Reaching New Heights

Tools and Data for air quality planning in the Intermountain West

Intermountain West Data Warehouse

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Intermountain West Data Warehouse
- Presentation Overview

- Why a Data Warehouse?
- Highlights
  - Effective Tools for Achieving Clean Air
  - Gold Standard Data
  - Recipe for Success
  - Who Benefits?
- How Does it Work?
- Status of Current & Future Efforts
- Opportunities for Involvement

Why a Data Warehouse?

- Cost-Effective
- High Quality
- Convenient
- Comprehensive
- Widely-Supported

Effective Tools for Achieving Clean Air

Future clean air depends on making smart development and regulation decisions today.

Effective Air Quality Planning Tools

The Intermountain West Data Warehouse provides high quality tools for understanding and assessing the effects of current and future energy development and associated emissions on air quality.

- Data and Results for air quality planning:
  - Emission inventories, both current & future
  - Modeling (e.g., meteorology, emissions, air quality)
  - Monitoring networks and data access

- Data Warehouse tools will include:
  - Visualization of the potential air quality impacts (spatially and temporally)
  - Assessment of emissions trends and individual source contributions
  - Evaluation of air quality models

Recognized Value

The Intermountain West Data Warehouse has been available for less than a year and is already being used in several air quality planning projects.

- Example Air Quality Projects:
  - Wyoming NEPA air quality analyses:
    - Converse County EIS
    - Greater Crossbow EIS
    - Hiawatha EIS
  - Colorado Ozone State Implementation Plan
  - New Mexico Ozone Studies

History of Collaborations

“Western Energy Alliance values the partnership with WRAP working on air emissions inventories and modeling over many years. WRAP enables the oil and natural gas industry to work more effectively on air quality issues. By combining technical expertise with the ability to bring all stakeholders together, WRAP delivers accurate, credible information to inform regulatory policy across the West.”

Gold Standard Data

The Intermountain West Data Warehouse contains the most robust air quality data and modeling resources on a regional scale.

What makes it so noteworthy?

The Data Warehouse provides a comprehensive air quality database that is endorsed by multiple regulatory and authorizing agencies.

- Quality of Data Warehouse Products:
  - Developed, reviewed, continuously tested by leading air scientists and cooperating agencies.
  - Open source and well-documented methodology and analyses.
- Monitoring Products:
  - Regulatory-grade monitors to establish and track baseline conditions.

What makes it so noteworthy?

The Data Warehouse provides a comprehensive air quality database that is endorsed by multiple regulatory and authorizing agencies.

- Emissions Data:
  - Most current and comprehensive representation of pollutant emissions and source sectors.
  - Focus on intermountain west and tailored toward optimal characterization of regional emissions and oil and gas emissions.
- Modeling Results:
  - Uses latest, most reliable, and approved data and model platforms.
  - Predicts air quality indicators and trends critical to planning: Ozone, Visibility, and Deposition
- Monitoring Data
  - Track air quality across rural intermountain West
  - Evaluate modeling results to improve emissions estimates

Emphasis on Energy Development Projects

Industry support for the Data Warehouse and regional air quality modeling products..

"BP America Production Company has supported the development and use of air emissions inventory data in modeling analyses by WRAP in various projects and studies. The warehousing of those data and modeling results have assisted BP and the rest of the oil and natural gas industry by providing our best available estimates of emissions and air quality results. BP supports the use of the Intermountain West Data Warehouse and Western Air Quality Study modeling to accomplish technical inputs to NEPA air quality studies and other air quality planning efforts across the West."

Recipe for Success

Trusted resources from the Intermountain West Data Warehouse reduce the uncertainty, time, and expense of starting an air quality analysis from scratch.

Trusted and High Quality Data Products

The Data Warehouse provides a centralized platform to store and share data, reducing the uncertainty, redundancy, and resources needed for air quality project analyses.

