

Colorado Oil and Gas Conservation Commission

Staff Testimony for
Setback Rulemaking
December 11, 2012



OIL & GAS CONSERVATION COMMISSION

Outline of Presentation

- Setback Stakeholder Meetings – Thom Kerr
- Concept of Rule Requirements
 - Information – Thom Kerr
 - Mitigation – Stuart Ellsworth
 - Setback Discussion – Greg Deranleau
- Draft Rules – Thom Kerr
- Current Discussion – Matt Lepore



Stakeholder Meetings

- Commission initiated in January 2012
- 11 Meetings held from February – September
- Timeout for the Governor's Taskforce
- Open meetings all may participate
- Web pages created to track information
- Ended with staff recommendation for
Rulemaking



Participants and Stakeholders

- Over 120 individuals participated, represented the following stakeholder groups:
 - Oil and gas operators
 - Environmental & Conservation Groups
 - Developers and home builders
 - Agricultural interests
 - Local governments
 - State agencies (CDPHE, DOLA)
 - Public



Stakeholder Presentations

- COGCC Staff
- Industry
- Homebuilders
- CDPHE
- Local Governments
- Agricultural Community
- Public
- Environmental and Conservation Groups



Issues Identified

- Traffic
- Noise
- Local Government Setbacks
- Other Regulatory Rules
- Health Impacts
- Air Impacts
- Safety and Fire
- Federal Lands
- Social impacts
- Multiwell Pads
- Surface Owner Values
- Mineral Owner Estate
- Land Use Planning
- Legal Constraints
- Odors
- Lights
- Pits



Issues Beyond the Group's Scope

- Federal Lands
- Local Government Setbacks
- Land Use Planning
- Other Regulatory Rules
- Surface Owner Values
- Mineral Owner Estate
- Legal Constraints



Issues That Need Further Study

- Health Impacts
- Social impacts



Issues That Can Addressed

- Multiwell Pads
- Safety and Fire
- Legal Constraints
- Traffic
- Noise
- Air Impacts
- Odors
- Lights
- Pits



Straw Man Concept

3 Main Issues to Address in Rules

- Information to Adjacent Residents
- Mitigation of Nuisance Issues
- Setbacks for Wells and Equipment



Information Outreach

- Community Meetings Conducted by Industry has reduced the complaints to COGCC
- COGCC Staff meets with homeowners and explains what is going on
- COGCC Staff has participated in scores of meeting over the last few years
- The Governor's Taskforce Recommendation was for greater information outreach

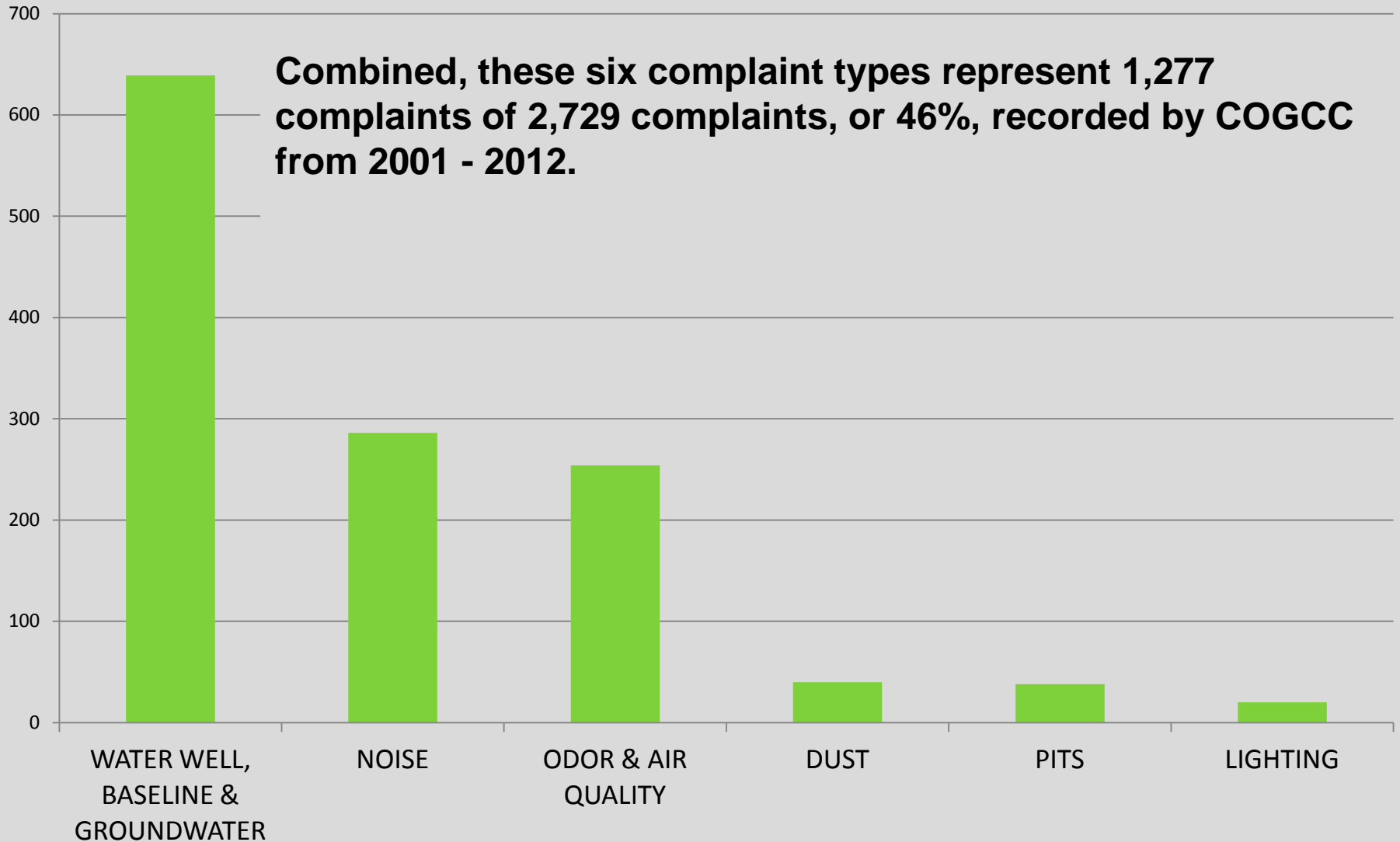


MITIGATION MEASURES



Complaints 2001 - 2012

Combined, these six complaint types represent 1,277 complaints of 2,729 complaints, or 46%, recorded by COGCC from 2001 - 2012.



NOISE ABATEMENT

Statewide noise abatement standards were established in 2006 with Rule 802.

These standards are to be applied to a producing Oil and Gas Location.

<u>ZONE</u>	<u>7:00 am to 7:00 pm</u>	<u>7:00 pm to 7:00 am</u>
Residential/Agricultural/Rural	55 dB (A)	50 dB (A)
Commercial	60 dB (A)	55 dB (A)
Light industrial	70 dB (A)	65 dB (A)
Industrial	80 dB (A)	75 dB (A)

During drilling rig, completion rig, workover rig, or stimulation is subject to the maximum permissible noise levels for industrial zones.

