



## **Facility Closure Investigation and Environmental Summary**

WELLS RANCH AA35-69-1HNB Wellhead

ECMC Remediation Project #35408

Weld County, Colorado

### **Attachments:**

**Figure 1 – General Location Map**

**Figure 2 – Wellhead Soil Sample and Field Screening Locations**

**Table 1 – Soil Sample and Field Screening Location Information**

**Table 2 – Soil Analytical Results Summary Table – Volatile Organics**

**Table 3 – Soil Analytical Results Summary Table – PAHs**

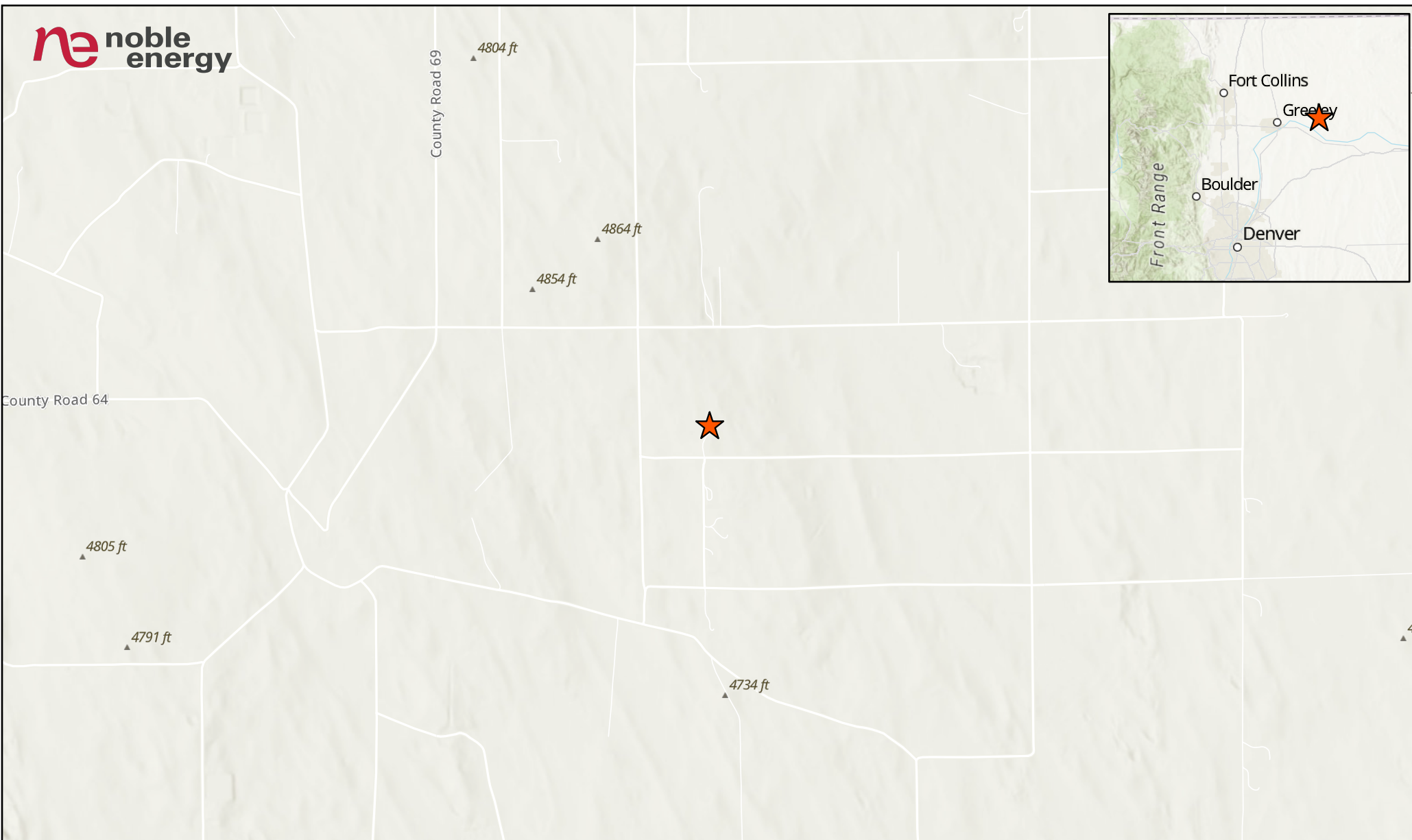
**Table 4 – Soil Analytical Results Summary Table – Soil Suitability**