- Increased level of confidence in air quality analyses as a result of:
  - Data products reviewed and approved by project cooperators.
  - Agreement among regulatory and authorizing agencies on air quality analysis techniques.
  - Consistency among data formats, data quality, data updates, data collection, and analytical assumptions.
  - Streamlining a process for air quality analyses.

Save TIME and MONEY

The Data Warehouse consolidates data, resources, and expertise to produce more efficient and expeditious analyses for air quality planning projects.

- Time-savings for future projects that utilize the Data Warehouse:

  1 to 2 years per project…

- Cost-savings for projects that utilize the Data Warehouse:

  $300,000 to $800,000 per project…

- Projects would NOT need to generate:
  - Model Input Data for Baseline Period
  - No-Action Scenario for Future Model Simulation
  - Model Performance Evaluations

Who Benefits?

You may be surprised at the wide range of groups positively affected by the Intermountain West Data Warehouse.

Beneficiaries:

1. **Air quality regulators** – Better information for healthy air.
2. **Land managers** – Better understanding of potential effects of projects.
3. **Oil and gas companies** – Better information for air quality analysis will save money!
4. **Scientists** – High quality basis for research in the region.
5. **Outdoor Recreation Enthusiasts** – Clearer views and easier breathing from more effective mitigation of air pollution.
6. **Ozone sensitive plants** – More effective protection of vegetation resources through better air quality analyses.
7. **Decision-makers** – Better science-based information.
8. **Tax payers** – Business of government is more efficient.

Intermountain West Data Warehouse
- How does it work?

- Hosts
  - Monitoring data
  - Emissions data
  - Modeling results
  - Data visualization tools
- Delivers, tracks, and receives data from various modeling studies.
- Conducts routine baseline simulations and model performance evaluations.
- Website address: http://views.cira.colostate.edu/tsdw/

Intermountain West Data Warehouse

Express your interest by getting involved…

- Share Information and Data
- Provide Feedback
- Sponsorship
- Track the work by IWDW by signing up for E-Mail listserv

Intermountain West Data Warehouse
- *Cooperating Agencies*

- *and our partners at the Western States Air Resources Council (WESTAR) / Western Regional Air Partnership (WRAP)*

  and the
  Cooperative Institute for Research in the Atmosphere based at Colorado State University.

SAN JUAN BASIN OIL & GAS EMISSION INVENTORY: STATUS UPDATE

San Juan Basin - Emission Inventory

- Provide regulatory-grade inventories of upstream oil & gas (exploration and production) emissions, including methane
  - Well-documented and comprehensive
  - Develop current data by building a 2014 “base year” with projections to future years
  - Multiple data sources studied through an integrated analysis
    1) well-drilling and production information from a high-quality commercial dataset;
    2) permitted emissions from state, tribal, and federal databases; and
    3) operator and producer activity surveys

