



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



# A Closer Look at Water Treatment Options

Department of Environmental Protection

September 25, 2013

# ➤ Areas of Environmental Protection

- Site Development
- Water Sources
- Wastewater Management
- Water Quality Protection
- Wetland and Waterway Protection
- Dams and Impoundments
- Well Construction and Completion
- Waste Management
- Air Quality

# Produced Fluid Treatment Options

- Processing and Beneficial Use of Liquid Waste
- Surface Discharge
- Disposal of residuals
  - Injection Well
  - Landfill

# Produced Fluid – Beneficial Use

- Processing and Beneficial Use of Liquid Waste
  - WMGR123
    - authorizes the processing and beneficial use of processed liquid wastes generated on oil and gas well sites and associated infrastructure.
    - identifies other waters eligible including contaminated water from well sites, transmission line construction operations and facilities authorized to operate.
    - identifies specific water quality criteria that, if met, will not require the processed water to be stored in impoundments, tanks or containers that meet the residual waste requirements prior to future use as make up water for hydraulic fracturing or other oil and gas well development activities.

# ➤ Produced Fluid – Surface Discharge

- Surface Discharge- limitations can be water quality based (reasonable potential analysis), and/or technology based.
  - NPDES permit as required by the CSL and CWA and 25 Pa Code Chapter 92a and 40 CFR Part 122 regulations.
  - Water Quality Management as required by the CSL and 25 Pa Code Chapter 91 regulations.

# ▶ Produced Fluid – Surface Discharge

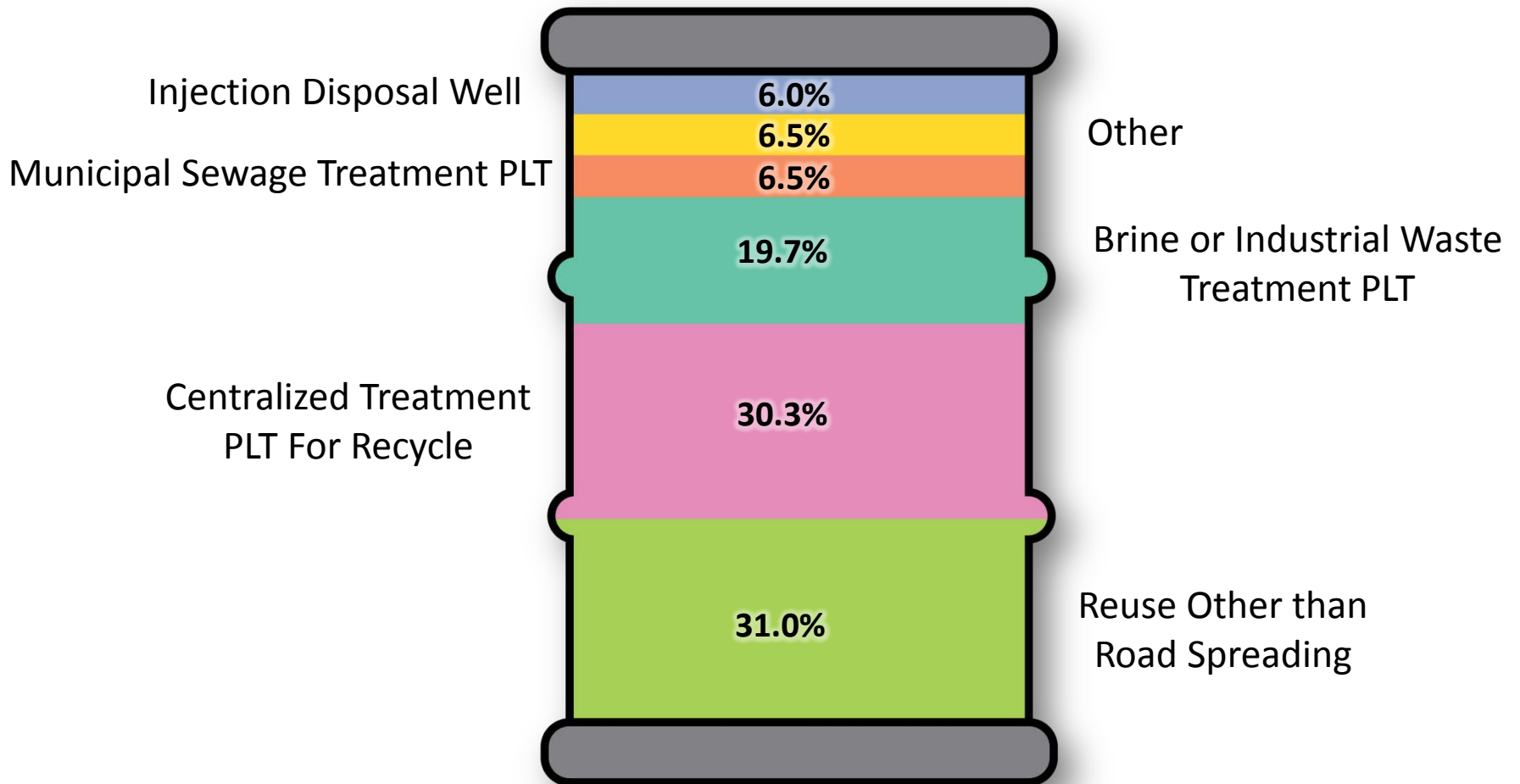
- TDS Effluent Standards for Natural Gas Sector:
  - 500 mg/l of total dissolved solids as a monthly average.
  - 250 mg/l of total chlorides as a monthly average.
  - 10 mg/l of total barium as a monthly average.
  - 10 mg/l of total strontium as a monthly average.