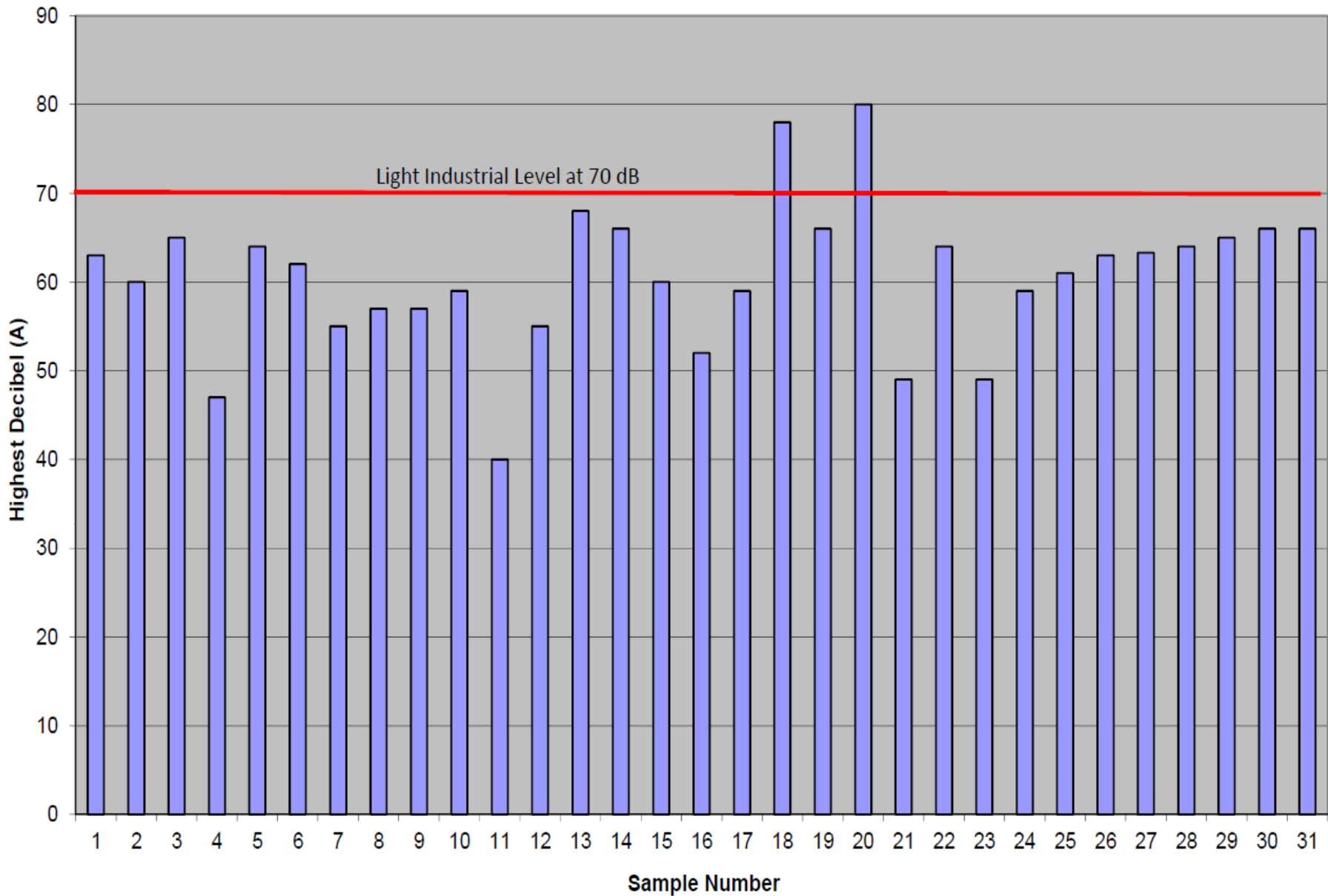


Environmental Noise

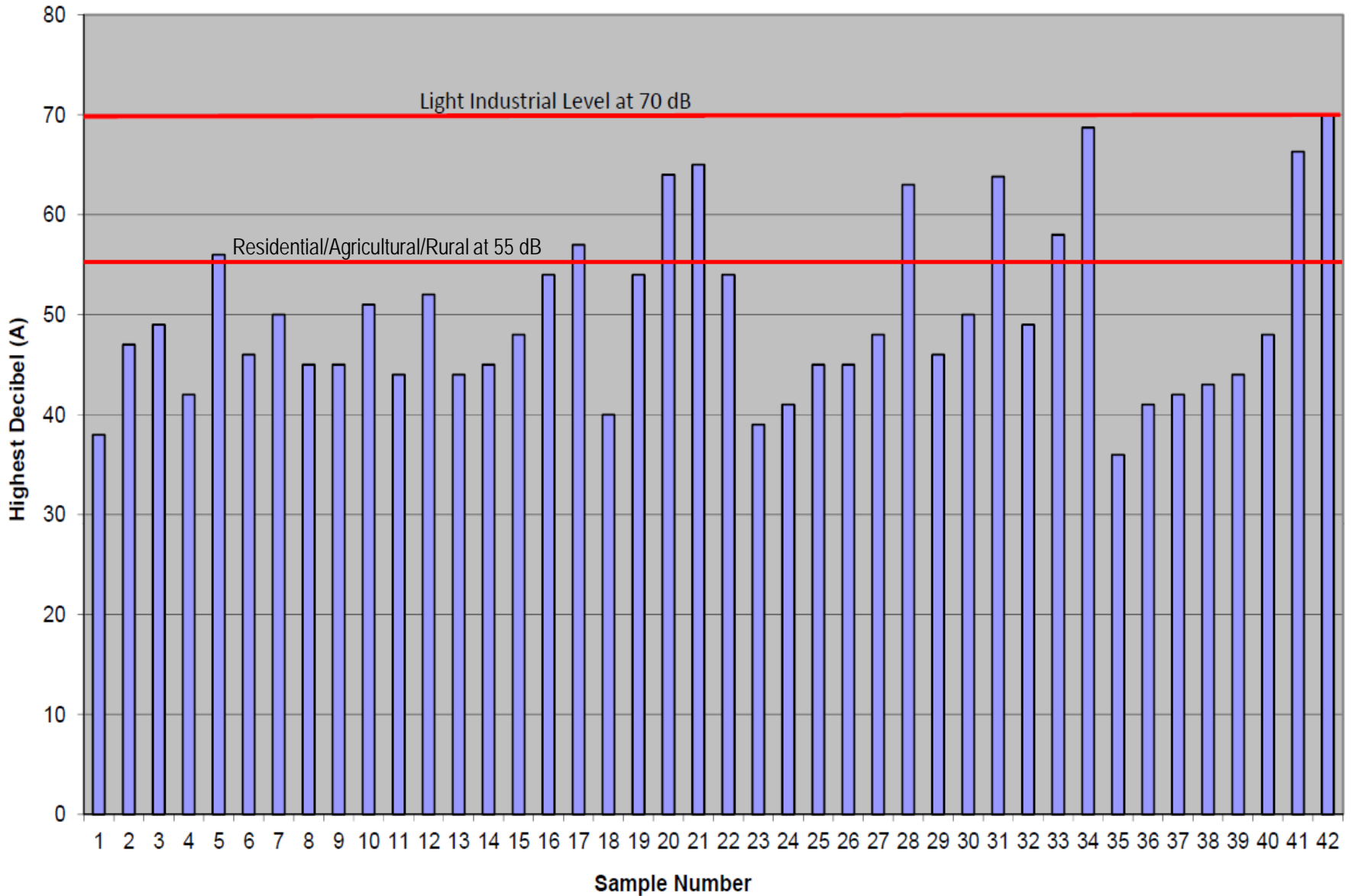
Weakest sound heard (Threshold of hearing)	0dB
Rustling leaves in the distance	10dB
Background in TV studio	20dB
Quiet bedroom at night	30dB
Quiet Library at 6'	40dB
Average home	50dB
Normal conversation at 3'	60dB
Vacuum cleaner, distance 3'	70dB
Telephone dial tone or busy road at 15'	80dB
City Traffic (inside car)	85dB
Train whistle at 500', Truck Traffic	90dB
Jackhammer at 50'	95dB
Subway train at 200'	95dB
<i>Level at which sustained exposure may result in hearing loss</i>	90 - 95dB
Hand Drill	98dB
Snowmobile, Motorcycle	100dB
Power mower at 3'	107dB
Power saw at 3'	110dB
Sandblasting, Loud Rock Concert	115dB
Pneumatic riveter at 4'	125dB
Threshold of pain	125dB
<i>Even short term exposure can cause permanent damage - Loudest recommended exposure <u>WITH</u> hearing protection</i>	140dB
Jet engine at 100'	140dB
12 Gauge Shotgun Blast	165dB
Loudest sound possible	194dB

Residential/Agricultural/Rural – 55 dB
 Commercial – 60 dB
 Light Industrial – 70 dB
 Industrial – 80 dB

Highest Decibel Reading - Drilling Rig at 350 feet (Field Measurements for 2006 Noise Rulemaking)



Highest Decibel Reading - Ajax at 350 feet (Field Measurements for 2006 Noise Rulemaking)





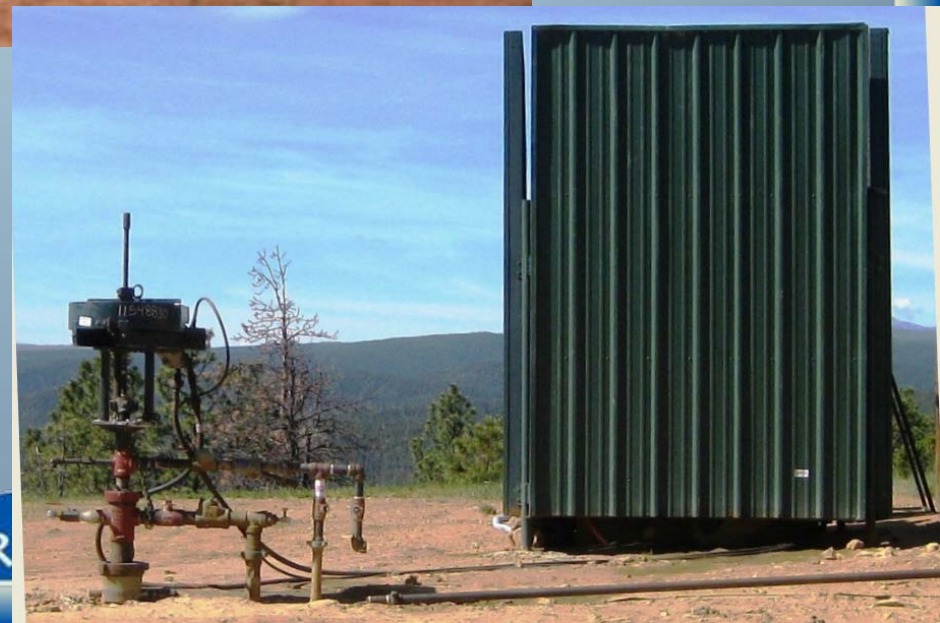
Summary Of Compliance

Field Measurements at 350' for 2006 Noise Rulemaking

• Drilling Rig	93%
• Well Site (Ajax)	64%
• Well Site (Multi-Cyl)	68%
• Well Site (Electric)	100%
• Well Site (Plunger Lift)	100%
• Compressor Stations	<u>13%</u>
All Sites Surveyed	56%



