DATE: February 19, 2013
STAFF: Laurie Kadrich, Dan Weinheimer, Wanda Nelson

AGENDA ITEM SUMMARY
FORT COLLINS CITY COUNCIL

26

SUBJECT

Items Relating to a Ban of Hydraulic Fracturing and Certain Storage of Waste within the City.

A. First Reading Ordinance No. 032, 2013 Amendment to the City Code Which Would Impose a Ban on Hydraulic Fracturing and Certain Storage of Waste within the City (Operator Agreement in place).

OR

Resolution 2013-011 Submitting to the Registered Electors of the City a Proposed Amendment to the City Code Which Would Impose a Ban on Hydraulic Fracturing and Certain Storage of Waste Within the City (Operator Agreement in place).

AND

B. Resolution 2013-012 Requesting Statutory Power to Regulate Oil and Gas Exploration and Production, Supporting the City of Longmont in its Litigation with the State of Colorado Concerning the Regulation of Oil and Gas Exploration and Production and Authorizing Negotiations with Larimer County Regarding Oil and Gas Regulations in the City's Growth Management Area.

Staff also requests Council direction regarding which option(s) to prepare for future Council consideration regarding City-owned lands outside the city limits.

EXECUTIVE SUMMARY

On February 5, 2013, City Council directed staff to prepare City Code changes prohibiting the use of hydraulic fracturing, and limiting the open pit storage of waste or flowback created in connection with the fracturing process in the city limits. Those changes are reflected in the proposed Ordinance No. 032, 2013. If no action is taken on Ordinance No. 32, 2013, staff prepared an optional resolution for Council to consider:

- Resolution 2013-011 Submitting to the Registered Electors of the City a Proposed Amendment to the City Code Which Would Impose a Ban on Hydraulic Fracturing and Certain Storage of Waste With the City (Operator Agreement in place).

In addition to the options presented banning hydraulic fracturing, staff developed Resolution 2013-012:

- requesting the Governor and Attorney General support the Colorado General Assembly in enacting legislation that will explicitly grant power for home rule cities in the State of Colorado to regulate oil and gas exploration and production within municipal boundaries
- supporting the City of Longmont in its litigation with the State of Colorado concerning the power of home rule cities to regulate the exploration for and production of oil and gas development
- directing negotiation with the Board of Commissioners of Larimer County for the establishment of County regulations on oil and gas exploration outside the City, but within the Fort Collins Growth Management Area.

BACKGROUND / DISCUSSION

In December 2012, City Council authorized a moratorium preventing any further drilling of oil and gas wells in the city limits or on City-owned lands until July 31, 2013. Since that time, citizens asked the Council to consider banning hydraulic fracturing in the city. During the January 22, 2013 Work Session, Council discussed the pros and cons related to banning hydraulic fracturing (Attachment 10). Following this discussion staff was directed to prepare a Resolution banning hydraulic fracturing and storage of related waste materials for the February 19, 2013 regular Council meeting.

Council also asked that the staff report include more information on local geology, scientific data relative to hydraulic fracturing, the likelihood of local earthquakes due to fracturing, and the financial impacts of a ban or an adverse incident if hydraulic fracturing were not banned.

Staff was further directed to pursue an operator agreement with Prospect Energy seeking compliance with the strictest measures proposed for Land Use Code adoption prior to the implementation of a moratorium. During a Council meeting on February 5, 2013, staff was asked to prepare an Ordinance banning hydraulic fracturing and open pit storage except on existing well or operating pad sites, or if the pad site becomes the subject of an operator agreement with the City. Council also asked staff to develop options for regulating or banning hydraulic fracturing on City-owned lands outside the city limits.

On February 11, 2013, the Colorado Oil and Gas Commission (COGCC) adopted rule changes moving setbacks from well pads to 500 feet in most areas and 1000 feet from buildings that house larger numbers of people. This change reduces the area that may be subject to oil and gas development to 11% inside the City limits.

Geology

Staff was asked to review the geology beneath Fort Collins and adjacent lands to determine what potential oil and gas resources may exist. Staff reviewed information provided by geologists at Colorado State University (CSU), the Colorado State Geologist, and the United States Geological Survey (USGS). Most of the academic and professional mapping and articles available on the North Front Range focus on the Greater Wattenberg Area (GWA); very few mention Fort Collins or the Fort Collins Field by name. Geologists cite the lack of information as an indication of a low probability of oil and gas production within the community. In 2009, the Natural Areas Department, as part of the Energy by Design project, developed a map depicting potential oil and gas development (Attachment 8). Mapping of oil and gas development potential indicates that the most likely production area is expected in the northern part of Fort Collins, where the present field exists (Attachment 9). Recent activity in Northern Colorado has focused on the Niobrara formation ; in Fort Collins, the Niobrara development potential is estimated as “moderate” (Attachments 8 or 9).

Potential Fort Collins Oil and Gas Activity

To determine oil and gas potential, staff reviewed the historic record of drilling in Fort Collins, the current operations, and the regional geological information.

- The historic record indicates that the Muddy “J” has been the only productive formation in Fort Collins. Niobrara development has been the focus of the recent activity in the Greater Wattenberg Area.
- Prospect Energy indicates that current operations have targeted the Niobrara formation but those efforts have not proved economical.
- The geologic record indicates that the Niobrara is located near the surface in Fort Collins and the Niobrara is not deep enough to yield quality gas or oil.

Fort Collins

The wells drilled within the Fort Collins Field were drilled with several target formations in mind. Initially, wells drilled in 1925 sought to reach the Hygiene (Pierre Shale) or the Muddy “J” sandstone. This is consistent with the discovery in 1923 of oil from the Muddy “J” in the Wellington Field to the north of Fort Collins. The Wellington Field was the first set of wells producing from the Muddy “J” in the Denver Basin. Muddy “J” sandstone near Fort Collins exists at a depth of approximately 4,500 feet with an average thickness of 25 feet. Going east from Fort Collins, there is greater depth beginning along Interstate 25. The shallow portions of the rock to the west of the City are not likely to have marketable oil and gas supplies. Prospect Energy’s operations in the Fort Collins Field are in the Muddy “J” formation. The company tested the Niobrara in the Fort Collins Field but has not yet found a well that would be profitable. These results reflect the historical development of oil and gas in Fort Collins where operators attempted to produce oil and gas from the Lyons, Lakota, Dakota, Codell, Niobrara and the Hygiene formations. A detailed review of Colorado Oil and Gas Conservation Commission (COGCC) records indicates the Muddy “J” is the only formation that has ever profitably produced within Fort Collins. As hydraulic fracturing and drilling technology advance it remains possible that other formations lying beneath Fort Collins might produce oil and gas. For a more detailed analysis, see Attachment 1.

ENVIRONMENTAL IMPACTS

Air Quality
Several current studies pertinent to the Front Range or Rocky Mountain region were reviewed to support the following conclusions (citations are provided in Attachment 2):

- Measurable emissions of several pollutants attributable to drilling, construction, material storage and treatment, production, and transmission activities from oil and gas operations have been detected, including the following:
  - Nitrogen oxides (NOx) and volatile organic compounds (VOCs) which are ozone precursors
  - Hazardous Air Pollutants (HAPS) including several carcinogens (primarily benzene and formaldehyde) and other air toxics associated with chronic and sub-chronic health effects (respiratory and neurologic disease and head, throat, and eye irritation)
  - Particulate matter including dust and aerosols
  - Odors (hydrogen sulfide and odiferous hydrocarbons)
  - Nitrogen and sulfur compounds that contribute to visibility impairment (haze) and atmospheric deposition (acid rain)
  - Methane, a potent greenhouse gas and ozone precursor.
- Oil and gas development activities can emit raw (non-combusted) natural gas which has a unique signature that can be differentiated from motor vehicle emissions and other industrial or combustion sources. Elevated levels of volatile organic compounds associated with natural gas operations (drilling and venting) were found in the Front Range area.
- Hydrocarbons emitted from oil and gas activities along the Front Range (primarily propane and other alkanes) comprise some of the highly reactive precursors important in the complex atmospheric chemistry responsible for winter ozone formation. Winter ozone formation is a recently discovered phenomenon that has clearly been attributed to emissions from oil and gas development and production activities in the Green River Basin (Wyoming) and Uintah Basin (Utah).
- Associated impacts to human health including excess cancer risk and chronic non-cancer health impacts have been measured at locations within 0.5 miles of active well pad sites. Additional studies, many of which are currently ongoing, will help to define the potential risk to human health, effectiveness of air emission control strategies, and potential impacts to air quality from oil and gas development activities.

Water Quality Environmental and Health Concerns

- While there is no scientific consensus and studies are few, there is some indication of a potential link between high-pressure underground injection (i.e., underground injection wells for wastewater) and gas migration near the well (movement of methane into groundwater.) The associated risk to humans is that methane that is found in drinking water sources could potentially build up in confined spaces and cause explosions. Methane gas is not considered toxic if consumed in drinking water and is not regulated by the Environmental Protection Agency (EPA) under the Safe Water Drinking Act (SWDA).
  - A USGS study by Ellsworth near wastewater wells (Class II Underground Injection Control (UIC) wells) in Menlo Park, CA suggests the high pressure injection might make well cement cracks more likely. Findings by other researchers suggest a similar finding, but conclude further research is needed. Although this may have implications for high pressure injection techniques used in hydraulic fracturing, there is no scientific consensus on the probability of its occurrence or the mechanisms involved. Local wells classified as UICs are actually injecting at sub-fracturing pressures; see more below under earthquakes.
- Most shallow water contamination resulting from hydraulic fracturing and conventional oil and gas production has been linked to surface activities resulting in releases of wastewater due to accidents, poor management of wastewater storage and disposal, and illicit dumping.
- Most aquifer contamination (i.e., potential drinking water resources) from conventional oil and gas production has been linked to well casing failures. There is not enough research for hydraulic fracturing operations to show a similar link.

In response to public concern and industry growth, the US House of Representatives requested in 2009 that the US EPA conduct scientific research to examine the relationship between hydraulic fracturing and drinking water resources. The project planning phase involved agency consultation with other federal agencies, state and interstate regulatory agencies, industry, non-governmental organizations, and others in the private and public sector to determine the focus of the study regarding potential impacts on human health and the environment. The primary research focused on

investigating impacts to drinking water resources. The first progress report on the results of this research was published by the EPA, December 2012, Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, Progress Report, EPA 601/R-12/011, Office of Research and Development.

The research consists of 18 research projects and is organized around five stages of the hydraulic fracturing water cycle:

1. Water acquisition: What are the possible impacts of large volume water withdrawals from ground and surface waters on water resources?
2. Chemical mixing: What are the possible impacts of hydraulic fracturing fluid surface spills on or near well pads on water resources?
3. Well injection: What are the possible impacts of the injection and fracturing process on water resources?
4. Flowback and produced water: What are the possible impacts of both types of wastewater surface spills on or near well pads on water resources?
5. Wastewater treatment and waste disposal: What are the possible impacts of inadequate treatment of hydraulic fracturing wastewater on water resources?

The results from the study, which are not expected until 2014, are intended to inform the public and provide policymakers at all levels with high-quality scientific knowledge that can be used in decision-making. The research involves collection and analysis of existing data from 24,925 wells that have been hydraulically fractured, complex modeling conducted by the Lawrence Berkeley National Laboratory, toxicity assessments of 1,858 chemicals associated with hydraulic fracturing, and case studies. The EPA also manages the two most comprehensive databases on toxicological data that are used for risk assessments nationally and internationally.

The literature reviews for this study are subject to a separate quality review that assesses the soundness, applicability and utility, clarity and completeness, uncertainty and variability, and evaluation and review of the data and information before inclusion in the research. Attachment 3 includes references accepted for inclusion in the EPA report that are organized by research topic related to water quality. This list is a subset of references reviewed to date that cover the most relevant research topics being investigated; for a complete list refer to the 2012 EPA report cited above. The EPA has compiled and continues to search for literature relevant to the research questions posed in this report including a recent Federal Register notice requesting peer-reviewed data and publications relevant to this study. There has not been any preliminary data released from this effort.

Waste and Wastewater Environmental Concerns

- Hydraulic fracturing produces higher volumes of wastewater that surface as flowback in a shorter period of time than conventional drilling techniques. This creates more challenges for capture, storage, and disposal of wastewater and associated emissions than for conventional drilling operations (e.g., more VOC emissions if not captured adequately, more potential for accidental spills).
- Wastewater management and disposal may be the single most important issue associated with environmental and human health protection. The Bureau of Land Management has proposed new requirements for submission of wastewater management plans prior to drilling. Deep injections of wastes in Class II UIC wells, not fracturing operations, have been linked to earthquakes to date.

Earthquake Potential in Fort Collins

Water disposal in the oil field involves injecting waste water into a deep disposal well. This process usually increases pressure in the rock above the native state (pre-water disposal) of the rock. Usually there is not any fluid removed from the rock, only fluid (wastewater) added, thereby increasing reservoir pressure. Many other industries and the Federal government also use water disposal wells. There have been noted cases of water disposal wells causing seismic activity. National Academies of Science concluded a study in 2012 and listed three major findings:

1. “the process of hydraulic fracturing a well as presently implemented for shale gas recovery does not pose a high risk for inducing felt seismic events;”
2. “injection for disposal of wastewater derived from energy technologies into the subsurface does pose some risk for induced seismicity, but very few events have been documented over the past several decades relative to the large number of disposal wells in operation”; and
3. “Carbon Capture and Storage (CCS) due to the large net volumes of injected fluids, may have potential for inducing larger seismic.”

The factor that appears to have the most direct consequence in regard to induced seismicity is the net fluid balance.

The Bureau of Reclamation stated it has not done any independent studies regarding hydraulic fracturing or deep injection wells. However, it did state that the work done between 1999 and 2004 on all the Horsetooth Dams was performed as mitigation for major seismicity that it defines as much greater than what research reveals is a risk due to deep injection wells. Locally, a process called waterflooding is used and, in general, operators are required to maintain pressures that are below fracture gradient and even further lower, based on the last mechanical integrity test, according to COGCC regulations. In other words, at the Fort Collins Field waterflooding (recycled water), the Muddy formation maintains pressures near or slightly below original reservoir pressures.

Waterflooding started in the Fort Collins Field as a smaller pilot test in September 1979 after obtaining COGCC approval. Upon success of the pilot, COGCC approved expansion and the expanded project started in July 1985. According to the current operator, "We've been injecting water for a long time at fairly steady rates without any recorded seismic events."

Habitat Fragmentation Resulting From Oil and Gas Development

Several current studies pertinent to the Front Range or Rocky Mountain region were briefly reviewed to support the following conclusions (For further information and citations see Attachment 4):

- Wildlife impacts and habitat fragmentation from oil and gas activities have been documented, largely for the Greater Yellowstone and Western Wyoming regions. Species studied include mule deer, pronghorn, and greater sage-grouse. The studies largely focused on how migration patterns and winter habitat use could be or have been affected by oil and gas development.
    - Mule deer migration patterns changed in the initial year of oil and gas development. Migration patterns did not appear to acclimate three years after well establishment. Instead, mule deer migration patterns continued to drift further from the well pad development areas. High value habitat areas prior to the study shifted to low habitat values throughout the study.
    - A further study found that mule deer abundance for the herds in the same area had declined by 23% during 2001-2010, where the oil and gas development had expanded.
    - One recent study has also examined the impact of oil and gas development on sagebrush-dependent songbirds (Gilbert and Chalfoun 2012). Some species, which are generally more tolerant to disturbance, such as the Horned lark (*Eremophila alpestris*) did not respond to increases in well densities. However other species, such as the Brewer's sparrow (*Spizella breweri*) and sage sparrow (*Amphispiza belli*) which are dependent on sagebrush communities, had significant population decreases as oil and gas well density increased, suggesting there may be significant impacts to sagebrush-obligate species. A comprehensive synthesis of oil and gas impacts was recently compiled by The Wildlife Society in 2012. In addition to the issues addressed above, the report also identifies increased noxious weed invasions, impacts to waterfowl from wetland impacts, and the potential for increased competition between deer and elk as highly valued habitat is used for oil and gas development. The report also highlights that the cumulative effects of habitat fragmentation, overall loss, and degradation may prove to have the most impact on wildlife.
- Horizontal drilling may reduce the overall impacts of habitat fragmentation, as multiple areas of land can be accessed from a single well pad. However, it is difficult to know the extent of this reduction without further study.
- Based on the studies available, habitat fragmentation effects from oil and gas development appear to be better understood at the landscape level, e.g., how oil and gas development affects pronghorn and mule deer migration patterns. Thus, the findings from these studies may be best applied at the regional scale, e.g., Larimer County and the Rocky Mountain Foothills.
- Staff did not find any research that compared the habitat fragmentation effects of oil and gas development in rural or open undeveloped lands with those in more traditional urban development.

FINANCIAL AND SOCIAL IMPACTS

A true triple bottom line analysis includes an assessment of environmental, social, and economic impacts. Staff analysis to date has focused on potential and possible environmental impacts if hydraulic fracturing is allowed. Staff however, was unable to conclusively determine financial impacts of any health and safety hazard related to hydraulic fracturing due to the significant number of variables that relate to the hydraulic fracturing process, transportation of material and waste produced, and removal of waste materials. A social impact analysis has not yet been undertaken

for this discussion. It is assumed that social impacts of hydraulic fracturing are discussed and addressed in terms of concerns about health impacts, impacts to property and housing values, and quality of life.

Should hydraulic fracturing be banned, the City would likely need to prepare for the costs associated with a lawsuit since similar ballot measures have resulted in lawsuits being filed. The City of Longmont is being sued by the State of Colorado for its regulation of drilling, and by the industry (Colorado Oil and Gas Association (COGA)) for its citizen-approved ban on hydraulic fracturing.

If the City bans hydraulic fracturing, this action would prohibit any use of this treatment in the Fort Collins Field. Whether the local operator, Prospect Energy, would be able to present a claim for damages is unknown. There are other fracturing technologies that have seen limited use and for which there may be limited equipment available for field use (See Attachment 5).

There could be a loss of local revenues generated from oil and gas development within the city limits. Revenues for the last two years average $215,460 annually. This revenue is based on state formulas that include well sites, jobs, roads and other measures to determine the revenues sent to individual communities. It is difficult to estimate what impact the loss of future wells or reduced production would have on this amount received by the City.

STATUS OF OPERATOR AGREEMENT

Prospect Energy and City staff have discussed possible terms of an agreement but no formal option is ready for Council review at this time.

