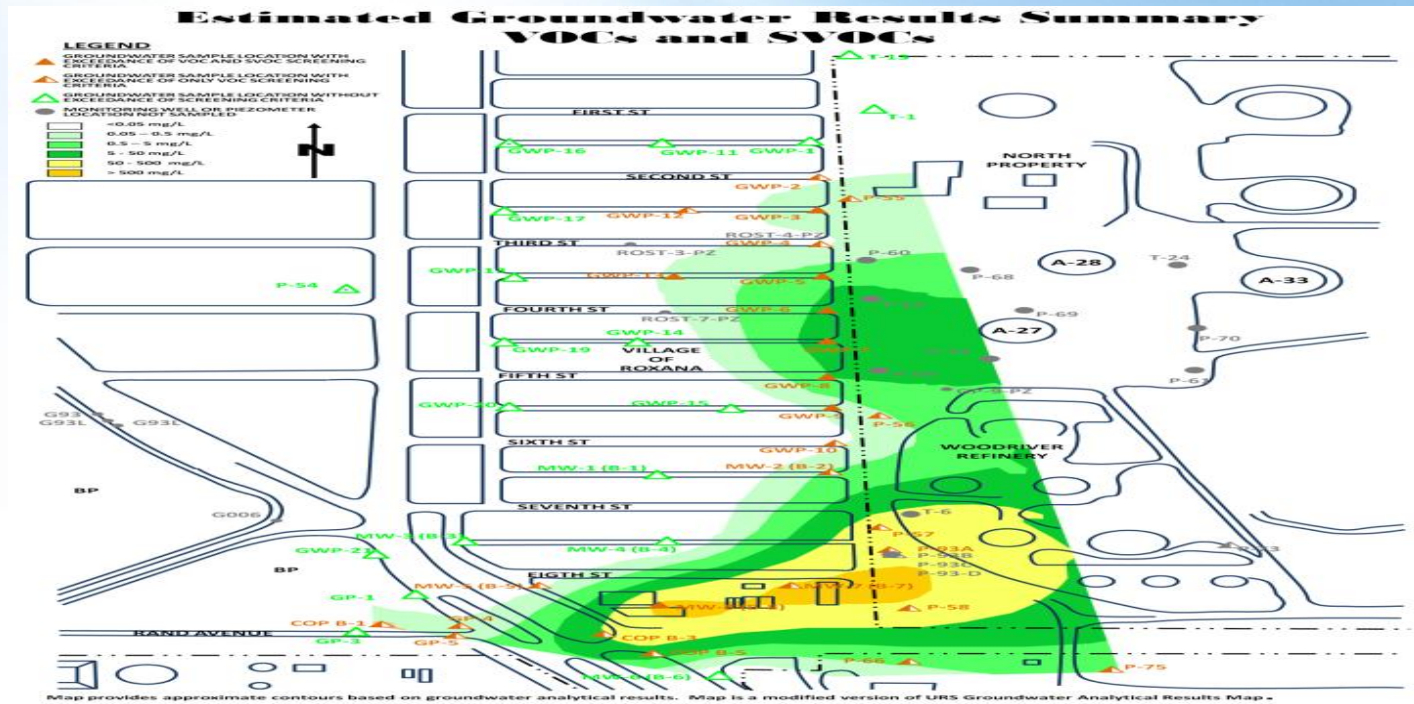
White Swan Cleaner-Sea Girt



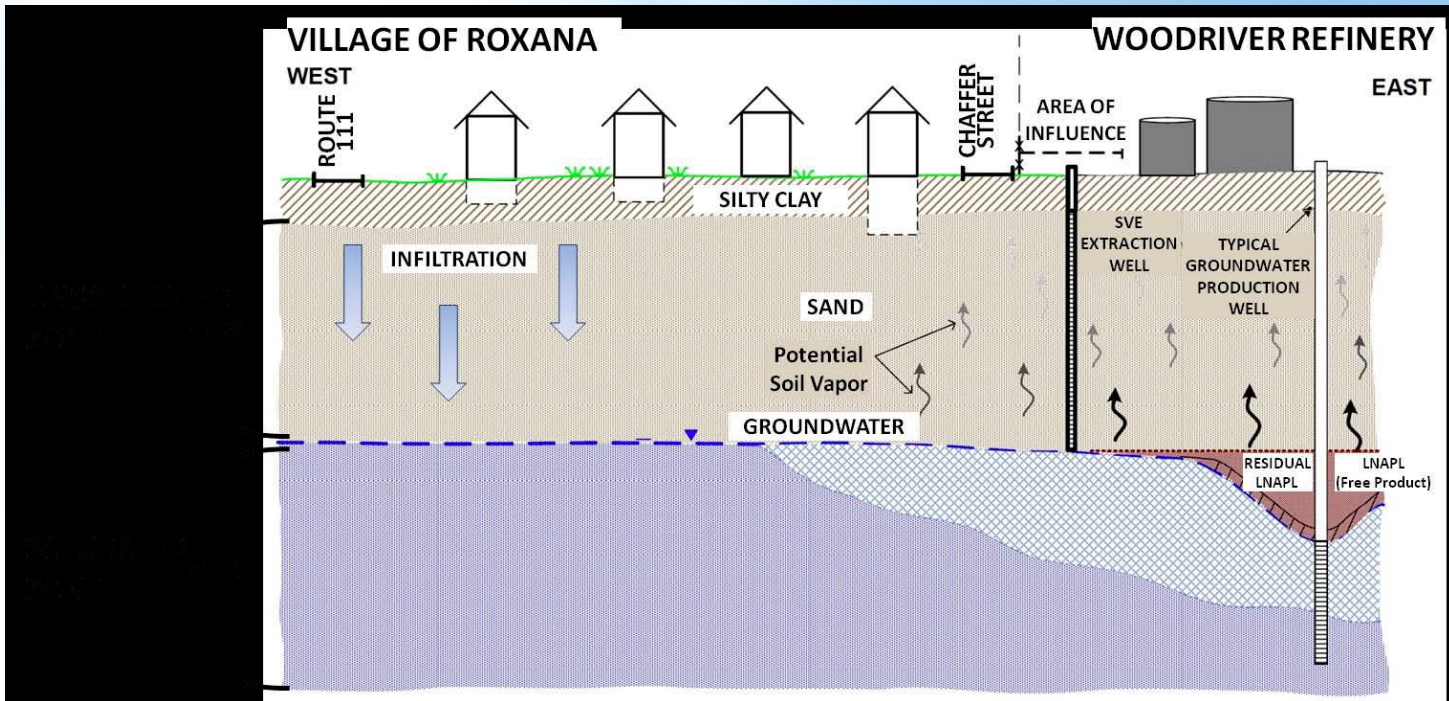
Roxana, Illinois Benzene Plume



Roxana Groundwater Plume



Roxana Cross-section GW and VI



PART 3: Disclosure and Common Law

Form No. EPA-3 SALES
Disclosure of Information on Lead-Based Paint and/or Lead-Based Paint Hazards

This addendum made part of sales agreement dated _____

Property Address: _____

Seller(s): _____ Agent _____

Purchaser(s): _____

Lead Warning Statement

Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may contain deposits of lead based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage including learning disabilities, reduced intelligence quotient, behavioral problems, and emotional memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from assessments or inspections in the sales transaction and notify the buyer of any based lead-based paint hazards. If assessments or inspections for possible lead-based paint hazards is recommended prior to purchase.

Seller's Disclosure

(a) Presence of lead-based paint and/or lead-based paint hazards (check (i) or (ii) below)

(i) _____ known lead-based paint and/or lead-based paint hazards are present in the housing (insert): _____

(ii) _____ Seller has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

(b) Records and reports available to the seller (check (i) or (ii) below)

(i) _____ seller has provided the purchaser with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below): _____

(ii) _____ seller has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Purchaser's Acknowledgment (Initial)

(i) _____ Purchaser has received copies of all information listed above.

(ii) _____ Purchaser has received the pamphlet titled "Lead-Based Paint Hazards in Your Home"

(iii) Purchaser has (check (i) or (ii) below):

(i) _____ received a 10-day opportunity for mutually agreed upon periods to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards, or waived that opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards.

