Monitoring oil & gas sites in the parks (close-out presentation, excerpt).
Washington Office-Geologic Resources Division.
Rory Hunter

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Introduction

In response to requests from resource management personnel for technical assistance regarding non-federal oil and gas operations on land managed by the National Park Service, the National Park Service-Geologic Resources Division created a pilot program to gather comprehensive site-specific baseline information that park managers can use to bring operators into compliance with the NPS regulations at CFR 36 Part 9, Subpart B, governing the exercise of non-federal oil and gas rights in park units. The pilot program was conducted at three parks (Big South Fork National River and Recreation Area, Big Thicket National Preserve, and Padre Island National Seashore) during June, July, and August of 2008, by Rory Hunter, a Guest Scientist via the Geoscientists-In-the-Park program.

The goal of the project was to record spatial and descriptive data on each site. The group used GPS equipment to locate sites and individual features, including potential hazards to park resources. Digital photography along with a site inspection checklist was used to document each site and its features. The condition of each site was evaluated and potential hazards were identified.

Field data was assembled into a geodatabase using GPS Photolink and ArcInfo. Footprint areas and linear features were also added to ArcInfo using GPS track files and DNR Garmin. Results of the pilot program were sent to the parks for review, and park staff incorporated this data directly into the resource management database.

Monitoring Oil & Gas Sites in the Parks

Created by Rory Hunter
GSA GeoCorp/GIP

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Oil & Gas in a National Park?

- Owners of mineral rights underneath National Park land have a right of reasonable access to conduct operations
- NPS charged with protecting resources and values within its boundaries
- 9B regulations provide framework for review and approval of O&G operations

No Simple Job

- Park staff is overwhelmed
- Proposals and EAs
- More operations on the way
- Some operators out of compliance
- Outdated site condition data

Pursuing corrective actions

- Can be huge workload
- Require legal expertise
- Require technical expertise

GIP/GSA GeoCorps of America

Oil monitoring pilot program

- Travel to three nonfederal O&G parks
  - Big South Fork
  - Big Thicket
  - Padre Island
- See what resources GRD can provide to resource managers