OPTIONS FOR RESTRICTING HYDRAULIC FRACTURING ON CITY-OWNED LANDS OUTSIDE THE CITY LIMITS

1. Include restrictions on City-owned lands outside of the city limits in the ban on hydraulic fracturing.
2. Include these restrictions in any Land Use Code requirements following the moratorium.
3. Extend the moratorium on City-owned lands and apply for Designated Outside Activity Areas status through the COGCC.
4. Utilize the Energy by Design Process for mineral rights owned by the State Land Board (SLB) and extend those requirements to other mineral owners through the adoption of surface use agreements.
5. Utilize the Energy by Design Process for mineral rights owned by the SLB and develop surface use agreements for other mineral interests that reflect best practice or meet the Land Use Code during the time the mineral right is extracted rather than committing to the Energy by Design process at this time.

Natural Areas staff was consulted about the potential for a hydraulic fracturing or drilling ban on lands owned by the City that are outside the city limits, including Soapstone Prairie Natural Area and other natural areas. Natural Areas staff recommends against a ban. The recommendation is based on a variety of factors, but in particular relates to Soapstone and Meadow Springs Ranch (a Utilities property) for the following reasons:

Staff learned that, in the absence of horizontal hydraulic fracturing, there is a some likelihood that smaller companies will lease minerals and drill vertically. Vertical wellheads could be placed on the ground at densities of one well per 20 to 35 acres. That density of activity would be very destructive to the surface of Soapstone and Meadow Springs. Hydraulic fracturing densities potentially could be kept to perhaps one five to ten acre well pad (with multiple wellheads) per section (640 acres), or perhaps even less. This would be far better for the natural, cultural, and scenic resources the City is trying to protect.

The City Council approved a Memorandum of Understanding with the State Land Board (SLB) regarding a cooperative effort to undertake an Energy by Design (EBD) process The attached memo (Attachment 7) describes that effort. The final EBD report was presented to the public in September, and is to be reviewed by the SLB commissioners this month. The SLB took an unprecedented and major step forward by engaging in the EBD process, partly in response to the strong urging of the City of Fort Collins. Implementation of Energy by Design would place strict limits on mining activities, far stricter than any regulation or practice that staff is aware of in the State of Colorado in a similar environment.

Staff is concerned about the implications of an effort by the City to ban drilling or hydraulic fracturing on these lands and the negative impact that would have on the collaborative relationship the City has built with the SLB, as well as on the Energy by Design approach that has been developed and is being reviewed. It is difficult to predict how the SLB would approach leasing of minerals on the City's property in this event, but the collaborative approach developed

through the EBD process would be put in jeopardy. Under the terms outlined in the EBD, mineral owners and /or lessees will be required to enter into an Operator Agreement or Surface Use Agreement with the City prior to any surface disturbance associated with exploration or production. This agreement will contain requirements much stricter than current State regulations and will implement the avoidance and mitigation strategies outlined in Energy by Design. The State Land Board is a partner in the planning process and will recognize and support the use of EBD. Further, Council approval is required for the City to enter into the Operator Agreement or Surface Use Agreement.

In summary, Natural Areas negotiated with the SLB to create a potentially much better on-the-ground situation. Further, Natural Areas believes that patient planning, negotiations, and the use of multiple strategies will obtain the best possible long-term results. While there are substantial risks associated with this approach, staff believes they are far less than those posed by a hydraulic fracturing or drilling ban.

STAFF RECOMMENDATION

Staff recommends the following actions:

- Adoption of Ordinance No. 032, 2013, on First Reading and Resolution 2013-012, as opposed to placing the question on the ballot.
- Limit restrictions to lands within the city's boundary and not include restrictions on City-owned lands outside the city boundaries
- Direct staff to continue developing Code language regulating oil and gas exploration to the greatest extent of its home rule authority
- Direct staff to prepare an operator agreement for Council consideration with Prospect Energy.

BOARD / COMMISSION RECOMMENDATION

There has not been any additional board or commission review since the moratorium was authorized in December 2012.

PUBLIC OUTREACH

There has not been any additional public outreach specific to the Ordinance and Resolutions proposed.

ATTACHMENTS

1. Geology Memorandum, Dan Weinheimer, City of Fort Collins Policy and Project Manager
2. Air Quality Memorandum, Melissa Hovey, City Senior Environmental Planner
3. Water Quality Memorandum, Bonnie Pierce, City Environmental Data Analyst
4. Habitat Fragmentation Memorandum, Lindsay Ex City Environmental Planner
5. Options to Hydraulic Fracturing, Bonnie Pierce, City Environmental Data Analyst
6. Natural Areas Memorandum of Understanding
7. Natural Areas Memorandum, John Stokes, City Natural Areas Director
8. Map Oil and Gas Potential
9. Map (detailed Fort Collins) Oil and Gas Potential
10. January 22, 2013 Work Session Summary
11. Powerpoint presentation

ATTACHMENT 1

City Manager's Office
PO Box 580
300 LaPorte Ave.
Fort Collins, CO 80522

970.221.6505
970.224.6107 - fax
fcgov.com

MEMORANDUM

Date: February 6, 2013

To: Mayor Weitkunat and City Councilmembers

From: Laurie Kadrich, Director, Community Development and Neighborhood Services
Dan Weinheimer, Policy and Project Manager

Through: Darin Atteberry, City Manager
Wendy Williams, Assistant City Manager

Re: Submitting to the Registered Electors of the City a Proposed Amendment to the Code of the City of Fort Collins Which Would Impose a Ban on Hydraulic Fracturing and Certain Storage of Waste Within the City

Staff was asked to review the geology beneath Fort Collins and adjacent lands to determine what potential oil and gas resources may exist. Staff reviewed information provided by geologists at Colorado State University (CSU), the Colorado State Geologist, and the United States Geological Survey (USGS).

Most of the academic and professional mapping and articles available on the North Front Range focus on the Greater Wattenberg Area (GWA) and very few mention Fort Collins or the Fort Collins Field by name. Geologists cite the lack of information as an indication of a low probability of oil and gas production within the community.

The mapping indicates that the most likely production area is expected in the northeast of Fort Collins, where the present field exists. Recent activity in Northern Colorado has focused on the Niobrara formation and in Fort Collins the Niobrara development potential is estimated as "moderate".[i]

Potential Fort Collins Oil and Gas Activity
To determine oil and gas potential staff reviewed the historic record of drilling in Fort Collins, the current operations and the regional geological information.

- The historic record indicates that the Muddy "J" has been the only productive formation in Fort Collins. Niobrara development has been the focus of the recent activity in the Greater Wattenberg Area.

- Prospect Energy has indicated that current operations have targeted the Niobrara formation but those efforts have not proved economical.
- The geologic record indicates that the Niobrara is located near the surface in Fort Collins and the Niobrara is not deep enough to yield quality gas or oil.

Northern Colorado

The Greater Wattenberg Area (GWA) is a regulatory designation devised by the Colorado Oil and Gas Conservation Commission (COGCC) for the area of prolific oil and gas production adjacent to the Northern Front Range. Part of Larimer County and a portion of Fort Collins are often included in the GWA designation used by the COGCC. GWA is also part of the larger Denver-Julesburg Basin.

Oil and gas in the Denver Basin come from several rock formations and depths ranging from less than 900 feet at the Florence field in Fremont County to about 9,000 feet at the Pierce field in Weld County. [ii] Fort Collins lies within the Front Range Urban Corridor. The urban corridor, located adjacent to and east of the Rocky Mountains in the Colorado and Wyoming portions of the basin, is as much as 40 miles wide and encompasses Denver, Colorado, Cheyenne, Wyoming, and other population centers. More than 1.05 billion barrels of oil and 3.67 trillion cubic feet of natural gas have been produced from wells across the Denver Basin. Of this, 245 million barrels of oil and 2.15 trillion cubic feet of natural gas are from wells within the Front Range Urban Corridor; this totals about 23 percent of the oil and 58 percent of the gas produced in the basin.

The Denver Basin encompasses more than 70,000 square miles from eastern Colorado, southeastern Wyoming and southwestern Nebraska. The area has an extensive petroleum exploration history. The first oil well in the Denver Basin was completed in 1881 in the Florence field, the oldest continuously working oil field in the United States. The basin contains more than 1,500 oil and (or) gas fields, 96 of which are within the corridor. Currently producing sandstone reservoirs range in age from Paleozoic through Cretaceous. [iii]

Across the Denver Basin, 187 wells have recorded production from Paleozoic-age rocks. Sixty-seven of these are within the urban corridor and produce mainly oil from the Permian Lyons Sandstone (fig. 2). Corresponding oil fields are Baxter Lake, Berthoud, Black Hollow, Douglas Lake, Fort Collins, Lake Canal, Loveland, New Windsor, and Pierce (fig. 4). All of these fields are located north and northeast of Boulder in Larimer and Weld Counties. Paleozoic-age rock formations that produce oil and gas include (from shallowest to deepest):

- Pierre Shale – including Sharon Springs, Hygiene “Shannon”, and Sussex
- Niobrara formation (shale and limestone)
- Codell sandstone
- “D” sandstone
- Muddy “J” sandstone
- “Dakota”
- “Lakota”
- Lyons sandstone

Fort Collins

The wells drilled within the Fort Collins Field were drilled with several target formations in mind. Initially, wells drilled in 1925 sought to reach the Hygiene (Pierre Shale) or the Muddy "J" sandstone. This is consistent with the discovery in 1923 of oil from the Muddy "J" in the Wellington Field to the north of Fort Collins. The Wellington Field was the first set of wells producing from the Muddy "J" in the Denver Basin. Muddy "J" sandstone near Fort Collins exists at a depth of approximately 4,500 feet with an average thickness of 25 feet.[iv]

As demonstrated in Figure 2, the western flank of the Denver Basin, including the Muddy "J" steeply rises near Fort Collins. Going east from Fort Collins, there is greater depth beginning along Interstate-25. The shallower portions of the rock to the west of the City are not likely to have marketable oil and gas supplies.

Prospect Energy's operations in the Fort Collins Field are in the Muddy "J" formation. The company has tested the Niobrara in the Fort Collins Field but has not yet found a well that would be profitable. These results reflect the historical development of oil and gas in Fort Collins where operators have attempted to produce oil and gas from the Lyons, Lakota, Dakota, Codell, Niobrara and the Hygiene formations. A detailed review of COGCC records indicates the Muddy "J" is the only formation that has ever profitably produced within Fort Collins.

As hydraulic fracturing and drilling technology advance it remains possible that other formations lying beneath Fort Collins might produce oil and gas.

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[i] Chapter 3 **A Model for Determining Potential Areas of Future Oil and Gas Development, Greater Wattenberg Area, Front Range of Colorado** By Troy Cook of **Energy Resource Studies, Northern Front Range Colorado** Edited by Neil S. Fishman; U.S. Geological Survey Digital Data Series DDS–69–P

[ii] Pg 1; Chapter 2 of **Oil and Gas Exploration and Development along the Front Range in the Denver Basin of Colorado, Nebraska, and Wyoming** Compiled by Debra K. Higley; U.S. of **Energy Resource Studies, Northern Front Range Colorado** Edited by Neil S. Fishman; U.S. Geological Survey Digital Data Series DDS–69–P

[iii] Pg 1; Chapter 2 of **Oil and Gas Exploration and Development along the Front Range in the Denver Basin of Colorado, Nebraska, and Wyoming** Compiled by Debra K. Higley; U.S. of **Energy Resource Studies, Northern Front Range Colorado** Edited by Neil S. Fishman; U.S. Geological Survey Digital Data Series DDS–69–P

[iv] Pg 8; Chapter 2 of **Oil and Gas Exploration and Development along the Front Range in the Denver Basin of Colorado, Nebraska, and Wyoming** Compiled by Debra K. Higley; U.S. of **Energy Resource Studies, Northern Front Range Colorado** Edited by Neil S. Fishman; U.S. Geological Survey Digital Data Series DDS–69–P

Memorandum

To: Oil and Gas Team
From: Melissa Hovey/Environmental Planner-Air Quality
Date: 2/5/2013
Re: Current Studies on Air Emissions from Oil and Gas Development

Staff advisors to City Council have been asked to collect information on the state of the science pertaining to environmental impacts from oil and gas development. This memo summarizes information from studies that address potential impacts to air quality due to emissions from oil and gas exploration and production activities.

Several current studies pertinent to the Front Range or Rocky Mountain region were briefly reviewed to support the following conclusions (citations are listed below):

- Measurable emissions of several pollutants attributable to drilling, construction, material storage and treatment, production, and transmission activities from oil and gas operations have been detected including the following:
    - Nitrogen oxides (NOx) and volatile organic compounds (VOCs) which are ozone precursors,
    - Hazardous air pollutants (HAPS) including several carcinogens (primarily benzene and formaldehyde) and other air toxics associated with chronic and sub-chronic health effects (respiratory and neurologic disease and head, throat, and eye irritation),
    - Particulate matter including dust and aerosols,
    - Odors (hydrogen sulfide and odiferous hydrocarbons),
    - Nitrogen and sulfur compounds that contribute to visibility impairment (haze) and atmospheric deposition (acid rain).
    - Methane, a potent greenhouse gas and ozone precursor.

- Oil and gas development activities can emit raw (non-combusted) natural gas which has a unique signature that can be differentiated from motor vehicle emissions and other industrial or combustion sources. Elevated levels of volatile organic compounds associated with natural gas operations (drilling and venting) were found in the Front Range area.

- Hydrocarbons emitted from oil and gas activities along the Front Range (primarily propane and other alkanes) comprise some of the highly reactive precursors important in the complex atmospheric chemistry responsible for winter ozone formation. Winter ozone formation is a recently discovered phenomenon that has clearly been attributed to emissions from oil and gas development and production activities in the Green River Basin (Wyoming) and Uintah Basin (Utah).

- Potential impacts to human health including excess cancer risk and chronic non-cancer health impacts have been measured at locations within 0.5 miles of active well pad sites.

- Additional studies, many of which are currently ongoing, will help to define the potential risk to human health, effectiveness of air emission control strategies, and potential impacts to air quality from oil and gas development activities.

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Ongoing Research

1. University of Texas, nine oil companies, and Environmental Defense Fund are conducting a major field study to measure emissions from natural gas production in several geographic areas. Estimated completion date: Jan. 2013. More information available at: http://www.engr.utexas.edu/news/7416-allenemissionsstudy

2. Garfield County Board of County Commissioners and Colorado State University are conducting a three year study on air emissions near well pad activities. Estimated completion date is fall of 2015. More information available at: http://www.garfield-county.com/news/administration-air-quality-study-iga.aspx

3. COGCC, CDPHE, and CDNR will sponsor a three year study by Colorado State University to study emissions from oil and gas development in the Front Range. Estimated completion date (assuming full funding is procured) is June 2016. More information available at: http://dnr.state.co.us/SiteCollectionDocuments/News/Statetoundertakemajorstudyonoilandgasemissionsstudyonoilandgasemissions.pdf

4. Wyoming DEQ is continuing its winter ozone study in the Upper Green River Basin to better define associated health impacts and the effectiveness of NOx and VOC control strategies.

5. NOAA and the State of Utah are continuing to study the winter ozone formation chemistry in the Uintah Basin.

Attachment #3

Hydraulic Fracturing Research Related to Impacts on Water Resources

In response to public concern and industry growth, the US House of Representatives requested in 2009 that the US EPA conduct scientific research to examine the relationship between hydraulic fracturing and drinking water resources. The project planning phase involved agency consultation with other federal agencies, state and interstate regulatory agencies, industry, non-governmental organizations, and others in the private and public sector to determine the focus of the study regarding potential impacts on human health and the environment. The resulting primary research questions were directed to investigating impacts to drinking water resources as the priority. The first progress report on the results of this research was published during December 2012 in:

> EPA, 2012, Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, Progress Report, EPA 601/R-12/011, Office of Research and Development.

The research scope is organized around 5 stages of the hydraulic fracturing water cycle:

1. Water acquisition: What are the possible impacts of large volume water withdrawals from ground and surface waters on water resources?
2. Chemical mixing: What are the possible impacts of hydraulic fracturing fluid surface spills on or near well pads on water resources?
3. Well injection: What are the possible impacts of the injection and fracturing process on water resources?
4. Flowback and produced water: What are the possible impacts of both types of wastewater surface spills on or near well pads on water resources?
5. Wastewater treatment and waste disposal: What are the possible impacts of inadequate treatment of hydraulic fracturing wastewater on water resources?

The progress report describes 18 trans-disciplinary research projects underway that can be categorized into 5 different types of research activities including: analysis of existing data from multiple sources, scenario evaluations using complex chemical fate and transport modeling, laboratory studies, toxicity assessments, and both retrospective and prospective case studies. Each research project involves a literature review, extensive stakeholder involvement, and stringent quality assurance requirements including development and peer review of each research project's Quality Assurance Project Plan (QAPP) by EPA's Science Advisory Board, an independent and external federal advisory committee. The result is designation of the report as a "Highly Influential Scientific Assessment."

The results from the study are intended to inform the public and provide policymakers at all levels with high-quality scientific knowledge than can be used in decision-making. The literature reviews are subject to a separate quality review that assesses the soundness, applicability and utility, clarity and completeness, uncertainty and variability, and evaluation and review of the data and information before inclusion in the research. The following list includes references accepted for inclusion in the EPA report that are organized by research topic related to water quality. This list is a subset of references reviewed to date that cover the most relevant research topics being investigated; for a complete list refer to the 2012 EPA report listed above. The EPA has compiled and continues to search for literature relevant to the research questions posed in this report including a recent Federal Register notice requesting peer-reviewed data and publications relevant to this study.

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Data also collected from Operator Material Safety Data Sheets (MSDSs) submitted to the US EPA and from data provided by the New York State Department of Environmental Conservation.

Memorandum

To: Oil and Gas Team
From: Lindsay Ex, Senior Environmental Planner
Date: 2/6/2013
Re: Current Studies on Habitat Fragmentation from Oil and Gas Development

Staff advisors to City Council have been asked to collect information on the state of the science pertaining to environmental impacts from oil and gas development. This memo summarizes information from studies that address potential impacts to habitat fragmentation due to the land use impacts from oil and gas exploration and production activities.