# ➤ Produced Fluid – Disposal of Residuals

- Generators of the waste need to keep records of the characterized waste (i.e. residual or hazardous) and where the waste went.
- Receivers of the waste are regulated through state laws and regulations.
  - Municipal and Residual Waste Transportation Authorization
  - Hazardous Waste Transporter License
  - Landfill Permit

# Unconventional Shale Well

## 2008 – 2011 Waste Summary

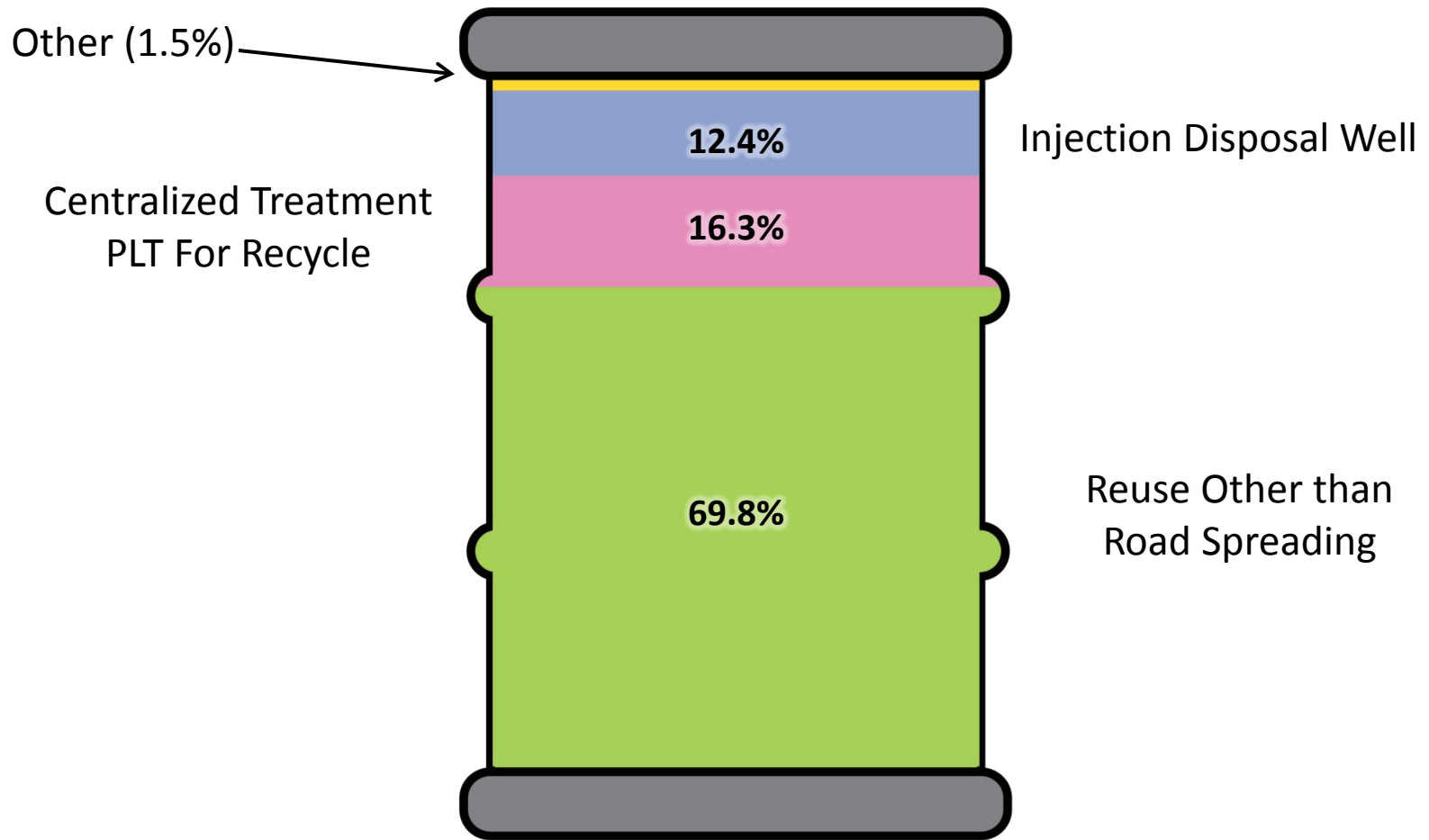


Total Waste: 44,347,869



# Unconventional Shale Well

## 2012 Waste Summary



Total Waste: 29,124,485