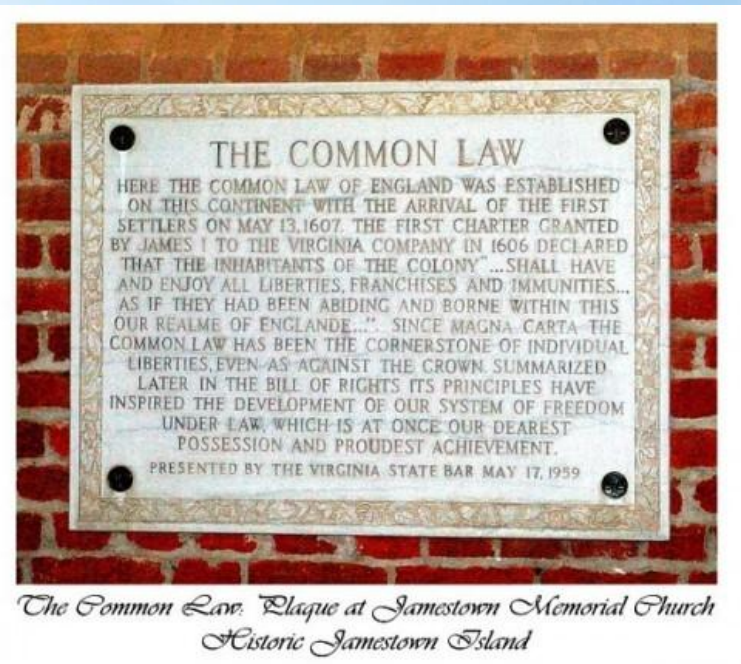
Agent's Acknowledgment (Initial)

(i) _____ Agent has advised the seller of the seller's obligations under 42 U.S.C. 4852a and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy

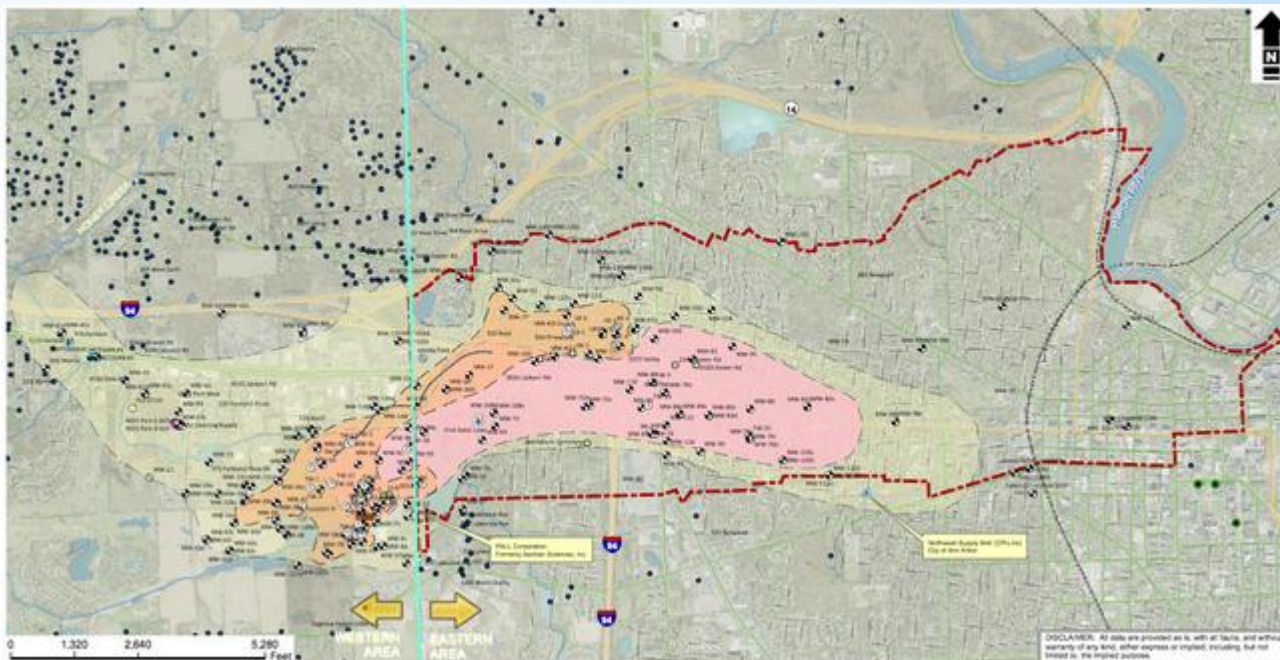
The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided is true and accurate.

