

United States Department of the Interior
Bureau of Land Management
Northeastern States Field Office
LLES003420

Environmental Assessment

NEPA #: DOI-BLM-ES-0030-2013-0009-EA

Environmental Assessment for Expressions of Interest 1404, 1405, and 1604

Date: March 2013

Type of Action: Oil and Gas

Serial Number: MIES 055110 (EOI-1404), MIES 056168 (EOI-1405),
MIES 057265 (EOI-1604)

Location: Michigan Meridian

EOI-1404 (40 acres)
Calhoun County, (Northwest Albion Quadrangle),
T. 1 S., R. 5 W., sec. 35, SW $\frac{1}{4}$ SW $\frac{1}{4}$;

EOI-1405 (40 acres)
Jackson County, (Onsted Quadrangle),
T. 4 S., R. 2 E., sec. 22, SW $\frac{1}{4}$ NE $\frac{1}{4}$;

EOI-1604 (40 acres)
Jackson County, (Onsted Quadrangle),
T. 4 S., R. 2 E., sec. 22, NE $\frac{1}{4}$ SE $\frac{1}{4}$.

Project Acreage: 120 acres

Proponent Address: N/A

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MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

Contents

.....	2
CHAPTER 1 – PURPOSE OF AND NEED FOR ACTION	2
Purpose of the Proposed Action	2
Need for the Proposed Action	2
Management Objectives of the Action	2
Conformance with BLM Land Use Plan(s)	2
Relationship to Statutes, Regulations and Other Plans	2
Decision(s) To Be Made.....	2
Scoping and Issues	3
Rationale for not conducting external scoping.....	3
Issues identified through internal scoping.....	3
CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION	3
Introduction	3
Location.....	3
Proposed Action.....	3
No Action.....	4
CHAPTER 3 – DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS.....	4
Introduction	4
Air Quality	5
Climate Change	5
Cultural/Paleontology	6
Prehistory and history.....	6
Paleontology	7
Environmental Justice	7
Prime and Unique Farmlands.....	8
Fish and Wildlife.....	8
Floodplains, Wetlands, and Riparian Zones.....	8
Geology/Mineral Resources/Energy Production	8
Hazardous Wastes.....	9
Invasive Species/Noxious Weeds	9
Native American Religious Concerns	9
Recreation	9
Socioeconomics.....	9
Soils	12
Bureau-Sensitive Species and Migratory Birds	12
Vegetation.....	12
Visual Resources	13
Water Resources and Water Quality	13

Wild and Scenic Rivers and Wilderness	13
Persons, Groups, Agencies, and Federally Recognized Tribes Consulted.....	14
Consultation and Coordination.....	14
Federally Recognized Indian Tribes.....	14
List of Preparers	16
References	17
Appendix A – Figures	19

CHAPTER 1 – PURPOSE OF AND NEED FOR ACTION

Purpose of the Proposed Action

The purpose is to provide opportunities for private individuals or companies to explore for and develop Federal oil and gas resources through a competitive leasing process. A Federal oil and gas lease is a legal contract that grants exclusive rights to the lessee to develop Federally-owned oil and gas resources.

Need for the Proposed Action

The BLM Northeastern States Field Office has received three requests from the BLM Eastern States Office for National Environmental Policy Act (NEPA) analyses on a total of 120 acres with legal descriptions as follows: Jackson County, (Onsted Quadrangle), T. 4 S., R. 2 E., sec. 22, SW¼NE¼, NE¼SE¼; Calhoun County, (Northwest Albion Quadrangle), T. 1 S., R. 5 W., sec. 35, SW¼SW¼. This lease would be in accordance with BLM handbook guidance.

Management Objectives of the Action

Since the BLM does not manage the surface, the BLM's sole management objective is to make Federal minerals available for economically feasible development without causing undue negative impacts to natural resources.

Conformance with BLM Land Use Plan(s)

The proposed action and the no-action alternative described in Chapter 2 of this Environmental Assessment (EA) are in conformance with the existing Michigan Resource Management Plan, available at the Northeastern States Field Office. This plan provides the basis for considering the proposed action and alternatives (43 CFR 1610.8). The Michigan Resource Management Plan was developed with public participation and governmental coordination, and this environmental assessment provides the site-specific environmental analysis required by the plan on page 4, Section B.2.c.

Relationship to Statutes, Regulations and Other Plans

This EA was prepared in accordance with the National Environmental Protection Act (NEPA) of 1969 and in compliance with all applicable regulations and laws passed subsequently, including Council on Environmental Quality (CEQ) regulations (40 C.F.R., Parts 1500-1508), U.S. Department of the Interior (USDI) requirements (Department Manual 516, Environmental Quality), the National Historic Preservation Act, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, E.O. 13007 (Indian Sacred Sites), guidelines listed in BLM's NEPA Handbook, H-1790-1 (BLM 2008a), and/or other Federal statutes and executive orders.

Additionally, any purchaser of a Federal oil and gas lease is required to comply with all applicable Federal, State, and local laws and regulations including obtaining all necessary permits required prior to the commencement of project activities.

Decision(s) To Be Made

The decision to be made is whether to offer the federal oil and gas mineral estate for lease. The BLM's policy is to promote oil and gas development if it meets the guidelines and regulations set forth by the

National Environmental Policy Act of 1969 and other subsequent laws and policies passed by the U.S. Congress.