# Unconventional Shale Well

## GP-123 Oil and Gas Wastewater Treatment Totals for 2012

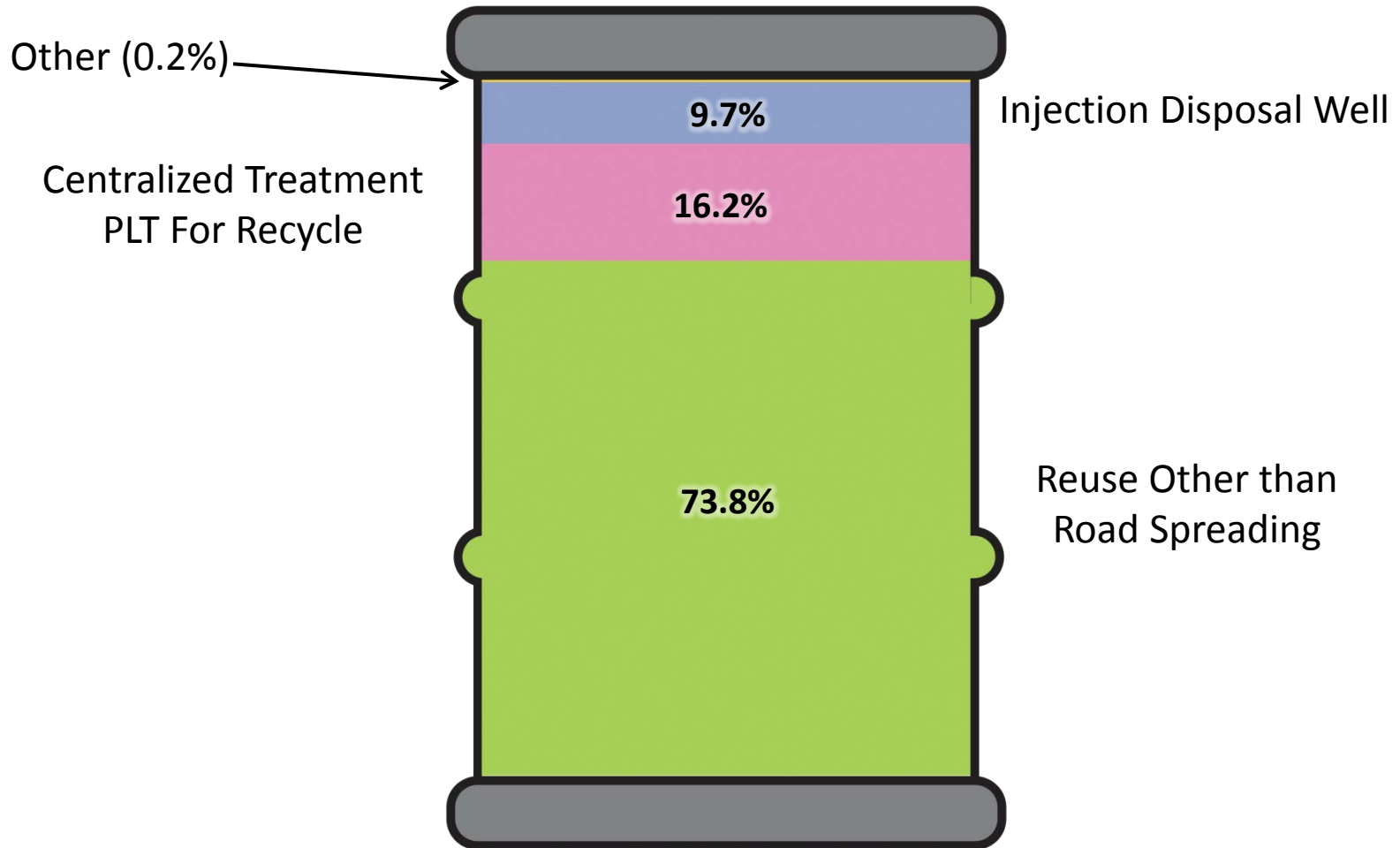
Waste Type delivered to GP-123 Facilities	Total Bbl Treated
Drilling Fluid Waste	1,065,371.5
Frac Fluid Waste	1,430,492.6
Production Fluid Waste	2,236,957.9
Service Fluid Waste	691.3
<b>TOTAL</b>	<b>4,733,513.13</b>

The information was taken from PA DEP Oil & Gas Reporting Website:

<https://www.paoilandgasreporting.state.pa.us/publicreports/Modules/DataExports/DataExports.aspx>