*Permanent sound wall
surrounding production
equipment*

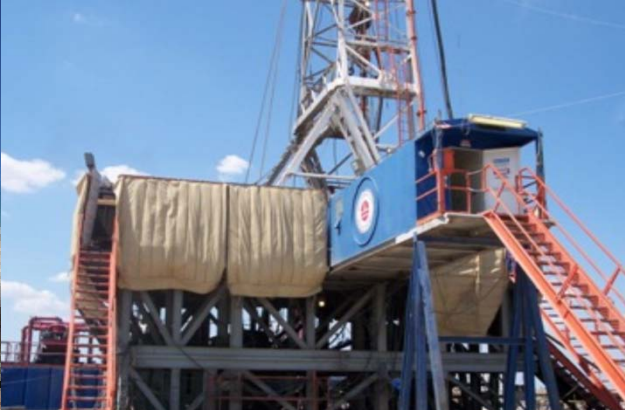


OIL & GAS CONSER

*Temporary sound wall
mitigating rig noise –
Hay Bales*

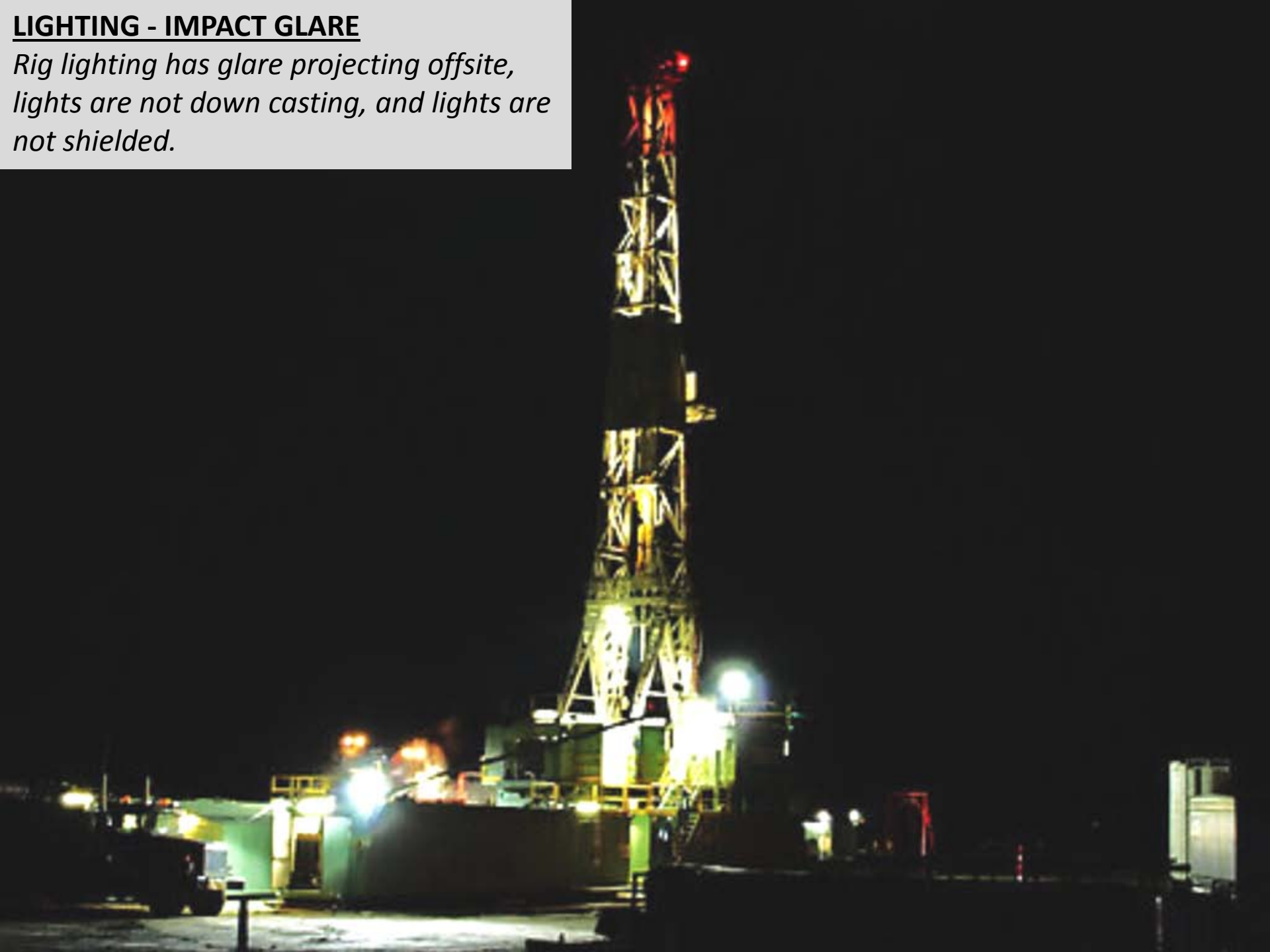


*Temporary sound wall
mitigating rig noise –
Sound Blankets*



LIGHTING - IMPACT GLARE

Rig lighting has glare projecting offsite, lights are not down casting, and lights are not shielded.



LIGHTING - DARK SKY

Rig lighting has limited offsite glare, down casting lights, and lights are shielded for reduced night impact yet maintain worker safety.



PITS



Closed-loop Drilling



Flowback to Closed Tanks



EMISSION CONTROL SYSTEMS.

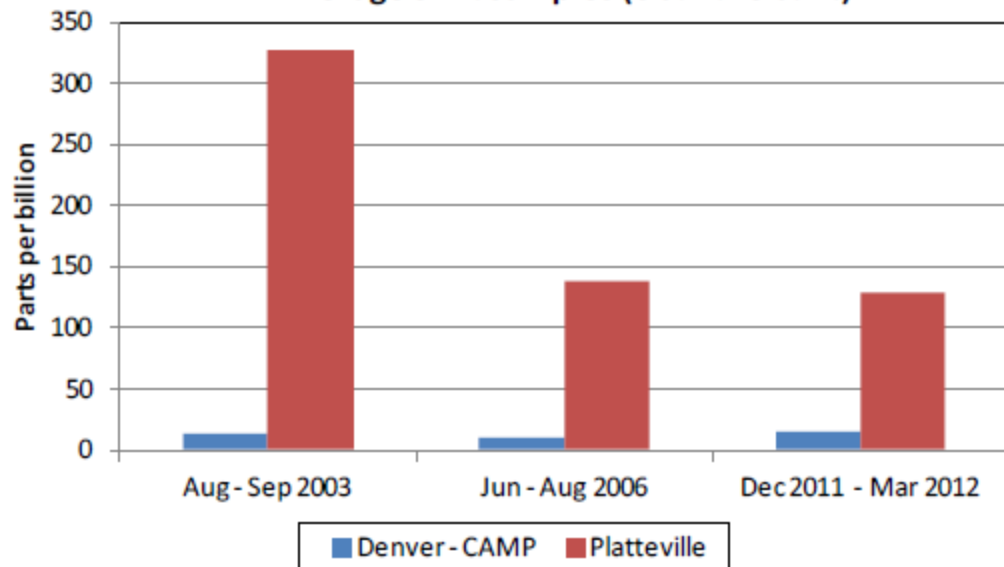
CDPHE Eastern Colorado monitoring for ozone precursor showed an emission decline due to emission controls added per Metro-Denver ozone non-attainment regulations seen through CDPHE air monitoring.



OIL & GAS CONSERVATION COMMISSION

Ethane

Average 3-hr. samples (6 a.m. - 9 a.m.)



Select
organics that
are typically
O&G-related

NOTE:

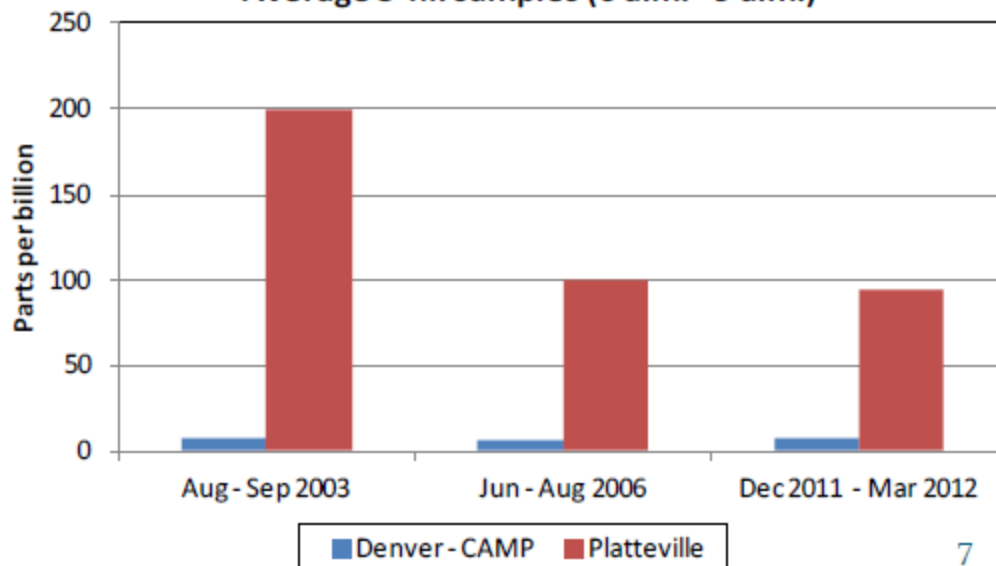
Average methane levels
for March 2012:

CAMP = 1780 ppb

Platteville = 2535 ppb

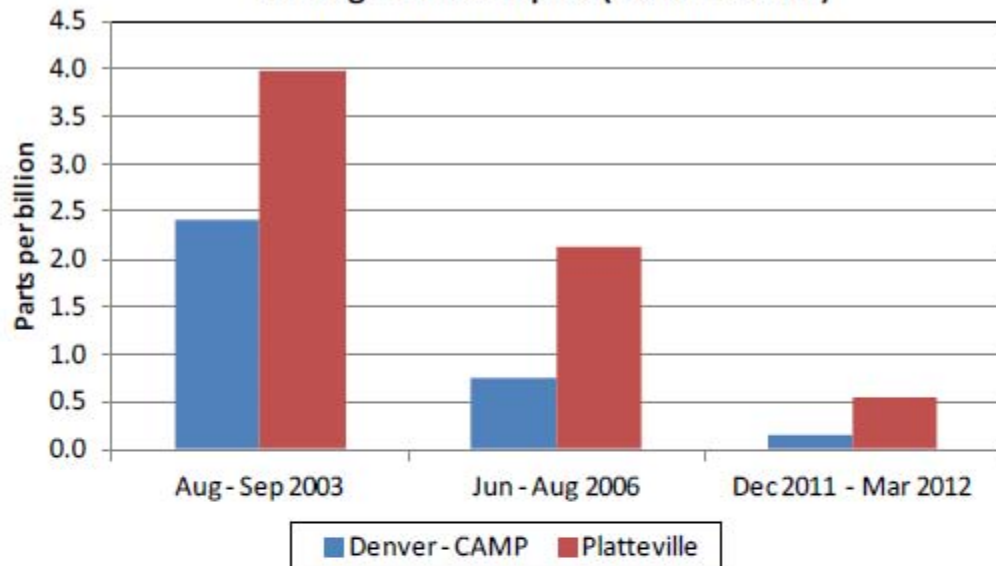
Propane

Average 3-hr. samples (6 a.m. - 9 a.m.)