Seller	Date	Buyer	Date
Purchaser	Date	Purchaser	Date
Agent	Date	Agent	Date



The Issue

Dealing with OFFSITE contamination in most cases



Pall-Gelman 1,4-dioxane plume - Ann Arbor, MI

Consumer Protection

Is order of the day and trends create new considerations

- Urban Renewal
- Suburban Sprawl

Examples

MA, TX and LA explosions

The image is a screenshot of a news article from the New York Daily News. The main headline reads "SEE IT: Massive explosion near Waco, Texas injures at least 160, between 5 to 15 feared dead". A sub-headline states "The explosion at West Fertilizer in downtown West, a community about 20 miles north of Waco, happened around 7 p.m. and could be heard as far away as Waxahachie, 45 miles to the north." The article is by GINGER ADAMS OTIS and was published on Wednesday, April 17, 2013, at 10:49 PM, with an update on Thursday, April 18, 2013, at 3:20 PM. The article includes social media sharing icons for Facebook (2K), Twitter (150), and others. On the left side of the screenshot, there is a smaller article snippet titled "Federal report been prevent" dated May 13, 2008, with an aerial photo of a residential area and the byline "By John R. Elleme". Below that, another snippet mentions "DANVERS -- The 20 neighborhood here o".

June 19th....AUSTIN — The state plans to compile a registry of businesses with dangerous chemicals so citizens can learn about hazards like the fertilizer plant in West, where a fire triggered a massive blast of ammonium nitrate.



<http://www.dallasnews.com/news/west-explosion/headlines/20130617-after-west-explosion-texas-may-compile-public-database-of-hazardous-chemical-sites.ece>

PART 4: Fracking – Reality from Myths



Source: Energy Information Administration, based on data from various published studies.
Updated: March 10, 2010

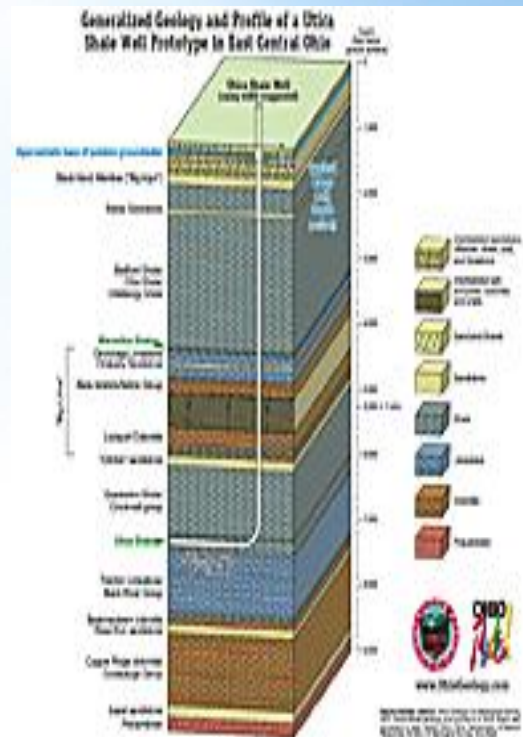
Some Background on Fracking

- Not new! – Developed in late 1940s, Large scale in late 60s
- Goal is to get petroleum hydrocarbons out of low permeability rock (i.e. Stuff won't move unless there is a path)
- These are Secondary and Tertiary “plays”
- Today it is largely about shale and natural gas
- Largest possible seismic event know was 3.3
- Fracturing fluids are a concern – most of them are patented and about 90% is water with 10% being sand and chemicals (known carcinogens in some cases)
- It occurs deep, typically 2000-3000 feet down...we get our drinking water 200-300 feet down typically so fairly large separation.