Scoping and Issues

Rationale for not conducting external scoping

The BLM elected not to conduct external scoping. Since the separate parcels are not managed by a single public agency, and since the proposed action is expected to result in no additional ground-disturbing activity, the BLM can easily assess the issues through a site visit and readily available GIS data.

Issues identified through internal scoping

There are no natural-resource-related issues of concern, since the proposed action will not involve any surface disturbance.

CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

Introduction

The three parcels, Expression of Interest (EOI) 1404, EOI 1405, and EOI 1604 (Appendix A, Figures 1 and 2), have been included in communitization agreements and must be offered for lease. Table 1 identifies the well that is producing from each parcel. A federal oil and gas lease is a legal contract that grants exclusive rights to the lessee to develop oil and gas resources that may exist on split estate property.

Table 1. Wells in Communitization Agreements

Parcel	Well name	API number	Completion Date	Comm. Agreement
EOI 1404	Langridge #1-35	21-025-58687-00-00	December 2007	MIES 055110
EOI 1405	Swank #1-22	21-075-59954-00-00	January 2010	MIES 056167
EOI 1604	Sigourney #1-22 HD1	21-075-60399-00-00	November 2011	MIES 056167

Location

The three parcels, shown in Appendix A, Figures 1 and 2, are located on private lands in south-central Michigan. Legal descriptions of the requested parcels are found in **Chapter 1 – Need for the Proposed Action**, above.

Proposed Action

The proposed action is to lease the nominated parcels. If approved, the lands would be offered in a competitive lease sale with stipulations and notices generated through this process and other consultations. Such a competitive lease provides exclusive rights to develop the federal oil and gas resources but does not obligate the company to drill a well on the federal mineral estate. The lands analyzed in this EA are already part of a producing property, and the lands were used to meet well spacing requirements. The BLM does not anticipate that a lease or leases for these parcels would lead to any additional development.

No Action

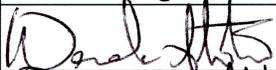
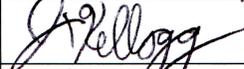
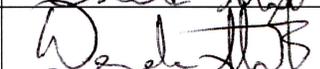
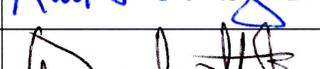
Under the no-action alternative, the request to offer the proposed tract for oil and gas lease would be denied.

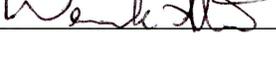
CHAPTER 3 – DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

Introduction

The Decision Area (Figures 1 and 2, Appendix A), a total of 120 acres, consists solely of the parcels offered for lease. The Decision Area is within the Southern Michigan/Northern Indiana Drift Plains level III ecoregion. EOI 1404 is in the Kalamazoo Subbasin of the Southeastern Lake Michigan Basin, and EOIs 1405 and 1604 are in the Raisin Subbasin of the Western Lake Erie Basin. All three parcels are privately owned.

Table 2. Technical Review

X	Program	Reviewer	Signature	Date
X	Air Quality	Derek Strohl Natural Resources Specialist		3/22/13
X	Climate Change	Derek Strohl Natural Resources Specialist		3/22/13
X	Cultural/Paleontology	Jarrold Kellogg Archeologist		3/22/13
X	Environmental Justice	Kurt Wadzinski Planning & Environmental Coordinator		3/22/13
X	Farmlands (Prime & Unique)	Derek Strohl Natural Resources Specialist		3/22/13
X	Fish and Wildlife	Derek Strohl Natural Resources Specialist		3/22/13
X	Floodplains	Derek Strohl Natural Resources Specialist		3/22/13
X	Geology/Mineral Resources/Energy Production	Jeff Nolder Geologist		3/22/13
X	Hazardous Wastes	Derek Strohl Natural Resources Specialist		3/22/13
X	Invasive Species/Noxious Weeds	Derek Strohl Natural Resources Specialist		3/22/13
X	Recreation	Derek Strohl Natural Resources Specialist		3/22/13
X	Socioeconomics	Kurt Wadzinski Planning & Environmental Coordinator		3/22/13
X	Soils	Derek Strohl Natural Resources Specialist		3/22/13
X	Threatened, Endangered or Candidate Animal Species/Migratory Birds	Derek Strohl Natural Resources Specialist		3/22/13

X	Program	Reviewer	Signature	Date
X	Vegetation	Derek Strohl Natural Resources Specialist		3/22/13
X	Visual Resources	Derek Strohl Natural Resources Specialist		3/22/13
X	Water Resources/Quality (Drinking, Surface & Ground)	Derek Strohl Natural Resources Specialist		3/22/13
X	Wetlands/Riparian Zones	Derek Strohl Natural Resources Specialist		3/22/13
X	Wild & Scenic Rivers	Derek Strohl Natural Resources Specialist		3/22/13
X	Wilderness	Derek Strohl Natural Resources Specialist		3/22/13

Air Quality

The Decision Area and all of Calhoun and Jackson Counties meet the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), particulate matter (PM_{2.5} and PM₁₀), and lead (Pb). These are the primary pollutants that the U.S. Environmental Protection Agency (EPA) tracks nationwide. The proposed action will not result in any additional emissions of pollutants into the air.