# Unconventional Shale Well

## 2013 (Jan – June) Waste Summary

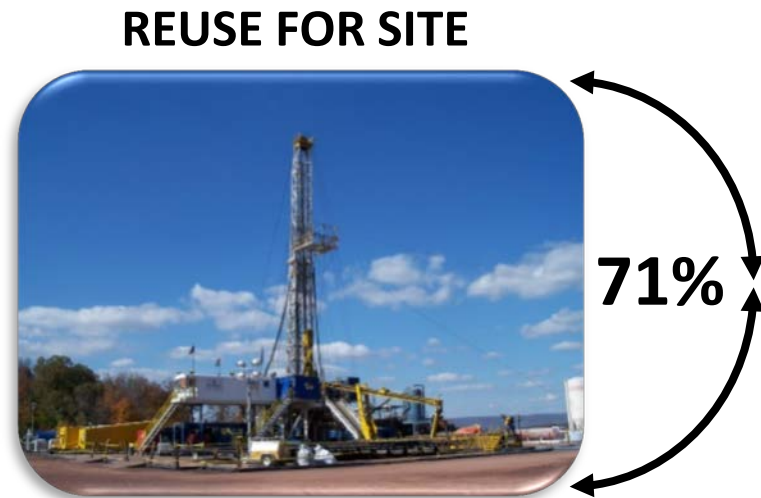
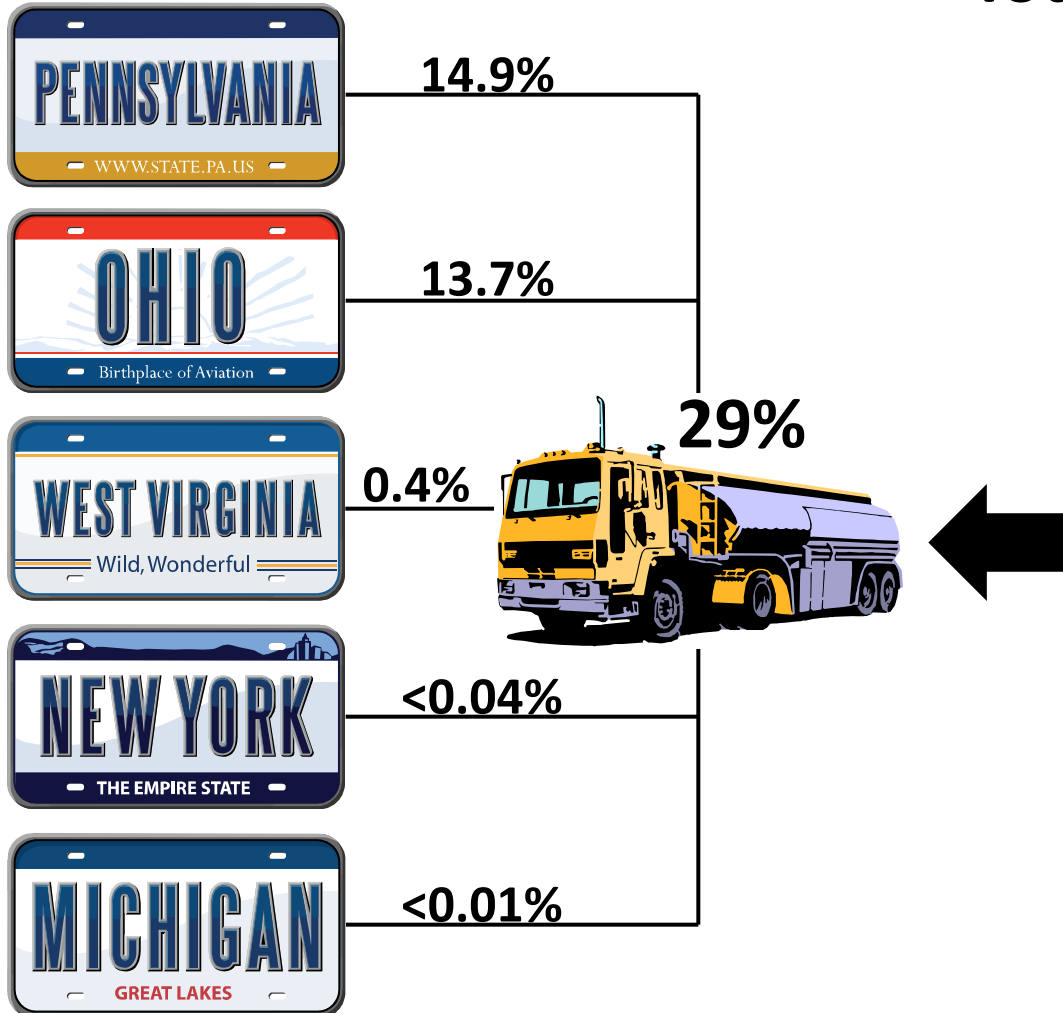


