

# MIXING OIL AND WATER

## GROUNDWATER CONCERNS WITH OIL & GAS DEVELOPMENT

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# OVERVIEW

THE MINERAL ESTATE IS THE **DOMINANT** ESTATE

- SURFACE OWNERS, I.E. LANDOWNERS, MUST GENERALLY ACCOMMODATE THE MINERAL OWNERS
  - ALLOW AS MUCH USE OF THE SURFACE AS “REASONABLY NECESSARY” – NEGOTIATIONS BECOME CRITICAL
  - GROUNDWATER SUPPLY IS GENERALLY OWNED BY THE SURFACE OWNER – NOT ATTACHED TO THE MINERAL ESTATE

OIL AND GAS PRODUCTION AND EXPLORATION – REQUIRES THE OPERATOR, MINERAL OWNER AND LANDOWNER TO WORK TOGETHER, ONE WAY OR ANOTHER, ESPECIALLY WHEN WATER IS INVOLVED

- THROUGH AGREEMENT OR APPRAISAL, DEPENDING ON THE REGION, THE LAW GENERALLY REQUIRES COOPERATION AMONG THE PARTIES AND THEIR INTERESTS
- LEGAL CHALLENGES AND ISSUES REQUIRE AN UNDERSTANDING OF THE AVAILABLE OPTIONS AND NEEDS OF ALL PARTIES



# SURFACE USE AGREEMENT OR SURFACE DAMAGES ACT

## AGREEMENT OR APPRAISAL

- SURFACE USE AGREEMENT – BEST OPTION FOR THE LANDOWNER. HOWEVER, IT IS SOMETIMES HARDER ON THE OPERATOR, CREATING ADDITIONAL OBLIGATIONS OUTSIDE OF THE OIL AND GAS LEASE
  - ALLOWS THE LANDOWNER TO VALUE AND BARGAIN FOR USE OF THE GROUNDWATER SUPPLY
  - LANDOWNERS MAY ATTEMPT TO NEGOTIATE FOR WATER RECYCLING AND/OR RE-USE – WHICH MAY CREATE ADDITIONAL DEMANDS FOR OPERATORS
- SURFACE DAMAGES ACT IN OKLAHOMA – 52 O.S. §318.2, ET SEQ
  - STATUTORY MECHANISM FOR PROTECTION OF THE SURFACE ESTATE – BUT NOT ALL INCLUSIVE
  - DOES NOT SPECIFICALLY OUTLINE HOW A LANDOWNER'S GROUNDWATER SUPPLY MAY BE COMPENSATED FOR OR PROTECTED – REQUIRES OPERATOR TO DISCLOSE WHETHER USE OF THE WATER IS NECESSARY
  - WHEN OIL AND GAS PRODUCTION IS INVOLVED, THE VALUE OF WATER INCREASES EXPONENTIALLY
  - LANDOWNERS MAY WANT MORE THAN WHAT THE SDA CAN PROVIDE
    - PRE DRILL AND POST DRILL SAMPLES, MONITORING SYSTEMS, TEMPORARY OR PERMANENT RECYCLING OPTIONS, ETC.

# QUICK LOOK AT SURFACE DAMAGES ACTS

## OKLAHOMA SDA

OPERATORS MUST PROVIDE NOTICE TO SURFACE OWNERS PRIOR TO ENTRY ON TO THE LAND

- PARTIES MUST ENTER GOOD FAITH NEGOTIATIONS AND DETERMINE THE FAIR MARKET VALUE OF THE SURFACE IMPACTED BY THE OPERATOR'S USE
- IF AGREEMENT CANNOT BE MET, OPERATOR MUST POST A BOND AND APPRAISERS MUST BE APPOINTED
- JURY TRIAL AND APPEALS ARE PERMITTED

## NEW MEXICO SDA

OPERATORS MUST PROVIDE WRITTEN NOTICE AND PROPOSAL OF A SURFACE USE AGREEMENT 30 DAYS PRIOR TO COMMENCEMENT OF OPERATIONS

- IF NO AGREEMENT IS REACHED, OPERATOR MAY POST BOND AND CONTINUE OPERATIONS
- SURFACE OWNERS MAY APPEAL

## TEXAS HAS NO SURFACE DAMAGES ACT

OPERATORS GENERALLY OWE NO COMPENSATION TO THE LANDOWNER UNLESS ACTIONS ARE UNREASONABLE OR NEGLIGENT, BUT SURFACE OWNERS MAY SEEK COMPENSATION FROM WATER REVENUES THROUGH COMMON LAW REMEDIES