Climate Change

The primary indicators of interest for climate change are emissions of greenhouse gases (GHG), primarily water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and a few other gasses of lesser importance. These gasses tend to trap heat from the sun in the Earth's atmosphere, leading to global warming. The various GHGs trap different amounts of heat and persist in the atmosphere for different amounts of time. Therefore, the various GHGs have different levels of potency in causing global warming per unit volume in the atmosphere. These potencies are normalized with respect to the potency of CO₂ and expressed in terms of CO₂e (carbon dioxide equivalent). For example, one metric ton of methane, which is 21 times as potent as carbon dioxide, represents 21 metric tons of CO₂e. Carbon dioxide and CH₄ are the most abundant GHGs in terms of CO₂e.

Because these gases circulate freely throughout Earth's atmosphere, the appropriate Analysis Area for this resource is the entire globe. The largest component of global anthropogenic greenhouse gas emissions is carbon dioxide. Global anthropogenic carbon emissions reached about 7,000,000,000 metric tons per year in 2000 and about 9,000,000,000 metric tons per year in 2004.¹ Oil and gas production is a major contributor of greenhouse gases. In 2006, natural gas production accounted for eight percent of global methane emissions, and oil production accounted for 0.5% of global methane emissions.² The proposed action will not result in any additional emissions of greenhouse gases.

¹ G. Marland, T.A. Boden, and R. J. Andres, *Global, Regional, and National CO₂ Emissions. Outside Trends: A Compendium of Data on Global Change.*

² URS Corporation, *Climate Change Supplementary Information Report, Montana, North Dakota and South Dakota Bureau of Land Management.*

Cultural/Paleontology

Prehistory and history

Settlement of southern Michigan began approximately 12,000 Before Present (BP). Paleo-Indian artifacts found in the region are similar to those found throughout the northeastern United States, indicating a common tool manufacturing style. Around 10,000 BP the Archaic tradition began to enter the region, although settlements were sparse, particularly when compared to areas farther south.³ Increased settlement did not begin in earnest until arrival of the Hopewell culture beginning sometime after 300 Common Era (CE). The Hopewell, followed by the Adena, were known for constructing burial mounds and extensive trade networks that brought items such as Gulf Coast conch shells and an alligator effigy pipe to Michigan.⁴

French exploration in the region began in earnest around 1640.⁵ While early European contact had little direct effect on Native tribes in the region, Iroquois attempts to expand their hunting grounds and seize more fur-rich territory forced the Pottawatomi into the region from the north.⁶ The Ottawa from the north, and later the Ojibwa from the south and east, moved into the region and began trading furs with the French in the northern part of the Lower Peninsula by the 1670s.⁷

The end of the Revolutionary War brought significant changes to the Native inhabitants of modern day Michigan. Although the British were officially expelled from the area, several frontier posts remained which, coupled with American influence, brought a peak to fur trading in the region. However, unlike the British who gave the Native Americans a more favorable status, the United States viewed them as a conquered people. This situation was exacerbated by the conclusion of the War of 1812, which all but eliminated British influence and allowed the United States to more freely deal with Native Americans. A series of treaties between 1814 and 1825 resulted in Native inhabitants ceding most of Michigan to the United States.⁸ The Treaty of 1836 ceded all remaining land in the Lower Peninsula, as well as the

³ Robert E. Funk, "Post Pleistocene Adaptations." In *Handbook of North American Indians, Vol. 15: Northeast*, pp. 16-27.

⁴ James E. Fitting, "Regional Cultural Development, 300 B.C. to A.D. 1300." In *Handbook of North American Indians, Vol. 15*, pp. 44-57.

⁵ Grand Traverse County, Michigan, *History of Grand Traverse County*.

⁶ Lyle M. Stone and Donald Chaput. "History of the Upper Great Lakes Area." In *Handbook of North American Indians, Vol. 15: Northeast*, pp. 602-609.

⁷ Johanna E. Feest and Christian F. Feest, "Ottawa." In *Handbook of North American Indians, Vol. 15: Northeast*, pp. 772-786.

⁸ Stone and Chaput.

eastern half of the Upper Peninsula, to the United States. All tribal members, primarily Ojibwa, Ottawa, and Potawatomi, were either relocated to a reservation in Grand Traverse Bay or moved south or west.⁹

The area that would become both Calhoun and Jackson Counties was ceded to the United States by the Potawatomi Tribe with the Treaty of Chicago in 1821. The region was initially categorized as a wasteland by the United States Government, resulting in slow settlement.¹⁰ Settlement picked up later in the decade, however, with the construction of the Territorial Road or Trail. Calhoun County was established in 1829, with Jackson County established in 1833.¹¹ Agriculture became the primary industry in both counties.

There are 39 and 23 historic properties listed in the National Register of Historic Places in Calhoun and Jackson Counties, respectively. All are historic structures or districts, and none are located in or adjacent to the EOIs. There are no known archaeological sites in or adjacent to the EOIs. If the lease is approved, any ground disturbance would be subject to an archaeological records search, literature search, and cultural resources survey covering the project area. No further analysis is warranted at this time.