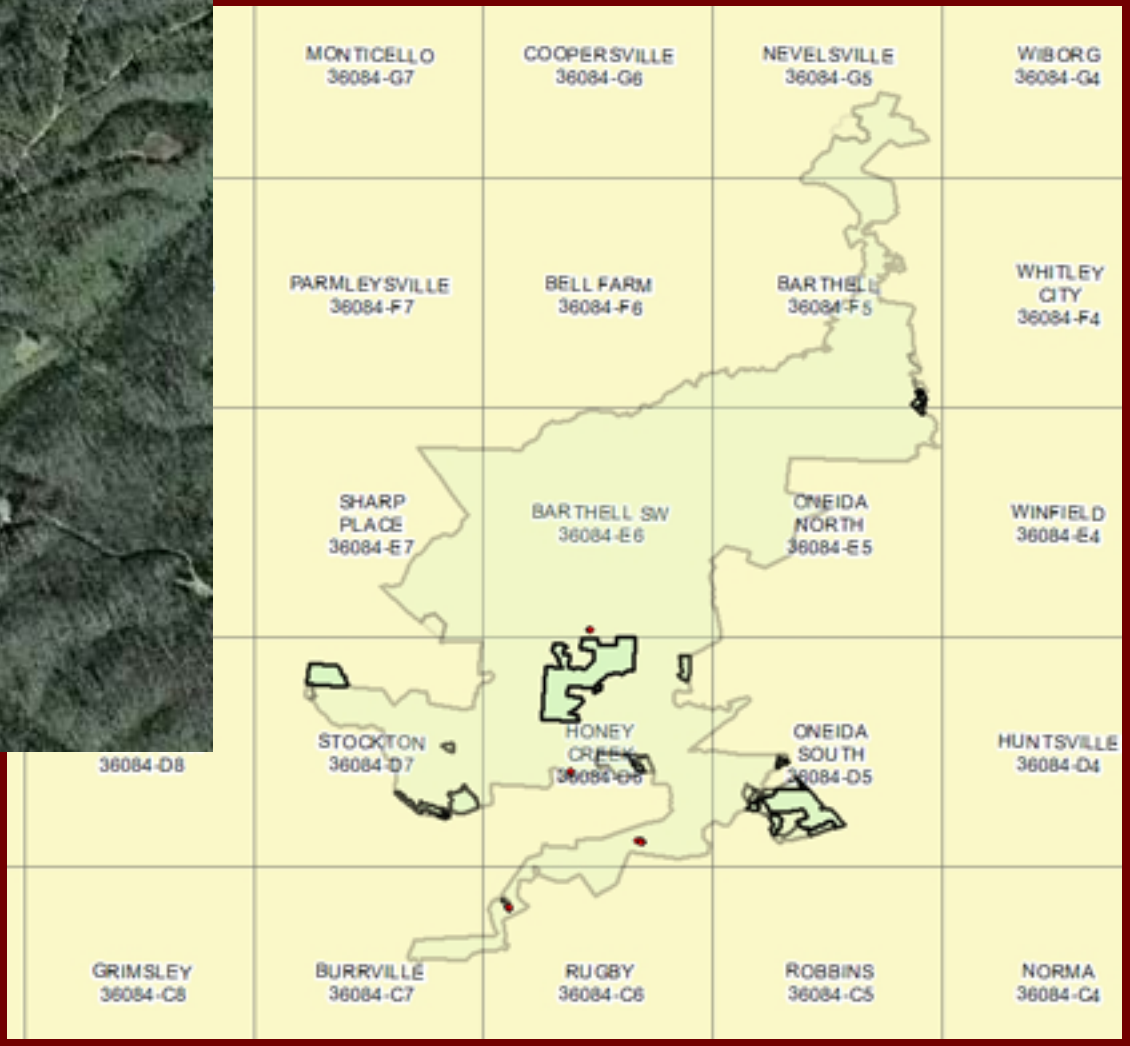
Oil and Gas Monitoring Project

- Audit active sites
  - Identify priorities
- Assist park resource managers
  - Manage information
  - Supplement park GIS
- Provide data to GRD
- Monitor new drilling/plugging

O & G Monitoring: GIS

- Putting complete, accurate, up-to-date information at resource manager's fingertips

GIS


MONTICELLO
36084-G7
COOPERSVILLE
36084-G6
NEVELSVILLE
36084-G5
WIBORG
36084-G4
PARMLEYSVILLE
36084-F7
BELL FARM
36084-F6
BARTHELL
36084-F5
WHITLEY CITY
36084-F4
SHARP PLACE
36084-E7
BARTHELL SW
36084-E6
ONEIDA NORTH
36084-E5
WINFIELD
36084-E4
36084-D8
STOCKTON
36084-D7
HONEY CREEK
36084-D6
ONEIDA SOUTH
36084-D5
HUNTSVILLE
36084-D4
GRIMSLEY
36084-C8
BURRVILLE
36084-C7
RUGBY
36084-C6
ROBBINS
36084-C5
NORMA
36084-C4

A Hidden Danger: underground leaks

- Can go unnoticed
  - Even with changing operators
- Can affect resources away from site
- Can damage a large area

Red polygon is area of surface contamination/Chinese Tallow growth

Big South Fork NRRA

Big Thicket Nat'l Preserve

http://www.nps.gov/archive/bith/P2030070.jpg

Padre Island Nat'l Seashore

Oil & Gas Monitoring
A Summary

- Make site audit data more accessible and useful to park staff and GRD
  - Document all operations
  - Create oil & gas layer for all parks
- Help enforcement of compliance to 9B regs
  - Get operators to clean up sites and maintain equipment
- Digitize archived documents for GRD and park use
- Prevent any catastrophic mishaps
  - Continue auditing operations and pipelines
- Be available to assist resource managers in an emergency

Goals of Oil & Gas Monitoring

- Goal is preventing instances rather than having to react to them
- Making information available, useful, and up-to-date best tool to limit impact on park resources

http://www.lboro.ac.uk/departments/cg/news/graphics/PipelineFire.jpg

Thanks and Credits

Etta Spradlin, Tom Blount, Dusty Pate, Mark Biel, Pat O' dell, Melanie Ransmeier, Brian Diethorn and GRD

Credits

ESRI I3 Imagery Prime World 2D
http://services.arcgisonline.com/v92

National Parks Service Geologic Resource Division
Non-federal Oil & Gas
Site Inspection Checklist