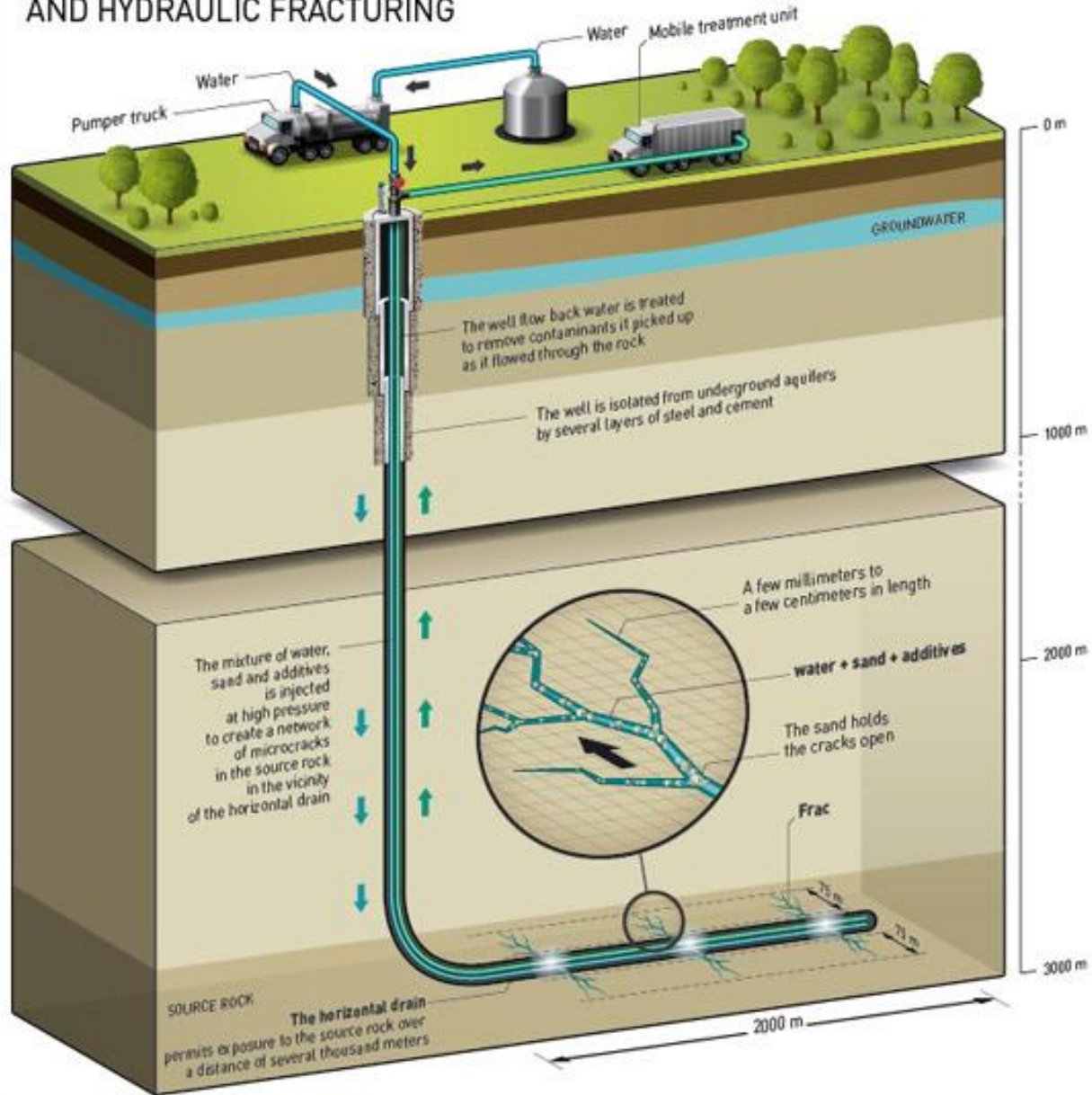
What is Fracking?

- Short for “Induced Hydraulic Fracturing”
- Injection of a fluid (typically water based) into rock layers with the purpose of extracting oil or gas