Paleontology

Michigan's Lower Peninsula is comprised primarily of sedimentary rock deposited from a shallow sea during the Paleozoic Era. Fossils of brachiopods, trilobites, crinoids, and corals from this period are found throughout Michigan. Whale fossils have also been discovered at a few sites in Michigan, the closest of which is approximately twenty miles to the southwest of the study area in Mesick. Pleistocene fossils, most notably mastodons, from the period after the last glacial retreat, are also found throughout Michigan.

No known paleontological localities are located in or immediately adjacent to the current proposed EOI. Before any further drilling were to be approved on a lease, a paleontological records search would be required, as well as a report detailing the likelihood of finding fossils. No further analysis is currently warranted.

Environmental Justice

Executive Order 12898 (1994) formally requires federal agencies to incorporate environmental justice as part of their missions. Specifically, it directs agencies to address, as appropriate, any disproportionately high and adverse human health or environmental effects of their actions, programs, or policies on minority or low-income populations.

⁹ Charles J. Kappler, ed. "Treaty with the Ottawa, etc. 1836." *Indian Affairs: Laws and Treaties, Vol. II, Indian Treaties*.

¹⁰ Calhoun County, Michigan. *History of Calhoun County*.

¹¹ Charles V. Deland, *Deland's History of Jackson County, Michigan*; and Calhoun County, Michigan, *History of Calhoun County*.

The lands analyzed in this EA were used to meet well spacing requirements. The BLM does not anticipate that a lease or leases for these parcels would lead to any additional development and no adverse human health and environmental effects on minority and low-income populations or individuals are anticipated to occur as a result of leasing of these lands.

Prime and Unique Farmlands

All three parcels consist almost entirely of farmlands that are classified by the U.S. Department of Agriculture as *prime, locally important, or prime if drained*. The proposed action will not result in any development of farmlands.

Table 3. Prime and Unique Farmlands in Decision Area (acres).

Type of farmland	EOI 1404	EOI 1405	EOI 1604
Prime farmland	7	2	2
Prime farmland if drained	11	6	<1
Farmland of local importance	22	32	37

Fish and Wildlife

All three parcels contain forested and open wetland habitats, detailed in the next section. These habitats likely harbor wetland-dependent reptiles, amphibians, birds, other taxa. Several ponds within the Decision Area are most likely used as breeding or hibernation areas for frogs, toads, and salamanders, which spend their summers in the adjacent and nearby wooded uplands. The proposed action will not result in any modification of wildlife habitats.

Floodplains, Wetlands, and Riparian Zones

According to the National Wetlands Inventory, wetlands comprise 36 acres of EOI 1404, nine acres of EOI 1405, and 15 acres of EOI 1604. Most of the wetlands in EOIs 1404 and 1405 are forested wetlands, and EOI 1404 has an area of open wetland in a cleared corridor surrounding a drainage ditch. The wetlands in EOI 1604 are mostly open, emergent wetlands. There are no floodplains or riparian zones in the Decision Area. The proposed action will not result in any activities in floodplains, wetlands, or riparian zones.

Geology/Mineral Resources/Energy Production

The Jackson and Calhoun County portions of the Decision Area sit atop about 100 and 300 feet, respectively, of unconsolidated sediments. These sediments are underlain by about 7,000 feet of sandstone and other sedimentary rocks that extend down to crystalline basement rocks of the Granite-Rhyolite Province. Fractures in these basement rocks and the lowermost sedimentary rocks are the main reservoirs for hydrocarbons.

The Calhoun County portion of the Decision Area lies just west of the Albion–Pulaski–Scipio (APS) trend, an interconnected series of reservoirs along the same geologic structure, which has been producing locally since 1957. There is very little hydrocarbon production in the vicinity of the Jackson County parcel. More information on the area’s geology can be found in the Reasonably Foreseeable

Development Scenario.¹² The proposed action will result in no additional production of hydrocarbons or other mineral resources.

Hazardous Wastes

The Decision Area contains no active or closed underground storage tanks, leaking underground storage tanks, or sites of environmental contamination, according to the Michigan Department of Environmental Quality's online Environmental Mapper¹³. The proposed action will likely not result in any production or disposal of hazardous wastes.

Invasive Species/Noxious Weeds

Portions of the Decision Area are infested with non-native, invasive shrub species, including exotic honeysuckle species (*Lonicera* spp.) and common buckthorn (*Rhamnus cathartica*). These species form dense thickets in disturbed areas such as roadsides, and they suppress regeneration of native woodland plant species. Reed canary grass (*Phalaris arundinacea*) is also present in the Decision Area, and purple loosestrife (*Lythrum salicaria*), a highly aggressive and highly mobile species that invades open wetlands, was spotted less than one mile from EOI 1404. There are likely many other non-native, invasive species present in the Decision Area. The proposed action will not result in the spread or introduction of invasive species or noxious weeds.

Native American Religious Concerns

Government-to-government consultation has been initiated by the BLM with 12 Federally Recognized Indian Tribes regarding this proposed undertaking (see Chapter 5 for a complete list of consulted parties). No response identifying cultural resources or areas of religious importance has been received from the contacted Tribes to date. The BLM has no knowledge of any such areas within the Decision Area. In the unlikely event that a lessee would apply for a drilling permit, consultation would be ongoing throughout the project process.