Benzene

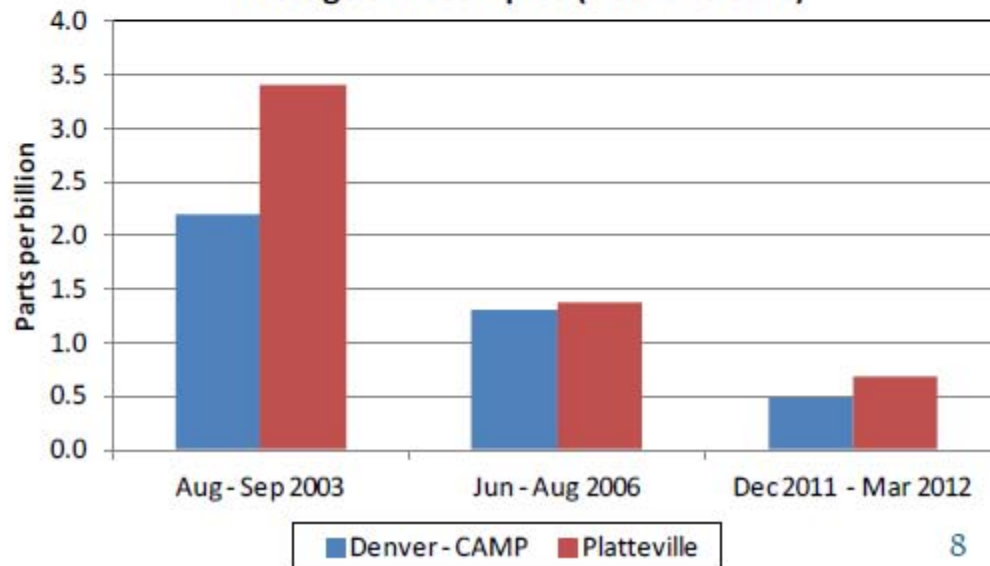
Average 3-hr. samples (6 a.m. - 9 a.m.)



Select organics that are urban and O&G-related

Toluene

Average 3-hr. samples (6 a.m. - 9 a.m.)



Enclosed Combustion Devices

Used at tank battery locations to comply with AQCC Regulation 7.



Control Equipment

- Thermal Oxidizer and Flare
 - Combustion of VOC waste stream
 - Emissions of NO_x , CO, and CO_2
- Vapor Recovery Unit
 - Recirculation of VOC waste to product lines for reprocessing
 - Zero emissions when operating, VOC emissions during downtime



DUST

Dust is generated by traffic and construction activities.

This can be managed by applying water to dirt roads.

Silica dust mitigation can be managed in the completion process by using a dust filter during sand handling.



TRAFFIC PLAN

A traffic plan should be coordinated with the local jurisdiction prior to commencement of move in and rig up.

These should include identification of the access route, local roadway conditions, and timing.

An effective traffic plan can reduce the number of truck trips, congestion, and dust impacts.



MULTIWELL PADS

Multi-well pads cause less total surface disturbance; however, they result in creation of an industrial site with concentrated oil and gas activity for longer time periods possibly generating greater impacts which may require mitigations



DAYLIGHT OPERATIONS

In *Exception Zone* locations, daylight operations are required *after casing is set*, except in emergencies. The Director may waive this requirement if Building Unit owners within the Exception Zone consent to 24-hour operations.

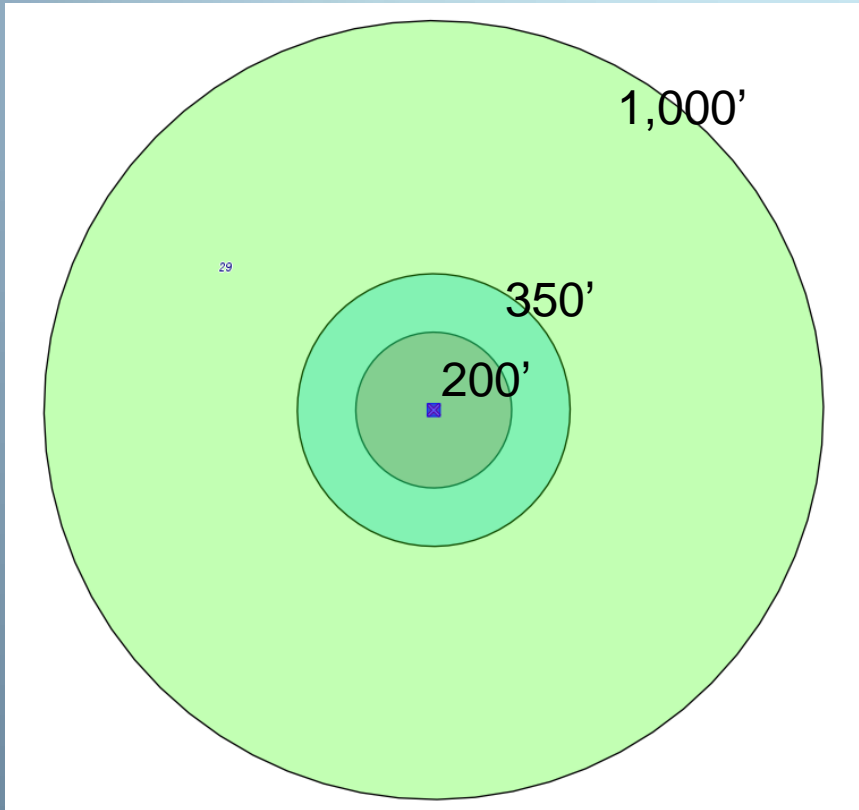


Quantitative impacts for increased setbacks and mitigation

Mitigation Measure	Addition cost per well	Zone	Percent of wells within zone
Noise Baseline Study (average)	\$3,000	Buffer Zone	23%
Noise Mitigation (average) Range \$2,000 to \$50,000	\$7,000	Buffer Zone	23%
2-Tanks per Berm Limit	\$4,600	Buffer Zone	23%
Daylight Operations post casing Range \$100,000 to \$430,000	\$430,000	Exception Zone	4%



Analysis of Well Setbacks in Draft Rules



Size of the Circle			
	200'	350'	1,000'
sq feet	125,660	384,834	3,141,500
acres	3	9	72

Area of Each Zone			
	200'	350'	1,000'
sq feet	125,660	259,174	2,882,326
acres	3	6	63



Oil and Gas Locations by Zone (4/1/09 – 12/6/12)

Well locations reviewed and approved in each zone.

Urban Vs Rural	Less than 200		Exception Zone		Buffer Zone		Greater than 1000		ALL
Amended High Density Location		0.00%	5	0.09%	13	0.24%		0.02%	18
New High Density Location		0.00%	7	0.13%	18	0.33%		0.07%	25
Amended Location	10	0.18%	62	1.12%	518	9.38%	1,124	20.35%	1,714
New Location	16	0.29%	86	1.56%	670	12.13%	2,995	54.22%	3,767
Total	26	0.47%	160	2.90%	1,219	22.07%	4,119	74.57%	5,524

Percentage represents the percentage of all the well locations.



OIL & GAS CONSERVATION COMMISSION

Well Permits by Zone (4/1/09 – 12/6/12)

Well permits reviewed and approved in each zone.

Urban Vs Rural	Less than 200		Exception Zone		Buffer Zone		Greater than 1000		ALL
Amended High Density Location		0.00%	22	0.17%	35	0.27%		0.01%	57
New High Density Location		0.00%	43	0.34%	107	0.83%		0.03%	150
Amended Location	18	0.14%	123	0.96%	1,244	9.69%	3,543	27.61%	4,928
New Location	52	0.41%	254	1.98%	1,772	13.81%	5,619	43.79%	7,697
Total	70	0.55%	442	3.44%	3,158	24.61%	9,162	71.40%	12,832

Percentage represents the percentage of the all drilling permits on the well locations review and approved.



OIL & GAS CONSERVATION COMMISSION

Wells Drilled by Zone (4/1/09 – 12/6/12)

Well permits reviewed and approved in each zone.

Urban Vs Rural	Less than 200		Exception Zone		Buffer Zone		Greater than 1000		ALL
Amended High Density Location		0.00%	22	0.30%	28	0.38%		0.00%	50
New High Density Location		0.00%	27	0.37%	58	0.80%	3	0.04%	88
Amended Location	17	0.23%	86	1.18%	729	10.00%	2,082	28.56%	2,914
New Location	35	0.48%	166	2.28%	1,091	14.97%	2,946	40.41%	4,238
Total	52	0.71%	301	4.13%	1,906	26.15%	5,031	69.01%	7,290

Percentage represents the percentage of the all wells drilled on the well locations reviewed and approved.



