3R – 453

GW WORKPLAN ADDENDUM

03 / 07 / 2013

Animas Environmental Services, LLC
www.animasenvironmental.com
624 E. Comanche
Farmington, NM 87401
505-564-2281
Durango, Colorado
970-403-3084

March 7, 2013

Steve Austin
Navajo Environmental Protection Agency
P.O. Box 1999
Shiprock, New Mexico 87420

RE: Workplan Addendum
Federal 2E #1 March 2012 Pipeline Release
SW¼ NE¼ , Section 2, T27N, R12W
San Juan County, New Mexico

Dear Mr. Austin:

On January 3, 2013, Animas Environmental Services, LLC (AES) submitted a *Continued Site Assessment Workplan* that included using a Geoprobe equipped with a hydropunch tool to collect groundwater samples from the Federal 2E #1 release location. The continued site assessment was initiated on January 14, 2013. However, due to unexpected auger refusal, the site assessment was unable to be completed. This letter is an addendum to the existing workplan dated January 3, 2013.

On January 14, 2013, AES was able to collect one grab groundwater sample from a temporary soil boring installed within the release location; PMW-1 on Figure 3. Laboratory analytical results confirmed that dissolved phase contaminants remain well above the New Mexico Water Quality Control Commission (WQCC) standards for groundwater, and dissolved phase concentrations were reported as 19,000 µg/L benzene, 33,000 µg/L toluene, 1,300 µg/L ethylbenzene, and 10,000 µg/L total xylenes. Based on the elevated contaminant concentrations in groundwater, AES requested a project planning meeting with Enterprise, Navajo Nation Environmental Protection Agency (NNEPA), and Navajo Agricultural Products Industry (NAPI) at the release location.

On February 8, 2013, a project planning meeting with Enterprise, NAPI and AES representatives was held at the release location, and the scope of work was modified to include the installation of three permanent groundwater monitor wells. The following sections amend the original scope of work detailed in the workplan dated January 3, 2013:

2.2 Installation of Soil Borings

AES proposes to install three soil borings which will be completed as groundwater monitor wells within the release area to delineate the extent of the

groundwater contamination. Soil borings will be advanced to a total depth of approximately 30 feet bgs with a CME-75 truck mounted drill rig equipped with hollow stem augers and 4-inch outer diameter (OD) core barrel. The drill rig will be operated by Kyvek Energy Services, Inc. of Aztec, New Mexico.

Drill cuttings from the soil borings will be contained in labeled and sealed 55-gallon drums. The drummed cuttings will be transported to Envirotech Landfarm for proper disposal. The locations of the proposed soil borings/monitor wells are shown on Figure 3.

2.3 Soil Sampling and Analyses

2.3.1 Sample Collection

Each soil boring will be continuously sampled using a core-barrel sampler. Soil samples collected will be field screened of volatile organic compounds (VOCs) with a photo-ionization detector (PID) organic vapor meter (OVM). A minimum of two soil samples will be collected from each boring for laboratory analysis. The samples will be collected from the vadose zone where the highest OVM-PID result is observed and from the capillary fringe just above groundwater. Additional soil samples will be collected and submitted for laboratory analyses if warranted by field observation. Therefore, based on three proposed soil borings, a minimum of 6 soil samples will be submitted for laboratory analyses.

For each soil boring, a Soil Boring Log will be completed. These logs will record sample identification, depth collected, and method of collection, as well as observations of soil moisture, color, density, grain size, plasticity, contaminant presence, and overall stratigraphy.

2.3.2 Field Screening

Samples will be field-screened for VOC vapors utilizing a PID-OVM calibrated with isobutylene gas to obtain preliminary data regarding potential hydrocarbon impacted soil.

Once collected, the soil sample to be field-screened will be placed immediately in a clean 16 ounce glass jar, filled approximately half full, and sealed with a threaded ring lid and a sheet of aluminum foil. Approximately 10 minutes will be allowed for the soil to be heated and for any VOCs in the soil to accumulate in the head space of the jar. During the initial stages of headspace development, the sample will be gently shaken for one minute to promote vapor development and disaggregate the sample. Volatile gases will then be measured by piercing the aluminum foil with the sample probe of the PID-OVM. The highest (peak)

measurement will be recorded. PID-OVM readings will be recorded onto the Soil Boring Logs.