Recreation

The entire Decision Area is on private lands. Recreational uses likely include private hunting, fishing, and similar activities. There are no publicly-owned trails within view or earshot of the Decision Area. The proposed action will not result in any modification of recreational areas.

Socioeconomics¹⁴

The Decision Area encompasses two parcels totaling 80 acres in Norvell Township in Jackson County and one 40 acre parcel in Lee Township in Calhoun County.

¹² RFDS's for these EOI's available at the NSFO.

¹³ Michigan Department of Environmental Quality, *Environmental Mapper*.

¹⁴ Much of the information in this section is taken from the 2010 United States Census Quickfacts website for Jackson and Calhoun Counties.

Jackson County

Jackson County is located in the southern part of Lower Michigan, bordered by the counties of Calhoun (West), Washtenaw (East), Ingham (North) and Hillsdale (South), and is 701.67 square miles, with a population density of approximately 228 persons per square mile. Its population as of the 2010 U.S. Census was 160,248, a 1.2% increase from the 2000 census. The county seat is located in the city of Jackson, in the central part of the county.

The distribution of population in Jackson County is 85.7% White, 8.2% African American, 3.1% Hispanic or Latino, 2.3% Two or More Races, 0.7% Asian, and 0.4% Native American or Alaska Native. 77.2% of Jackson County residents are 18 years of age or older, with 14.5% aged 65 years or older; the State of Michigan has a population 18 years of age and older of 76.8%, with 14.1% aged 65 or older.

In 2011, there were 69,521 housing units in the county with a homeownership rate from 2007-2011 of 75%, which is 1.5% higher than the state as a whole. The median value of these owner-occupied homes was \$123,200 for the period 2007-2011, well below that of the state (\$137,300).

For the period 2007-2011, median household income was \$47,169 for Jackson County, \$1,500 lower than the state. Approximately 15.1% of persons lived below the poverty level, slightly below the 15.7% statewide that live below the poverty level. 88.9% of the county population 25 years of age and over graduated from high school, similar to the percentage of the state (88.4%). 17.9% of county residents 25 years of age and older have a bachelor's degree compared to 25.3% for Michigan as a whole. About 4% of residents speak a foreign language in the home; in total, about 9% of Michigan residents speak a foreign language in the home.

The unemployment rate for Jackson County was 8.1% in December 2012, a 0.5% decrease from the 8.6% rate in December 2011¹⁵, which is 0.8% lower than Michigan's unemployment rate of 8.9% for December 2012. In 2010, health care and social assistance employed the most people in the county (9,075), followed by manufacturing (7,079), and the retail trade (6,831).¹⁶

In 2011, mining activities in Jackson County employed 41 people, with 17 employed in mining-related activities. These jobs account for approximately 0.1% of all employees in the county. The average annual wage for mining positions in Jackson County in 2011 was \$52,973, well above the average annual wage of \$36,751 for non-mining positions in the county.¹⁷

Demographically, Jackson County is less affluent, slightly less educated, more homogenous and slightly older than most counties in the State of Michigan.

Calhoun County

¹⁵ Bureau of Labor Statistics, *Local Area Unemployment Statistics*.

¹⁶ U.S. Census Bureau, *2010 County Business Patterns (NAICS)*.

¹⁷ U.S. Department of Commerce, *Census Bureau, County Business Patterns*.

Calhoun County is located in the southern part of Lower Michigan, bordered by the counties of Kalamazoo (West), Jackson (East), Barry and Eaton (North) and Branch (South), and is 706.23 square miles, with a population density of approximately 193 persons per square mile. Its population as of the 2010 U.S. Census was 136,146, a 1% decrease from the 2000 census. The county seat is located in the city of Marshall, in the central part of the county. The largest city in Calhoun County is Battle Creek, with a population of 52,347 in 2010.

The distribution of population in Calhoun County is 79.8% White, 11.1% African American, 4.6% Hispanic or Latino, 2.9% Two or More Races, 1.6% Asian, and 0.7% Native American or Alaska Native. 76.1% of Calhoun County residents are 18 years of age or older, with 15% aged 65 years or older; the State of Michigan has a population 18 years of age and older of 76.8%, with 14.1% aged 65 or older.

In 2011, there were 60,922 housing units in the county with a homeownership rate from 2007-2011 of 71.1%, which is 2.4% lower than the state as a whole. The median value of these owner-occupied homes was \$107,000 for the period 2007-2011, well below that of the state (\$137,300).

For the period 2007-2011, median household income was \$42,287 for Calhoun County, \$6,382 lower than the state. Approximately 17% of persons lived below the poverty level, slightly above the 15.7% statewide that live below the poverty level. 87.8% of the county population 25 years of age and over graduated from high school, similar to the percentage of the state (88.4%). 18.7% of county residents 25 years of age and older have a bachelor's degree compared to 25.3% for Michigan as a whole. About 6% of residents speak a foreign language in the home; in total, about 9% of Michigan residents speak a foreign language in the home.