Multi-well pad proposed (2011)

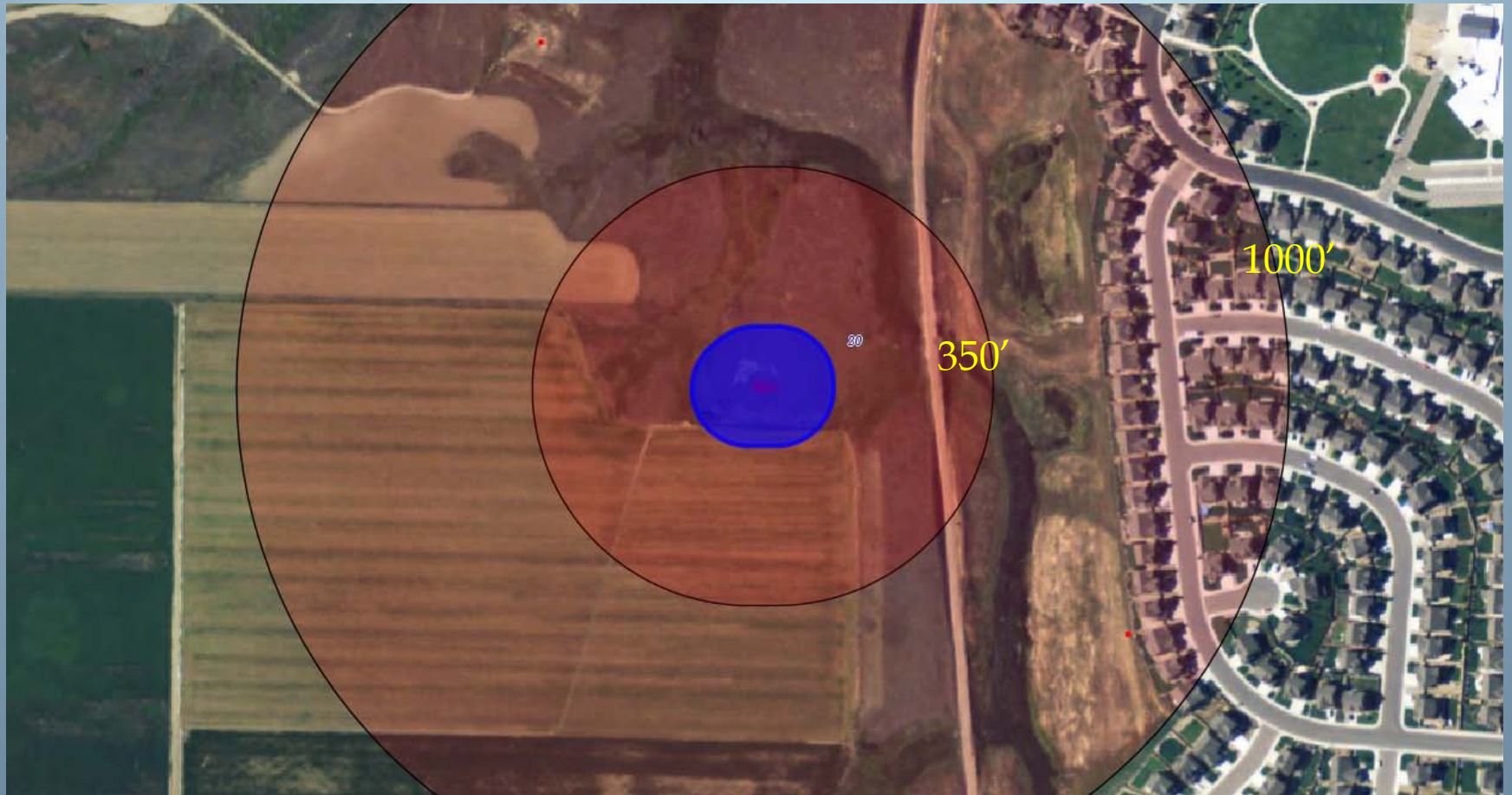


OIL & GAS CONSERVATION COMMISSION

No residences in Exception Zone (350')

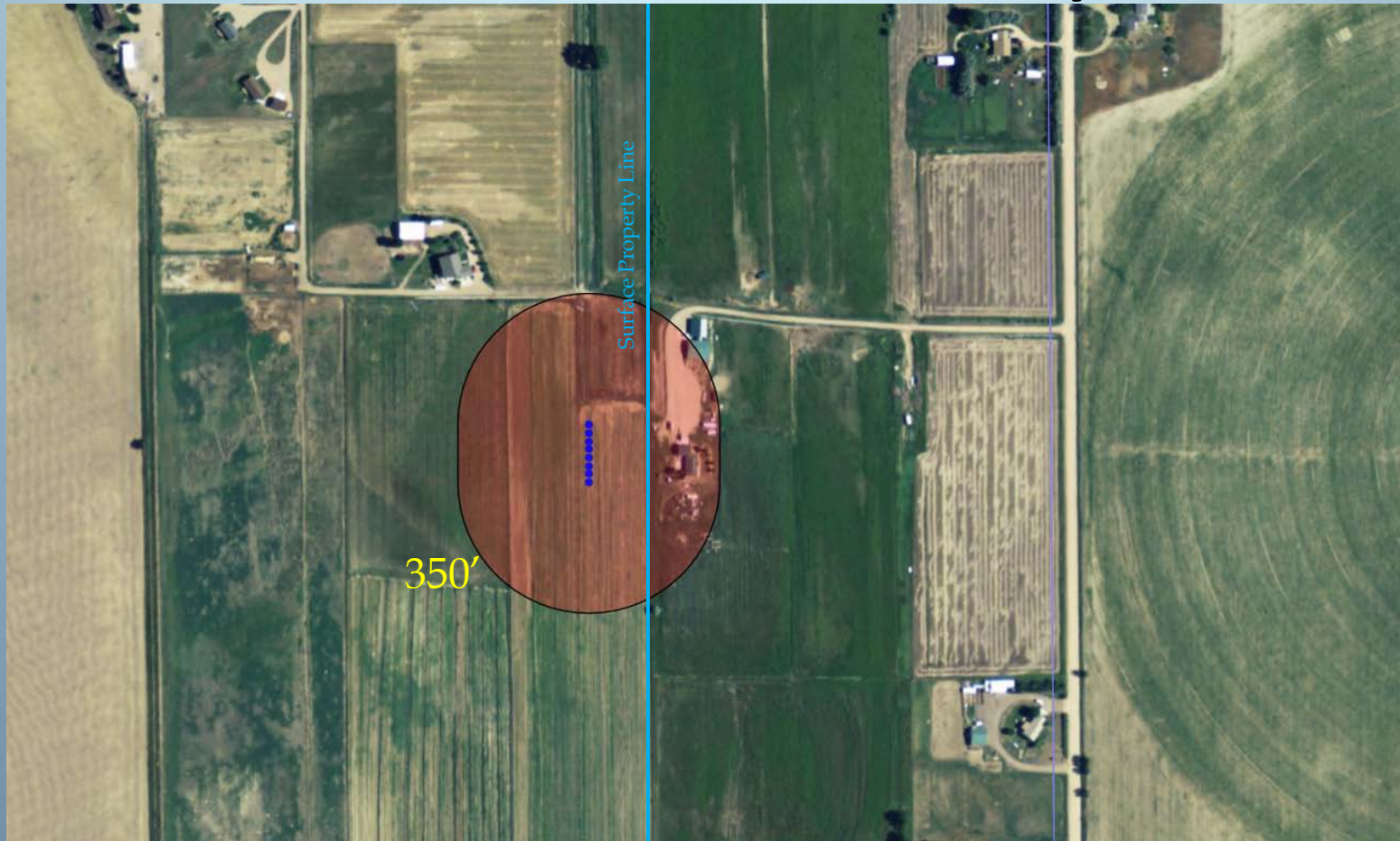


>50 residences in Buffer Zone (1000')