Overview

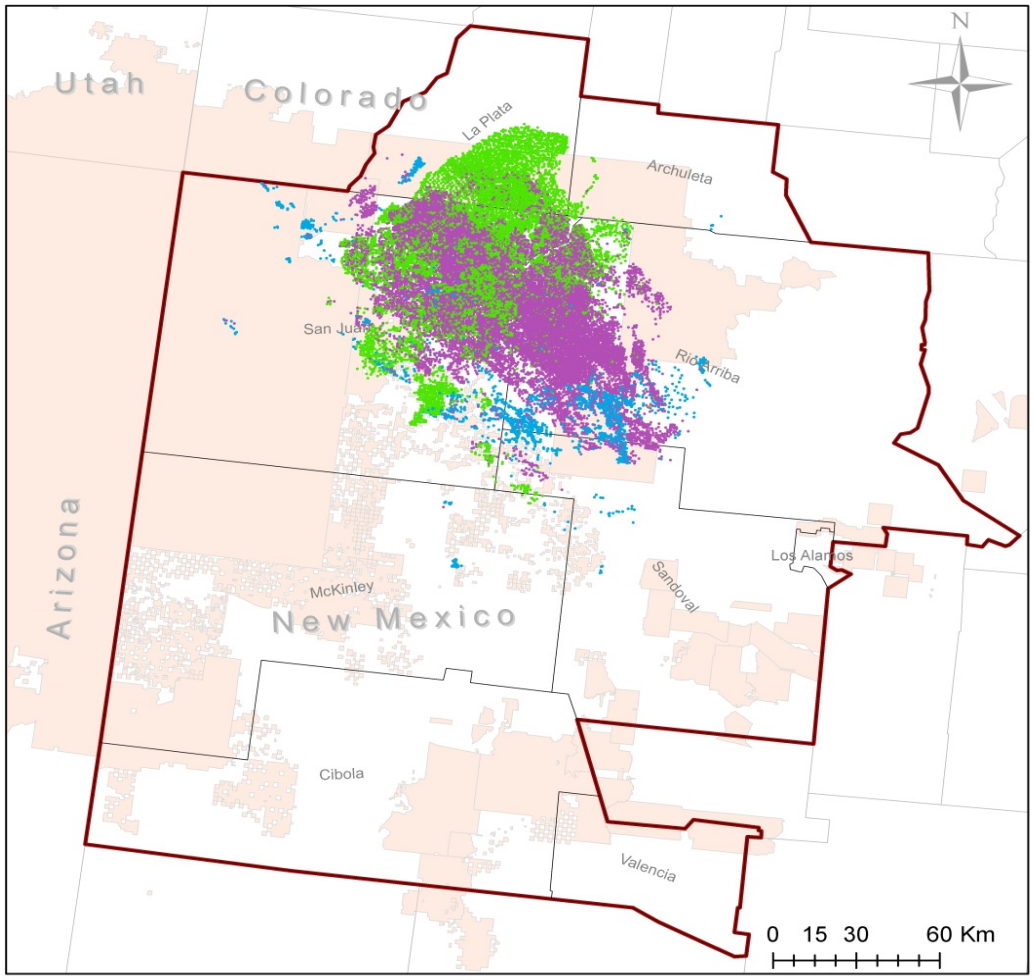
- Well location and production data
- Midstream permit and registration data
- Structure and completion of surveys

Greater San Juan Basin 2014 O&G Activity Data

Activity Metric		Basin-wide Totals	Percent by State	
			Colorado	New Mexico
Active Well Count	Gas Wells	16,047	5%	95%
	Oil Wells	1,725	5%	95%
	CBM Wells	7,098	32%	68%
	Total	**24,870**	**13%**	**87%**
Liquid Hydrocarbon Production (Mbbl/yr)	Primary Oil	4,413	1%	99%
	Condensate	1,653	<1%	>99%
	Total	**6,066**	**1%**	**99%**
Gas Production (BCF/yr)	Natural Gas	427	6%	94%
	Associated Gas	24	<1%	>99%
	Coalbed Methane	610	53%	47%
	Total	**1,060**	**33%**	**67%**