The unemployment rate for Calhoun County was 7.1% in December 2012, a 0.6% decrease from the 7.7% rate in December 2011¹⁸, which is 1.8% lower than Michigan's unemployment rate of 8.9% in December 2012. In 2010, manufacturing employed the most people in the county (10,657), followed by health care and social assistance (9,521), and the retail trade (6,038).¹⁹

Mining activities in Calhoun County currently employ 24 people, with 15 employed in Mining-related activities. These jobs account for approximately 0.05% of all employees in the county. The average annual wage for mining positions in Calhoun County in 2011 is not known, but based on industry averages, most likely above the average annual wage of \$38,632 for non-mining positions in the county.²⁰

¹⁸ Bureau of Labor Statistics, *Local Area Unemployment Statistics*.

¹⁹ United States Census Bureau, *2010 County Business Patterns (NAICS)*.

²⁰ U.S. Department of Commerce. *Census Bureau, County Business Patterns*.

Demographically, Calhoun County is much less affluent, slightly less educated, more homogenous and slightly older than most counties in the State of Michigan.

The lands analyzed in this EA are already part of a producing property, and the lands were used to meet well spacing requirements. The BLM does not anticipate that a lease or leases for these parcels would lead to any additional development. Therefore, there are no socioeconomic impacts anticipated to occur as a result of leasing of these lands.

Soils

Soils in the Decision Area are glacially-derived loams, clay loams, sandy loams, and mucks with widespread hydric soil types. Most of the Decision Area is characterized by flat to gently rolling topography. All of EOI 1404 is rated *slight* with respect to erosion hazard. Soils in EOIs 1405 and 1604 are rated *slight* for erosion except for 10 acres and three acres, respectively, of Leoni gravelly sandy loam with 12 to 18 percent slopes, which is rated *moderate* for erosion hazard potential. The proposed action will not result in any construction activities that would affect soils.

Bureau-Sensitive Species and Migratory Birds

Five species are listed on the Fish and Wildlife Service’s list of endangered species known to occur in Calhoun and Jackson Counties²¹. All of these species, listed in Table 4, depend on wetlands for foraging, breeding, or other basic functions and are potentially present in the Decision Area. The remaining species are animals and are also state-listed. The proposed action will not result in impacts to any special-status species.

Table 4. Special-status species in the Decision Area.

Common name	Scientific name	Taxa	County(ies)	Rank
Indiana bat	<i>Myotis sodalis</i>	Mammal	Calhoun, Jackson	Endangered
Copperbelly water snake	<i>Nerodia erythrogaster neglecta</i>	Reptile	Calhoun	Threatened
Eastern massasauga	<i>Sistrurus catenatus</i>	Reptile	Calhoun, Jackson	Candidate
Mitchell’s satyr butterfly	<i>Neonympha mitchellii mitchellii</i>	Insect	Jackson	Endangered, MI-endangered
Poweshiek skipperling	<i>Oarisma poweshiek</i>	Insect	Jackson	Candidate

Vegetation

Most of the Decision Area is wooded, and it contains abundant open, shrubby, and wooded wetlands, as described in **Floodplains, Wetlands, and Riparian Zones**, above. The primary wooded cover type is

²¹ U.S. Fish and Wildlife Service, *Michigan County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species*.

lowland hardwoods. Most of the upland portions of the Decision Area are agricultural fields or homesteads with little wild vegetation. The proposed action is not expected to impact vegetation.

Visual Resources

Most of the Decision Area consists of forests and agricultural fields. Roads are directly adjacent to each parcel, running along entire sides of EOIs 1405 and 1604. The parcels' relatively flat topography produces no distant or sweeping vistas. The proposed action is not expected to impact visual resources.

Water Resources and Water Quality

The uppermost sedimentary rocks under the Decision Area are sandstones that comprise the Marshall Formation, which is a regionally-important supplier of fresh water. Part of the Eaton and Baker Drain flows through EOI 1404. There are no drinking water wells in the Decision Area. The proposed action is not expected to impact water resources or water quality.

Wild and Scenic Rivers and Wilderness

There is no designated Wild and Scenic Rivers or Wilderness in the Decision Area. No further analysis is warranted.

Persons, Groups, Agencies, and Federally Recognized Tribes Consulted

Consultation and Coordination

List of Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Brian D. Conway, State Historic Preservation Officer	Antiquities Act, Section 106	No response, assumes no concerns at this time.
Consulted via website	U.S. Fish and Wildlife Service	Compiled list of endangered, threatened, and candidate species

Federally Recognized Indian Tribes

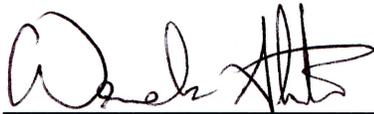
Government to government consultation was initiated with the Federally Recognized Indian Tribes listed below by letter on 1/13/2013.

Tribe/Individual Contacted	Purpose & Authorities for Consultation	Responses
Kurt Perron, Chairman Bay Mills Indian Community 12140 West Lakeshore Dr. Brimley, MI 49715	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Alan Shively, Chairman Lac Vieux Desert Band of Lake Superior Chippewa Indians P.O. Box 249 Watersmeet, MI 49969	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Aaron Payment, Chairman Sault Ste. Marie Tribe of Chippewa Indians 523 Ashmun St. Sault Ste. Marie, MI 49783	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Dexter McNamara, Chairman Little Traverse Bay Bands of Odawa Indians 7500 Odawa Circle Harbor Springs, MI 49740	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Alvin Pedwaydon, Chairman Grand Traverse Band of Ottawa & Chippewa Indians 2605 N. West Bay Shore Dr. Peshawbestown, MI 49682-9275	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Kenneth Meshigaud, Chairman Hannahville Indian Community	36 CFR 800 (as amended), National Historic	No response received, indicating