- APPLICATION OF THE ACCOMMODATION DOCTRINE IS RARE AND IS GENERALLY VIEWED IN FAVOR OF OPERATIONS

# ISSUES WITH GROUNDWATER

## SURFACE OWNER CONCERNS

- CONTAMINATION OF GROUNDWATER SUPPLY
- DROUGHT AND DRAINAGE
- ROADS AND TRAFFIC

## OPERATOR CONCERNS

- SALT WATER DISPOSAL
- PROTESTS AT THE OCC
- SEISMIC

## OPTIONS AND PROTECTION

- NEGOTIATE
- KNOW YOUR MINERAL OWNER(S)
- RECYCLING – PERMANENT AND MOBILE



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# SURFACE OWNER CONCERNS

- CONTAMINATION OF THE GROUNDWATER SUPPLY
  - CONCERNS WITH HYDRAULIC FRACTURING
  - THROUGH AGREEMENT, WATER SAMPLES AND ADVANCED MONITORING CAN BE NEGOTIATED
- DROUGHT AND DRAINAGE
  - NATURAL RESOURCE PRODUCTION USES A SIGNIFICANT AMOUNT OF WATER
  - AGRICULTURE AND RANCHING USES COULD POTENTIALLY BE EFFECTED
- ROADS AND TRAFFIC
  - USE OF WATER IN NATURAL RESOURCE PRODUCTION IS GENERALLY HANDLED BY TRUCKS
  - THE TRUCKING OF THE WATER MAY DAMAGE THE SURFACE AND POTENTIAL TRAFFIC CONCERNS



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# OPERATOR CONCERNS

SALT WATER DISPOSAL – WHEN THE WATER IS NO LONGER USED, IT IS COMMONLY INJECTED BACK INTO THE SUBSURFACE

- IN 2015 ALONE, MORE THAN 1 MILLION BARRELS OF WATER PER DAY WAS INJECTED BACK INTO THE GROUND
  - ADDITIONAL COSTS
  - MAN POWER CONSTRAINTS
  - ADDITIONAL NEGOTIATIONS

PROTESTS AT THE OKLAHOMA CORPORATION COMMISSION

- KITCHEN SINK APPROACH – NUISANCE, WASTE, MIGRATION/POLLUTION, ALTERNATIVE OPTIONS

REGULATIONS AND ASSOCIATED INCREASED COSTS

- RECENT INCREASES IN SEISMIC ACTIVITY
  - OCC AND UIC – RIGOROUS PERMITTING AND APPROVAL PROCEDURES FOR DISPOSAL
  - IN RESPONSE, THE OKLAHOMA CORPORATION COMMISSION CREATED A TRAFFIC LIGHT SYSTEM
  - SEISMIC ACTIVITY OF 2.5 MAGNITUDE OR HIGHER WITHIN 1.25 MILES OF FRACING OPERATIONS MUST BE REPORTED
    - 3.0 = OPERATIONS PAUSE FOR AT LEAST SIX HOURS (YELLOW LIGHT)
    - 3.5 = OPERATIONS MUST SUSPEND (RED LIGHT)
- THREAT OF FEDERAL OVERREACH

DISPOSAL CAN BE A CONCERN FOR OPERATIONS AS WELL AS A CONCERN FOR THE LEGAL TRANSACTIONS REQUIRED

- OPERATIONAL HURDLES + TRANSACTIONAL HURDLES
- BUT RECYCLING AND RE-USE ALSO REQUIRES PERMITTING PROCESSES AND CAN ALSO CREATE A DIFFERENT SET OF CONCERNS

# BUT HOW MUCH WATER?

THE AMOUNT OF WATER PER FRAC VARIES:

- LENGTH OF LATERAL
- NUMBER OF STAGES
- FORMATION

GENERALLY MILLIONS OF GALLONS OF WATER PER HORIZONTAL WELL IS REQUIRED

- FRACING ONE WELL IN THE PERMIAN BASIN OF TEXAS REQUIRES APPROXIMATELY 30 MILLION GALLONS OF WATER
  - 1 BARREL = INDUSTRY STANDARD OF 42 GALLONS

BUT IT'S NOT JUST FRACING...PRODUCING OIL ALSO PRODUCES WATER

FOR EVERY ONE BARREL OF OIL PRODUCED, AN ESTIMATED 10 BARRELS OF WATER IS GENERATED ENOUGH TO FILL UP 71,000 OLYMPIC SIZE SWIMMING POOLS



POTENTIAL OPTIONS AND FUTURE  
PROTECTION OF OPERATIONS

WHAT'S HAPPENING  
IN OUR NEIGHBORING  
STATES?