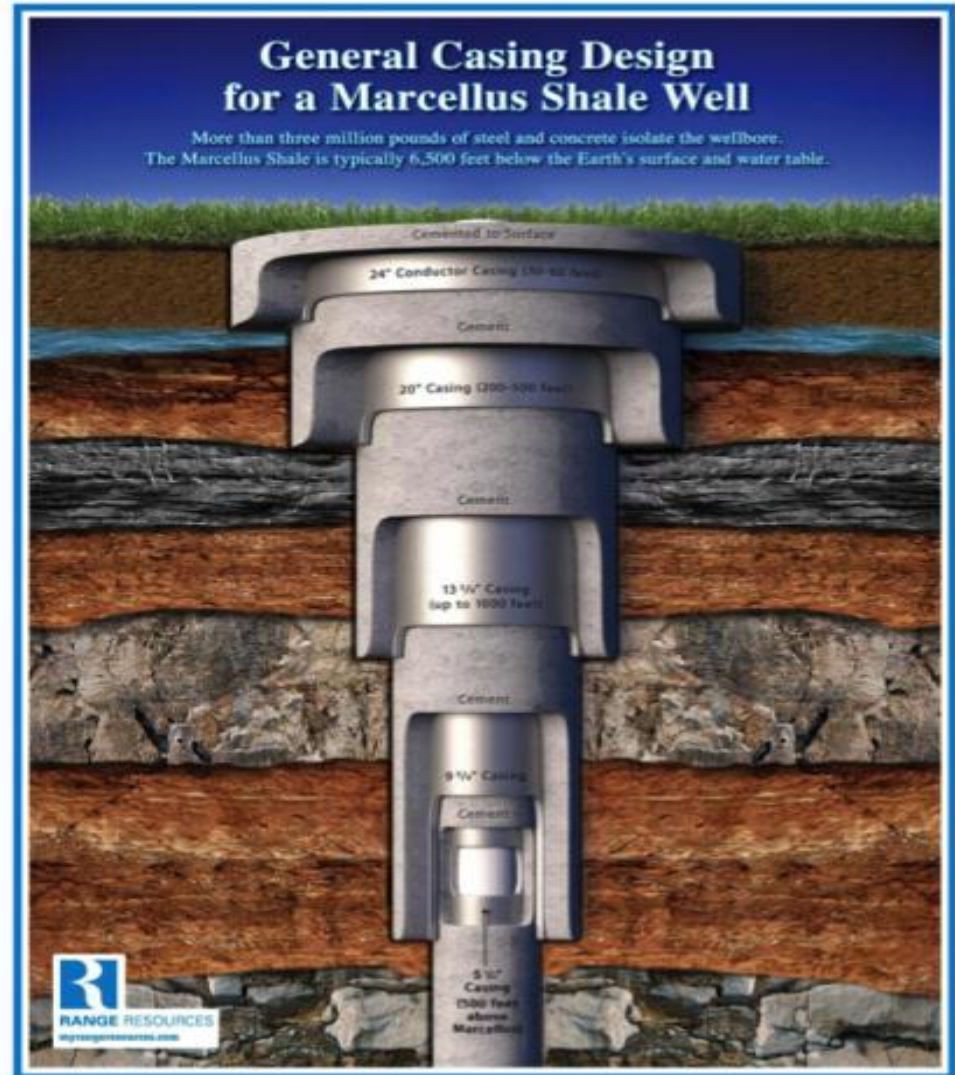
Shale formations



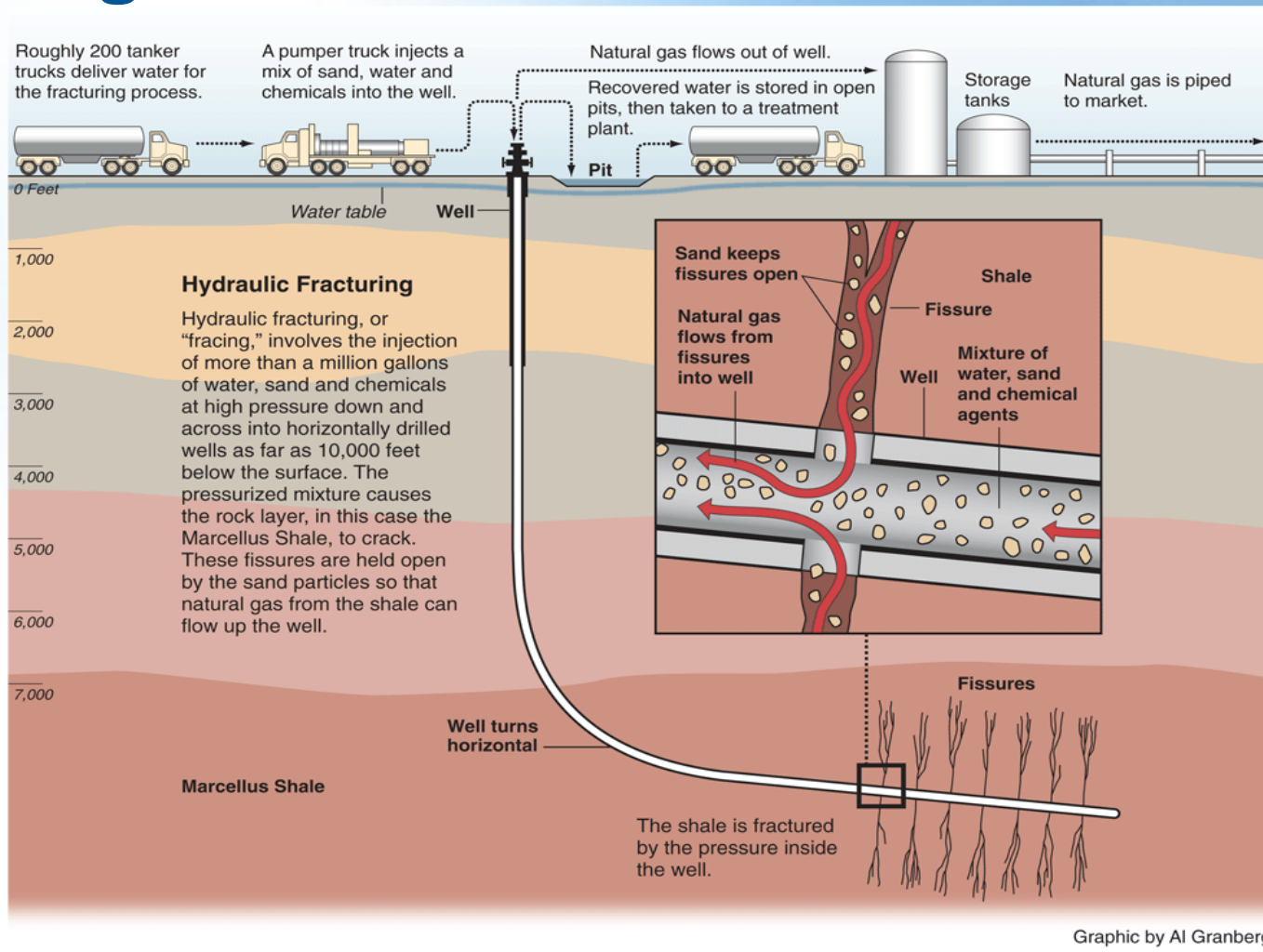
HORIZONTAL WELL AND HYDRAULIC FRACTURING



Casing to Depth



Fracking in Detail



Marcellus Shale

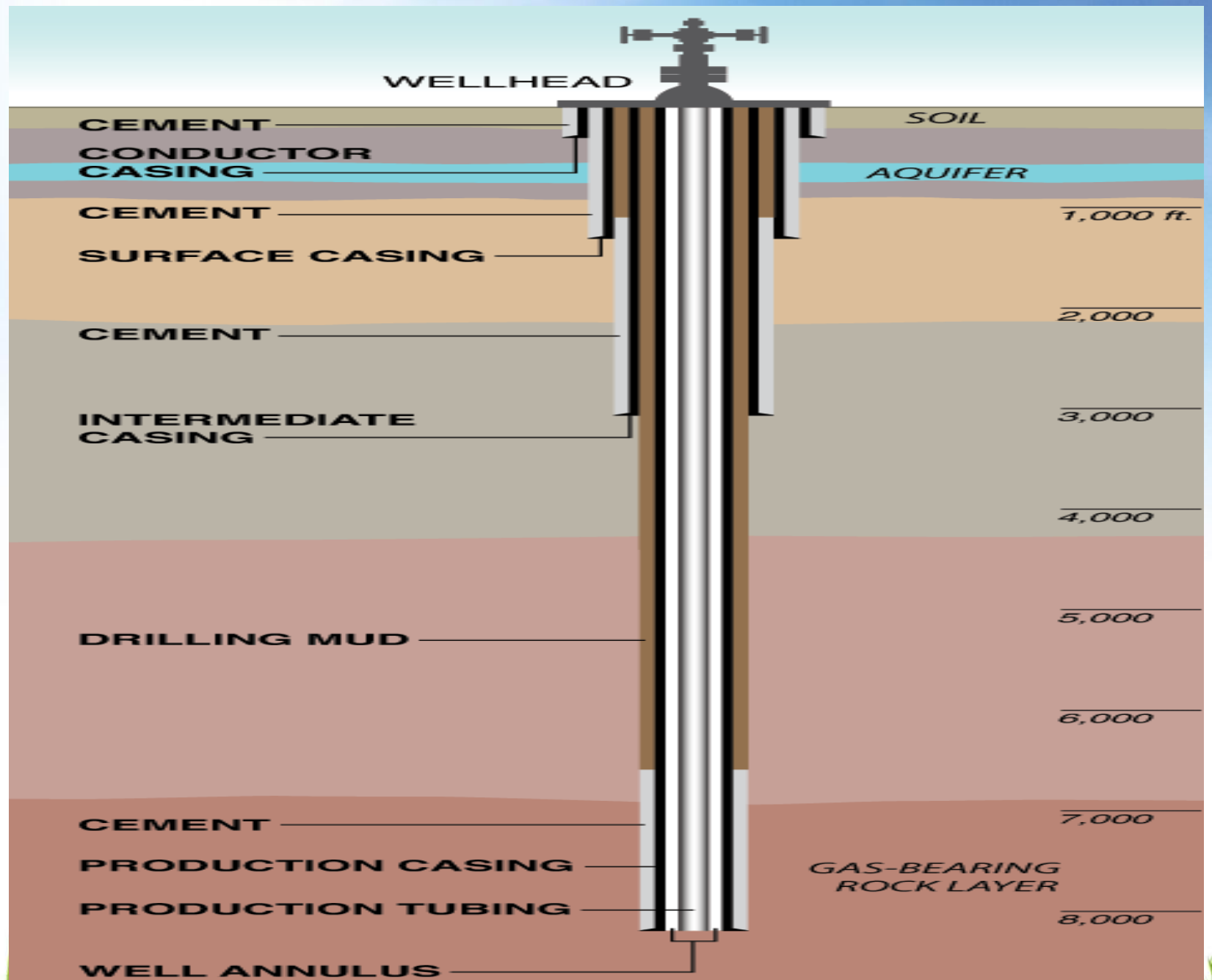


North Dakota BOOM!



Most common risks

- Casing Failure
- Above Ground Tanks
- Surface ponds



Graphic by Al Granberg

Bringing in LOTS of Water



Surface Lagoons



Surface Storage – Above Ground Tanks



Regulatory Regime

- Safe Drinking Water Act- Underground Injection Control
- Clean Air Act (well head emissions)
- State Oil and Gas Programs
 - Permitting, well design, siting pits/tanks,
- State Environmental Laws
 - groundwater, surface water, air emissions
- Local Ordinances

SWDA UIC Program

- Underground Injection
 - Subsurface emplacement of fluids by well injection
 - Endangers DWS if results or reasonably expected to result in presence of contaminants causing non-compliance or adversely affecting health §300h(d)(2)
- Fracking Exclusion- §300h(d)(1)(B)(ii)
 - Underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing related to oil, gas or geothermal production

Additional Issues

- Leasing Issues
 - Royalties, term, bonus, rental payments, delays, etc
- Operations May Be Larger and Closer Than Thought
- Landowners left with impacted land