**Table 5 – Soil Analytical Results Summary Table – Metals**

**Attachment A: Photographic Log**

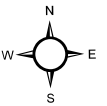
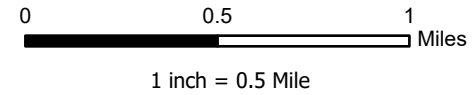
**Attachment B: Facility Closure Checklists**

## **FIGURES**



**LEGEND**

 Site Location



Project No: 024-307

Map By: JW

Date: 02/08/2025

**WELLS RANCH AA35-69-1HNB WELLHEAD  
GENERAL LOCATION MAP**  
PDC ENERGY  
NW 1/4 NW 1/4 SECTION 36  
T6N R63W, 6TH PM  
WELD COUNTY, COLORADO



1843 Sunlight Dr.  
Longmont, CO 80504  
303.378.4036

Figure

1

WH01-W@3 (0.0) ●

WH01-N@3 (0.0) ●

WH01-E@3 (0.0) ●

WH01@6	
11/26/2024	
pH:	8.34
Arsenic (mg/kg):	2.09
Barium (mg/kg):	167

BKG01@3	
11/26/2024	
Arsenic (mg/kg):	3.83
Barium (mg/kg):	93.9

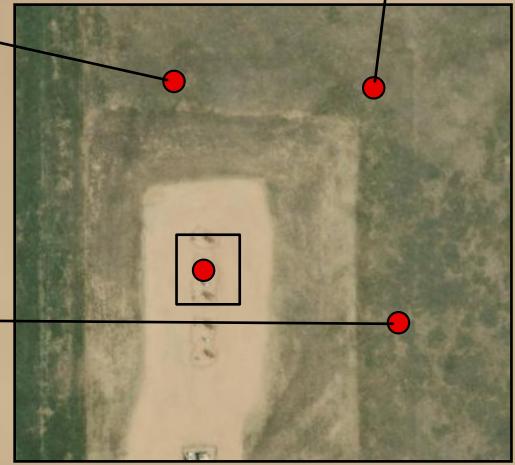
BKG01@6	
11/26/2024	
pH:	8.48
Arsenic (mg/kg):	3.66

BKG03@3	
11/26/2024	
Arsenic (mg/kg):	2.89

BKG03@6	
11/26/2024	
pH:	8.35
Arsenic (mg/kg):	2.25

BKG02@3	
11/26/2024	
pH:	8.33
Arsenic (mg/kg):	3.36
Barium (mg/kg):	82.1

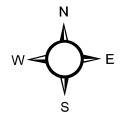
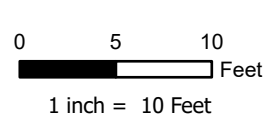
BKG02@6	
11/26/2024	
pH:	8.50
Arsenic (mg/kg):	3.86



**LABEL LEGEND**  
 XXXX@X: SAMPLE NAME @ DEPTH IN FEET  
 WH: WELLHEAD SAMPLE  
 BKG: BACKGROUND SAMPLE  
**RED:** ABOVE ECMC TABLE 915-1 STANDARDS  
**GREEN:** ABOVE ECMC TABLE 915-1 GWSSL,  
 REPRESENTATIVE OF BACKGROUND LEVELS

**Legend**  
 ● Soil Sample ● Screening Location

**NOTES:**  
 - Sample Label (PID Result in ppm)  
 - ppm = parts per million  
 - PID = photoionization detector



Project No: 024-307  
 Map By: JW  
 Date: 02/08/2025

**WELLS RANCH AA35-69-1HNB WELLHEAD  
 SOIL SAMPLE AND FIELD SCREENING LOCATIONS**  
 NOBLE ENERGY  
 NW 1/4 NW 1/4 SECTION 36  
 T6N R63W, 6TH PM  
 WELD COUNTY, COLORADO



1843 Sunlight Drive  
 Longmont, CO 80504  
 303.378.4036

Figure  
 2

Chiron, Figure 2 - Template POC Wellhead - Soil Sample and Field Screening Locations

## **TABLES**

**TABLE 1**  
**FIELD DATA SUMMARY TABLE**  
**NOBLE 100322**  
**WELLS RANCH AA35-69-1HNB WELLHEAD, WELD COUNTY, COLORADO**  
**REM # 35408**