# WATER RIGHTS BY STATES

	OKLAHOMA	TEXAS	NEW MEXICO
LEGAL SYSTEM?	HYBRID (TRANSITION STATE)	HYBRID (TRANSITION STATE)	PRIOR APPROPRIATION (FIRST IN TIME, FIRST IN RIGHT)
OWNER OF GROUNDWATER?	LANDOWNER	LANDOWNER	PUBLIC
PERMIT REQUIRED FOR DOMESTIC USE?	NO	NO	YES
PERMIT REQUIRED FOR OTHER USE?	YES	NO	YES

# LOOKING AT THE NUMBERS – SNAP SHOT OF TEXAS

PERMIAN WELLS – PRODUCTION IS EXPECTED TO REACH 5.4 MILLION BARRELS PER DAY BY 2023

- BETWEEN 2016 AND 2018, TWO COUNTIES IN NEW MEXICO IN THE UPPER DELAWARE BASIN PRODUCED 505 MILLION BARRELS – JANUARY OF THIS YEAR, TEXAS REPORTED STATEWIDE PRODUCTION OF 96.06 MILLION BARRELS OF CRUDE AND 679.55 MILLION CUBIC FEET OF NATURAL GAS
  - PRODUCED WATER REACHED FIVE TIMES THAT AMOUNT

5,500 WELLS ARE PERMITTED FOR DRILLING IN THE PERMIAN – THAT MEANS 2.75 BILLION BARRELS OR 115 BILLION GALLONS OF WATER WILL BE NEEDED FOR COMPLETION

- TEXAS ALSO NEEDS AN ADDITIONAL 11,000 MILES OF PIPELINE

THE PERMIAN IS LOOKING AT A WATER BILL OF \$14 BILLION – MORE THAN 3X WHAT PRODUCERS SPENT ON FRAC SAND LAST YEAR

DISPOSAL CAN COST 50 CENTS TO \$4/BARRELL – DEPENDING ON WHETHER TRUCKS OR PIPELINES ARE USED FOR TRANSPORT

TEXAS IS TURNING WASTEWATER INTO A BUSINESS OF ITS OWN

- WATER HAS NOTOTRIOUSLY BEEN AN AFTERTHOUGHT FOR PRODUCERS – TODAY, IT IS IT'S OWN BUSINESS

# TEXAS – A DIFFERENT BEAST

## HIGH DEMAND, LOW SUPPLY

- HIGH AREAS OF DROUGHT - OBTAINING RIGHTS TO THE WATER SUPPLY CAN CREATE LEGAL HURDLES AND OPERATIONAL CHALLENGES
  - WATER CAN NOW BE BARGAINED FOR AS A COMMODITY
- EVEN WHEN CONTRACTS ARE IN PLACE, THE SUPPLY MAY NOT BE CAPABLE OF MEETING THE DEMAND – HIGHLY COMPETITIVE MARKET

## LIMITED REGULATIONS

- TEXAS RELIES HEAVILY ON COMMON LAW PRINCIPLES AND TRADITIONAL LEGAL DOCTRINES - LIMITED AMOUNT OF REGULATIONS IN PLACE FOR THE USE AND SALE OF THE WATER SUPPLY
- THIS CREATES A COMPETITIVE ENVIRONMENT
- RECENT CONFLICTS WITH NEW MEXICO REVOLVE AROUND THE RULE OF CAPTURE AND HAVE ADDED LEGAL TENSIONS

## SUBSIDENCE

- PARTS OF THE DELAWARE BASIN HAVE COLLAPSED AND SINK HOLES REMAIN – PERCEIVED TO BE CAUSED BY RAPID GROUNDWATER REMOVAL
- RECLAMATION AND REMEDIATION DOES NOT APPEAR TO BE A PRIORITY AT THIS TIME

TEXAS NATURAL RESOURCES CODE, CHAPTER 122.002 STATUTE WAS INTENDED TO ENCOURAGE RECYCLING BUT MAY CONFLICT WITH THE COMMON LAW, AND ALSO MAY HAVE ADVERSE CONSEQUENCES TO LANDOWNERS

TEXAS LEGISLATURE ESTABLISHED THAT WHEN A PERSON TAKES POSSESSION OF PRODUCED WATER TO TREAT IT FOR A SUBSEQUENT BENEFICIAL USE, THE PRODUCED WATER BECOMES THAT PERSON'S PROPERTY

- THIS CONFLICTS WITH THE RULE THAT THE PRODUCED WATER IS OWNED AND CONTROLLED BY THE SURFACE OWNER
  - POSSESSION + SUBSEQUENT BENEFICIAL USE = POSSESSOR'S PROPERTY TO TRANSFER
  - THE STATUTE IS SILENT AS TO THE APPLICATION WHERE THE TRANSFER CREATES REVENUES AND UNTIL CLARITY IS GAINED, AND THE PLAN IS TO SELL THE WATER, OPERATORS SHOULD CONTINUE TO PRIVATELY CONTRACT UNDER THE COMMON LAW AND NOT RELY SOLELY ON THIS STATUTE

TEXAS LEGISLATURE IS LOOKING AT NEW LAWS FOR GROUNDWATER AND BRACKISH WATER THIS YEAR – STAY TUNED!