2.3.3 Laboratory Analyses - Soil

Discrete samples for laboratory analysis will be collected and transferred to laboratory-supplied sample containers, labeled, and stored in an insulated cooler containing ice at less than 6°C. Samples will be submitted to Hall Environmental Analysis Laboratory (Hall), Albuquerque, New Mexico, for analysis of the following parameters:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) per U.S. Environmental Protection Agency (USEPA) Method 8021B;
- Total Petroleum Hydrocarbons (TPH) for gasoline range organics (GRO) and diesel range organics (DRO) per USEPA Method 8015B.

2.4 Groundwater Monitor Well Installation

2.4.1 Groundwater Monitor Well Installation and Construction

Groundwater monitor wells will be installed within all three soil borings, and monitor well construction will consist of 2.0-inch inside diameter (ID)] Schedule 40 PVC screen with 0.010-inch slots and 2.0-inch blank riser casing. The screened interval will extend 15 feet across the water table. Colorado silica sand (filter pack) will be placed from total depth to approximately 2 feet above the top of the well screen. Two feet of bentonite seal will be placed above the sand pack, and concrete grout with approximately 5 percent bentonite will be poured from the top of the bentonite plug up to within 0.5 feet of ground surface. An above grade locking steel protective casing, enclosed with a shroud of concrete, will be installed on the well to prevent unauthorized access and damage. Furthermore, a safety flag on a 6 foot pole will be mounted on the top of the steel casing in order to increase the visibility of the monitor well locations. Three concrete filled steel bollards will also be installed around the monitor wells to provide a 4 foot protective radius, and the bollards will be painted construction yellow to increase visibility. A proposed monitor well schematic is presented in Figure 4.

2.4.2 Professional Survey

The location and elevation of the top of each well casing will be surveyed to the nearest 0.01 foot with reference to mean sea level by a licensed surveyor in order to accurately determine the local groundwater depth and gradient beneath the site. Each well will be tied to an existing USGS benchmark. AES will arrange with Enterprise surveyors to complete the survey upon completion of the monitor well installation.

2.4.3 Groundwater Monitor Well Development

Following monitor well installation and completion, each well will be developed by a combination of surging and bailing techniques. Groundwater purged from the wells will be contained in labeled and sealed 55-gallon drums, and transported to Envirotech Landfarm for proper disposal.

2.4.4 Groundwater Monitor Well Gauging and Sampling

Upon completion and development, the monitor wells will be allowed to sit undisturbed for a minimum of one week. The monitor wells will then be gauged to determine water elevation and gradient. The wells will then be purged of a minimum of three well volumes, and a groundwater sample will be collected from each well.

Groundwater samples will be collected from each well with a new disposable bailer equipped with a low-flow release valve. Purging data, including pH, temperature, conductivity, oxidation-reduction potential, and dissolved oxygen, will be measured with a YSI water quality meter and documented on a Water Sample Collection Form along with purged water volume and sample depth. All sampling equipment will be thoroughly decontaminated between uses. Purged water will be contained and labeled in a sealed 55-gallon drum and transported to the Envirotech Landfarm for proper disposal.

2.4.5 Laboratory Analyses - Groundwater

All groundwater analytical samples collected from the monitor wells will be submitted to Hall for analysis of the following parameters:

- BTEX per USEPA Method 8021B;

Once collected, sample containers will be packed per standard protocol with ice in insulated coolers and shipped via bus to the laboratory.

All other sections of the workplan dated January 3, 2013, remain in effect, including all notifications and utility locate protocols. If you have any questions about the modified scope of work or the recent site activities, please do not hesitate to contact me or Ross Kennemer at (505) 564-2281.

Sincerely,

Tami C. Ross

Tami C. Ross, CHMM
Project Manager

Elizabeth McNally, P.E.