OIL & GAS CONSERVATION COMMISSION

Rural Weld County



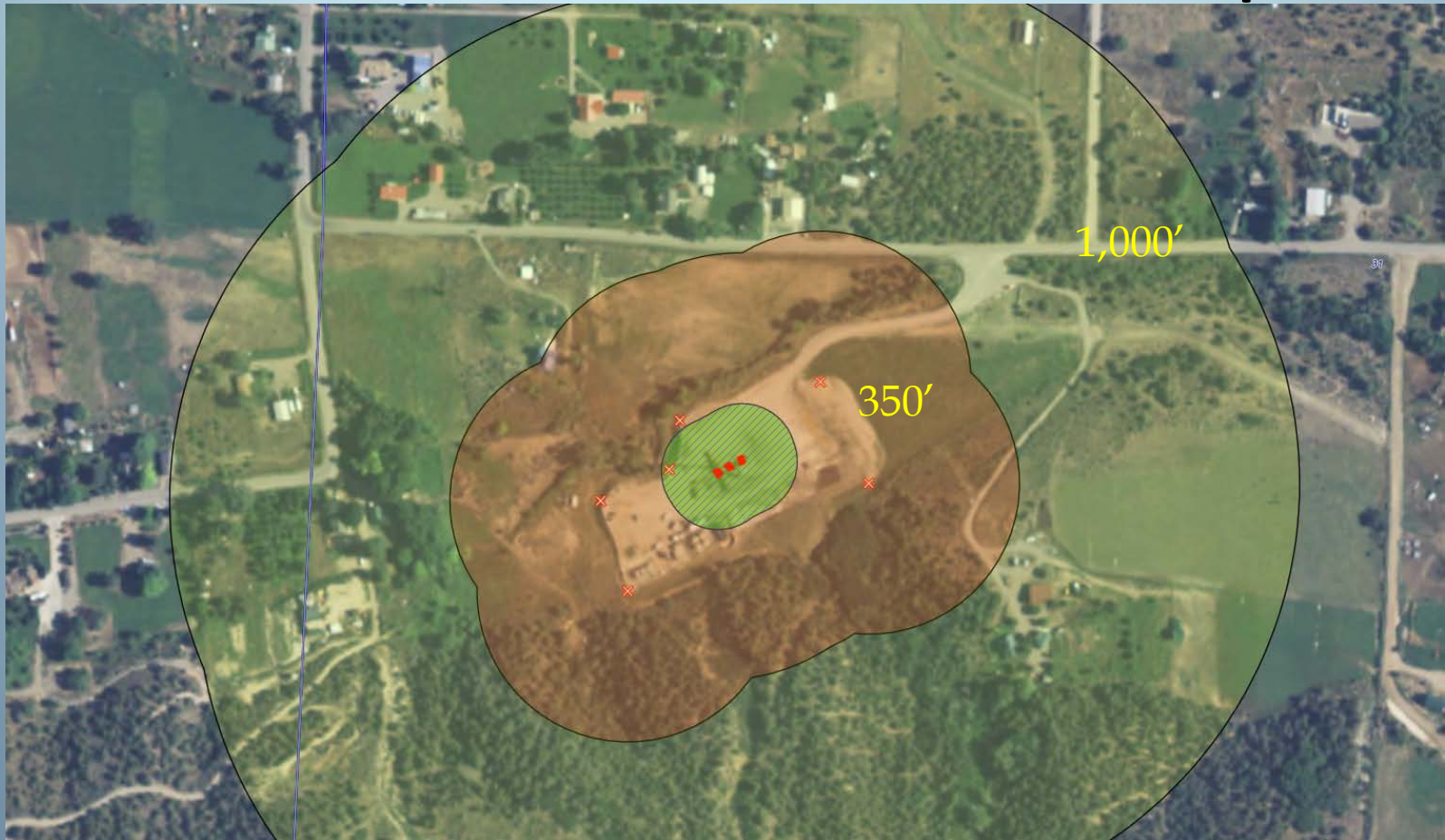
OIL & GAS CONSERVATION COMMISSION

Rural Weld County



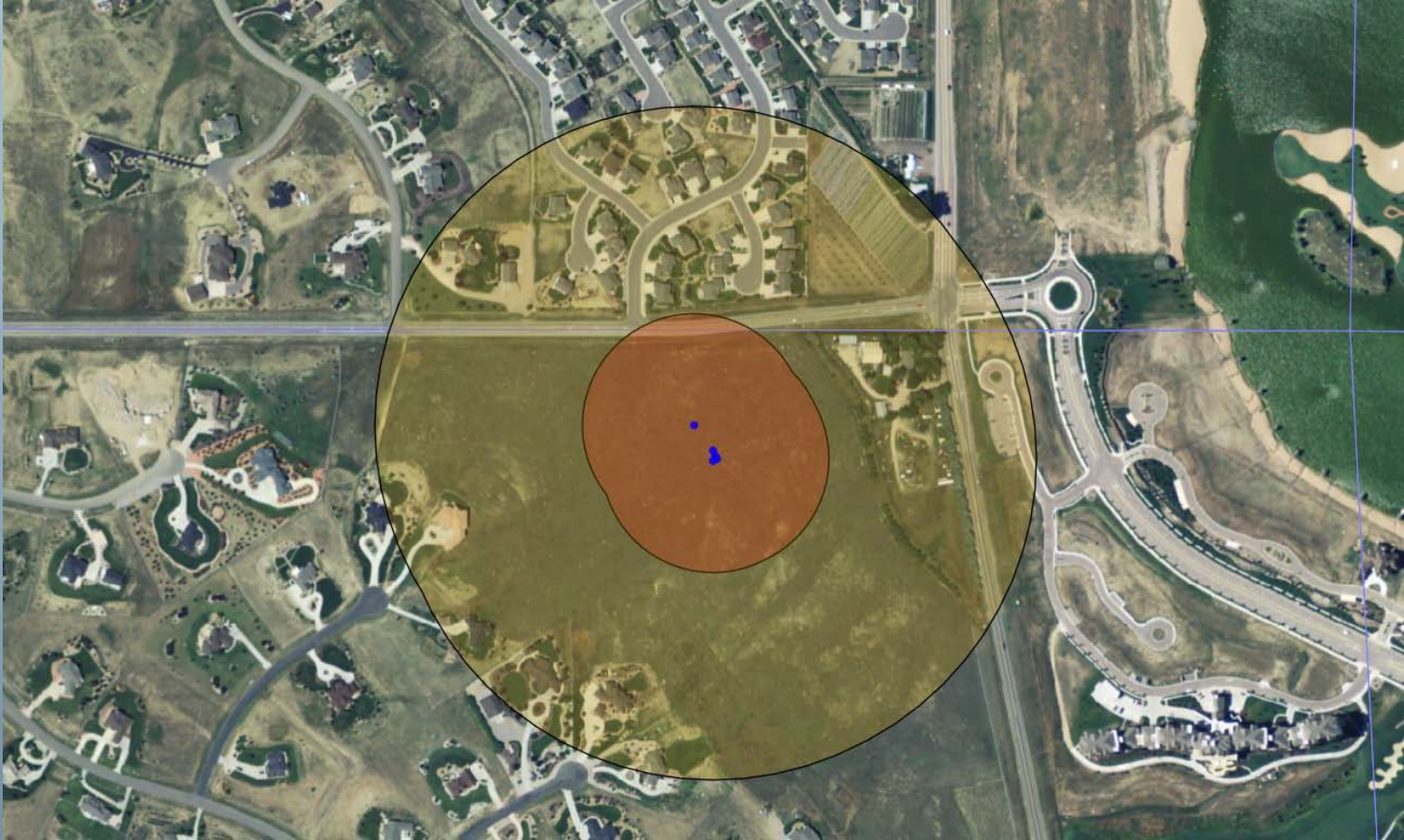
OIL & GAS CONSERVATION COMMISSION

Rural-Residential West Slope



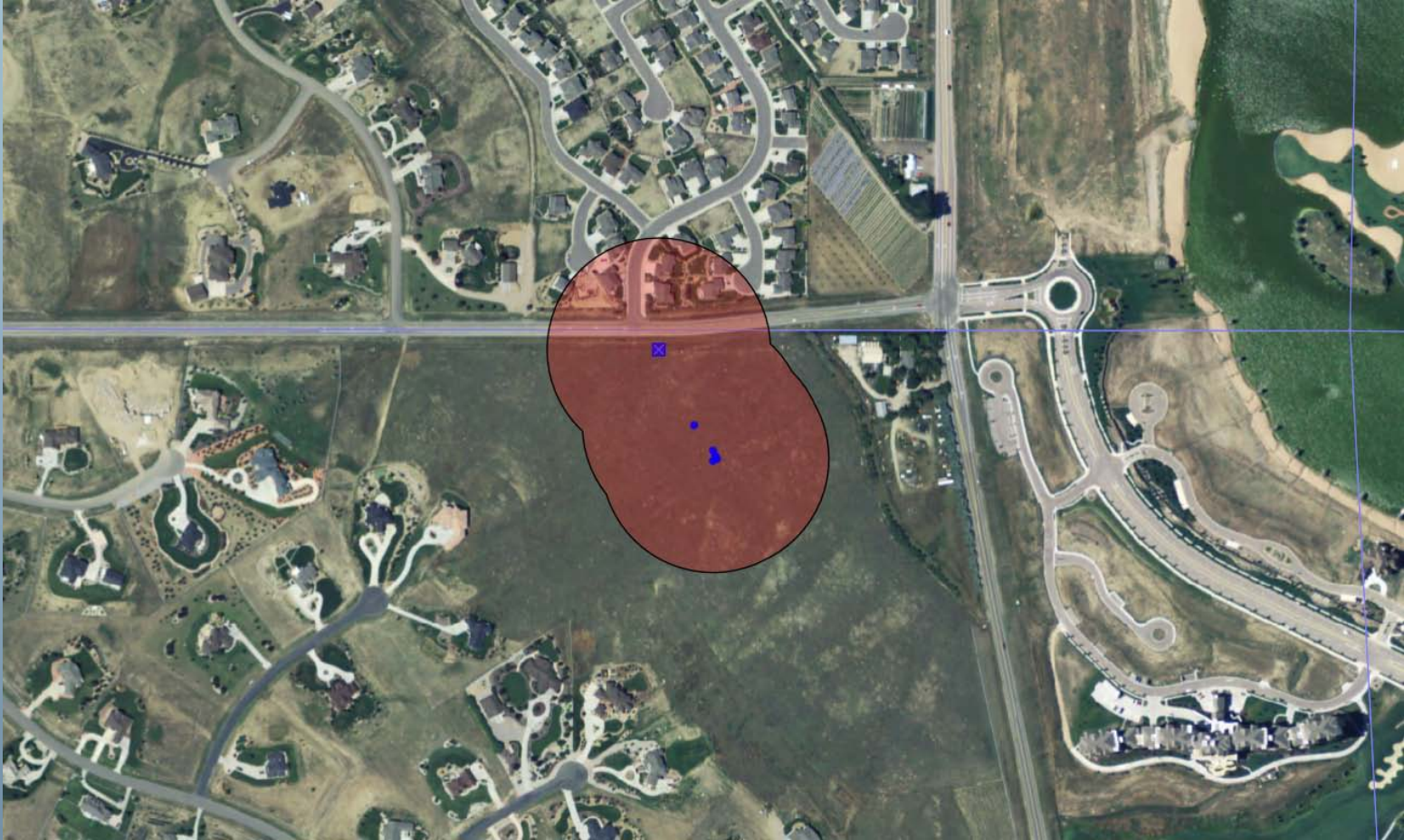
OIL & GAS CONSERVATION COMMISSION

Multi-well Pad



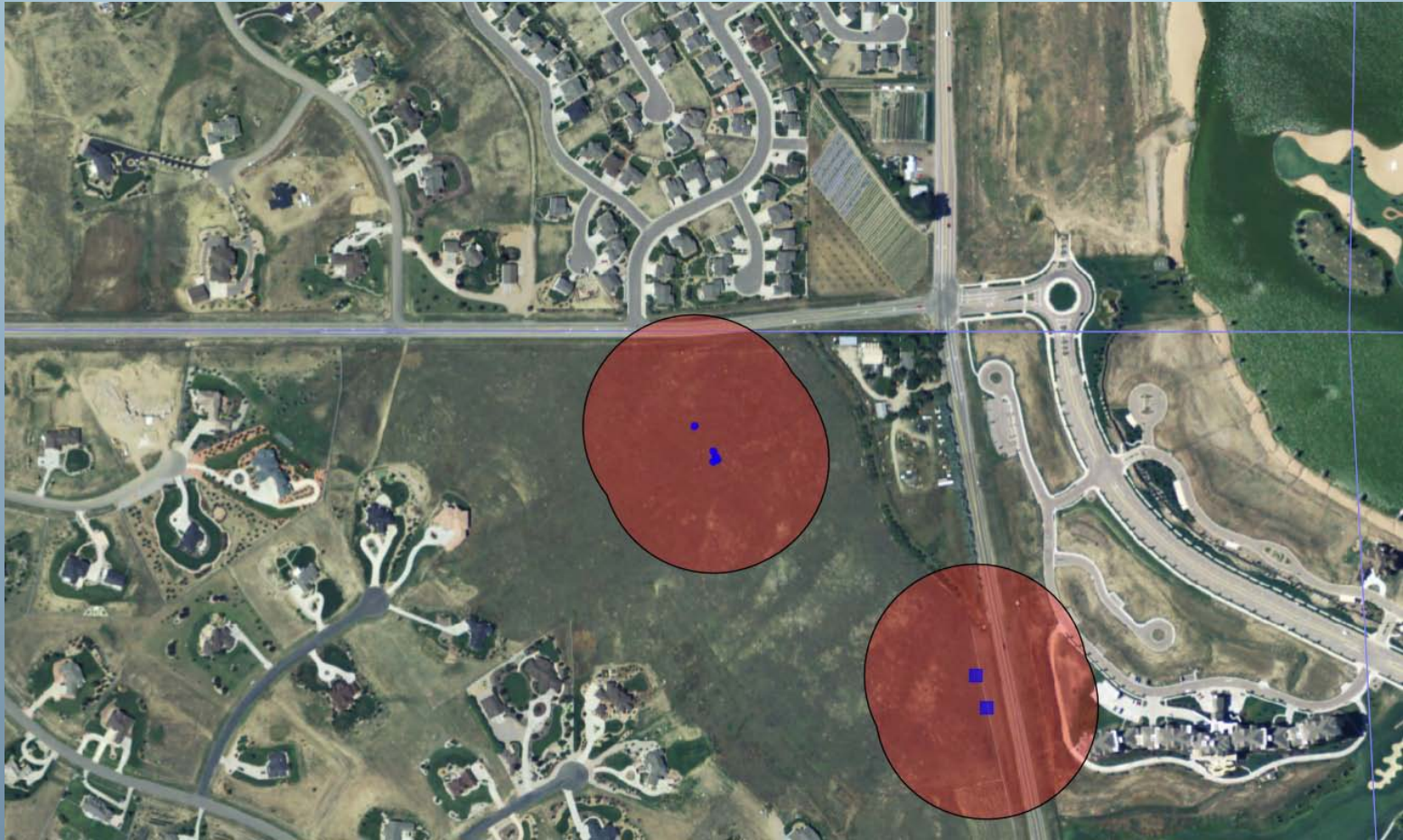
OIL & GAS CONSERVATION COMMISSION

Multi-well Pad



OIL & GAS CONSERVATION COMMISSION

Multi-well Pad



OIL & GAS CONSERVATION COMMISSION

Setback Evaluation Tables

All Locations and Wells Approved Since April 1, 2009 and December 6, 2012

Colorado Oil and Gas Conservation Commission

December 7, 2012

Size of the Circle										
	150	200	350	500	600	700	1000	1200	1320	2000
sq feet	70,684	125,660	384,834	785,375	1,130,940	1,539,335	3,141,500	4,523,760	5,473,750	12,566,000
acres	2	3	9	18	26	35	72	104	126	288

Area of Each Zone				
	200	350	500	1000
sq feet	125,660	259,174	400,541	2,356,125
acres	3	6	9	54

Area of Each Zone				
	200	350	700	1320
sq feet	125,660	259,174	1,154,501	3,934,415
acres	3	6	27	90

High density criteria used to represent urban setting.

Well locations reviewed and approved in each zone.

Urban vs Rural	0 - 200	0 - 350	350 - 500	500 - 700	700 - 1000	1000 - 1320	All