# NEW MEXICO

TEXAS V. NEW MEXICO (138 S.C.T. 954) – WATER ISSUES IN THIS CASE REMAIN UNRESOLVED AND WE ARE 5 YEARS IN

- CASE REVOLVES AROUND THE RIO GRANDE COMPACT WITH COLORADO, NEW MEXICO AND TEXAS
- COLORADO DELIVERS WATER TO NEW MEXICO WHO DELIVER WATER DOWN TO TEXAS
  - TEXAS FILED SUIT CLAIMING DELIVERY OF WATER WAS SHORT – NEW MEXICO COUNTERED DELIVERY WAS MET
  - UNITED STATES ALLOWED TO INTERVENE ON THE SIDE OF TEXAS BUT COURT HAS NOT RULED ON THE WATER OBLIGATIONS
    - STAY TUNED...

NEW MEXICO AND THE EPA – HAS NEW MEXICO FOUND AN ANSWER?

- IN SEPTEMBER, NEW MEXICO STATE OFFICIALS ENTERED AN AGREEMENT WITH THE EPA TO UNDERSAND AND BETTER RECYCLE OILFIELD WATER IN THE STATE
  - REGULATORS, SCIENTISTS, AND LAWMAKERS
  - PLAN TO HELP NEW MEXICO OIL AND GAS INDUSTRY THRIVE + CUT BACK ON FRESHWATER USE
  - TEST-PILOT PROGRAM DRIVEN BY AN UNRELENTLESS STATE-WIDE DROUGHT
    - STAY TUNED...

# WATER RECYCLING AND RE-USE: AN OVERVIEW

## RE-USE V. RECYCLING

- RE-USE – TAKING THE WATER AND BRINGING IT TO A QUALITY THAT IS APPROPRIATE FOR ADDITIONAL OPERATIONS
  - NON-POTABLE WATER
  - GREAT FOR USING THE WATER FROM ONE WELL SITE TO THE NEXT
- RECYCLING – TAKING THE WATER AND BRINGING IT TO A QUALITY THAT IS APPROPRIATE FOR CONSUMPTION
  - POTABLE WATER
  - SOME ADVANCED STAGES CAN MAKE WATER SAFE FOR VEGETATION, LIVESTOCK, ETC.

WATER RE-USE AND WATER RECYCLING ARE AN OPTIONS FOR OPERATORS WHEN THEY NEED TO MAKE THE MOST OF THE WATER SUPPLY THEY HAVE BEEN GIVEN

- POTENTIAL FOR LONG TERM COST SAVINGS
- POTENTIAL FOR LONG TERM PROTECTION OF THE GROUNDWATER SUPPLY

# WATER RECYCLING AND RE-USE BASICS

TRADITIONALLY, THREE KEY INGREDIENTS HAVE BEEN NEEDED FOR RECYCLING AND RE-USE:

- 1) LARGE BLOCKS OF DRILLABLE ACREAGE
- 2) FRAC CHEMISTS THAT UNDERSTAND RE-USE
- 3) INFRASTRUCTURE SUPPORT





## RECYCLING IN THE PRESENT

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### PERMANENT RECYCLING

CONNECTING PIPELINES TO  
RECYCLING INFRASTRUCTURES IS  
PENNIES ON THE BARREL  
COMPARED TO TRUCKING WATER

- FASKEN OIL & RANCH
  - TEXAS – LANDOWNER CREATED/OPERATED. ON-SITE FACILITY RECYCLES APPROX. 330,000 GALLONS PER DAY
- EAGLEFORD SHALE
  - TEXAS – MORE ESTABLISHED INFRASTRUCTURES = MORE COMMON TO SEE RECYCLING
- NEWFIELD EXPLORATION
  - OKLAHOMA – PERMANENT RECYCLING FACILITY; RECENT LEGAL HURDLES



SOME COMPANIES ARE TAKING  
THE THREE "KEY INGREDIENTS"  
AND MAKING IT WORK IN A  
MOBILE CAPACITY!

# TEMPORARY RECYCLING

GROWING IN NUMBERS BUT LESS EXPOSURE

- COST EFFICIENT OPTION FOR OPERATORS
  - TRUCKING WATER IS NOT
    - 100 BARRELS PER TRUCK – HIGH VOLUME OF TRAFFIC
    - APPROX. \$2.00 PER BARREL – HIGH COSTS
- NO PERMANENT DAMAGE TO THE SURFACE
  - LOWER COST FOR OPERATORS THAN PERMANENT INFRASTRUCTURE + EASIER RECLAMATION
  - APPROX. 12,000 BARRELS PER DAY
  - MAY BE BEST OPTION WHEN "KEY INGREDIENTS" CANNOT BE MET



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QUESTIONS?

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