Attachments
Figure 3. Proposed Soil Borings/Monitor Wells
Figure 4. Proposed Monitor Well Schematic

Cc:

Tsosie Lewis, CEO
NAPI
P.O. Drawer 1318
Farmington, New Mexico 87499

Mike Freeman
NAPI
P.O. Drawer 1318
Farmington, New Mexico 87499

David R. Smith, P.G.
Senior Environmental Scientist
Enterprise Products Operating
1100 Louisiana, Rm 13.036
Houston, TX 77002-5227

Aaron Dailey
Enterprise Field Services, LLC
614 Reilly Avenue
Farmington, New Mexico 87401

Glenn von Gonten
NMOCD
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Brandon Powell
NMOCD
1000 Rio Brazos Road
Aztec, New Mexico 87410

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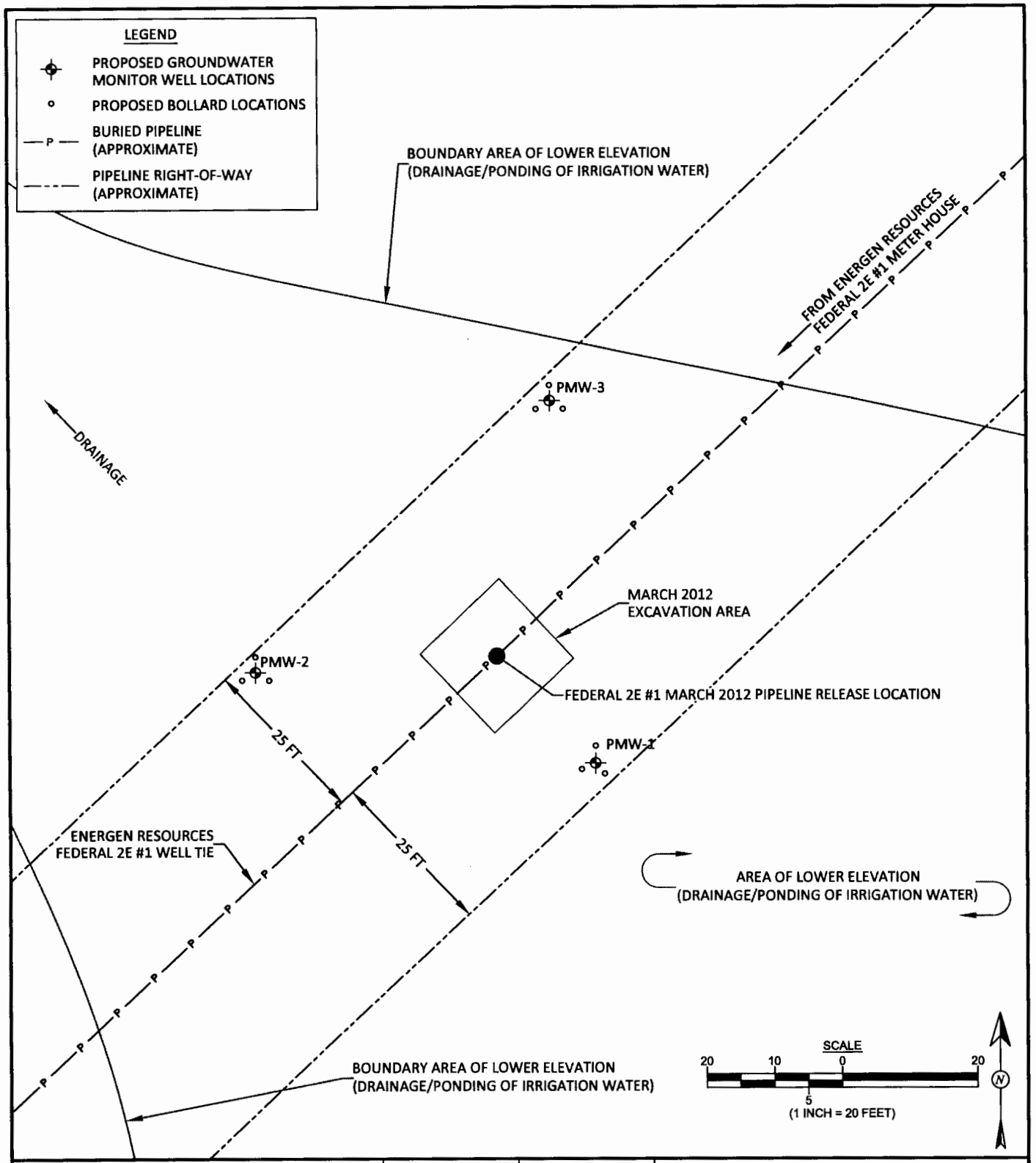