Several current studies pertinent to the Front Range or Rocky Mountain region were briefly reviewed to support the following conclusions (citations are listed below):

- Wildlife impacts and habitat fragmentation from oil and gas activities have been documented, largely for the Greater Yellowstone and Western Wyoming regions. Species studied include mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and greater sage-grouse (*Centrocercus urophasianus*). The studies largely focused on how migration patterns and winter habitat use could be or have been affected by oil and gas development.
    - Sawyer et al. (2006) found that mule deer migration patterns changed in the initial year of oil and gas development and that migration patterns did not appear to acclimate three years after well establishment. Instead, mule deer migration patterns continued to drift further from the well pad development areas. High value habitat areas prior to the study shifted to low habitat values throughout the study. Conversely, some areas of low value habitat were predicted to be of higher value, though still less-suitable, as they were further from the oil and gas development areas.
    - Sawyer et al. (2009) examined three types of well pads and their effects on mule deer migration and found that having a liquids gather system (pipelines) at the site may reduce indirect habitat loss by 38-63% rather than being stored on site. The study also found that drilling in crucial winter range areas created a short-term disturbance.
    - A further study (Sawyer and Neilson 2011) found that mule deer abundance for the herds in the same area had declined by 23% during 2001-2010, where the oil and gas development had expanded.
    - Beckmann et al. (2012) studied how natural gas fields impacted pronghorn over a 5-year period (2005-2009) in the Greater Yellowstone Area. The studied found that pronghorn in the area have abandoned up to 82% of their highest quality winter range, though changes in mortality or reproduction were not observed in the 125 female pronghorns the studied tracked.
    - In the Powder River Basin of Wyoming and Montana, Doherty et al. (2008) found that female greater sage-grouse were 1.3 times more likely to avoid existing habitats that lacked natural gas wells within a 1000 acre area than similar areas with the maximum 12.3 wells allowed per 1000 acre.

  - One recent study has also examined the impact of oil and gas development on sagebrush-dependent songbirds (Gilbert and Chalfoun 2012). Some species, which are generally more tolerant to disturbance, such as the Horned lark (*Eremophila alpestris*) did not respond to increases in well densities. However other species, such as the Brewer's sparrow (*Spizella breweri*) and sage sparrow (*Amphispiza belli*) which are dependent on sagebrush communities, had significant population decreases as oil and gas well density increased, suggesting there may be significant impacts to sagebrush-obligate species.
  - A comprehensive synthesis of oil and gas impacts was recently compiled by The Wildlife Society in 2012. In addition to the issues addressed above, the report also identifies increased noxious weed invasions, impacts to waterfowl from wetland impacts, and the potential for increased competition between deer and elk as highly valued habitat is used for oil and gas development. The report also highlights that the cumulative effects of habitat fragmentation, overall loss, and degradation may prove to have the most impact on wildlife (see also Watkins et al. 2007).

- Horizontal drilling may reduce the overall impacts of habitat fragmentation (GWPC 2009), as multiple areas of land can be accessed from a single well pad, but it is difficult to know the extent of this reduction without further study.

- Based on the studies available, habitat fragmentation effects from oil and gas development appear to be better understood at the landscape level, e.g., how oil and gas development affects pronghorn and mule deer migration patterns. Thus, the findings from these studies may be best applied at the regional scale, e.g., Larimer County and the Rocky Mountain Foothills.

- Staff did not find any research that compared the habitat fragmentation effects of oil and gas development with those of more traditional urban development.

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Attachment #5

Description of Fracturing Technologies

One way that fracture stimulation technologies can be categorized is according to the rate at which energy is applied to induce fracturing. The following are the broad categories of fracturing techniques:

1. *Hydraulic fracturing* involves a relatively low rate of loading of the geologic formation resulting in a 2-winged fracture outward from the well bore approximately 180^{o} apart. The potential penetration for the fracture into the formation can be up to a few hundred feet, and this is the most widely used type of fracturing.
2. At the other extreme, *explosive fracturing* involves a very rapid loading of the formation, resulting in a highly fracture zone around the wellbore, but usually to a radius not exceeding 10 feet. A radial fracture pattern is created.
3. In between these two extremes is *pulse fracturing*, characterized by peak pressures resulting in multiple vertical fractures extending radially from the wellbore with penetrations on the order of 10 to 20 feet.

<u>Overview of fracturing technologies</u>

The oil and gas industry is a conservative industry that tends to continue to use the most productive existing technologies until enough data is collected on new extraction techniques before they are commonly adopted. The following is a list of other fracturing technologies that have seen limited use and for which there may be limited equipment available for field use:

1. Water-based fracturing: Most commonly employed method. Large volumes of "clean" water introduced under high pressure. Water –based hydraulic fracturing can represent 1/3 to ½ of total well costs. Water can be damaging to the geologic formation (e.g., clay swelling) that reduces hydrocarbon extraction. Proppants are employed to keep fractures open.
2. Gel-based fracturing: One example is a liquefied petroleum gas (LPG) or propane based gel that uses a zero-oxygen, closed system and specialized equipment (GASFRAC). There are some claims that gels can also be damaging to the geologic formation, but GASFRAC claims the gel reverts to vapor due to pressure and heat, and then returns to the surface for collection and possible reuse. Proppants are commonly used.
3. Liquid CO_2: This technique avoids formation damage, leaves no chemical residue which leads to rapid cleanup, and reduces the use of water that can cause clay swelling. Mixing the fluids poses problems because a purpose-built pressurized blending system is required, and only a few exist.
4. Straight nitrogen without proppant: Nitrogen is pumped as a cryogenic liquid and then heated to form a gas prior to being injected into the well.
5. Coiled tubing fracturing: A continuous roll or "coil" of tubing is used in place of drill pipe or tubing strings. It offers several advantages including portability, a small well site footprint, and the elimination of a rig. This method reduces the risk of wellbore damage from multiple well interventions and down-hole tool runs.
6. Propellant gas fracturing: This is a method of pulse fracturing, also called controlled pulse fracturing, tailored pulse loading, or high energy gas fracturing and involves the use of a wireline run, electrically ignited propellant (similar to solid rocket fuel) which is placed across the formation to create a high pressure pulse. This is less damaging to the wellbore than explosive fracturing techniques. With recent concerns over the possibility that hydraulic fracturing may contaminate aquifers, this technique could be used to guarantee that breakthrough (of the confining layer) will not occur and ensure the fracture does not communicate with overlying aquifers. One disadvantage is that the fractures are left unpropped and are susceptible to closure and plugging.
7. Nitrogen pulse: This is used to create short multi-directional fractures and may be most applicable to coalbed methane wells. This method does not use a proppant, so the fractures are susceptible to closure and plugging.
8. Dry fracturing: Also called exothermic extraction. Few details known due to patent concerns. This involves using hot gases and was originally intended for artic regions where water used in fracking freezes. May also use metal oxides, evaporants, and pumice. When the hot gases expand they crack the shale.

Definition of hydraulic fracturing: The technical description of hydraulic fracturing is provided in the following publication:

B.C. Haimson, F.H. Cornet, 2003, ISRM Suggested Methods for rock stress estimation – Part 3: hydraulic fracturing (HF) and/or hydraulic testing of pre-existing fractures (HTPF), International Journal of Rock Mechanics and Mining Sciences, 40: 1011-1020.

There does not appear to be one universally accepted common definition of hydraulic fracturing because the technology evolved over several decades. This International Society for Rock Mechanics (ISRM) method paper provides a basis for a definition of modern methods of hydraulic fracturing.

Memorandum of Understanding

THIS MEMORANDUM OF UNDERSTANDING is made and entered into as of January 24, 2012 (the "Effective Date"), by and among the State of Colorado (the "State"), acting by and through the Colorado State Board of Land Commissioners, (the "Board"), the City of Fort Collins, and Larimer County. The parties may be referred to hereinafter collectively as the "Parties" and each individually as a "Party."

Recitals

This Memorandum is made with respect to the following facts:

A. The Board is a trustee agency and governmental entity of the State and, pursuant to Article IX, Sections 9 and 10 of the State Constitution and Title 36, Article 1, Sections 100.3 through Section 153 of the Colorado Revised Statutes, the Board serves as the trustee of the lands granted to the State in public trust by the federal government, lands acquired in lieu thereof and additional lands held in public trust. The Board owns a portion of the mineral estate within the Project Area (as defined below).

B. The City of Fort Collins is a governmental entity and is the owner of surface estate in Meadow Springs Ranch and the Soapstone Prairie Natural Area which are a portion of Project Area.

C. Larimer County is a governmental entity and is the owner of surface estate in Red Mountain Open Space which is a portion of the Project Area.

D. The Nature Conservancy ("TNC") is a non-profit corporation which has been hired by the Board to utilize its Energy by Design framework to create an analysis and map of the project area for the Board as described in the Scope of Work attached as **Exhibit A**.

E. The Project Area includes three open space parcels which are adjacent to one another and cover over 60,000 acres north of Fort Collins, along the Wyoming border:

- Meadow Springs Ranch. City-owned, 26,000 acres.
- Red Mountain Open Space. County-owned, 15,000 acres.
- Soapstone Prairie Natural Area. City-owned, 22,058 acres.

These properties are split estate, with the major mineral owners/lessees being the Board, Anadarko, Marathon, and Chesapeake. A map of the Project Area is attached as **Exhibit B**.

Agreement

NOW, THEREFORE, the Parties agree as follows:

1. Vision. The Board is interested in leasing and developing its oil and gas holdings on trust lands within the Project Area. TNC shall provide the Board an analysis and map of the Project Area which depicts areas and resources critical to meeting both community value and statewide conservation goals. Utilizing TNC's work product, the Parties will work collaboratively with each other and with oil and gas lessees and other

mineral owners, to develop a plan for oil and gas development that seeks to preserve key natural, recreational, landscape view, and cultural resource values while providing reasonable access to the Board's and other's mineral estate, with specific strategies to avoid, minimize, and mitigate surface impacts to such resources.

2. Purpose. The Parties acknowledge that the general purpose of this Memorandum is to establish the Parties' intent and expectations regarding their long-term cooperation and good faith dealing towards each other related to the future development of the mineral estate within the Project Area. The Parties recognize that such cooperation and good faith dealing is necessary to ensure that successful realization of the vision of this Memorandum of Understanding. The Parties shall, on an ongoing basis, cooperate and coordinate with each other to achieve the goals in this Memorandum of Understanding and the Scope of Work, including, without limitation, attending meetings and sharing information relevant to the Project Area on a timely basis and by acting in good faith towards each other in the management and implementation of activities on both parcels. The Parties shall use reasonable efforts to cause their employees, consultants and agents to cooperate with the provisions of this Memorandum of Understanding.

3. Products. The Parties envision that the following products will be developed to accomplish the goal of managing oil and gas development so as to avoid, minimize, and mitigate the surface impacts and protect natural, recreational, scenic, and cultural resources.

a. TNC shall provide the final product and analysis required under the Scope of Work to the Parties.

b. The Parties shall work with each other and other mineral estate owners in the Project Area to develop a Comprehensive Drilling Plan that serves the goals of this Memorandum of Understanding.

c. The Parties and other mineral estate owners in the Project area shall develop proposed terms and conditions for a form of Surface Use Agreement that would allow for defined surface use and impact for development of oil and gas in the Project Area while avoiding, minimizing, and mitigating surface impacts and protecting natural, recreational, landscape and cultural resources. The Surface Use Agreement may restrict oil and gas development completely on certain portions of the Project Area to avoid impacting sensitive natural or cultural resources. However, the Parties contemplate that said Surface Use Agreement will provide reasonable access for development of the oil and gas in the mineral estate.

4. Roles and Responsibilities of the Parties. The Parties agree to the roles and responsibilities as allocated in this paragraph in addition to cooperating to develop the products as discussed in paragraph 3. The Parties intend to use best efforts by assigning staff resources to meet these responsibilities.

a. City of Fort Collins and Larimer County shall be responsible for the following:

i. managing the public outreach and information process by communicating with the public, organizing public information sessions, and responding to public concerns regarding this Memorandum of Understanding in a manner consistent with the spirit of and stated purpose of this Memorandum of Understanding,

ii. managing the process of any required approvals of the form of Surface Use Agreement from the City Council of Fort Collins and the Board of County Commissioners for Larimer County, respectively, upon development of a mutually agreeable form of Surface Use Agreement,

iii. managing communications with other stakeholders in the Project Area including Great Outdoors Colorado, citizens' groups, and surface lessees, and

iv. providing to TNC and the Board previously acquired data, maps, field studies, research, and other information regarding the cultural, natural, recreational, and landscape resources within the Project Area for TNC's use in creating the final products required in the Scope of Work. This shall be considered an in-kind contribution to support the goals of this Memorandum of Understanding.

b. The Board shall be responsible for the following:

i. entering into the Scope of Work with TNC and providing the staff support and financial compensation for TNC's work product;

ii. incorporating terms and stipulations in their oil and gas leases in the Project Area designed to implement the Comprehensive Drilling Plan, Surface Use Agreement, and the goals of this Memorandum; and

ii. obtaining any required approval from the Board of Land Commissioners for the Surface Use Agreement, Comprehensive Drilling Plan, and oil and gas leases.

5. Ongoing Cooperation. In addition to consulting on the Comprehensive Drilling Plan and Surface Use Agreement, the Parties shall, on an ongoing basis, cooperate and coordinate with each other regarding the development of the mineral estate and furthering the goals to avoid, minimize, and mitigate the impacts to the surface estate and the protected resources described above in the Project Area. Such ongoing cooperation shall include, without limitation, sharing relevant information on a timely basis and acting in good faith towards each other in the implementation of activities in the Project Area. It is the Parties' intent that upon development and execution of one or more Surface Use Agreements in the Project Area, the City of Fort Collins and Larimer County shall enforce the terms of the Surface Use Agreement and the Board shall enforce the terms of any oil and gas lease in the Project Area in order to ensure long term success in implementing the

goals of this Memorandum. The commitments in this paragraph shall survive termination of this Memorandum.

6. Communications. The Parties agree to the following process for addressing media contacts and requests for inspection of records under the Colorado Open Records Act:

a. With regard to media contacts and news releases, the parties will work together on joint news releases, public announcements, advertisements or publicity concerning the products anticipated from this Memorandum. This is not to limit the parties from responding to media inquiries or information requests from constituents. Standard talking points and project information will be jointly created and used by the parties to provide consistent and clear details to the general public. The parties will also keep each other informed when interviews have been conducted with various media outlets, to ensure parties involved are kept informed of public response.

b. The Parties acknowledge that certain Parties to this Memorandum are subject to the provisions of the Colorado Open Records Act and may, in certain circumstances, be obligated to allow inspection of certain records that are made, maintained or kept by the Parties. Upon receipt of a request to inspect any records concerning this Memorandum or its products, the Party in receipt of the request shall confer with the other Parties to provide them notice and an opportunity to respond to the request for inspection.

7. Term. If the Parties have not developed a Comprehensive Drilling Plan and Surface Use Agreement by December 31, 2013, this Memorandum shall terminate and be of no further force or effect.

8. Termination. Any Party to this Memorandum may terminate participation in the Memorandum by providing thirty (30) calendar days written notice of termination to the other Parties. In the event of termination of any party, upon expiration of the notice period, the entire Memorandum shall also terminate as to the remaining Parties' participation and all Parties shall be relieved of further obligation under the Memorandum.

9. Miscellaneous Provisions

a. Notices. Any notice required or permitted to be given under this Memorandum shall be in writing and shall be deemed given upon personal delivery or on the second business day after mailing by registered or certified United States mail, postage prepaid, to the appropriate party at its address stated below:

If to the Board:

State of Colorado, acting by and through the Colorado State Board
of Land Commissioners
1127 Sherman Street, Suite 300
Denver, CO 80203
Attn: Director, and Minerals Director

If to the City of Fort Collins:

John Stokes
Director, Natural Areas Department
215 N Mason
Fort Collins, CO 80522

If to Larimer County:

Gary K. Buffington, Director
Natural Resources Department
1800 S. County Road 31
Loveland, CO 80537

b. Amendment. This Memorandum may be amended by written agreement executed and delivered by the Parties.

c. No Partnership. Nothing in this Memorandum shall be deemed in any way to create between any of the Parties any relationship of partnership, joint venture or association, and the Parties hereby disclaim the existence of any such relationship.

d. Assignment. No Party may assign, charge, encumber or otherwise amend any of its rights and obligations under this Memorandum without the prior written consent of the other Parties.

IN WITNESS WHEREOF, each Party has executed this Memorandum of Understanding or has caused it to be executed, under seal, on its behalf by its duly authorized representatives as of the Effective Date.

STATE OF COLORADO, acting by and through the COLORADO STATE BOARD OF LAND COMMISSIONERS:

By: _____
Name: William E. Ryan
Title: Director, State Board of Land Commissioners

CITY OF FORT COLLINS
ATTEST
SEAL
City Clerk
COLORADO

APPROVED AS TO FORM:
Deputy City Attorney

CITY OF FORT COLLINS

By:_____
Name: Darin Atteberry
Title: City Manager

LARIMER COUNTY

By:_____
Name: Gary K. Buffington
Title: Director, Natural Resources Department

Exhibit A - Scope of Work
Mountains to Plains Energy by Design

Summary: The Nature Conservancy (TNC) will utilize its Energy by Design (EbD) framework to identify opportunities to avoid, minimize, and mitigate the impacts of oil and gas development to natural and cultural values associated with three open space parcels in northern Larimer County. EbD is designed to achieve "no net loss" outcomes to biodiversity values in light of energy development. TNC will work collaboratively with the State Land Board (SLB) as its client, project partners including the City of Fort Collins and Larimer County, and with a technical team comprised of experts from government agencies (federal, state, and local) and conservation organizations. The project will provide for an "onsite analysis" of priority biodiversity values prior to SLB's lease sale (Phase I), which SLB can use to guide the development of a Minerals Development Plan (Phase II). Following the creation of the Minerals Development Plan, the lessee(s) may opt to participate in a third phase of the project, to identify and implement offsite mitigation opportunities associated with unavoidable impacts onsite (Phase III). This SOW covers Phases I and II, and briefly describes Phase III.

Project goal: SLB seeks a strategy to lease and develop its oil and gas holdings on trust lands within the Soapstone Prairie Natural Area, Red Mountain Open Space, and Meadow Springs Ranch parcels in northern Larimer County. SLB and TNC will work collaboratively with Larimer County and the City of Fort Collins, and in conjunction with oil and gas lessees and other mineral owners, to develop a plan for oil and gas development that provides access to the state's mineral estate, with specific strategies to avoid and minimize surface impacts to key natural and cultural resource values. This initiative may also be part of SLB's goals to create oil and gas development master plans on specific trust lands in the future.