- Traffic in towns that never had traffic
- Damage to roads through heavy equipment transport

Fact from Fiction

- Separation of thousands of feet from actual fracking to water supply wells

Questions!

STATEMENT OF ASSUMPTIONS AND LIMITING CONDITIONS: The appraiser's certification in this report is subject to the following assumptions and limiting conditions:

1. The appraiser will not be responsible for matters of a legal nature that affect either the property being appraised or the title to it, except for information that he or she became aware of during the research involved in performing this appraisal. The appraiser assumes that the title is good and marketable and will not render any opinions about the title.
2. The appraiser has provided a sketch in this appraisal report to show the approximate dimensions of the improvements. The sketch is included only to assist the reader in visualizing the property and understanding the appraiser's determination of its size.
3. The appraiser has examined the available flood maps that are provided by the Federal Emergency Management Agency (or other data sources) and has noted in this appraisal report whether any portion of the subject site is located in an identified Special Flood Hazard Area. Because the appraiser is not a surveyor, he or she makes no guarantees, express or implied, regarding this determination.
4. The appraiser will not give testimony or appear in court because he or she made an appraisal of the property in question, unless specific arrangements to do so have been made beforehand, or as otherwise required by law.
5. The appraiser has noted in this appraisal report any adverse conditions (such as needed repairs, deterioration, the presence of hazardous wastes, toxic substances, etc.) observed during the inspection of the subject property or that he or she became aware of during the research involved in performing this appraisal. Unless otherwise stated in this appraisal report, the appraiser has no knowledge of any hidden or unapparent physical deficiencies or adverse conditions of the property (such as, but not limited to, needed repairs, deterioration, the presence of hazardous wastes, toxic substances, adverse environmental conditions, etc.) that would make the property less valuable, and has assumed that there are no such conditions and makes no guarantees or warranties, express or implied. The appraiser will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because the appraiser is not an expert in the field of environmental hazards, this appraisal report must not be considered as an environmental assessment of the property.