I. GENERAL INFO. **Date:_____ Time:_____**
Inspector:_____ **Datum:_____**
Location: _____
Permit Number: _____ (spot from *center* of footprint)
Owner/Operator:_____ **Operator Number: _____**
Site Name: _____ **Phone: _____Fax_____**
Address: _____

Name of contractor on site:_____ N/A Company name:_____ N/A
(if other than that of operator) **Phone:_____ Fax:_____**
Address:_____

Proposed date of beginning operations:_____ Estimated date of completion:_____

Phase of Operations: ___Geophysical Survey, ___Production, ___Reclamation, ___Complete

General location of site: ___ Plainview, ___ Along or adjacent to roadway, ___Hidden, ___Other:_____

Proximity to park equipment: _____ft. to road _____ft. to building _____ft. to trail _____ft. to monument/historical area _____ft. to waterway
Damage to park equipment? Y N N/A
If yes, document:_____

Does site appear to be near: **
T & E (*TE*) habitat? Y N
If yes, document:_____

Wetlands (*WL)*? Y N
If yes, document:_____

Floodplain (*FP*)? Y N
If yes, document:_____

Cultural/archeological site (*CA*)? Y N
If yes, document:_____

******In spaces provided for documentation give photo ID number and location of violation

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II. ACCESS
Access (*ACCESS)* is prevented by: ___ locked gate, ___on-duty guard, ___ inaccessibility to road, ___nothing If nothing, should access be prevented: Y N N/A
Document, if necessary:_____

Fence (FENCE) Condition: 0 1 2 3 4 Specifically:_____

Hazards and required operator information are clearly posted by proper signage: Y N N/A

Document, if necessary:_____
Sign (*SIGN)* Condition: 0 1 2 3 4 Specifically:_____

Transportation (*TRANS)* of equipment on site is primarily by: ___improved road, ___rutted two-track, ___barge, ___helicopter, ___other:_____ **Secondary Access:**_____
Document, if necessary:_____
Impact on natural/cultural resources due to transportation of equipment: 0 1 2 3 4
Specifically:_____

III. FOOTPRINT

Footprint (*FOOT*) is: ___bare soil, ___overgrown, ___maintained vegetation, ___cement, ___reclaimed, ___other:_____
Document, if necessary:_____
Estimated area of footprint:_____**sqft. (Cat. Com.)**

Natural land contours (*CONTOUR*) have been: ___preserved, ___ cut, ___filled, ___dynamited, ___other:_____
Document, if necessary:_____

Invasive species are:___not present, ___present, ___being controlled, ___other:_____
Document, if necessary:_____
Condition of native vegetation (*VEG*): 0 1 2 3 4 Specifically:_____

IV. PRODUCTION EQUIPMENT

Product: ___active gas (*AGAS)*, ___active oil (*AOIL)*,___active combo (*ACOMBO*),___plugged (*PLUG*), ___ shut-in gas (*SIGAS*),___other:_____
Wellhead (*WELL*): 0 1 2 3 4 Specifically:_____
Document:_____
Type: ___sucker rod pump, ___tree, ___subsurface pump, ___other:_____**, ___ N/A (Internal)**

Casing (*CASING*): 0 1 2 3 4 Specifically:_____
Document:_____

Flowlines (*FLOWLINE)*: 0 1 2 3 4 Specifically:_____
___onsite, ___offsite transport, ___both, ___other:_____ **(Internal)**
Document:_____

Compressor(s) (*COMPRESS)*: 0 1 2 3 4 Specifically:_____
Document:_____

Engine/generator (*POWER)*: 0 1 2 3 4 Specifically:_____
Document:_____

Seperator(s) (*SEPERATOR)*: 0 1 2 3 4 Specifically:_____
___horizontal, ___vertical (Internal)
Document:_____

Heater-treater (*HTREAT)*: 0 1 2 3 4 Specifically:_____
___horizontal, ___vertical (Internal)
Document:_____

Dehydrator (*DEHYD*): 0 1 2 3 4 Specifically:_____
Document: _____

Soil (*SOIL*) contamination due to production equip: 0 1 2 3 4 Specifically:_____
Area of contamination:_____**sqft. Were samples taken? Y N N/A**
Document:_____

Water (*WATER)* contamination due to production equip: 0 1 2 3 4 Specifically:_____
Area of contamination:_____**sqft. Were samples taken? Y N N/A**
Document:_____