Project area: The project area includes three open space parcels with severed estate ownership between the surface owners and minerals holders, with the SLB being one of the major minerals owners with over 15,000 acres in trust. The three open space parcels are adjacent to one another and cover over 60,000 acres north of Fort Collins, along the Wyoming border:

- Meadow Springs Ranch. City-owned, 26,000 acres.
- Red Mountain Open Space. County-owned, 15,000 acres.
- Soapstone Prairie Natural Area. City-owned, 22,058 acres.

Timing and milestones: The project will be completed by December 30, 2012. There are three phases of this project, of which the SLB and TNC will work together directly on the first two. The deliverables for Phase I will be completed by June 30, 2012. TNC's work on Phase II will be completed by December 30, 2012. There will be three project check-ins over the life of the project, during which time SLB and TNC will agree whether to proceed and if so, whether changes are needed. Documentation of these decision points will be recorded through review and acceptance of summary meeting notes exchanged by the parties as part of the progress reports provided after each technical team meeting.

Milestone	Date
PHASE I – ONSITE ANALYSIS (Led by TNC)	
Target selection, collect available data, identify data gaps	
• Technical team meeting #1	• November 30, 2011
• Project Check-in: evaluation and status review between SLB and TNC	• December 2011
Create draft maps of importance of natural and cultural values. Develop different options for combining this information to identify important places for avoidance and minimization of energy development	
• Technical team meeting #2	• January 2012
• Project Check-in: evaluation and status review between SLB and TNC	• February 2012
Based on input from technical team, create draft final results for priority areas for avoidance and minimization of impacts associated with potential energy development	

Milestone	Date
• Technical team meeting #3	• March 2012
• Project Check-in: evaluation and status review between SLB and TNC	• April 2012
Complete Phase I	
• Send draft deliverables to SLB for comment	• April 2012
• Edit and send final deliverables to SLB	• June 2012
PHASE II – MINERALS DEVELOPMENT PLAN (Led by SLB)	
• TNC's contribution to minerals plan complete	• December 2012

Phase I (Onsite Analysis) – Identify priority areas for avoiding and minimizing impacts: TNC will lead this phase. This phase will identify and map priority natural and cultural resource values for the three open space properties to inform SLB's oil and gas leasing decisions. Example inputs include maps of natural and cultural values such as rare plants, wildlife habitat, cultural sites, and viewsheds. Example data sources include Colorado Division of Parks & Wildlife and the Colorado Natural Heritage Program. TNC will look to the City and County for guidance on how best to address cultural values.

This phase will aid SLB decisions regarding which stipulations to build into the Minerals Development Plan and associated leases, such as no surface occupancy and restricted surface occupancy (see Phase II below), and may also be used to decide provisions of Surface Use Agreements between the SLB and the surface owners (City of Fort Collins and Larimer County).

The onsite analysis will involve the identification and mapping of priority natural and cultural resource values by the project partners and a technical team. The final product will show a map of areas and resources that are critical to meeting both local community value and statewide conservation goals (see Figure 1 as example). The map will incorporate available GIS data and may involve habitat modeling as necessary. The final product will take into account the uniqueness (i.e., irreplaceability) and importance of the natural resource values in any one unit of analysis relative to the Central Shortgrass Prairie ecoregion as a whole, with rare and difficult-to-mitigate-for values being of greater importance (e.g., rare plants) than more common and easier-to-mitigate-for values (e.g., mule deer habitat).

Phase II (Minerals Development Plan) – Identify a drilling plan for the project area: SLB will lead this phase. The second phase of the project, in which some support will be required on an hourly basis from TNC to the SLB, will require the development of a drilling plan for the minerals estate on SLB holdings, which may also include a leasing plan, stipulations and surface use agreements. This phase will also require participation and involvement with other mineral estate owners, representatives from Larimer County and the City of Fort Collins, and a potential operator. In this phase, there are no specific deliverables for TNC. Rather, TNC will contribute technical support in the development of the drilling plan upon SLB request, and as the budget under this contract permits.

Optional Phase III (Mitigation Plan) – Identify a plan for potential offsite mitigation: TNC would lead this phase, should it occur. This phase of the project is not defined in this scope of work, as the goal of the parties is to have a comprehensive plan which seeks to avoid and minimize disturbances to the site first, essentially conducting onsite vs. offsite mitigation plans. However, there may be a need for offsite mitigation. This project phase is anticipated to require participation with TNC, other mineral estate owners, representatives from Larimer County and the City of Fort Collins, the selected minerals operator, and other stakeholders as necessary. The SLB may be a participant, but does not anticipate financially supporting this phase of the project.

Summary of deliverables from TNC

- Phase I Report – This report will describe the background, methods, results, and participants for Phase I so the SLB has documentation of what decisions were made, by whom and why. For example, the report will describe:

- Natural and cultural targets selected and rationale
- GIS layers used, including sources of data and modifications made
- Weighting/prioritization of each GIS layer and rationale
- Method for combining individual GIS layers – final method used and other methods tried – in order to identify recommended avoidance and minimization areas.
- Any other information and explanation to make it clear how the analysis was developed.

The final map(s) will prioritize important areas, with a "ranking system." For example, this ranking system may show:

- Tier 1 – areas where avoidance is legally required (e.g., threatened and endangered species)
- Tier 2 – areas where avoidance (e.g., no surface occupancy) is recommended based on rarity or other significance of the natural and cultural values
- Tier 3 – areas where minimization of impacts (if avoidance is not possible) would be sufficient to protect natural and cultural values
- Tier 4 – areas where energy development is preferred, such as already-disturbed areas.

TNC will provide all materials, include the reports and associated shapefiles by email and/or CD, based on the delivery method preferred by the SLB. Color hard copies of the report will only be provided upon request by the SLB and if the budget allows.

- Phase II contributions – SLB does not necessarily expect any specific deliverables from TNC for the Minerals Development Plan. However, as described above, SLB may request input from TNC on an hourly basis as needed and as the project budget permits.

Use of results:

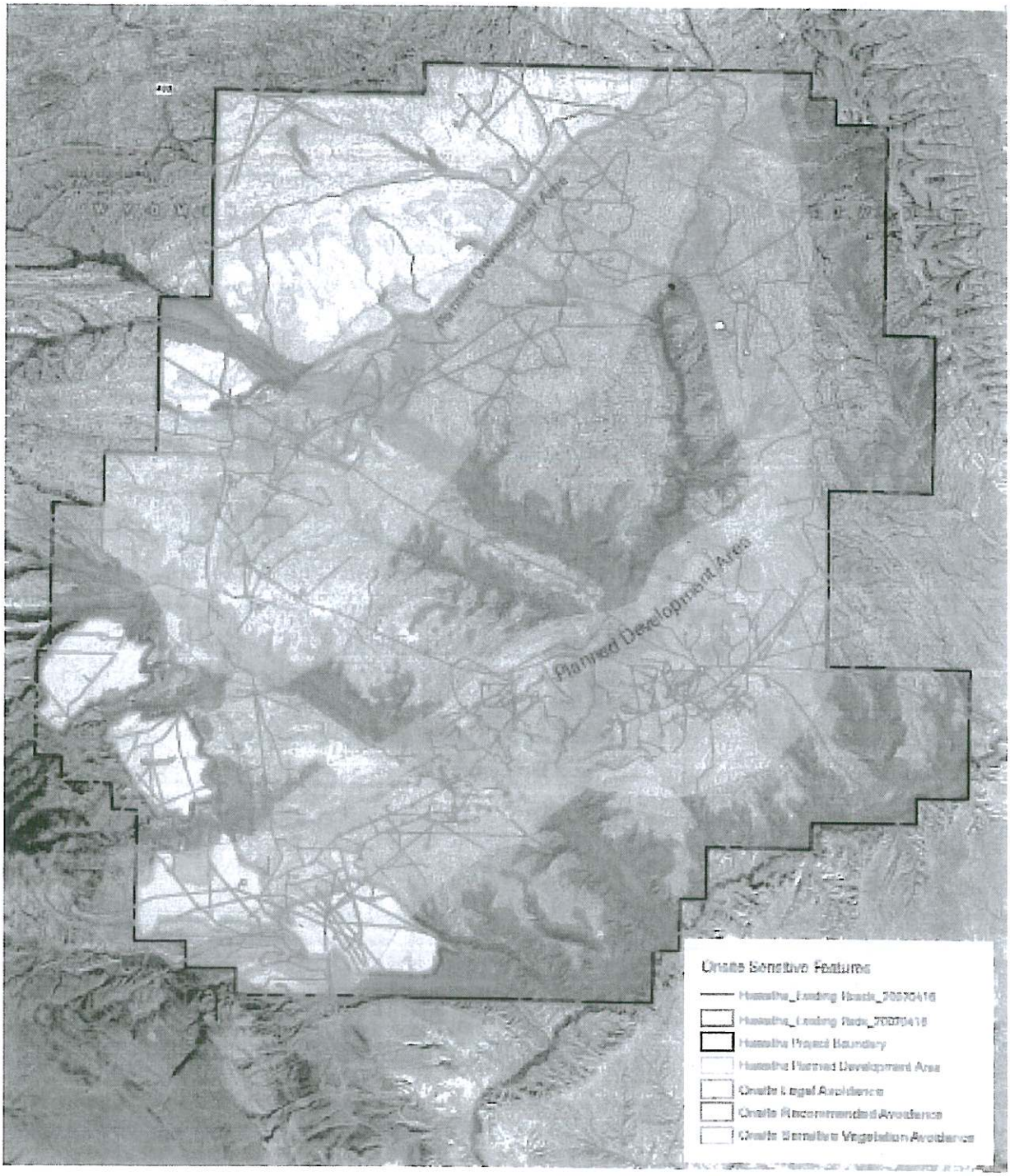
The final report for Phase I will be provided to the SLB from TNC, with copies of the report also going to the contributing stakeholders. All parties will be providing data and services for the study and will share in joint ownership of the document and findings. The final report is also expected to be a "living product" which will be used to make decisions regarding a Minerals Development Plan, which is expected to include a leasing plan, stipulations, surface use agreements, and a drilling plan. "Living product" means that SLB may include additional or updated data should the need for doing so arise between the completion of this project and the lease sale; it is not expected that TNC would rerun the EbD analysis after its completion. While all parties expect to use the report, the contract to provide data and the memorandum of understanding do not guarantee that the plans devised in this report will be implemented.

Responsibilities

- TNC will facilitate the completion of all work on the Energy by Design analysis, including the completion of all GIS work, and soliciting input from Project Partners and the technical team. TNC will provide input to the drilling plan as requested by SLB and as remaining hours allow under the project budget.
- SLB will participate on the technical team and work with TNC to ensure that EbD deliverables will meet SLB's needs, and provide data to TNC as needed for the EbD analysis. SLB will facilitate the completion of the Minerals Development Plan (Phase II) once the EbD analysis is complete.
- Project partners (City, County) will participate on the technical team and provide data to TNC as needed and complete all duties pursuant to the Memorandum of Understanding between the SLB, the City and the County.

Figure 1. Sample results for onsite analysis.

This map shows the final results for the onsite analysis of sensitive features for an EbD project that TNC completed with Questar, in northwestern Colorado and southwestern Wyoming. The map shows three types of avoidance areas – legal avoidance, recommended avoidance, and sensitive vegetation avoidance. TNC could create a similar map for the Mountains to Plains project area.



Mountains to Plains Energy by Design

Project Area

12N 70W
12N 69W
12N 68W
12N 67W
11N 70W
11N 69W
11N 68W
11N 67W
10N 70W
10N 69W
10N 68W
10N 67W

Red Mountain Open Space

Soapstone Prairie Natural Area

Meadow Springs Ranch

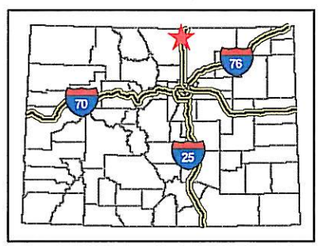
LARIMER

WELD

25

- Project Area Outline
- SLB Mineral Estate
- SLB Surface Ownership
- Soapstone Prairie Natural Area- City of Ft. Collins
- Meadow Springs Ranch- City of Ft. Collins
- Red Mountain Open Space- Larimer County

Sources:
Surface- 8/1/2011 SAMS
Minerals- 3/29/2010 SAMS



0 1 2 Miles

STATE BOARD OF LAND COMMISSIONERS
COLORADO

12/14/11

Mountains to Plains Energy by Design

Attachment 7

Natural Areas Department
1745 Hoffman Mill Road
PO Box 580
Fort Collins, CO 80522

970.416.2815
970.416.2211 - fax
fcgov.com/naturalareas

Memorandum

Dec. 18, 2012 Agenda Item #24

To: Mayor and City Councilmembers

Thru: Darin Atteberry, City Manager
Wendy Williams, Assistant City Manager
Marty Heffernan, Community Services Director

From: John Stokes, Natural Areas Director
Daylan Figgs, Senior Environmental Planner

Date: December 13, 2012

RE: Oil and Gas moratorium, impacts to Soapstone and Meadow Spring Ranch

Background Summary:

At the December 4, 2012 City Council meeting, Councilmember Ben Manvel asked staff to address any concerns an oil and gas moratorium might pose for Soapstone Prairie Natural Area and Meadow Spring Ranch. Both of these properties have been involved with an oil and gas planning effort undertaken by the State Land Board (SLB). The process, Energy by Design (EBD), has been conducted by The Nature Conservancy (TNC) acting on behalf of the SLB. The City Natural Areas Department (NAD) is a primary partner in EBD; Larimer County also has been involved. The City's participation in the process was memorialized in a Memorandum of Understanding with the SLB and Larimer County executed on January 24th, 2011 (attached). Numerous other agencies have devoted time and resources, including: Colorado Parks and Wildlife, Colorado Natural Heritage Program, Colorado State University, Legacy Land Trust, Marathon Oil, Natural Resource Conservation Service, Platte River Power Authority, Rocky Mountain Bird Observatory, and the U.S. Fish and Wildlife Service.

Bottom Line:

NAD staff has met in person and by phone with the SLB. It is understandable that after a year of work on the EBD process, the SLB was surprised and dismayed by the unexpected extension of a moratorium to lands owned by the NAD outside of the City's limits. The SLB has foregone revenues at a time of high interest in mineral leases and also invested substantial resources in EBD, in part due to strong support and encouragement from the City's NAD. In spite of this context, the SLB has indicated that it will not advocate for the moratorium to be lifted from Soapstone. City staff and SLB agreed that the moratorium, while perhaps casting a shadow over the EBD process from the perspective of potential mineral lessees, does not prevent the process from continuing. Staff has expressed its appreciation to the SLB for its patience and its commitment to the EBD process and its outcomes.

Aside from the SLB and the moratorium, City NAD staff recommends that whatever Code provisions are ultimately enacted by City Council, they should include an option for EBD or a similar process to take precedence over the Code provisions with respect to Natural Areas properties. Staff believes that a combination of EBD, the City's land ownership, and its management expertise will provide an "equal to

or better than outcome" for potential oil and gas related activities on City Natural Areas. A detailed description of EBD and related issues follows.

Detailed Background:

Beginning in 2010, Natural Areas Department (NAD) staff provided information to the City Council regarding potential oil exploration and production issues at Soapstone Prairie Natural Area ("Soapstone") and Meadow Springs Ranch ("Meadow Springs"). Both properties are considered "split estate" meaning the surface estate is owned by the City and the underlying minerals are owned by separate entities. A portion of the mineral owners, including the State Land Board (SLB) were interested in developing the mineral estate and were requesting access to the City owned surface. While the initial interest in mineral exploration was never realized, City staff continued to engage in efforts to better understand and address the possibility of oil and gas exploration and production on Soapstone and Meadow Springs. Ultimately these efforts lead to the Mountains to Plains Energy by Design (EBD) planning process between the City, Larimer County, The Nature Conservancy (TNC), and the SLB as the owner of a significant mineral estate underlying the properties.

Essentially, the EBD process is designed to bring together all of the parties-in-interest, including surface owners, mineral rights owners and lessees, and local experts and stakeholders in order to develop a common understanding of natural, cultural, scenic, agricultural, and recreational resources. Once those resources have been carefully identified and understood, the participants design an approach to minerals exploration and production activities intended to direct surface activities away from critical resources (such as wetlands, rare species, nesting bird habitat, viewshed corridors and cultural sites). Additionally, the approach entails a "no net loss" strategy that requires the mining companies to protect habitat of equal value or restore habitat to equal value. This can be accomplished through on-site or off-site mitigation (including land and water conservation). The City entered into a Memorandum of Understanding with the SLB and Larimer County (the County) to conduct the EBD planning process. The SLB agreed to forgo leasing minerals within the planning area during the planning process and provided the funding necessary to conduct EBD; the City and County and partner organizations provided information on natural and cultural resources.

It is important to note that those elements of EBD that go beyond the existing regulatory framework will require voluntary participation by mineral interests. While the SLB will build EBD requirements into its leasing program, privately owned mineral interests are not subject to those requirements. Private interests constitute about two-thirds of the mineral estate at Soapstone and Meadow Springs. Staff believes that the State's application of EBD ultimately will drive other interests to participate, but there are no guarantees.

The EBD process utilized two primary information sources to identify key resource values for the planning area: site specific natural, cultural, scenic, agricultural, and recreational information generated through various surveys conducted on Soapstone and Meadow Springs; and large scale planning processes such as the Southwest Regional Gap Analysis Project (SWReGAP), TNC's Ecoregional Planning, Colorado Natural Heritage Program's Statewide Potential Conservation Areas. The SLB, TNC, City and County as partners in the EBD process, comprised the core planning team. In addition, a technical advisory team was created to provide advice and guidance on resource protection that included experts from federal, state, and local agencies and science based conservation organizations including: Colorado Parks and Wildlife, Colorado Natural Heritage Program, Colorado State University, Legacy Land Trust, Marathon Oil, Natural Resource Conservation Service, Platte River Power Authority, Rocky Mountain Bird Observatory, and the U.S. Fish and Wildlife Service.