Tribe/Individual Contacted	Purpose & Authorities for Consultation	Responses
N14911 Hannahville B-1 Rd. Wilson, MI 49896	Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	no concerns or issues at present time.
Homer Mandoka, Tribal Council Chairperson Nottawaseppi Huron Band of Potawatomi 2221 1-½ Mile Road Fulton, MI 49052	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
D.K. Sprague, Chairman Match-E-Be-Nash-She-Wish Band of Pottawatomi Indians PO Box 218 Dorr, MI 49323	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Matthew Wesaw, Mekko Pokagon Band of Potawatomi Indians 58620 Sink Road, Box 180 Dowagiac, MI 49047	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	Email by Tribal Historic Preservation Officer Michael Zimmerman, Jr., on 2/19/13, stated that the tribe had no knowledge of cultural resources in the decision area but want to be notified if any are found and to be included in future consultation.
Warren Swartz, Jr., President Keweenaw Bay Indian Community 16429 Beartown Rd. Baraga, MI 49908	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	Response dated 2/14/13 stated that the Tribe had no knowledge of cultural or archaeological resources in the area but would like to be further consulted as the project moves forward and to be notified if any cultural resources are discovered.
Dennis Kequom, Chief Saginaw Chippewa Indian Tribe 7070 East Broadway Road Mt. Pleasant, MI 48858	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.
Larry Romanelli, Tribal Ogema Little River Band of Ottawa Indians 375 River Street Manistee, MI 49660	36 CFR 800 (as amended), National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.	No response received, indicating no concerns or issues at present time.

List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Derek Strohl	Natural Resources Specialist	Air Quality, Climate Change, Prime and Unique Farmlands, Fish and Wildlife, Floodplains, Hazardous Wastes, Invasive Species/Noxious Weeds, Recreation, Soils, Endangered Species/Migratory Birds, Vegetation, Visual Resources, Water Resources/Quality, Wetland/Riparian Zones, Wild and Scenic Rivers, and Wilderness
Kurt Wadzinski	Planning and Environmental Coordinator	Environmental Justice, Socioeconomics
Jarrold Kellogg	Cultural Resources Specialist	Cultural Resources, Paleontology
Jeff Nolder	Geologist	Geology/Mineral Resources/Energy Production



Preparer

3/22/2013

Date



Planning & Environmental Coordinator

3/22/2013

Date



AFM (Minerals or Natural Resources)

3/22/2013

Date

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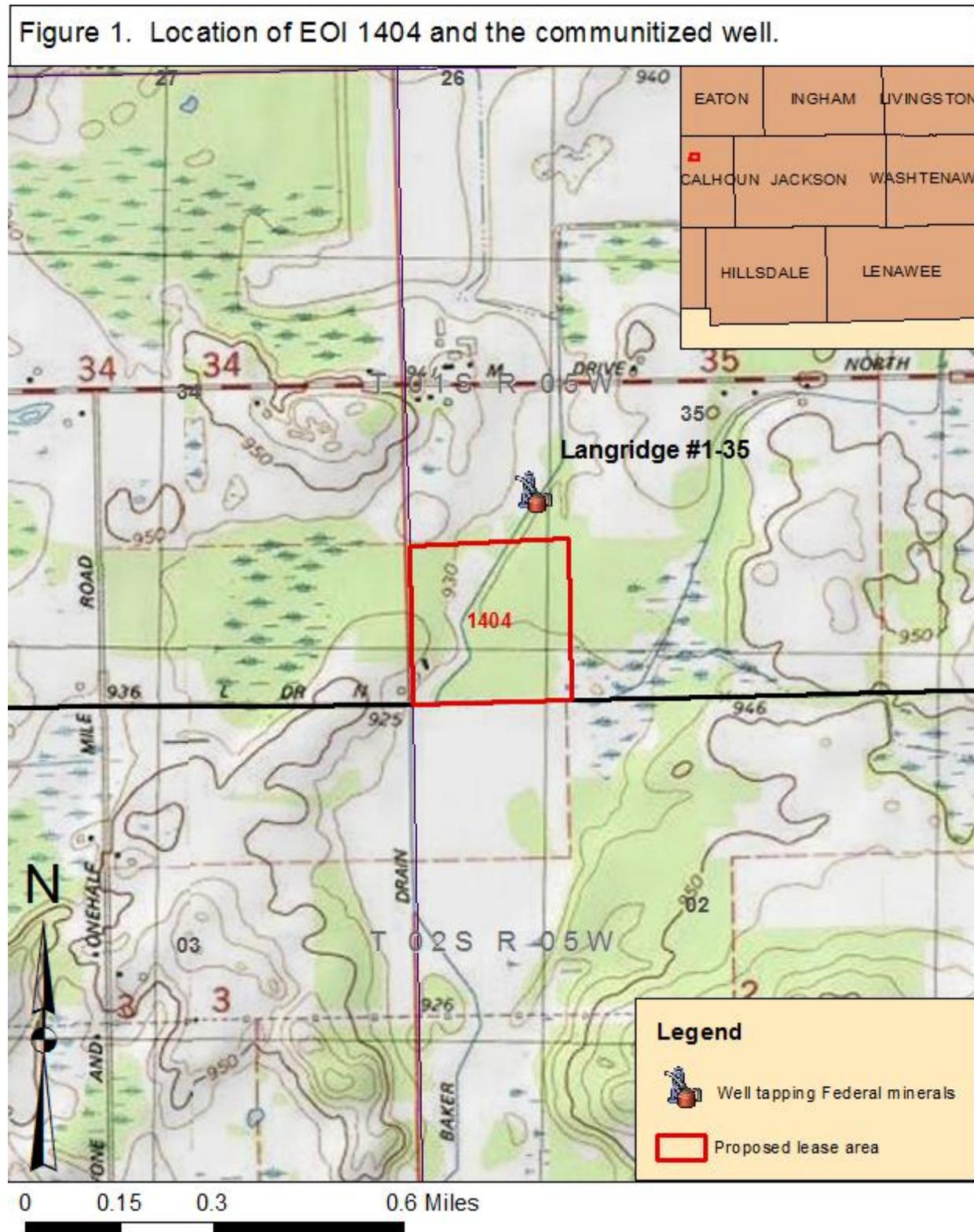
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Appendix A – Figures