Greater San Juan Basin

Wells by Well Type



Legend

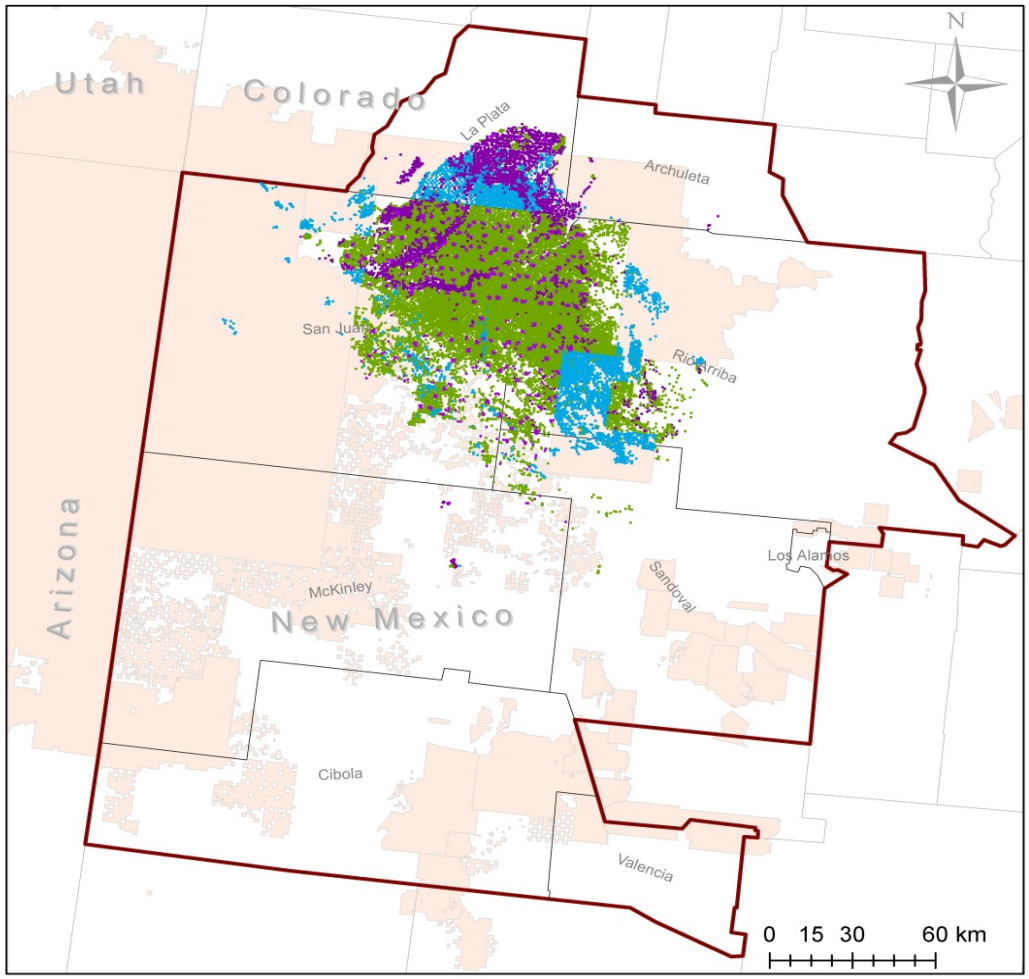
- Greater San Juan Basin (consistent with GHGRP Subpart W definition)
- Tribal Lands

Well Type

- Oil
- CBM
- Gas

Wells by Mineral Ownership

Greater San Juan Basin



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Mineral Ownership (2014 Wells)