The EBD process utilized ten ecological systems, thirty-three wildlife and plant species, cultural resources, scenic values, and recreational resources to create four surface occupancy area classifications to control where and how oil and gas activities could occur. The surface occupancy areas are described below and shown on Map 1 (attached):

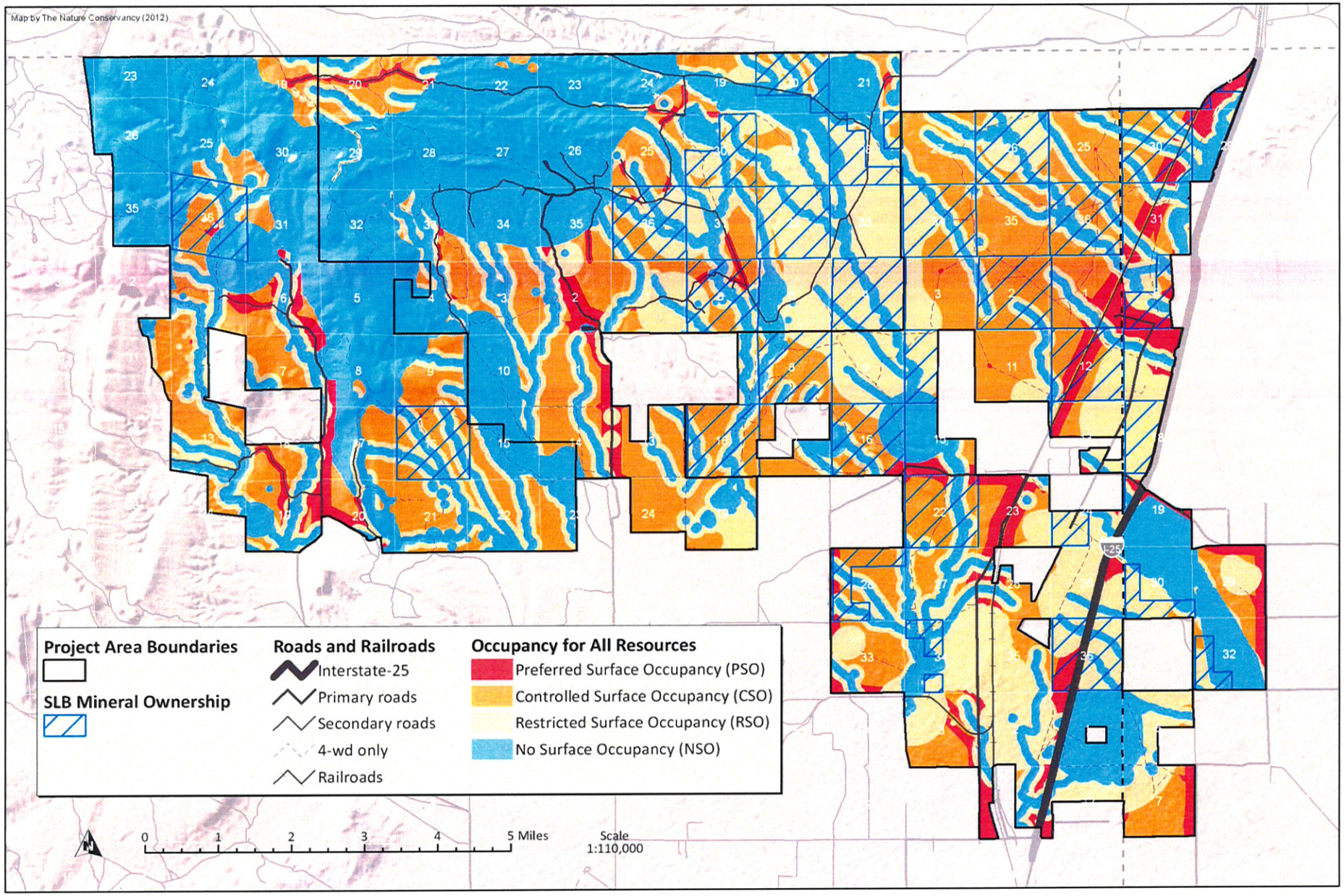
- No Surface Occupancy (approximately 44% of the planning area) – Mandated no surface occupancy due to the unprecedented biological or cultural values in these areas, that are either irreplaceable or would take decades or centuries to restore.
- Restricted Surface Occupancy (approximately 29% of the planning area) – Areas that are subject to highest restrictions on surface use due to sensitivity of the biological and/or cultural values in these areas.
- Controlled Surface Occupancy (approximately 22% of the planning area) – Areas that are generally suitable for O&G development. While biological and cultural values are present throughout the CSO area, they are less sensitive than in Limited Surface Occupancy areas. Pre-development surveys shall be required to ensure no significant impact will occur to biological or cultural resources.
- Preferred Surface Occupancy (approximately 5% of the planning area) – Areas in which surface occupancy is preferred from a biological and cultural perspective due to previous and existing disturbances such as roads and transmission lines. These areas have biological values but are relatively common, already degraded, or potentially restorable with minimal effort.

Additionally, an extensive list of Best Management Practices (BMPs) was developed to address oil and gas related activities from the initial planning stages to final site restoration. Other components of EBD being developed will limit the amount of surface disturbance that can occur at any one time and will outline how compensatory mitigation requirements are determined and where these projects can occur. Finally, the City is developing a Surface Use Agreement (SUA) that will address how operators will explore and develop the City-owned property in a manner that avoids or minimizes impacts to important resources, a detailed plan to mitigate unavoidable impacts, and incorporates BMPs including interim and final restoration plans. It is important to note that SUAs outlining oil and gas activities will be subject to approval by City Council. This process will allow Council to determine if plans for oil and gas exploration and production are adequate to avoid and minimize impacts, and if mitigation and restoration plans compensate for unavoidable impacts.

Currently, oil and gas activities on Soapstone and Meadow Springs are regulated by the Colorado Oil and Gas Conservation Commission ("COGCC") rules and regulations. While these regulations provide a basis for protecting the City's property, NAD recognizes the regulations do not fully consider the types of conservation values contained within EBD or management objectives developed for each property. The purpose of EBD is to develop a science based and data driven protection and mitigation strategy that is tailored to a defined planning landscape. The level of detail necessary to complete this process is difficult to replicate within COGCC rules and regulations or City Land Use Code (LUC). Creating a plan driven by conservation objectives and site specific information allows for a comprehensive planning approach with the flexibility necessary to avoid, minimize, and mitigate impacts to important and site specific natural, cultural, scenic, and recreational resources.

Given the potential advantages of EBD, staff recommends that Council apply the LUC to parks and natural areas outside of city limits only in the absence of Energy by Design or an equivalent planning process.

Map 1 – Laramie Foothills to Plains Energy by Design Project Surface Occupancy Areas



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Recitals

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B. The City of Fort Collins is a governmental entity and is the owner of surface estate in Meadow Springs Ranch and the Soapstone Prairie Natural Area which are a portion of Project Area.

C. Larimer County is a governmental entity and is the owner of surface estate in Red Mountain Open Space which is a portion of the Project Area.

D. The Nature Conservancy ("TNC") is a non-profit corporation which has been hired by the Board to utilize its Energy by Design framework to create an analysis and map of the project area for the Board as described in the Scope of Work attached as **Exhibit A**.

E. The Project Area includes three open space parcels which are adjacent to one another and cover over 60,000 acres north of Fort Collins, along the Wyoming border:

- Meadow Springs Ranch. City-owned, 26,000 acres.
- Red Mountain Open Space. County-owned, 15,000 acres.
- Soapstone Prairie Natural Area. City-owned, 22,058 acres.

These properties are split estate, with the major mineral owners/lessees being the Board, Anadarko, Marathon, and Chesapeake. A map of the Project Area is attached as **Exhibit B**.

Agreement

NOW, THEREFORE, the Parties agree as follows:

1. Vision. The Board is interested in leasing and developing its oil and gas holdings on trust lands within the Project Area. TNC shall provide the Board an analysis and map of the Project Area which depicts areas and resources critical to meeting both community value and statewide conservation goals. Utilizing TNC's work product, the Parties will work collaboratively with each other and with oil and gas lessees and other

mineral owners, to develop a plan for oil and gas development that seeks to preserve key natural, recreational, landscape view, and cultural resource values while providing reasonable access to the Board's and other's mineral estate, with specific strategies to avoid, minimize, and mitigate surface impacts to such resources.

2. Purpose. The Parties acknowledge that the general purpose of this Memorandum is to establish the Parties' intent and expectations regarding their long-term cooperation and good faith dealing towards each other related to the future development of the mineral estate within the Project Area. The Parties recognize that such cooperation and good faith dealing is necessary to ensure that successful realization of the vision of this Memorandum of Understanding. The Parties shall, on an ongoing basis, cooperate and coordinate with each other to achieve the goals in this Memorandum of Understanding and the Scope of Work, including, without limitation, attending meetings and sharing information relevant to the Project Area on a timely basis and by acting in good faith towards each other in the management and implementation of activities on both parcels. The Parties shall use reasonable efforts to cause their employees, consultants and agents to cooperate with the provisions of this Memorandum of Understanding.

3. Products. The Parties envision that the following products will be developed to accomplish the goal of managing oil and gas development so as to avoid, minimize, and mitigate the surface impacts and protect natural, recreational, scenic, and cultural resources.

a. TNC shall provide the final product and analysis required under the Scope of Work to the Parties.

b. The Parties shall work with each other and other mineral estate owners in the Project Area to develop a Comprehensive Drilling Plan that serves the goals of this Memorandum of Understanding.

c. The Parties and other mineral estate owners in the Project area shall develop proposed terms and conditions for a form of Surface Use Agreement that would allow for defined surface use and impact for development of oil and gas in the Project Area while avoiding, minimizing, and mitigating surface impacts and protecting natural, recreational, landscape and cultural resources. The Surface Use Agreement may restrict oil and gas development completely on certain portions of the Project Area to avoid impacting sensitive natural or cultural resources. However, the Parties contemplate that said Surface Use Agreement will provide reasonable access for development of the oil and gas in the mineral estate.

4. Roles and Responsibilities of the Parties. The Parties agree to the roles and responsibilities as allocated in this paragraph in addition to cooperating to develop the products as discussed in paragraph 3. The Parties intend to use best efforts by assigning staff resources to meet these responsibilities.

a. City of Fort Collins and Larimer County shall be responsible for the following:

i. managing the public outreach and information process by communicating with the public, organizing public information sessions, and responding to public concerns regarding this Memorandum of Understanding in a manner consistent with the spirit of and stated purpose of this Memorandum of Understanding,

ii. managing the process of any required approvals of the form of Surface Use Agreement from the City Council of Fort Collins and the Board of County Commissioners for Larimer County, respectively, upon development of a mutually agreeable form of Surface Use Agreement,

iii. managing communications with other stakeholders in the Project Area including Great Outdoors Colorado, citizens' groups, and surface lessees, and

iv. providing to TNC and the Board previously acquired data, maps, field studies, research, and other information regarding the cultural, natural, recreational, and landscape resources within the Project Area for TNC's use in creating the final products required in the Scope of Work. This shall be considered an in-kind contribution to support the goals of this Memorandum of Understanding.

b. The Board shall be responsible for the following:

i. entering into the Scope of Work with TNC and providing the staff support and financial compensation for TNC's work product;

ii. incorporating terms and stipulations in their oil and gas leases in the Project Area designed to implement the Comprehensive Drilling Plan, Surface Use Agreement, and the goals of this Memorandum; and

ii. obtaining any required approval from the Board of Land Commissioners for the Surface Use Agreement, Comprehensive Drilling Plan, and oil and gas leases.

5. Ongoing Cooperation. In addition to consulting on the Comprehensive Drilling Plan and Surface Use Agreement, the Parties shall, on an ongoing basis, cooperate and coordinate with each other regarding the development of the mineral estate and furthering the goals to avoid, minimize, and mitigate the impacts to the surface estate and the protected resources described above in the Project Area. Such ongoing cooperation shall include, without limitation, sharing relevant information on a timely basis and acting in good faith towards each other in the implementation of activities in the Project Area. It is the Parties' intent that upon development and execution of one or more Surface Use Agreements in the Project Area, the City of Fort Collins and Larimer County shall enforce the terms of the Surface Use Agreement and the Board shall enforce the terms of any oil and gas lease in the Project Area in order to ensure long term success in implementing the

goals of this Memorandum. The commitments in this paragraph shall survive termination of this Memorandum.

6. Communications. The Parties agree to the following process for addressing media contacts and requests for inspection of records under the Colorado Open Records Act:

a. With regard to media contacts and news releases, the parties will work together on joint news releases, public announcements, advertisements or publicity concerning the products anticipated from this Memorandum. This is not to limit the parties from responding to media inquiries or information requests from constituents. Standard talking points and project information will be jointly created and used by the parties to provide consistent and clear details to the general public. The parties will also keep each other informed when interviews have been conducted with various media outlets, to ensure parties involved are kept informed of public response.

b. The Parties acknowledge that certain Parties to this Memorandum are subject to the provisions of the Colorado Open Records Act and may, in certain circumstances, be obligated to allow inspection of certain records that are made, maintained or kept by the Parties. Upon receipt of a request to inspect any records concerning this Memorandum or its products, the Party in receipt of the request shall confer with the other Parties to provide them notice and an opportunity to respond to the request for inspection.

7. Term. If the Parties have not developed a Comprehensive Drilling Plan and Surface Use Agreement by December 31, 2013, this Memorandum shall terminate and be of no further force or effect.

8. Termination. Any Party to this Memorandum may terminate participation in the Memorandum by providing thirty (30) calendar days written notice of termination to the other Parties. In the event of termination of any party, upon expiration of the notice period, the entire Memorandum shall also terminate as to the remaining Parties' participation and all Parties shall be relieved of further obligation under the Memorandum.

9. Miscellaneous Provisions

a. Notices. Any notice required or permitted to be given under this Memorandum shall be in writing and shall be deemed given upon personal delivery or on the second business day after mailing by registered or certified United States mail, postage prepaid, to the appropriate party at its address stated below:

If to the Board:

State of Colorado, acting by and through the Colorado State Board
of Land Commissioners
1127 Sherman Street, Suite 300
Denver, CO 80203
Attn: Director, and Minerals Director

If to the City of Fort Collins:

John Stokes
Director, Natural Areas Department
215 N Mason
Fort Collins, CO 80522

If to Larimer County:

Gary K. Buffington, Director
Natural Resources Department
1800 S. County Road 31
Loveland, CO 80537

b. Amendment. This Memorandum may be amended by written agreement executed and delivered by the Parties.

c. No Partnership. Nothing in this Memorandum shall be deemed in any way to create between any of the Parties any relationship of partnership, joint venture or association, and the Parties hereby disclaim the existence of any such relationship.

d. Assignment. No Party may assign, charge, encumber or otherwise amend any of its rights and obligations under this Memorandum without the prior written consent of the other Parties.

IN WITNESS WHEREOF, each Party has executed this Memorandum of Understanding or has caused it to be executed, under seal, on its behalf by its duly authorized representatives as of the Effective Date.

STATE OF COLORADO, acting by and through the COLORADO STATE BOARD OF LAND COMMISSIONERS:

By: _____
Name: William E. Ryan
Title: Director, State Board of Land Commissioners

CITY OF FORT COLLINS SEAL COLORADO

APPROVED AS TO FORM
Deputy City Attorney

CITY OF FORT COLLINS

By: _____
Name: Darin Atteberry
Title: City Manager

LARIMER COUNTY

By: _____
Name: Gary K. Buffington
Title: Director, Natural Resources Department

Exhibit A - Scope of Work
Mountains to Plains Energy by Design

Summary: The Nature Conservancy (TNC) will utilize its Energy by Design (EbD) framework to identify opportunities to avoid, minimize, and mitigate the impacts of oil and gas development to natural and cultural values associated with three open space parcels in northern Larimer County. EbD is designed to achieve "no net loss" outcomes to biodiversity values in light of energy development. TNC will work collaboratively with the State Land Board (SLB) as its client, project partners including the City of Fort Collins and Larimer County, and with a technical team comprised of experts from government agencies (federal, state, and local) and conservation organizations. The project will provide for an "onsite analysis" of priority biodiversity values prior to SLB's lease sale (Phase I), which SLB can use to guide the development of a Minerals Development Plan (Phase II). Following the creation of the Minerals Development Plan, the lessee(s) may opt to participate in a third phase of the project, to identify and implement offsite mitigation opportunities associated with unavoidable impacts onsite (Phase III). This SOW covers Phases I and II, and briefly describes Phase III.

Project goal: SLB seeks a strategy to lease and develop its oil and gas holdings on trust lands within the Soapstone Prairie Natural Area, Red Mountain Open Space, and Meadow Springs Ranch parcels in northern Larimer County. SLB and TNC will work collaboratively with Larimer County and the City of Fort Collins, and in conjunction with oil and gas lessees and other mineral owners, to develop a plan for oil and gas development that provides access to the state's mineral estate, with specific strategies to avoid and minimize surface impacts to key natural and cultural resource values. This initiative may also be part of SLB's goals to create oil and gas development master plans on specific trust lands in the future.

Project area: The project area includes three open space parcels with severed estate ownership between the surface owners and minerals holders, with the SLB being one of the major minerals owners with over 15,000 acres in trust. The three open space parcels are adjacent to one another and cover over 60,000 acres north of Fort Collins, along the Wyoming border:

- Meadow Springs Ranch. City-owned, 26,000 acres.
- Red Mountain Open Space. County-owned, 15,000 acres.
- Soapstone Prairie Natural Area. City-owned, 22,058 acres.

Timing and milestones: The project will be completed by December 30, 2012. There are three phases of this project, of which the SLB and TNC will work together directly on the first two. The deliverables for Phase I will be completed by June 30, 2012. TNC's work on Phase II will be completed by December 30, 2012. There will be three project check-ins over the life of the project, during which time SLB and TNC will agree whether to proceed and if so, whether changes are needed. Documentation of these decision points will be recorded through review and acceptance of summary meeting notes exchanged by the parties as part of the progress reports provided after each technical team meeting.

Milestone	Date
PHASE I – ONSITE ANALYSIS (Led by TNC)	
Target selection, collect available data, identify data gaps	
◦ Technical team meeting #1	◦ November 30, 2011
◦ Project Check-in: evaluation and status review between SLB and TNC	◦ December 2011
Create draft maps of importance of natural and cultural values. Develop different options for combining this information to identify important places for avoidance and minimization of energy development	
◦ Technical team meeting #2	◦ January 2012
◦ Project Check-in: evaluation and status review between SLB and TNC	◦ February 2012
Based on input from technical team, create draft final results for priority areas for avoidance and minimization of impacts associated with potential energy development	

Milestone	Date
◦ Technical team meeting #3	◦ March 2012
◦ Project Check-in: evaluation and status review between SLB and TNC	◦ April 2012
Complete Phase I	
◦ Send draft deliverables to SLB for comment	◦ April 2012
◦ Edit and send final deliverables to SLB	◦ June 2012
PHASE II - MINERALS DEVELOPMENT PLAN (Led by SLB)	
◦ TNC's contribution to minerals plan complete	◦ December 2012

Phase I (Onsite Analysis) – Identify priority areas for avoiding and minimizing impacts: TNC will lead this phase. This phase will identify and map priority natural and cultural resource values for the three open space properties to inform SLB's oil and gas leasing decisions. Example inputs include maps of natural and cultural values such as rare plants, wildlife habitat, cultural sites, and viewsheds. Example data sources include Colorado Division of Parks & Wildlife and the Colorado Natural Heritage Program. TNC will look to the City and County for guidance on how best to address cultural values.