Amended High Density Location	0.00%	5	0.09%	5	0.09%	3	0.05%
New High Density Location	0.00%	7	0.13%	12	0.22%	3	0.05%
Amended Location	10	0.18%	72	1.30%	102	1.85%	191
New Location	16	0.29%	102	1.85%	168	3.04%	218
Total	26	0.47%	186	3.37%	287	5.20%	417

Percentage represents the percentage of all the well locations.

Well permits reviewed and approved in each zone.

Urban vs Rural	0 - 200	0 - 350	350 - 500	500 - 700	700 - 1000	1000 - 1320	All
Amended High Density Location	0.00%	22	0.17%	18	0.14%	4	0.03%
New High Density Location	0.00%	43	0.34%	67	0.52%	27	0.21%
Amended Location	18	0.14%	141	1.10%	179	1.39%	505
New Location	52	0.41%	306	2.38%	412	3.21%	581
Total	91	0.71%	512	3.99%	676	5.27%	1126

Percentage represents the percentage of the all drilling permits on the well locations review and approved.

Wells drilled in each zone.

Urban vs Rural	0 - 200	0 - 350	350 - 500	500 - 700	700 - 1000	1000 - 1320	All
Amended High Density Location	0.00%	22	0.30%	17	0.23%	9	0.12%
New High Density Location	0.00%	27	0.37%	43	0.59%	8	0.11%
Amended Location	17	0.23%	103	1.41%	111	1.52%	277
New Location	35	0.48%	201	2.76%	272	3.73%	344
Total	73	1.00%	353	4.84%	443	6.08%	638

Percentage represents the percentage of the all wells drilled on the well locations reviewed and approved.