Sample ID	Sample Date	Depth (ft-bgs)	GPS Data		VOC Concentration (ppm)
			Latitude/Longitude		
WH01@6'	11/26/2024	6	40.448492	-104.394122	0.0
WH01-E@3'	11/26/2024	3	40.448485	-104.394065	0.0
WH01-N@3'	11/26/2024	3	40.448513	-104.394110	0.0
WH01-W@3'	11/26/2024	3	40.448511	-104.394186	0.0
BKG01	11/26/2024	3, 6	40.449169	-104.394250	NM
BKG02	11/26/2024	3, 6	40.449137	-104.393316	NM
BKG03	11/26/2024	3, 6	40.448296	-104.393213	NM

1. Global Positioning System (GPS) data is provided in decimal degrees using North American Datum (NAD) 83 UTMZone 13 North.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

ppm = Parts per million

ft-bgs = feet below ground surface

NM = Not measured

TABLE 2  
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA  
NOBLE 100322  
WELLS RANCH AA35-69-1HNB, WELD COUNTY, COLORADO  
REM # 35408

Sample ID	Sample Date	Depth (ft-bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4-Trimethyl-Benzene (mg/kg)	1,3,5-Trimethyl-Benzene (mg/kg)	Naphthalene (mg/kg)	TPH (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500	500**		
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	500**		
WH01@6'	11/26/2024	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<25.0	<100

1. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit

2. \*\* Summation of GRO+DRO+ORO must be less than 500 mg/kg

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

ft-bgs = feet below ground surface

mg/kg - milligrams per kilogram

TABLE 3  
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA  
NOBLE 100322  
WELLS RANCH AA35-69-1HNB, WELD COUNTY, COLORADO  
REM # 35408

Sample ID	Sample Date	Depth (ft-bgs)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) Anthracene (mg/kg)	Benzo (a) Pyrene (mg/kg)	Benzo (b) Fluoranthene (mg/kg)	Benzo (k) Fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) Anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) Pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - Naphthalene (mg/kg)	2-Methyl- Naphthalene (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
WH01@6'	11/26/2024	6	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.002	<0.002

1. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit

ft-bgs = feet below ground surface

mg/kg - milligrams per kilogram

**TABLE 4**  
**SUMMARY OF SOIL SUITABILITY FOR RECLAMATION**  
**NOBLE 100322**  
**WELLS RANCH AA35-69-1HNB WELLHEAD, WELD COUNTY, COLORADO**  
**REM # 35408**

Sample ID	Sample Date	Depth (ft-bgs)	pH (Standard Units)	EC (mmhos/cm)	SAR (Standard Units)	Boron (mg/L)
ECMC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
WH01@6'	11/26/2024	6	<b>8.34</b>	0.319	0.155	0.147
BKG01@3'	11/26/2024	3	8.28	0.214	0.351	<0.0986
BKG01@6'	11/26/2024	6	<b>8.48</b>	0.292	2.43	0.169
BKG02@3'	11/26/2024	3	<b>8.33</b>	0.190	0.328	0.111
BKG02@6'	11/26/2024	6	<b>8.50</b>	0.398	2.73	0.235
BKG03@3'	11/26/2024	3	7.84	0.116	0.182	0.110
BKG03@6'	11/26/2024	6	<b>8.35</b>	0.205	0.206	<0.0995
Maximum Background Concentration @ 3'			8.33	0.214	0.351	0.111
Maximum Background Concentration @ 6'			8.50	0.398	2.73	0.235

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within background concentrations.
2. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit
3. Brown highlighted soil analytical values indicate a regulatory exceedance.

ft-bgs = feet below ground surface

EC - Electrical Conductivity

SAR - Sodium adsorption ratio

mmhos/cm - millimhos per centimeter

mg/L - milligrams per liter

TABLE 5  
SUMMARY OF METALS IN SOIL CHEMISTRY DATA  
NOBLE 100322  
WELLS RANCH AA35-69-1HNB WELLHEAD, WELD COUNTY, COLORADO  
REM # 35408