This phase will aid SLB decisions regarding which stipulations to build into the Minerals Development Plan and associated leases, such as no surface occupancy and restricted surface occupancy (see Phase II below), and may also be used to decide provisions of Surface Use Agreements between the SLB and the surface owners (City of Fort Collins and Larimer County).

The onsite analysis will involve the identification and mapping of priority natural and cultural resource values by the project partners and a technical team. The final product will show a map of areas and resources that are critical to meeting both local community value and statewide conservation goals (see Figure 1 as example). The map will incorporate available GIS data and may involve habitat modeling as necessary. The final product will take into account the uniqueness (i.e., irreplaceability) and importance of the natural resource values in any one unit of analysis relative to the Central Shortgrass Prairie ecoregion as a whole, with rare and difficult-to-mitigate-for values being of greater importance (e.g., rare plants) than more common and easier-to-mitigate-for values (e.g., mule deer habitat).

Phase II (Minerals Development Plan) – Identify a drilling plan for the project area: SLB will lead this phase. The second phase of the project, in which some support will be required on an hourly basis from TNC to the SLB, will require the development of a drilling plan for the minerals estate on SLB holdings, which may also include a leasing plan, stipulations and surface use agreements. This phase will also require participation and involvement with other mineral estate owners, representatives from Larimer County and the City of Fort Collins, and a potential operator. In this phase, there are no specific deliverables for TNC. Rather, TNC will contribute technical support in the development of the drilling plan upon SLB request, and as the budget under this contract permits.

Optional Phase III (Mitigation Plan) – Identify a plan for potential offsite mitigation: TNC would lead this phase, should it occur. This phase of the project is not defined in this scope of work, as the goal of the parties is to have a comprehensive plan which seeks to avoid and minimize disturbances to the site first, essentially conducting onsite vs. offsite mitigation plans. However, there may be a need for offsite mitigation. This project phase is anticipated to require participation with TNC, other mineral estate owners, representatives from Larimer County and the City of Fort Collins, the selected minerals operator, and other stakeholders as necessary. The SLB may be a participant, but does not anticipate financially supporting this phase of the project.

Summary of deliverables from TNC

- Phase I Report – This report will describe the background, methods, results, and participants for Phase I so the SLB has documentation of what decisions were made, by whom and why. For example, the report will describe:

- Natural and cultural targets selected and rationale
- GIS layers used, including sources of data and modifications made
- Weighting/prioritization of each GIS layer and rationale
- Method for combining individual GIS layers – final method used and other methods tried – in order to identify recommended avoidance and minimization areas.
- Any other information and explanation to make it clear how the analysis was developed.

The final map(s) will prioritize important areas, with a "ranking system." For example, this ranking system may show:

- Tier 1 – areas where avoidance is legally required (e.g., threatened and endangered species)
- Tier 2 – areas where avoidance (e.g., no surface occupancy) is recommended based on rarity or other significance of the natural and cultural values
- Tier 3 – areas where minimization of impacts (if avoidance is not possible) would be sufficient to protect natural and cultural values
- Tier 4 – areas where energy development is preferred, such as already-disturbed areas.

TNC will provide all materials, include the reports and associated shapefiles by email and/or CD, based on the delivery method preferred by the SLB. Color hard copies of the report will only be provided upon request by the SLB and if the budget allows.

- Phase II contributions – SLB does not necessarily expect any specific deliverables from TNC for the Minerals Development Plan. However, as described above, SLB may request input from TNC on an hourly basis as needed and as the project budget permits.

Use of results:

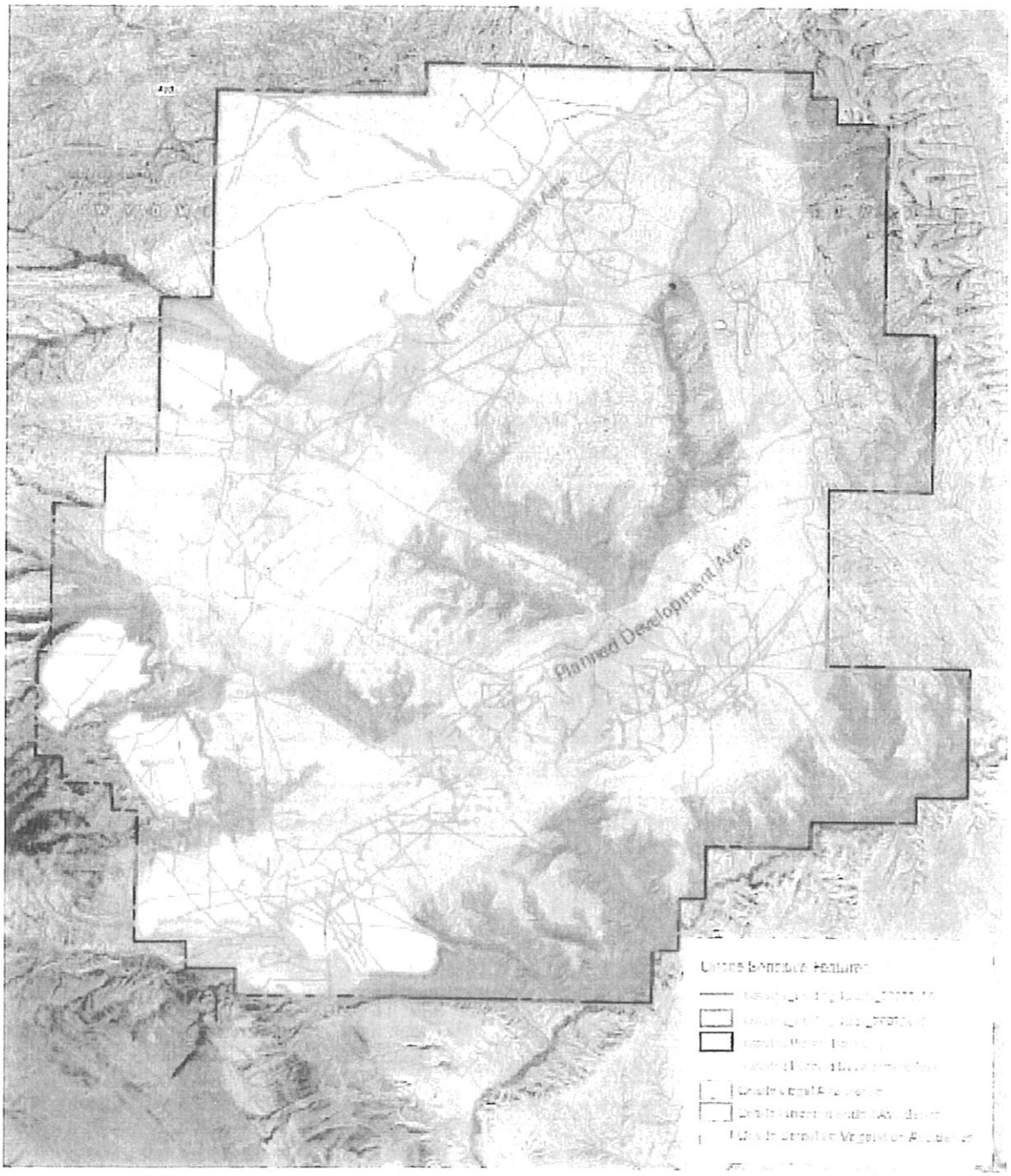
The final report for Phase I will be provided to the SLB from TNC, with copies of the report also going to the contributing stakeholders. All parties will be providing data and services for the study and will share in joint ownership of the document and findings. The final report is also expected to be a "living product" which will be used to make decisions regarding a Minerals Development Plan, which is expected to include a leasing plan, stipulations, surface use agreements, and a drilling plan. "Living product" means that SLB may include additional or updated data should the need for doing so arise between the completion of this project and the lease sale; it is not expected that TNC would rerun the EbD analysis after its completion. While all parties expect to use the report, the contract to provide data and the memorandum of understanding do not guarantee that the plans devised in this report will be implemented.

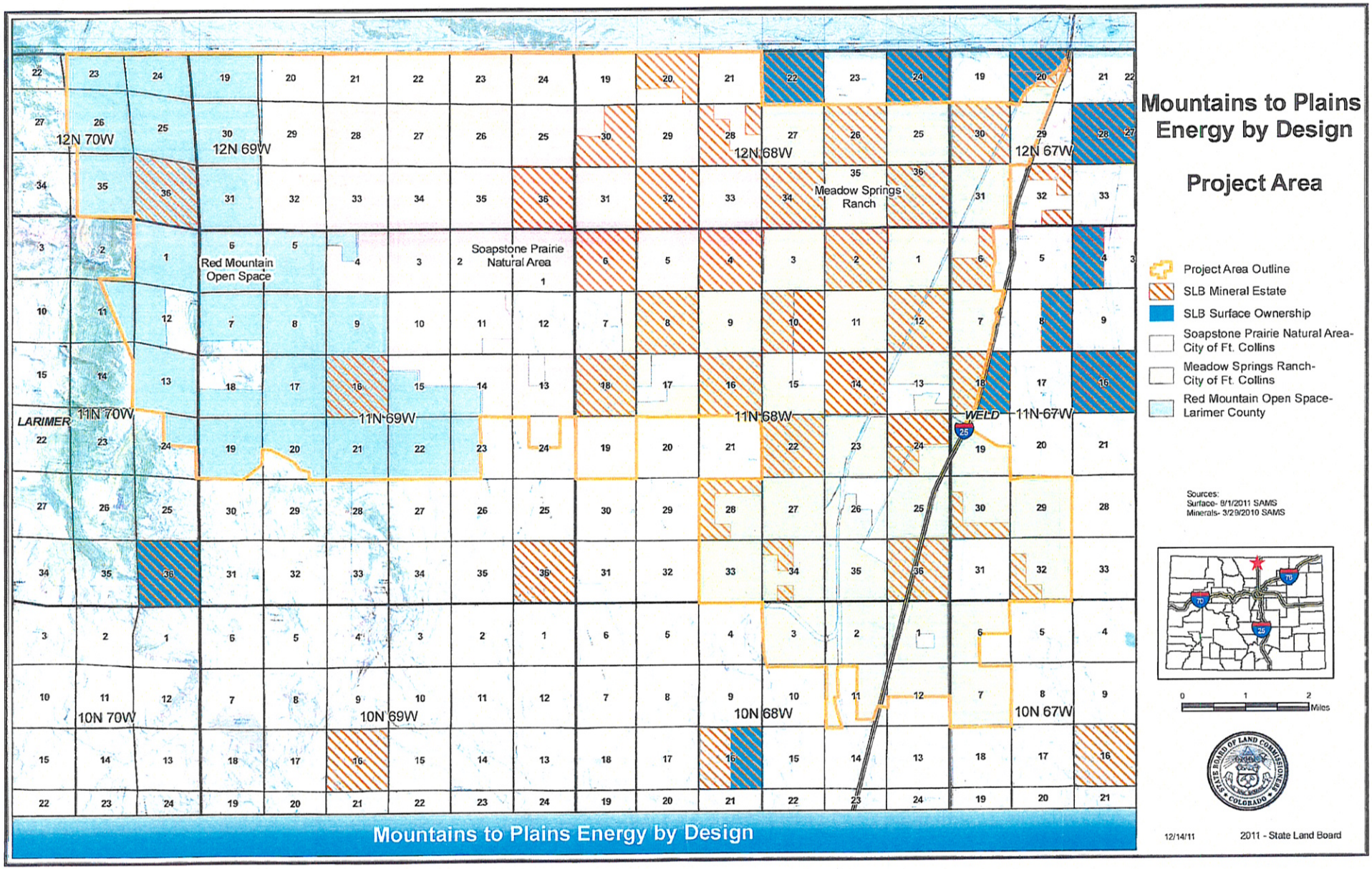
Responsibilities

- TNC will facilitate the completion of all work on the Energy by Design analysis, including the completion of all GIS work, and soliciting input from Project Partners and the technical team. TNC will provide input to the drilling plan as requested by SLB and as remaining hours allow under the project budget.
- SLB will participate on the technical team and work with TNC to ensure that EbD deliverables will meet SLB's needs, and provide data to TNC as needed for the EbD analysis. SLB will facilitate the completion of the Minerals Development Plan (Phase II) once the EbD analysis is complete.
- Project partners (City, County) will participate on the technical team and provide data to TNC as needed and complete all duties pursuant to the Memorandum of Understanding between the SLB, the City and the County.

Figure 1. Sample results for onsite analysis.

This map shows the final results for the onsite analysis of sensitive features for an EbD project that TNC completed with Questar, in northwestern Colorado and southwestern Wyoming. The map shows three types of avoidance areas – legal avoidance, recommended avoidance, and sensitive vegetation avoidance. TNC could create a similar map for the Mountains to Plains project area.





Mountains to Plains Energy by Design

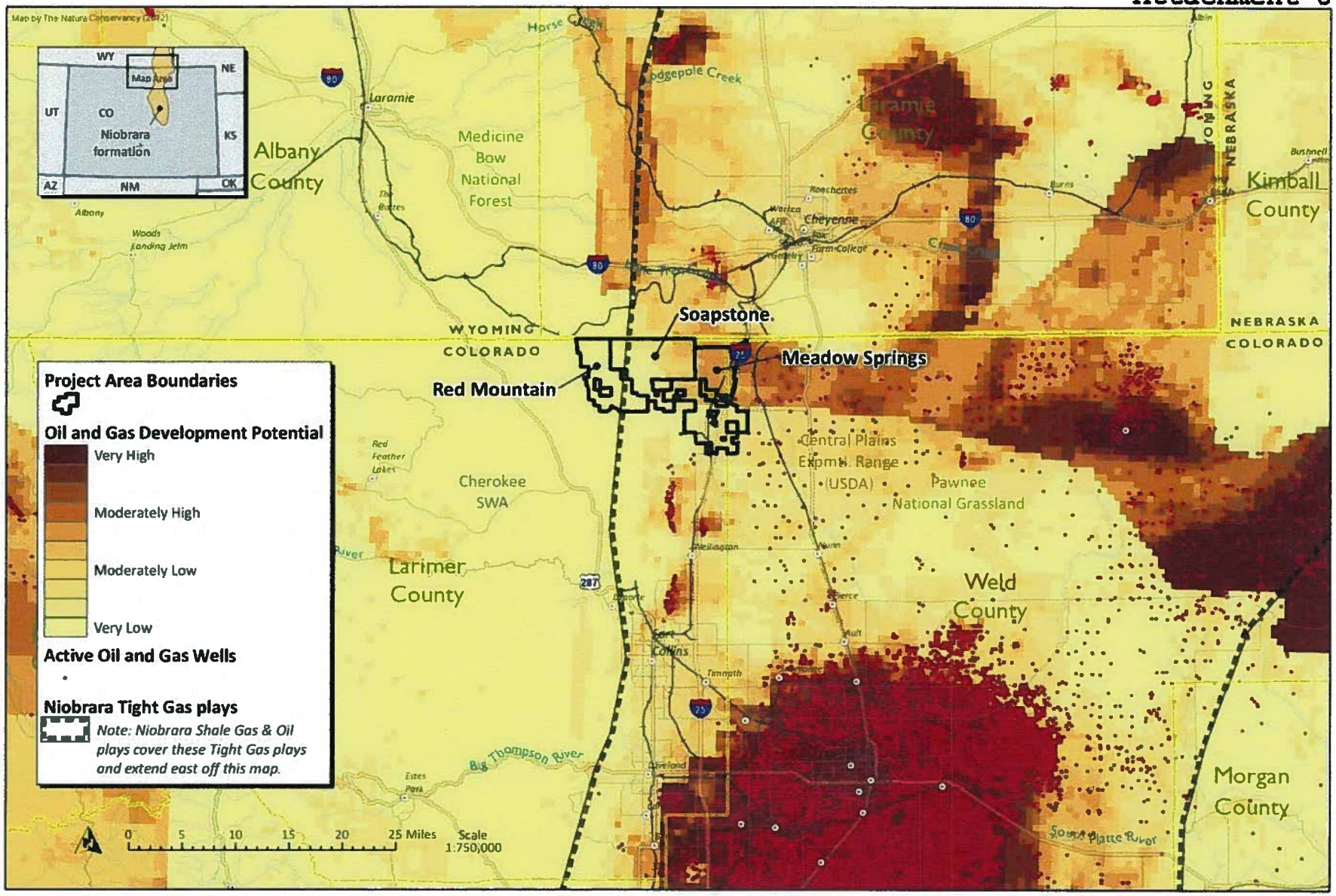
Project Area

- Project Area Outline
- SLB Mineral Estate
- SLB Surface Ownership
- Soapstone Prairie Natural Area- City of Ft. Collins
- Meadow Springs Ranch- City of Ft. Collins
- Red Mountain Open Space- Larimer County

