

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Beaver Creek Bridge Crude Oil Spill - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV

Subject: POLREP #17
Replugging Efforts of Abandoned Oil Well Continues
Beaver Creek Bridge Crude Oil Spill

Glasgow, KY
Latitude: 36.9914130 Longitude: -85.9861300

To:
From: Perry Gaughan, OSC
Date: 3/31/2015
Reporting Period: 3/27/2015 to 4/10/2015

1. Introduction

1.1 Background

Site Number:	Z4ZB	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	OPA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	9/19/2014	Start Date:	9/19/2014
Demob Date:		Completion Date:	
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:	E14459	Reimbursable Account #:	

1.1.1 Incident Category

Region 4 Emergency Response and Removal Branch (ERRB) responded to a continuous release of crude oil along a one half mile section of Beaver Creek three miles west of Glasgow, Kentucky. Response efforts were initially requested by Kentucky Dept Environmental Protection (KDPE) and are being performed under the OSC's Oil Pollution Act authority.

1.1.2 Site Description

The spill Site is along the flood plain of a 50 acre farm three miles west of Glasgow. Crude oil continues to emanate from a creek bank into a 100 yard section of Beaver Creek in a remote section of the creek. Approximately a one half mile stretch of the creek has been impacted. The spill is located immediately south of a recent interchange construction by Kentucky DOT along the Louie B. Nunn Expressway between Interstate 65 and Glasgow, Ky.

1.1.2.1 Location

The spill is located along Beaver Creek on a 50 acre farm along State Route 1297 where it runs under the Louie B. Nunn Expressway.

1.1.2.2 Description of Threat

The crude oil release is emanating from the Harrison No. 2 abandoned oil well 80 feet from Beaver Creek. There are two additional abandoned oil wells on the flood plain but test trenching operations conducted in December of 2014 confirmed the source as the Harrison No. 2 well. According to Kentucky Oil and Gas, this well was most likely improperly plugged in the mid 1980's.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

EPA working with Kentucky DEP and the property owner has located three former well locations along the Harrison flood plain adjoining Beaver Creek east of Glasgow. Kentucky DOT has recently built an interchange on the L. Nunn Expressway on an 8 acre parcel of the farm upgradient of the creek.

The Harrison No. 2 well was initially uncovered and cemented on October 3rd by EPA and ERRs contractors (reference Polrep #3). However, test trenching operations near the well in December 2014 indicated that oil was continuing to flow from the well. Based on the latest well operations during Feb 2015, the cast iron bridge plug placed on Oct 1st 2014 was most likely set on bad, corroded casing which resulted in the plugging failure.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Based on the continuing release of crude oil to Beaver Creek, the OSC requested and received additional funding from the National Pollution Fund Center (NPFC) on March 27th (see Polrep #16 OPA 90 Funding Request). Emphasis during the most current replugging operation were centered around the milling of the previous established well to 600 feet, reported to be the oil producing Leiper formation.

Monday, March 23rd through Thursday, March 26th 2015

On Monday, March 23rd, in an effort to stop crude oil from flowing from the well to landsurface (and the Beaver Creek water table), the oil well subcontractor attempted to cement 30 sacks of cement behind the 5 1/2 inch well casing at 185 feet. After a short period of time, this effort failed, apparently because of the zone/formation (void) at 200 feet. On Tuesday, March 24th, the well void from 205 feet to 600 feet was filled with 50 sacks of cement.

On Wednesday, March 25th, another effort was made to cement the backside (annular space) of the 5 1/2 inch well casing. First, ten sacks of drilling mud was pumped to a depth of 185 feet and circulated to land surface and then 100 sacks of cement was pumped and circulated to land surface in an effort to cement behind the 5 1/2 inch well casing. Initially this effort appeared to be successful but the following day, the 5 1/2 inch well casing was tested (easily moved with the drill rig) indicating that there was insufficient cement behind the casing. Again this indicated that the zone at 200 feet is absorbing the large amount of cement being pumped down the 5 1/2 inch well casing.

Monday, March 30th through Friday, April 3rd 2015

On Monday March 30th, it was determined that some cement did set up behind the 5 1/2 casing and a well log/cement bond log was run to determine the amount/degree of cement behind casing. The cement bond log showed 4-5 feet of cement behind the casing at 181 feet. On Tuesday March 31st, the decision was made to incrementally add sufficient cement in an effort to stop oil flow from the Corniferous Zone and force cement up the backside of the 5 1/2 casing. 80 sacks of cement was run downhole in a continuing attempt to squeeze cement behind the casing while ceiling off the oil producing zone.at 200 feet. (80 sacks of cement represents an approximate volume of 19,200 gallons of cement mix or 80 sacks with 240 gallons of water per sack/ 6 barrels of water).

On Wednesday, April 1st an additional 80 sacks of cement (19,200 gallons of grout mix) was pumped downhole into the oil producing zone. On Thursday April 2nd, a cement bond log was run again and the total depth was determined to be 155 feet. A cast iron bridge plug was set at 154 feet and the well was perforated at 146 feet to squeeze cement behind the well casing. An additional 80 sacks of cement was forced down hole and cement was noted at land surface from the backside of the 5 1/2 casing, the desired goal. Strong thunderstorms were expected Thursday evening and support equipment was moved to higher grounds in anticipation of the flood plane being flooded again. On Friday, April 3rd, the oil well service contractor checked the backside of the 5 1/2 casing and found that cement was still present indicating an apparent good cementing of the well. Cementing efforts were allowed to cure over the weekend.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The OSC is working with Kentucky Oil and Gas in identifying previous drillers in the area. Once identified, EPA will pursue normal responsible party liability and request plugging records by operators. Wells in this area of Kentucky date back to 1930's to 1940's. Wells in an area of Boyds Creek less than ten miles from this site date back to 1865 (Civil War).

2.1.4 Progress Metrics

<i>Waste Stream</i>	<i>Medium</i>	<i>Quantity</i>	<i>Manifest #</i>	<i>Treatment</i>	<i>Disposal</i>

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

EPA will continue to monitor the creek to determine if the well closure was successful.

2.2.1.2 Next Steps

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

No information available at this time.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

Kentucky DEP, Kentucky Oil and Gas, Kentucky DOT

4. Personnel On Site

ERRs (CMC Inc.) - 1 response manager, 1 equipment operator, 3 laborers.

Barnett and Smith (Oil well service subcontractor) - 1 rig operator/ supervisor, 2 oil rig laborers.

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.