- Private/State
- Tribal
- Federal

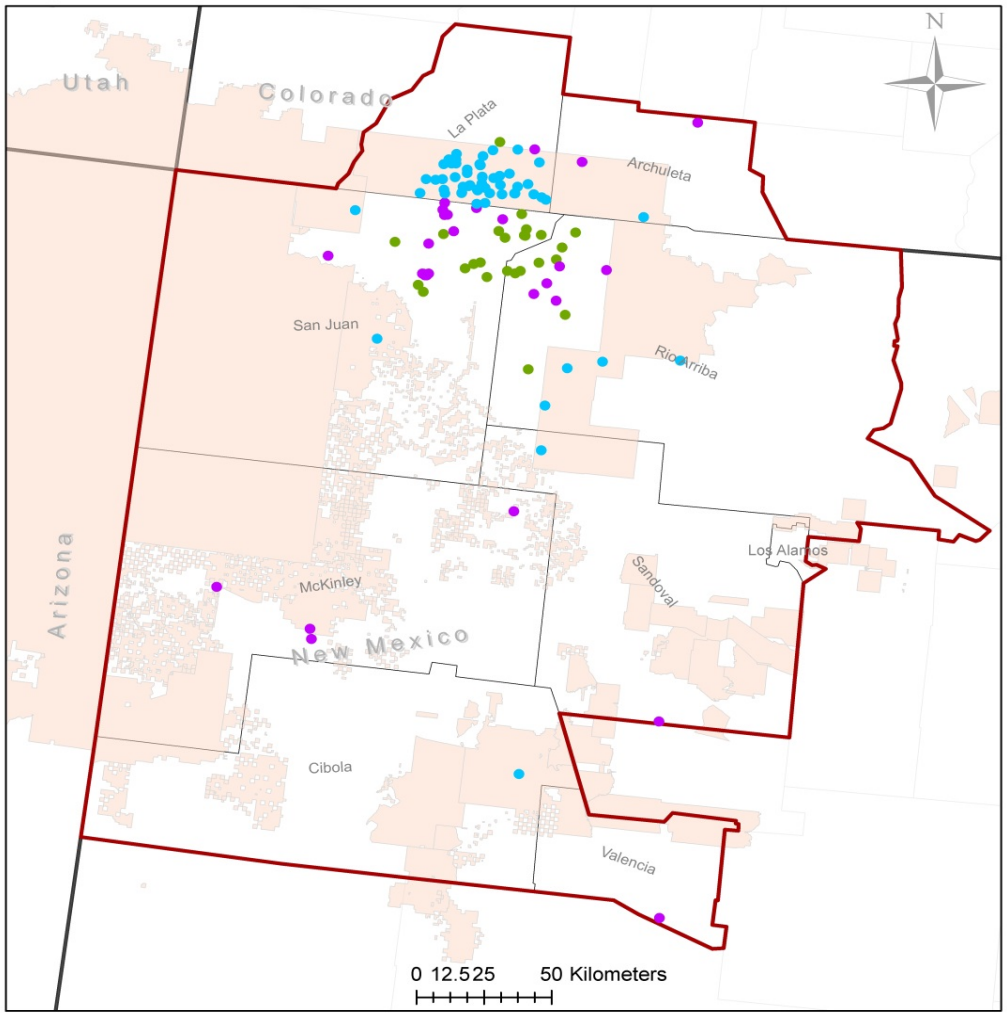
Midstream Permitted Emission Summary

By Emission Data Source					
Emission Data Source	**NOx**	**VOC**	**CO**	**PM10**	**SO2**
Colorado Dept. Public Health	89	26	88	2	0
New Mexico Environment Dept.	7,651	3,000	5,114	270	186
EPA Region 8 (Tribal MNSR)	609	449	803	11	1
EPA Region 6 (Title V/Part 71)	618	377	257	4	0
EPA Region 8 (Title V/Part 71)	249	126	0	1	0
Total	**9,216**	**3,979**	**6,262**	**287**	**187**

By Mineral Ownership					
Mineral Ownership	**NOx**	**VOC**	**CO**	**PM10**	**SO2**
Federal	2,572	1,806	2,907	62	19
Private/State Fee	2,927	1,021	1,831	129	157
Tribal	3,717	1,152	1,524	96	11
Total	**9,216**	**3,979**	**6,262**	**287**	**187**

Map of midstream facilities by Ownership

Greater San Juan Basin



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Ownership

- Federal
- Private/State
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Survey Overview

- Timeline
  - Draft survey sent out for comment in September 3, 2015
  - Final survey sent to operators on September 19, 2015
  - Request completion of survey by mid-November
- Survey leverages data collected/submitted as part of EPA national Subpart W Greenhouse Gas Reporting Program
- Survey includes request for the following
  - GHGRP Subpart W Submission by well type
  - GHGRP Subpart W Supplemental Information
  - Supporting Data (lab analyses, model input/output)
  - Survey Data (for source categories where Subpart W data is not sufficient/available to estimate criteria pollutant emissions)

Questions ?

The *New York Times* referred to the passage of the Clean Air Act Amendments of 1990 as the single most distinguished policy achievement of the Bush administration. The original Clean Air Act had been passed in 1970 under Richard Nixon and renewed in 1977.

George Bush Presidential Library and Museum

Bush signs the Clean Air Act Amendments into law, November 15, 1990.