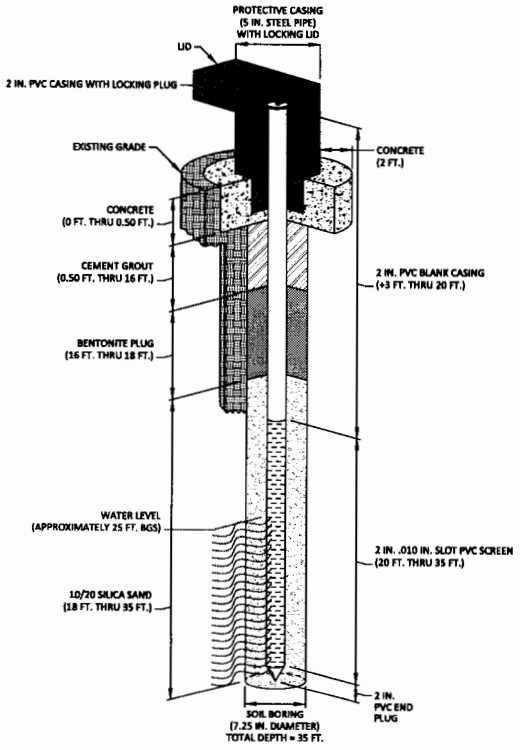
Animas Environmental Services, LLC

DRAWN BY: C. Lameman	**DATE DRAWN:** February 12, 2013
REVISIONS BY: C. Lameman	**DATE REVISED:** February 12, 2013
CHECKED BY: T. Ross	**DATE CHECKED:** February 12, 2013
APPROVED BY: E. McNally	**DATE APPROVED:** February 12, 2013

FIGURE 3

PROPOSED GROUNDWATER MONITOR WELL LOCATIONS
ENTERPRISE FIELD SERVICES, LLC
FEDERAL 2E #1 MARCH 2012 PIPELINE RELEASE
SAN JUAN COUNTY, NEW MEXICO
SW¼ NE¼, SECTION 2, T27N R12W
N36.60681, W108.08013

PROPOSED GROUNDWATER MONITOR WELL SCHEMATIC



PROPOSED CONCRETE BOLLARD DIAGRAM

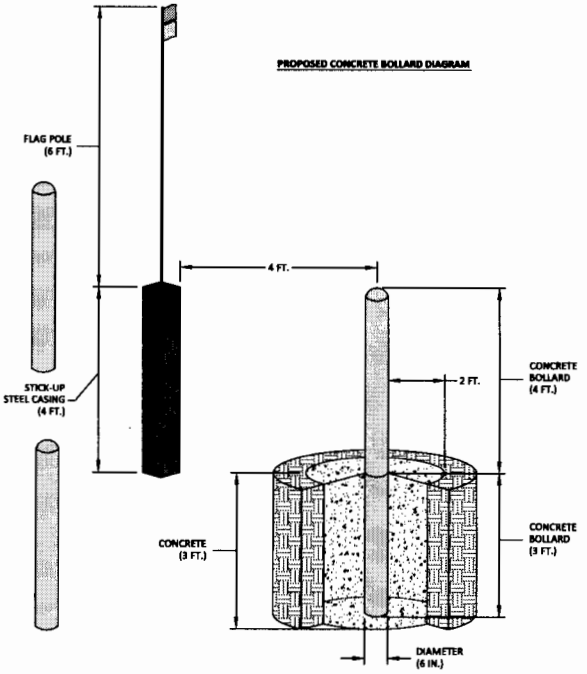


FIGURE 4

PROPOSED GROUNDWATER MONITOR WELL SCHEMATIC
ENTERPRISE FIELD SERVICES, LLC
FEDERAL 2E #1 MARCH 2012 PIPELINE RELEASE
SAN JUAN COUNTY, NEW MEXICO
SW¼ NE¼, SECTION 2, T27N R12W
N36.60681, W108.08013

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NOT TO SCALE