Greeley



OIL & GAS CONSERVATION COMMISSION

Greeley



OIL & GAS CONSERVATION COMMISSION

350' Exception Zone



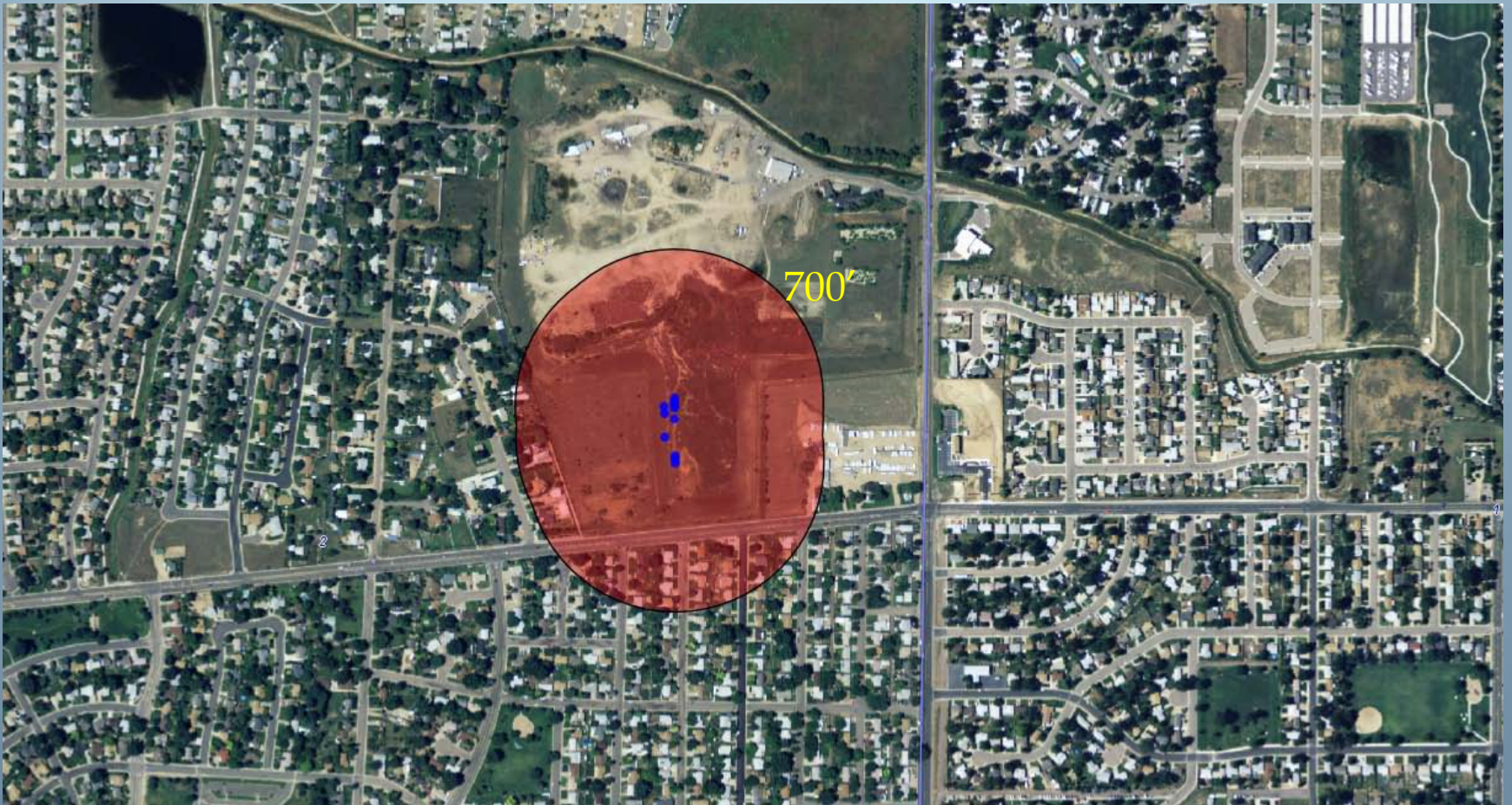
OIL & GAS CONSERVATION COMMISSION

500' Zone



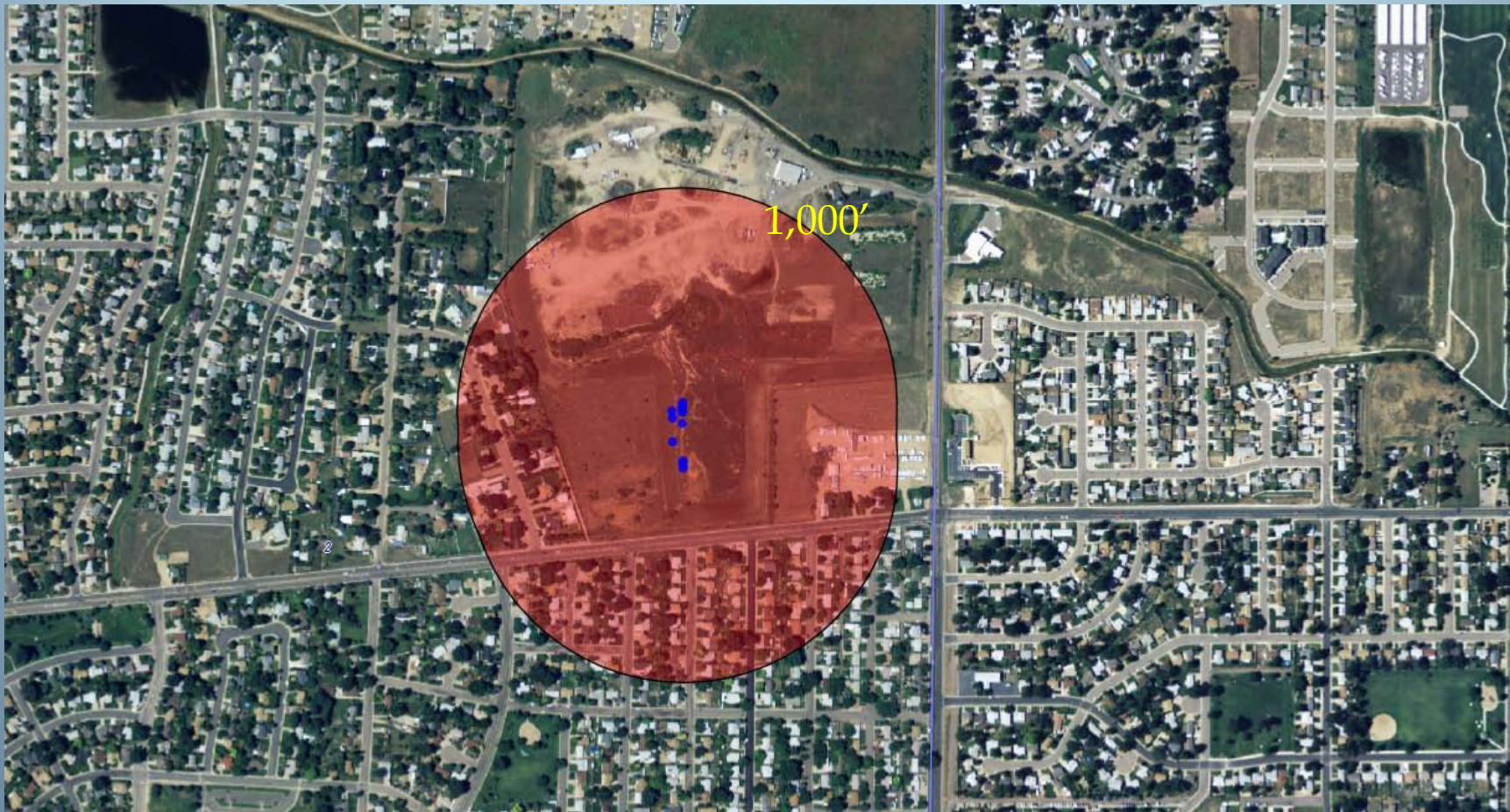
OIL & GAS CONSERVATION COMMISSION

700' Zone



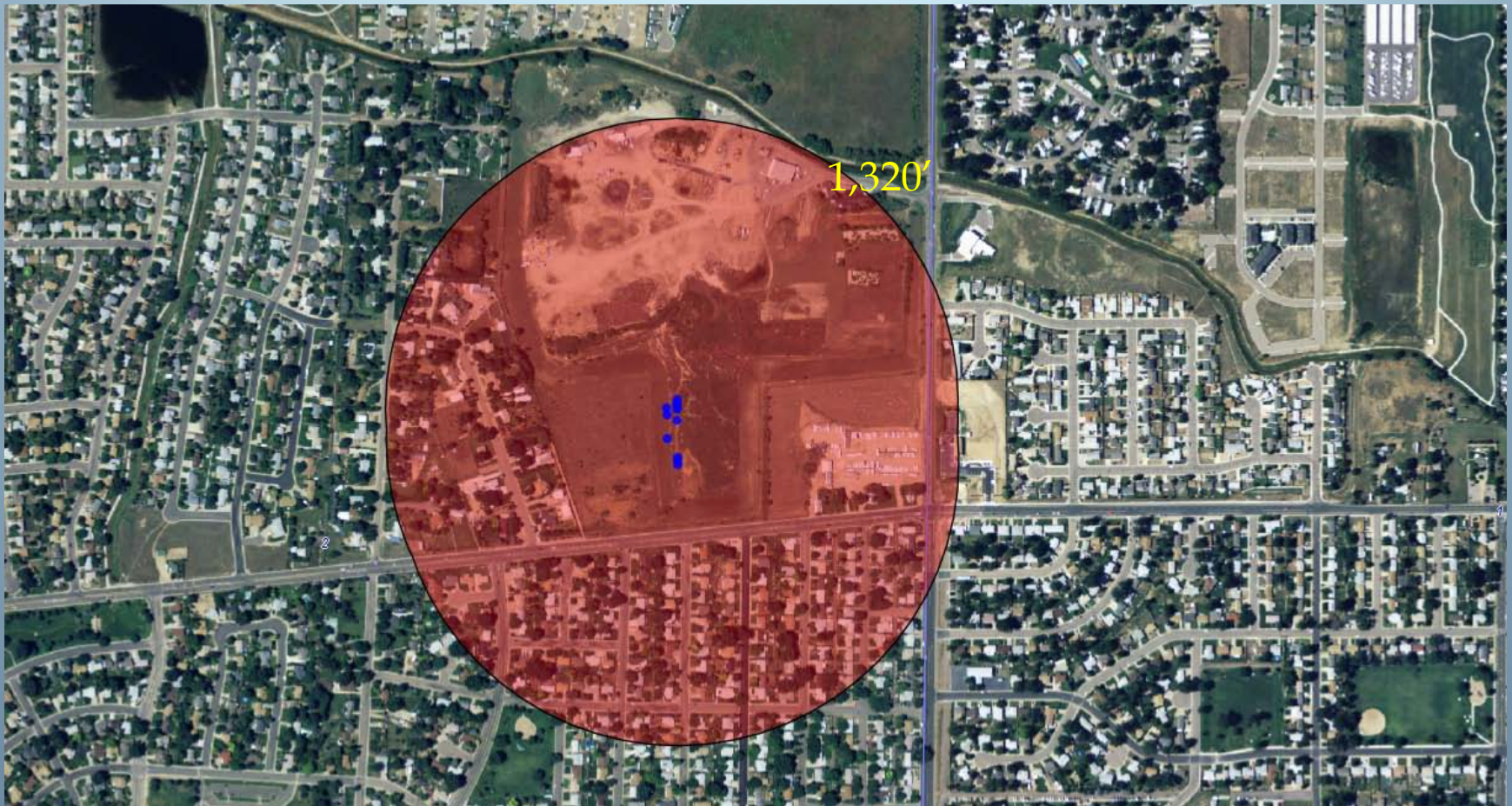
OIL & GAS CONSERVATION COMMISSION

1,000' Zone



OIL & GAS CONSERVATION COMMISSION

1/4-Mile Zone



OIL & GAS CONSERVATION COMMISSION

Draft Rules

- Based on the three objectives
 - More Information to Adjacent Building Owners
 - Mitigation from Nuisance Impacts
 - Setbacks
- Balancing comments from Stakeholders
- Rural and Urban Homeowners Equivalency
- Clarification and Organization of Existing Rules



800 Series

AESTHETIC AND NOISE CONTROL REGULATIONS

- Changes Elevate the Standards for Mitigation
- Provide Uniformity Across the State
- Clarification and Organization of Existing Rules



600 Series SAFETY REGULATIONS

- Create New Setback Requirements
- Equalize Safety Requirements for Rural Residents with that of Urban Residents
- Establish Mitigation Requirements for Encroachment on Occupied Building
- Clarification and Organization of Existing Rules



Rule 305

NOTICE, COMMENT, APPROVAL

- Require Notice to Residents in Setback Areas
- Increase Comment Period for Drilling Permits in Exception Area
- Clarification and Organization of Existing Rules



Rule 306 CONSULTATION

- Require Meeting with Residents in Setback Areas
- Clarification and Organization of Existing Rules



Rule 303

... REQUIREMENTS FOR FORM 2A

- Ties all the Rule Changes Together
- Standardize the Processing of the Form 2A
- Provide Timing Triggers for Comment and Meeting
- Vehicle to Provide Conditions of Approval from Residents, Public and LGD on Locations
- Clarification and Organization of Existing Rules



Status on Rulemaking

- Ongoing Meeting With Stakeholders
- Alternative Proposals
- Process to Finalize the Draft



THE END

Questions?

Website

<http://cogcc.state.co.us>



OIL & GAS CONSERVATION COMMISSION