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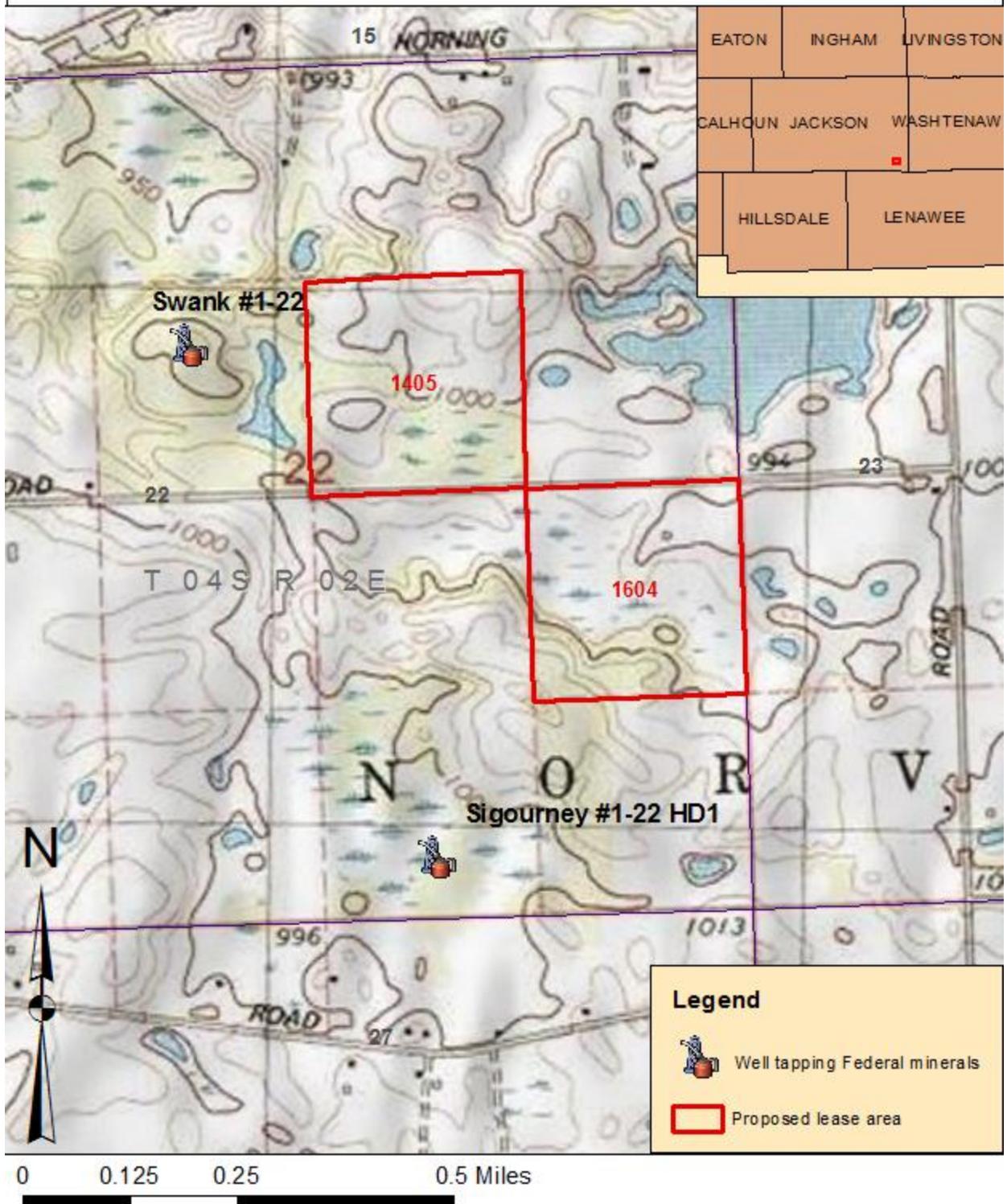


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Appendix A – Figures

Figure 2. Locations of EOIs 1405 and 1604 and the communitized wells.



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