Sources:
Surface- 8/1/2011 SAMS
Minerals- 3/29/2010 SAMS

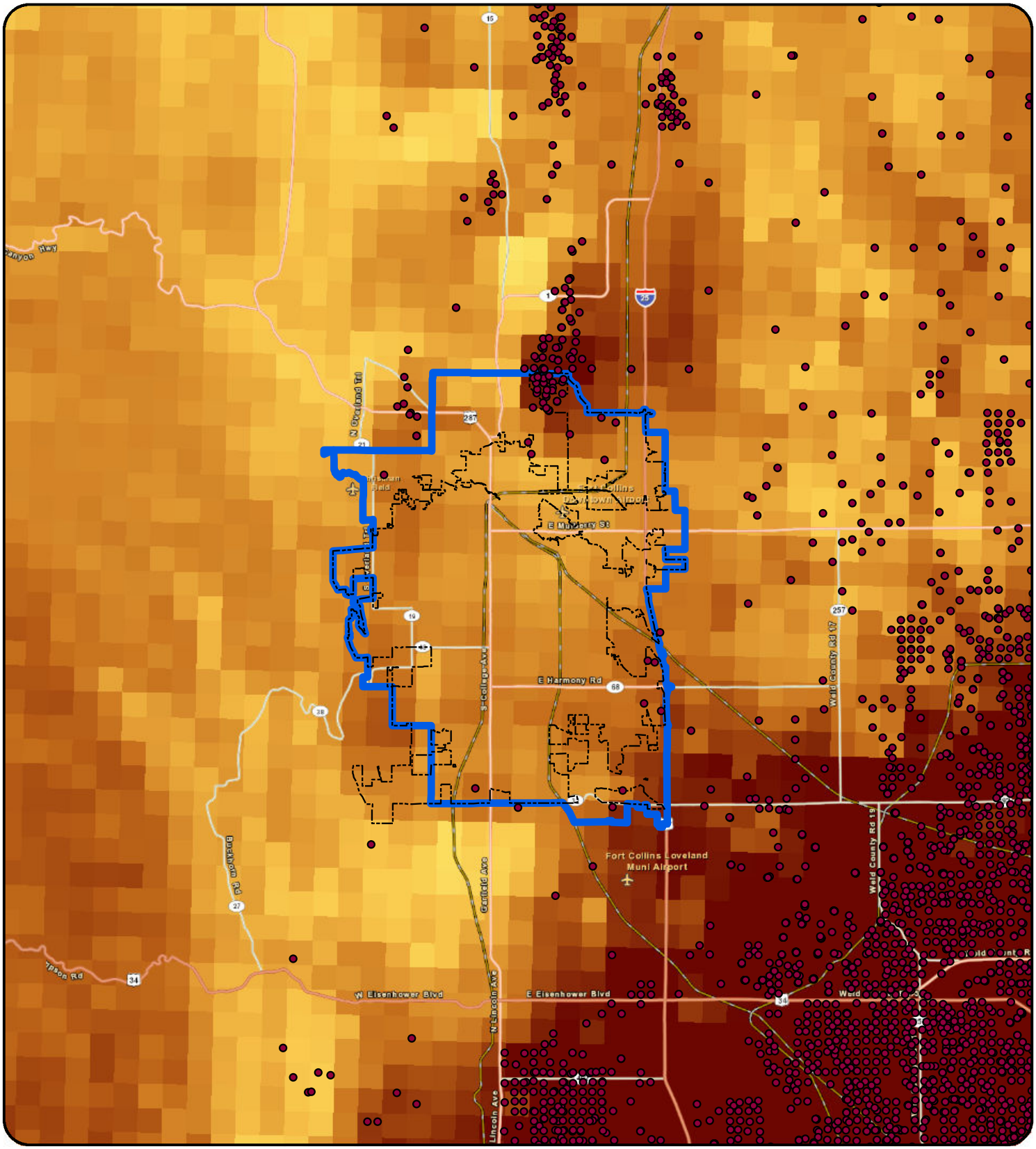
0 1 2 Miles

12/14/11



Sources: Oil and gas development potential: (Copeland, Dougherty, Naugle, Pocewicz , & Kiesecker, 2009). Oil and Gas Wells in Colorado: (Colorado Oil and Gas Conservation Commission, 2012). Oil and gas wells in Wyoming: (Wyoming Oil and Gas Conservation Commission, 2012). Niobrara formation boundary: (Energy Information Administration, 2010).

Oil and Gas Development Potential



Planning, Development, & Transportation

Community Development & Neighborhood Services
281 North College Avenue
P.O. Box 580
Fort Collins, CO 80522.0580

970.416.2740
970.224.6134- fax
fcgov.com

MEMORANDUM

Date: January 25, 2013

To: Mayor and City Councilmembers

Through: Darin Atteberry, City Manager
Diane Jones, Deputy City Manager – Policy, Planning and Transportation
Karen Cumbo, Planning, Development, and Transportation Director

From: Laurie Kadrich, Community Development and Neighborhood Services Director

Re: Work Session Summary – January 22, 2013 re: Request by City Council Consider Submitting a ballot measure for the April 2, 2013 Municipal election asking voters to ban hydraulic fracturing treatment.

City Council in Attendance: Mayor Weitkunat, Mayor Pro Tem Ohlson, Councilpersons Horak, Kottwitz, Manvel, Poppaw, and Troxell.

Presenting Staff: Laurie Kadrich, Dan Weinheimer, Wanda Nelson

In December 2012 City Council authorized a moratorium preventing any further drilling of oil and gas well in the city limits or on City-owned lands until July 31, 2013. Since that time, citizens asked the Council to consider banning hydraulic fracturing in the city. Staff requested Council's feedback on three items:

Specific Questions:

1. Should the City Council direct staff to draft a ballot measure for the April 2, 2013 Municipal election asking voters to ban hydraulic fracturing treatment in the City of Fort Collins or on City-owned lands?
2. Should the question be addressed by Land Use Code or the Environmental Health section of the Municipal Code?
3. Should the question be limited to hydraulic fracturing or apply to storage, disposal of waste materials?

Council Feedback:

- In response to Question 1, the City Council directed staff to proceed with drafting a Resolution to be considered at the February 19, 2013 Regular meeting submitting a ballot measure to ban hydraulic fracturing treatment exempting wells that were annexed in the City.
- In response to Question 2, the City Council directed staff to address the question in the Environmental Health section of the Municipal Code.
- In response to Question 3, the City Council directed staff to include storage and disposal of waste materials.

Additional Direction

Council asked staff to prepare information for the February 19, 2013 meeting to address the following:

- Describe the geology of Fort Collins and where drilling activity will likely occur.
- Locate science-based studies on hydraulic fracturing.
- To be balanced in the information presented using the “triple-bottom” line approach
- Describe the financial impacts if a ban were to be imposed.
- Pursue negotiation of an operator agreement with the local operator.

.

Should the City Council Ban "Hydraulic Fracturing Treatment"?

Laurie Kadrich

Director, Community Development & Neighborhood Services

Dan Weinheimer

Policy and Project Manager

Wanda Nelson

City Clerk

February 19, 2013 City Council Meeting

Items for City Council Consideration:

First Reading Ordinance No. 032: Amend City Code to Ban Hydraulic Fracturing and Storage within the City (operator agreement in place).

OR

Resolution 2013-011: Submit a question on the April Ballot asking whether to Ban Hydraulic Fracturing and Storage within the City (operator agreement in place).

City of Fort Collins

Items for City Council Consideration:

Resolution 2013-012:

- Request for regulatory powers over oil and gas exploration and production locally
- Support the City of Longmont in its litigation over home rule authority
- Authorize negotiations with Larimer County to regulate oil and gas exploration and production within the Growth Management Area (GMA)

Items for City Council Consideration:

Provide direction to staff on what option(s) to consider for city-owned lands outside the city limits

1. Include in the City Code, or on a ballot question to ban hydraulic fracturing
2. Include in any Land Use Code requirements following expiration of the moratorium
3. Extend the moratorium on city-owned lands and apply for Designated Outside Activity Areas status through the COGCC

City of Fort Collins

Items for City Council Consideration:

Provide direction to staff on what option(s) to consider for city-owned lands outside the city limits (cont'.)

4. Utilize the Energy by Design Process for mineral rights owned by the State Land Board: extend those requirements to other mineral owners thru the adoption of surface use agreements
5. Develop surface use agreements for other mineral interests that reflect best practice or meet LUC during the time the mineral right is extracted (rather than committing to the Energy by Design process)

City of Fort Collins

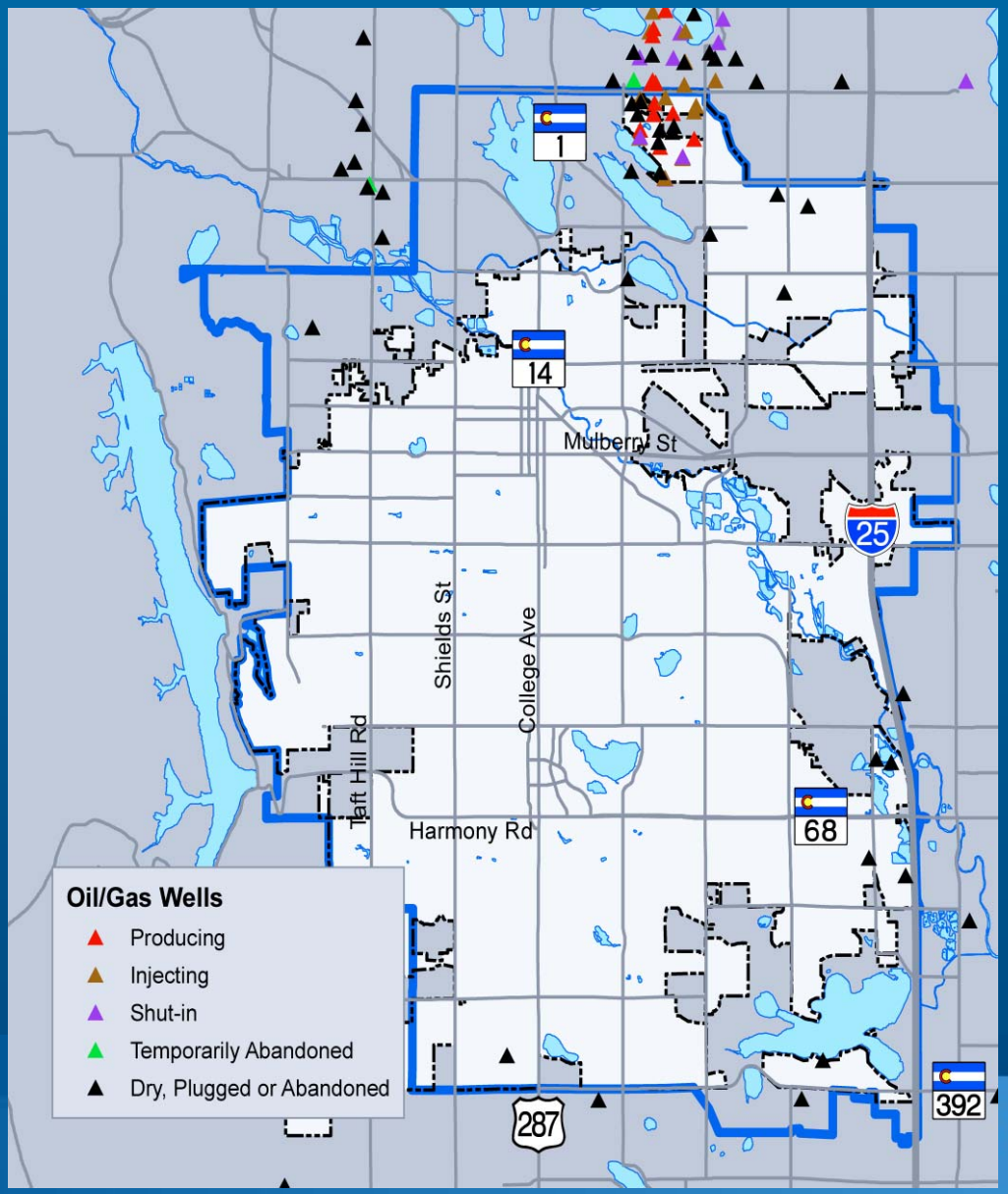
What is Hydraulic Fracturing?

- Generally allows for more oil or gas recovery
- A treatment used by the oil and gas industry to stimulate oil and gas recovery by:
  - Injecting fluids, including chemicals, under pressure into the well
  - Designed to fracture geological formations
  - Enhance production of oil & gas
  - Commonly referred to as “fracking”

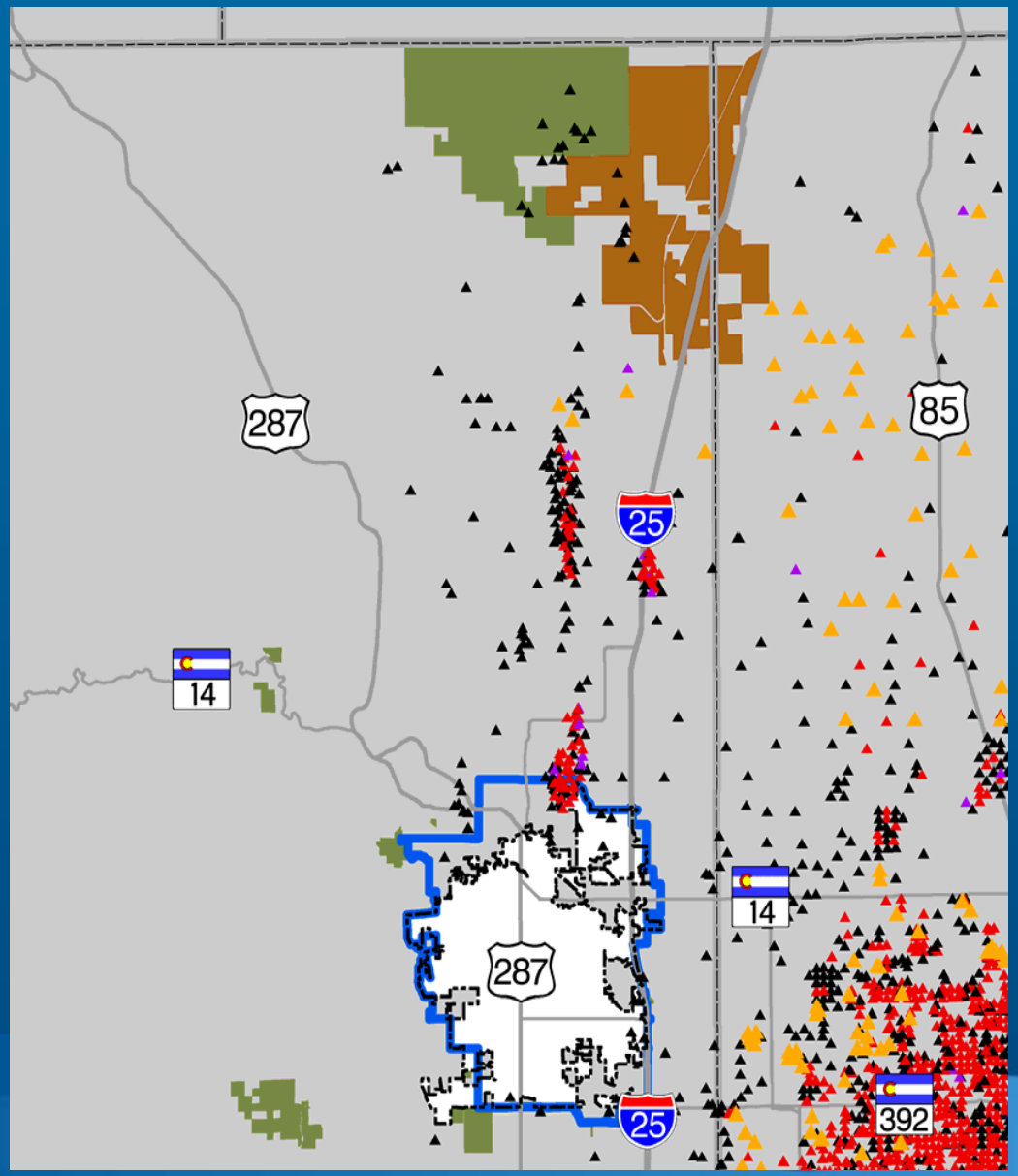
Where Does Hydraulic Fracturing Occur?

- Nearly every new drilling process uses hydraulic fracturing to stimulate well production
- Can also be used to increase production after the well production reduces, application for the extraction of oil and gas products
- Some potential for application in the Fort Collins field

Existing Wells in Fort Collins City Limits



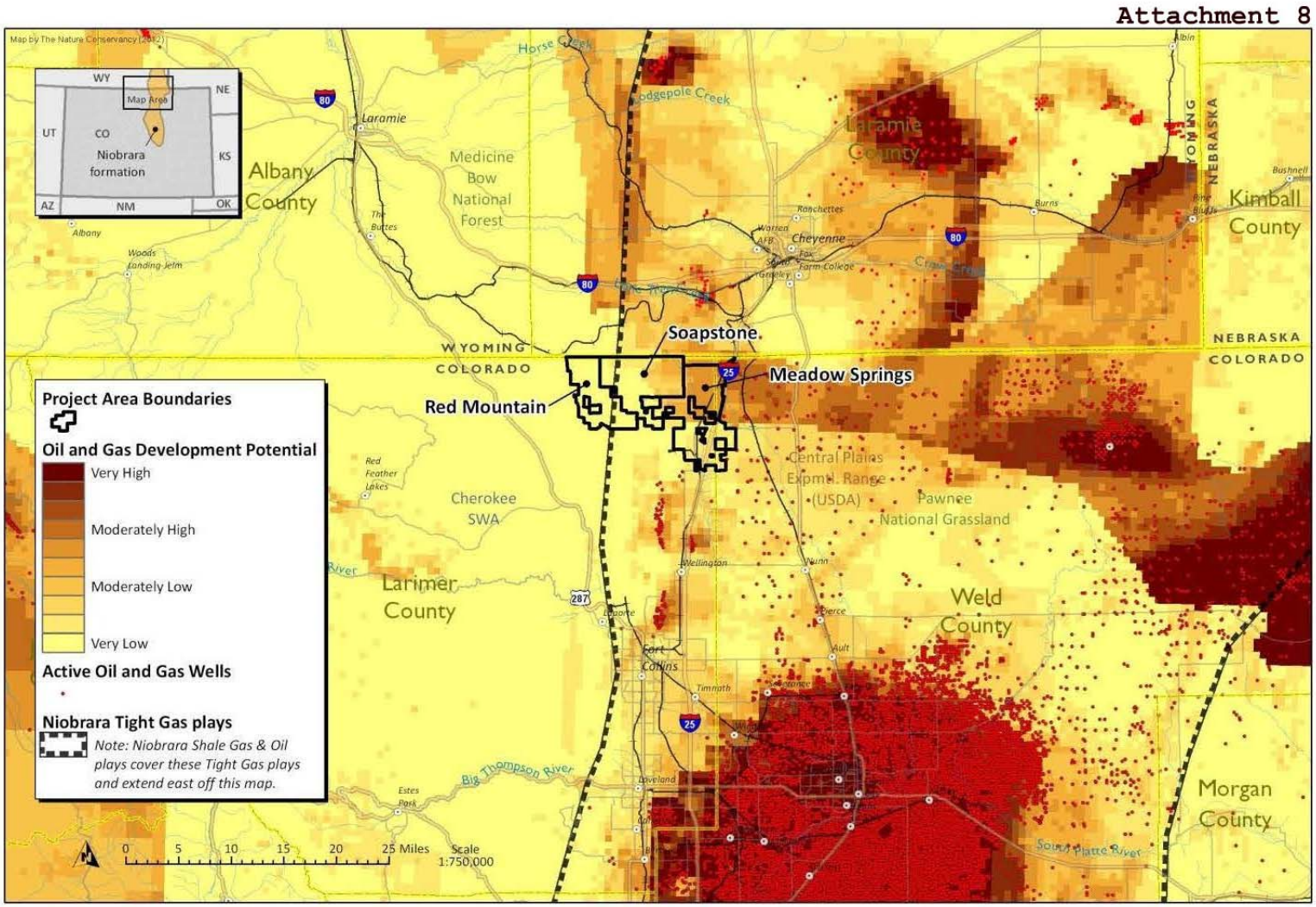
Well Activity City Limits & City-owned Natural Areas