Sample ID	Sample Date	Depth (ft-bgs)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
WH01@6'	11/26/2024	6	<b>2.09</b>	<b>167</b>	0.150	<0.134*	13.8	13.0	11.2	<0.247	<0.0949	53.5
BKG01@3'	11/26/2024	3	<b>3.83</b>	<b>93.9</b>	0.132	<0.0992*	<9.18	6.56	7.18	<0.239	<0.0918	<34.0
BKG01@6'	11/26/2024	6	<b>3.66</b>	60.7	0.134	<0.169*	<9.23	7.60	7.42	<0.240	<0.0923	<34.2
BKG02@3'	11/26/2024	3	<b>3.36</b>	<b>82.1</b>	0.0922	<0.116*	<8.87	5.88	5.89	<0.231	<0.0887	<32.8
BKG02@6'	11/26/2024	6	<b>3.86</b>	51.1	<0.0966	<0.134*	<9.66	8.03	7.73	<0.251	<0.0966	<35.7
BKG03@3'	11/26/2024	3	<b>2.89</b>	63.3	<0.0931	<0.141*	<9.31	6.40	4.46	<0.242	<0.0931	<34.5
BKG03@6'	11/26/2024	6	<b>2.25</b>	47.6	<0.0958	<0.105*	<9.58	6.20	3.00	<0.249	<0.0958	<35.5
Maximum Background Concentration @3' X 1.25			4.79	117	0.165	-	-	8.20	8.98	-	-	-
Maximum Background Concentration @6' X 1.25			4.83	75.9	0.168	-	-	10.0	9.66	-	-	-

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
  2. **Bold** faced values exceed the ECMC Table 915-1 limit(s)
  3. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit
  4. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
- \* Indicates laboratory minimum detection limit in excess of SSL
- ft-bgs = feet below ground surface  
mg/kg - milligrams per kilogram

**ATTACHMENT A  
PHOTOGRAPHIC LOG**



# Photo Log

**WELLS RANCH AA35-69-1HNB**

**November 26, 2024**

**Initial Wellhead Excavation Photo**



**Wellhead Excavation Sampling Closure Photo**



**Initial BKG01 Photo**



**BKG01 Closure Photo**



**Initial BKG02 Photo**



**BKG02 Closure Photo**



**Initial BKG03 Photo**



**BKG03 Closure Photo**



**ATTACHMENT B  
FACILITY CLOSURE CHECKLISTS**

# Wellhead Closure Checklist

## COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):		Pit Closure		Tank Battery Closure		Flowline Closure		Partially Buried Vault Closure	
Site Name & COGCC Facility Number: WELLS RANCH AA35-69-1HNB, 435561		Date: 11/26/2024				Remediation Project #: 35408			
Associated Wells: NA		Age of Site: 02/14/2014 - Spud Date				Number of Photos Attached: 8			
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) Lat/Long: 40.448495 / -104.394101							Estimated Facility Size (acres): ~.01		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)  Good overall									
USCS Soil Type: CL, SM, ML, SP					Estimated Depth to Groundwater: Unknown b/c GW not encountered				
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)  None encountered or observed									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)  None encountered or observed									
Wellhead(s)									
Well API	05-123-38663								
Age	02/14/2014 - Spud Date								
Condition of surface around wellhead	Good								
PID Readings	0 ppm								
Condition of subsurface (staining present)	Good								
PID Readings	0 ppm								
Sample taken? Location/Sample ID#	WH01@6								
Photo Number(s)	1-8								
Other observations regarding wellheads:  NA									
Summary									
Was impacted soil identified? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - less than 10 cubic yards <input type="checkbox"/> Yes - more than 10 cubic yards									
Total number of samples field screened: 4				Total number of samples collected: 4					
Highest PID Reading: 0 ppm				Total number of samples submitted to lab for analysis: 1					
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent:				Estimated spill volume:					
Lateral extent:				Volume of soil removed:					
Is additional investigation required?									
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - not impacted or in contact with impacted soils <input type="checkbox"/> Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater:				Was remedial groundwater removal conducted? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Date Groundwater was encountered:				Commencement date of removal:					
Sheen on groundwater? <input type="checkbox"/> Yes <input type="checkbox"/> No				Volume of groundwater removed prior to sampling:					
Free product observed? <input type="checkbox"/> Yes <input type="checkbox"/> No				Volume of groundwater removed post sampling:					
Total number of samples collected:				Total Volume of groundwater removed:					
Total number of samples submitted to lab for analysis:									