Total Waste: 14,224,718

# Wastewater Distribution 2012

## Offsite Treatment or Disposal

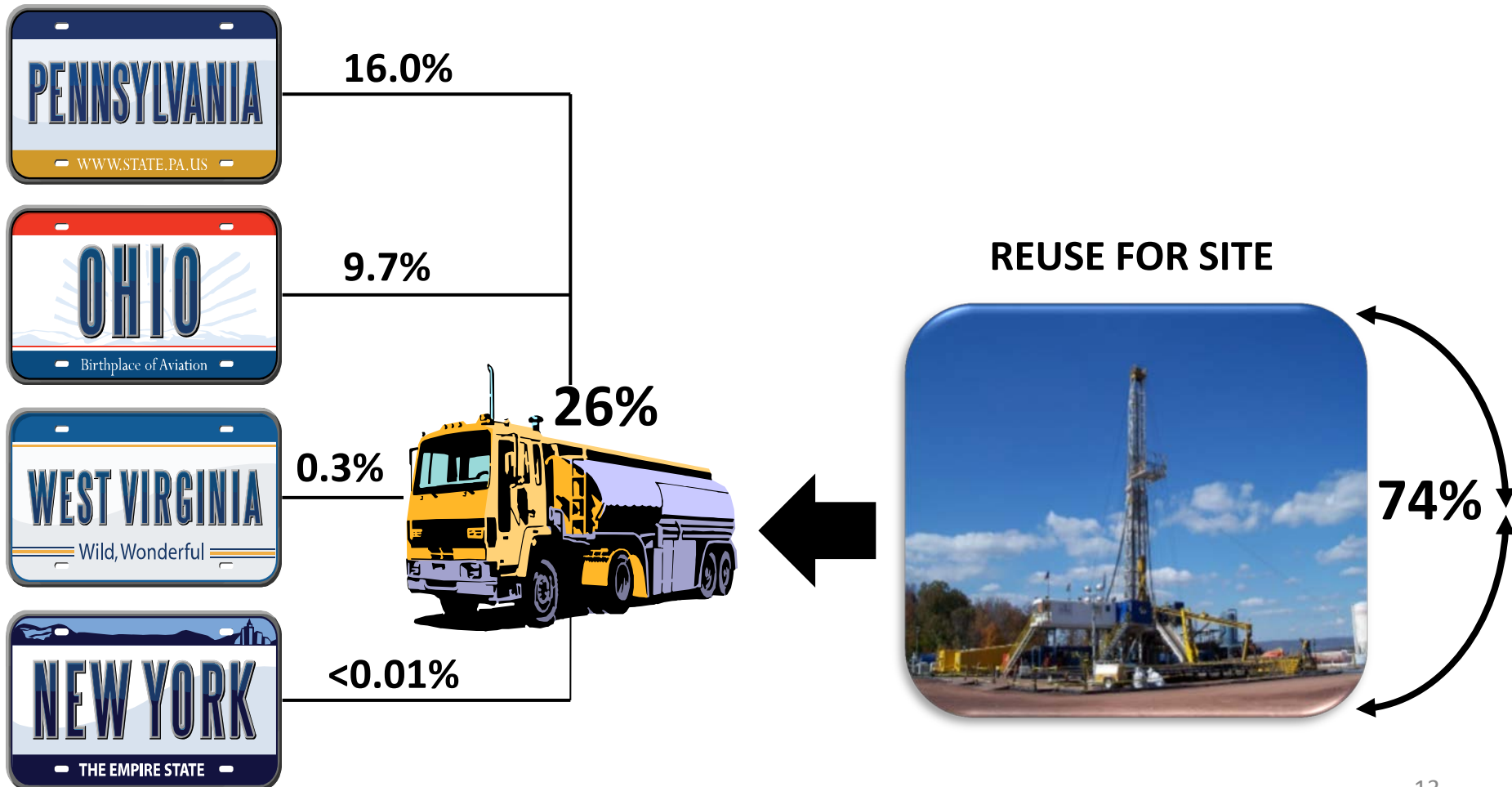
Total: 29,124,485



# Wastewater Distribution 2013 (Jan-Jun)

## Offsite Treatment or Disposal

Total: 14,224,718



# Residual Disposal 2012

- Approximately 1,300,000 tons of oil and gas waste derived from various well activities. Wastes such as drill cuttings and well site sludges were delivered to landfills across the Commonwealth of Pennsylvania.

# TENORM Study

- In early 2013, DEP began a study to analyze the radioactivity levels in flowback waters and treatment solids and drill cuttings.
- The study also is examining issues with:
  - transportation, storage and disposal of drilling wastes
  - levels of radon in natural gas
  - potential exposure to workers and the public.
- Study to be completed in 2014.

# Contact Information

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