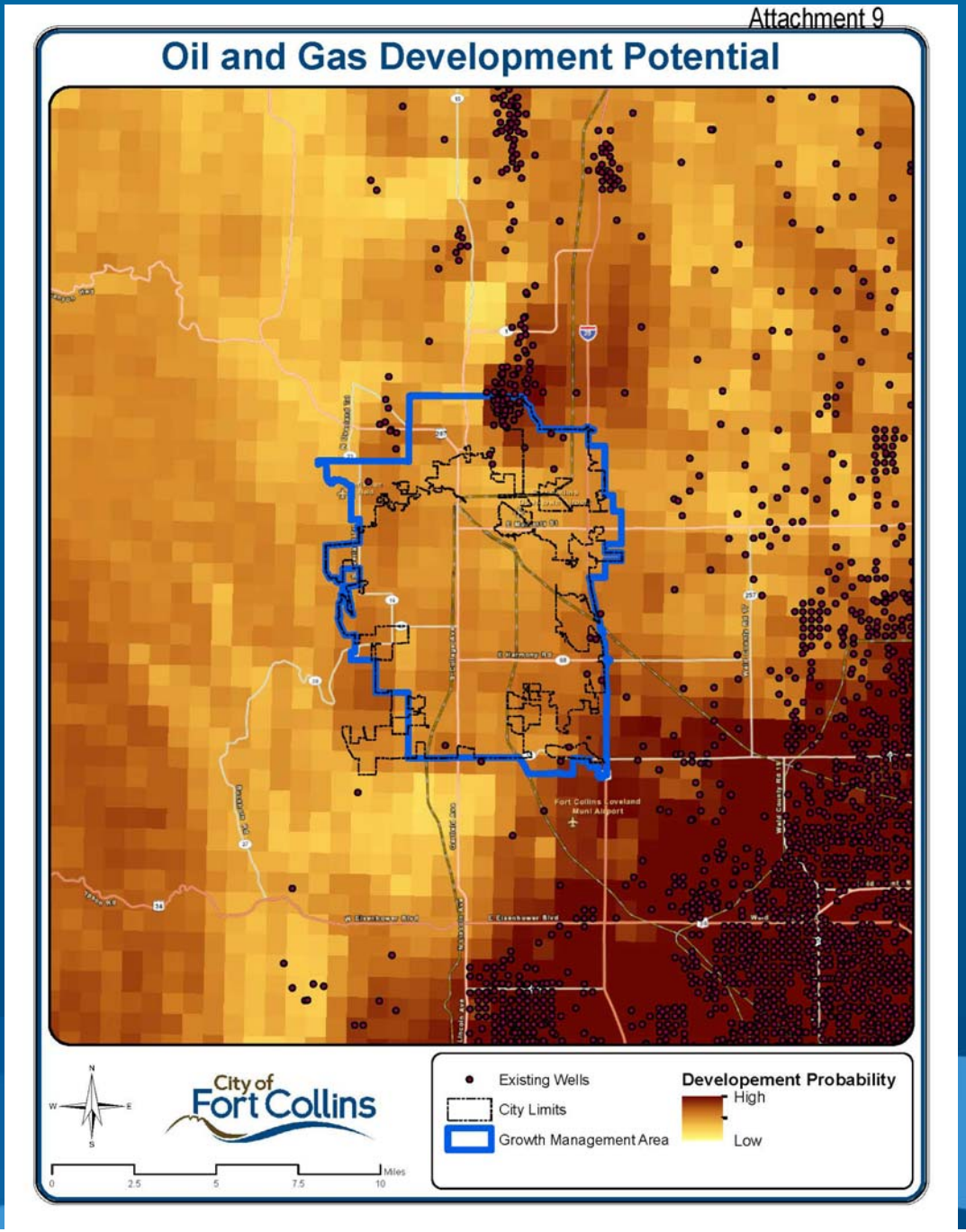
Oil/Gas Wells

- Active
- Shut-in
- Inactive
- Current Statewide Setbacks (150-350 ft)
- Parks/Natural Areas/Open Spaces

Regional Geology



Regional Geology, with City Limits and GMA



Why are people concerned?

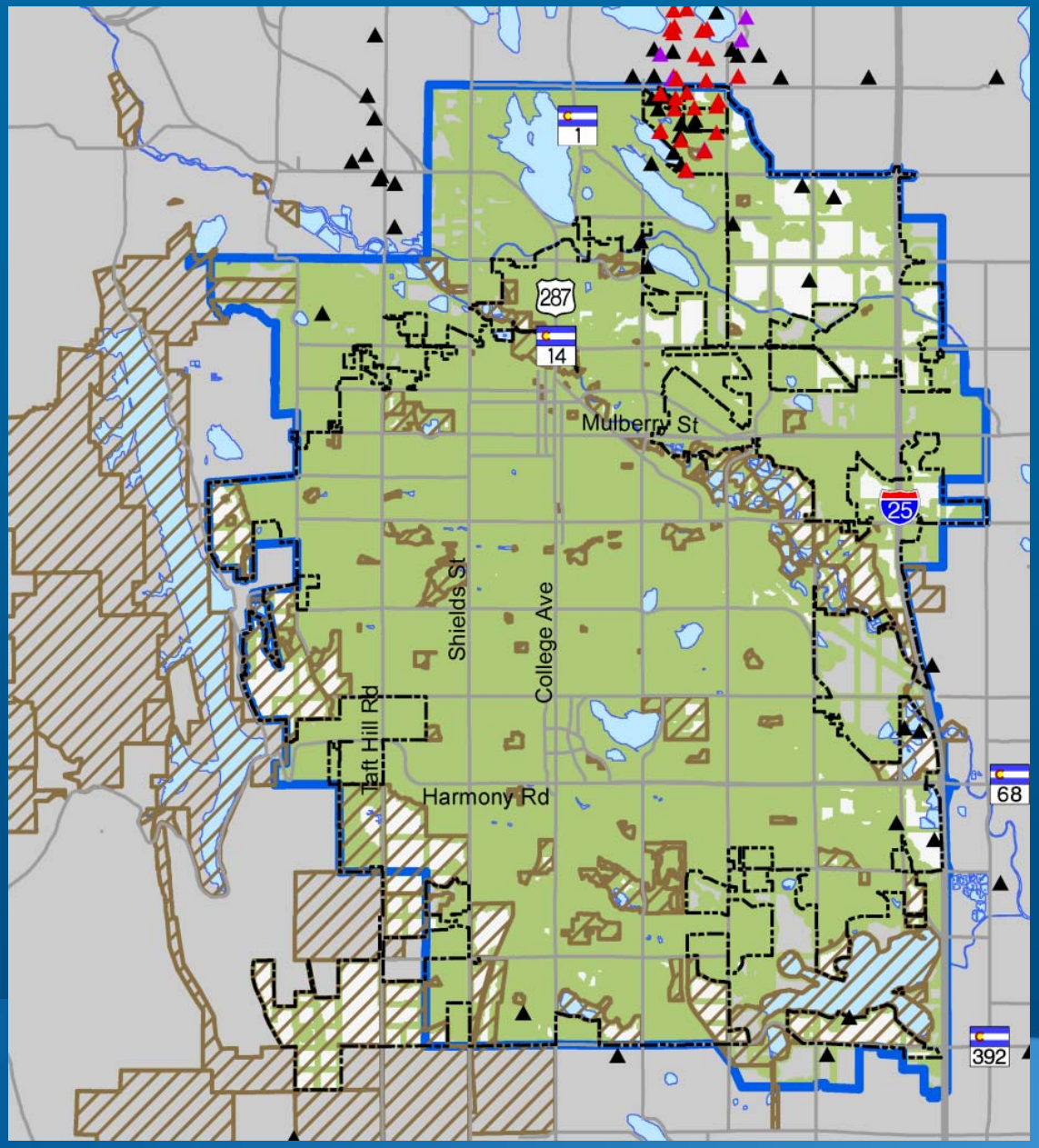
- Air Quality
  - Pollutants
  - Carcinogens, dust, aerosols, odors
  - Haze and acid rain
- Water Quality
  - Methane gas
  - Spills and shallow water contamination
  - Illicit dumping

Why are people concerned?

Cont.'

- Waste and Wastewater
  - Capture, storage and disposal challenges
- Earthquake Potential
  - Deep disposal wells
- Habitat Fragmentation (regional concern)
  - Migration patterns and winter use

New COGCC Rules 89.33%City Limits Excluded from Drilling (effective 8/1/13)



Staff Recommendation

- Adopt Ordinance No. 032
- Adopt Resolution 2013-012
- Limit Ban to City Limits
- Continue modifying LUC to greatest extent possible
- Continue negotiations with Prospect Energy to develop an operator agreement

Items for City Council Consideration:

First Reading Ordinance No. 032: Amend City Code to Ban Hydraulic Fracturing and Storage within the City (operator agreement in place).

OR

Resolution 2013-011: Submit a question on the April Ballot asking whether to Ban Hydraulic Fracturing and Storage within the City (operator agreement in place).

Items for City Council Consideration:

Resolution 2013-012:

- Request for regulatory powers over oil and gas exploration and production locally
- Support the City of Longmont in its litigation over home rule authority
- Authorize negotiations with Larimer County to regulate oil and gas exploration and production within the Growth Management Area (GMA)

Items for City Council Consideration:

Provide direction to staff on what option(s) to consider for city-owned lands outside the city limits

1. Include in the City Code, or on a ballot question to ban hydraulic fracturing
2. Include in any Land Use Code requirements following expiration of the moratorium
3. Extend the moratorium on city-owned lands and apply for Designated Outside Activity Areas status through the COGCC

City of Fort Collins

Items for City Council Consideration:

Provide direction to staff on what option(s) to consider for city-owned lands outside the city limits (cont'.)

4. Utilize the Energy by Design Process for mineral rights owned by the State Land Board: extend those requirements to other mineral owners thru the adoption of surface use agreements
5. Develop surface use agreements for other mineral interests that reflect best practice or meet LUC during the time the mineral right is extracted (rather than committing to the Energy by Design process)

ORDINANCE NO. 032, 2013
OF THE COUNCIL OF THE CITY OF FORT COLLINS
AMENDING THE CODE OF THE CITY OF FORT COLLINS
TO IMPOSE A BAN ON HYDRAULIC FRACTURING AND CERTAIN
STORAGE OF WASTE WITHIN THE CITY

WHEREAS, in December 2012, the City Council authorized a moratorium preventing any further drilling for oil and gas in the City until July 31, 2013; and

WHEREAS, since that time, citizens have requested that the City Council consider imposing a ban on hydraulic fracturing in the City; and

WHEREAS, the City Council has determined that in order to preserve the health, safety and welfare of the City residents, hydraulic fracturing should be banned within the City, as well as the storage in open pits of solid or liquid wastes and/or flowback created in connection with the hydraulic fracturing process; and

WHEREAS, the City Council has further determined that in order to respect the rights of existing oil and gas operators in the City, the proposed ban on hydraulic fracturing and storage should not apply to any oil or gas wells or pad sites existing within the City as of February 19, 2013, provided that the operators of such wells and/or pad sites enter into satisfactory agreements with the City to regulate their existing and future operations.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF FORT COLLINS that Chapter 12 of the Code of the City of Fort Collins is hereby amended by the addition of a new Article VIII which reads in its entirety as follows:

ARTICLE VIII.
HYDRAULIC FRACTURING

Sec. 12-135. Hydraulic fracturing/open pit storage prohibited.

The use of hydraulic fracturing to extract oil, gas or other hydrocarbons, and the storage in open pits of solid or liquid wastes and/or flowback created in connection with the hydraulic fracturing process is prohibited within the City.

Sec. 12-136. Exemptions.

The prohibitions contained in §12-135 shall not apply to any oil or gas wells or pad sites existing within the City on February 19, 2013, provided that any such wells or pad sites become the subject of an operator agreement between the operator of the same and the City, which agreement includes strict controls on methane release and, in the judgment of the City Manager, adequately protects the public health, safety and welfare.

Introduced, considered favorably on first reading, and ordered published this 19th day of February, A.D. 2013, and to be presented for final passage on the 5th day of March, A.D. 2013.

_____
Mayor

ATTEST:

_____
City Clerk

Passed and adopted on final reading on the 5th day of March, A.D. 2013.

_____
Mayor

ATTEST:

_____
City Clerk

RESOLUTION 2013-011
OF THE COUNCIL OF THE CITY OF FORT COLLINS
SUBMITTING TO THE REGISTERED ELECTORS OF THE CITY
A PROPOSED AMENDMENT TO THE CODE OF THE CITY OF
FORT COLLINS WHICH WOULD IMPOSE A BAN ON HYDRAULIC
FRACTURING AND CERTAIN STORAGE OF
WASTE WITHIN THE CITY

WHEREAS, in December 2012, the City Council authorized a moratorium preventing any further drilling for oil and gas in the City until July 31, 2013; and

WHEREAS, since that time, citizens have requested that the City Council consider imposing a ban on hydraulic fracturing in the City; and

WHEREAS, the City Council has determined that in order to protect the health, safety and welfare of City residents, a proposal for a ban on hydraulic fracturing within the City, including a ban on the storage in open pits in the City of solid or liquid wastes and/or flowback created in connection with the hydraulic fracturing process, should be submitted to the registered electors of the City for a vote; and

WHEREAS, the City Council has further determined that in order to respect the rights of existing oil and gas operators in the City, the proposed ban on hydraulic fracturing and storage should not apply to any oil or gas wells or pad sites existing within the City as of February 19, 2013, provided that the operators of such wells or pad sites enter into satisfactory agreements with the City to regulate their existing and future operations; and

WHEREAS, under Article X, Section 3 of the City Charter, the City Council may submit any question or proposed ordinance or resolution to a vote of the people at a regular or special election.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF FORT COLLINS that the following question, in substantially the form shown below, shall be submitted to the registered electors of the City of Fort Collins at the general municipal election to be held on April 2, 2013:

> SHALL CHAPTER 12 OF THE CODE OF THE CITY OF FORT COLLINS BE AMENDED BY ADDING A NEW ARTICLE VIII *HEALTH AND ENVIRONMENT* TO PROHIBIT WITHIN T H E FORT COLLINS CITY LIMITS THE USE OF HYDRAULIC FRACTURING TO EXTRACT OIL, GAS, OR OTHER HYDROCARBONS, AND TO PROHIBIT WITHIN THE FORT COLLINS CITY LIMITS THE STORAGE IN OPEN PITS OF SOLID OR LIQUID WASTES AND/OR FLOWBACK CREATED IN CONNECTION WITH THE HYDRAULIC FRACTURING PROCESS, AND EXCEPTING FROM THESE PROHIBITIONS

ANY OIL OR GAS WELL OR WELL PAD SITE THAT EXISTED WITHIN THE CITY AS OF FEBRUARY 19, 2013, PROVIDED THAT THE OPERATOR OF SUCH WELL OR PAD SITE ENTERS INTO AN AGREEMENT WITH THE CITY THAT SPECIFICALLY IMPOSES STRICT CONTROLS ON ANY METHANE RELEASED IN CONNECTION WITH SUCH OPERATIONS AND THAT, IN THE JUDGMENT OF THE CITY MANAGER, ADEQUATELY PROTECTS THE PUBLIC HEALTH, SAFETY AND WELFARE?

YES _____ NO_____

Passed and adopted at a regular meeting of the Council of the City of Fort Collins this 19th day of February A.D. 2013.

_____
Mayor

ATTEST:

_____
City Clerk

RESOLUTION 2013-012
OF THE COUNCIL OF THE CITY OF FORT COLLINS
REQUESTING STATUTORY POWER TO REGULATE OIL AND GAS
EXPLORATION AND PRODUCTION, SUPPORTING THE
CITY OF LONGMONT IN ITS LITIGATION WITH THE STATE OF COLORADO
CONCERNING THE REGULATION OF OIL AND GAS
EXPLORATION AND PRODUCTION AND AUTHORIZING NEGOTIATIONS
WITH LARIMER COUNTY REGARDING OIL AND GAS REGULATIONS
IN THE CITY'S GROWTH MANAGEMENT AREA

WHEREAS, the exploration for and production of oil and gas within the City presents significant health, safety and welfare issues for the City and its citizens and, in particular, presents significant risk to the environment of the City as it relates to both air and water quality and the aesthetic interests of the City; and

WHEREAS, the Colorado Oil and Gas Conservation Commission has commenced litigation against the City of Longmont with the goal of preventing the Longmont City Council and the citizens of Longmont, through the exercise of their power of initiative, from enacting and implementing local regulations of oil and gas operations; and

WHEREAS, the City Council believes that it is in the best interests of the citizens of the City to support, and seek the expansion of, the power of home rule cities to regulate oil and gas exploration and production within their territorial boundaries.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF FORT COLLINS as follows:

Section 1. That the City Council hereby requests that the Governor and Attorney General support the Colorado General Assembly in enacting legislation that will explicitly grant Colorado home rule cities broad regulatory powers over oil and gas exploration and production within their municipal boundaries.

Section 2. That the City Council hereby supports the City of Longmont in its litigation with the State of Colorado concerning the power of home rule cities to regulate the exploration for and production of oil and gas development within the boundaries of the City of Longmont.

Section 3. That the City Council hereby expresses its intent to negotiate with the Board of Commissioners of Larimer County for the establishment of County regulation of oil and gas exploration and production outside of the City but within the Fort Collins Growth Management Area.

Passed and adopted at a regular meeting of the Council of the City of Fort Collins this 19th day of February, A.D. 2013.

Mayor

ATTEST:

City Clerk