V. STORAGE AND CONTAINMENT

Number of Tanks in Battery (*PRIMSTOR)*: _____ Volume of largest tank:_____
Condition of tanks: 0 1 2 3 4 Specifically:_____
Document:_____

Storage of wastes on site (*WASTESTOR)*: 0 1 2 3 4 Specifically:_____
Document:_____

Storage of secondary/treatment chemicals on site: (*CHEMSTOR)* 0 1 2 3 4
Specifically:_____
Document:_____

Type of secondary containment: ___earthen berm, ___cement berm, ___, tarped pit/pond, ___open-ground pit/pond, ___other:_____ **(Internal)**
Condition of secondary containment: 0 1 2 3 4 Specifically:_____
Containment of ALL hazardous storage (*HAZSTOR)*: 0 1 2 3 4
Specifically:_____
Document:_____

Soil (*SOIL*) contamination due to storage equip: 0 1 2 3 4 Specifically:_____
Area of contamination:_____**sqft. Were samples taken? Y N N/A**
Document:_____

Water (*WATER)* contamination due to storage equip: 0 1 2 3 4 Specifically:_____
Area of contamination:_____**sqft. Were samples taken? Y N N/A**
Document:_____

VI. HAZARDS AND SAFETY

Potential hazards to natural/cultural resources or park visitors (*POTHAZ)*: 0 1 2 3 4
Specifically:_____
Document:_____

Explosive handling and layout: 0 1 2 3 4* (*EXPHAZ) S*pecifically:_____
Document:_____

Impact on visitor experience to park: 0 1 2 3 4 (*VISIMP)*
***S*pecifically:**_____
Document:_____

***make sure to account for all offsets required in operator's handbook!**

VII. ADDITIONAL NOTES/RECOMMENDATIONS

_____
_____
_____
_____
_____
_____
_____
_____
_____

VIII. KEY

A. Geophysical Phase

- **0- Not Applicable**
- **1- Operations exceed required provisions, operating at lowest impact possible to natural/cultural resources, reclamation unlikely, safe operation for workers and park visitors**
- **2- Required conditions met, operating at low impact to natural/cultural resources, minimal reclamation required, safe operation for workers and park visitors**
- **3- Operations not meeting requirements, unnecessary damage/impact to natural/cultural resources, unsafe operations to workers and park visitors, major reclamation required**
- **4- Hazardous operations, total disregard for natural/cultural resources, site irreclaimable, workers/ park visitors in immediate danger—IMMEDIATE SHUT-DOWN OF OPERATIONS!!**

B. Production Phase

- **0- Not Applicable or missing**
- **1- Equipment in good working order, well maintained, no leakages, no corrosion, natural/cultural resources and park visitors largely unaffected**
- **2- Acceptable condition, equipment functions, no/minimal leakages, some corrosion, natural/cultural resources unaffected, park visitors aware**
- **3- Improvements needed, equipment not functioning properly, major leakage, visible soil and/or water contamination, major corrosion, hazard to surrounding natural/cultural resources, impedes on park visitor experience**
- **4- Operations pose major threat to surrounding natural/cultural resources and park visitors--IMMEDIATE SHUT-DOWN OF OPERATIONS!!**

C. Reclemation Phase

- **0- Not Applicable**
- **1- Native habitat fully restored**
- **2- Reclamation finished, habitat recovering**
- **3- More reclamation needed, some contaminants/equipment still present on site**
- **4- No reclamation taken place, hazardous contaminants, abandoned equipment on site, unplugged well, land contour still altered**

COMMENT CODES

- CENTER
- TE
- WL
- FP
- CA
- ACCESS
- FENCE
- SIGN
- TRANS
- FOOT
- CONTOUR
- VEG
- WELL
- CASING
- FLOWLINE
- COMPRESSOR
- POWER
- SEPERATOR
- HTREAT
- DEHYD
- PRIMSTOR
- WASTESTOR
- CHEMSTOR
- HAZSTOR
- POTHAZ
- EXPHAZ
- VISIMP
- VALVES
- PIG
- PIPE

CONTAM CODES

- SOIL
- WATER
- BOTH

PRODUCT CODES

- AGAS
- AOIL
- ACOMBO
- PLUG
- SIGAS