



MICHELLE LUJAN GRISHAM
GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

September 15, 2022

Corey Jarrett, Project Manager
NMED Petroleum Storage Tank Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87506

RE: UIC General Discharge Permit and Invoice, DP-1947, Barela's Bridge

Dear Corey Jarrett:

The New Mexico Environment Department (NMED) issues the enclosed UIC General Discharge Permit, DP-1947, to NMED Petroleum Storage Tank Bureau (Permittee) pursuant to the New Mexico Water Quality Act and the New Mexico Ground and Surface Water Protection Regulations, 20.6.2 NMAC.

NMED sent you a draft permit dated July 14, 2022 and also made the draft available to the public for a 30-day comment period. NMED did not receive any comments on the draft permit.

Enclosed is an invoice for \$600.00. This fee is due 30 days from the date of this letter. If you wish to make annual payments, you may instead pay one-fifth of the applicable permit fee \$120.00 and pay this amount annually thereafter until expiration or termination of the Discharge Permit, Pursuant to 20.6.2.3114(F) NMAC. In addition, NMED now offers an online payment option. If you would like additional information, please contact Howard Gurule at howard.gurule@state.nm.us, (505) 490-2352 or nmenv-gwqb-financials@state.nm.us.

NMED advises you to submit an application for renewal or renewal/modification at least 180 days prior to September 14, 2027, the end of the Discharge Permit term, in order to avoid a lapse in permit coverage which could result in enforcement action.

This approval is issued pursuant to WQCC Regulation 20.6.2.3109 NMAC, and the NMED Delegation Order dated May 24, 2021, through which the Cabinet Secretary has delegated this authority to sign a Discharge Permit to the Chief of the Ground Water Quality Bureau. If you have any questions, please contact Andrew Romero at (505) 660-8624 or andrewc.romero@state.nm.us or submit an email to pps.general@state.nm.us. Thank you for your cooperation during the application review process.

Sincerely,

Justin D. Ball, Chief
Ground Water Quality Bureau

JB:AR

SCIENCE | INNOVATION | COLLABORATION | COMPLIANCE

Ground Water Quality Bureau | 1190 Saint Francis Drive, PO Box 5469, Santa Fe, New Mexico 87502-5469
Telephone (505) 827-2900 | www.env.nm.gov/gwqb/

Encl: UIC General Discharge Permit, DP-1947

cc: William Chavez, Acting District Manager, NMED District I
John Romero, Office of the State Engineer
Eric Hall, DWB, UOCP
Vener Mustafin, P.E., EA Engineering, Science, and Technology, Inc., PBC, vmustafin@eaest.com

State of New Mexico Environment Department
Ground Water Quality Bureau
PO Box 5469
Santa Fe, NM 87502-5469

INVOICE

Primary Billing Party:

Corey Jarrett, Project Manager
NMED Petroleum Storage Tank Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87506
corey.jarrett@state.nm.us

INVOICE DUE DATE: October 15, 2022

ASSESSMENTS

Discharge Permit Renewal and Modification, DP-1947, Barela's Bridge
Discharge Fee \$600.00

CREDITS

Payment - received with application

BALANCE DUE \$600.00

Cut Here and Include Lower Portion with Payment

Agency Interest: DP-1947, Barela's Bridge

Primary Billing Party:

Corey Jarrett, Project Manager
NMED Petroleum Storage Tank Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87506
corey.jarrett@state.nm.us

INVOICE DUE DATE: October 15, 2022

Invoice Amount: \$600.00

Amount Enclosed _____

Please make checks payable to:

New Mexico Environment Department

*****PLEASE ALSO NOTE "DP-1947, Permit Fee" ON YOUR CHECK*****

Mail payments to:

NMED Ground Water Quality Bureau
PO Box 5469
Santa Fe, NM 87502-5469

NMED Federal Tax ID#: 85-6000565



**NEW MEXICO ENVIRONMENT DEPARTMENT GROUND
WATER QUALITY BUREAU**

UNDERGROUND INJECTION CONTROL

GENERAL DISCHARGE PERMIT



Certified Mail- Return Receipt Requested

Facility Name: Barela's Bridge

Facility Location: 800 Bridge Boulevard SW, Albuquerque, NM
Section 30 Township 10 North Range 3 East
Bernalillo County

Legally Responsible Party: NMED Petroleum Storage Tank
Bureau 121 Tijeras Avenue NE Suite
1000 Albuquerque, NM 87102
(505) 372-8335

Remediation Oversight Agency Contact: NMED Petroleum Storage Tank Bureau Corey
Jarrett, Project Manager, Geoscientist 505-
372-8335
NM State Contract Number: 22-667-3200-0012

Remediation or Injection Plan Identification: Barelas's Bridge Final Remediation Plan
FID 29854 RID 54 Work Plan ID 4266

Permitting Action: New DP-1947

PPS Contact Andrew Romero
(505) 660-8624

EFFECTIVE DATE: September 15, 2022 **TERM ENDS:** September 14, 2027

Justin D. Ball
Chief, Ground Water Quality Bureau

[Subsection H of 20.6.2.3109 NMAC, NMSA 1978, § 74-6-5.]

Version updated December 5, 2018

I. UIC GENERAL DISCHARGE PERMIT

The New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) issues this Underground Injection Control General Discharge Permit (UIC Permit) for the subsurface emplacement of additive fluids through a Class V UIC injection well for the purpose of facilitating vadose zone or groundwater remediation. The GWQB issues this UIC Permit to New Mexico Environment Department Petroleum Storage Tank Bureau (Permittee) pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978 §§74-6-1 through 74-6-17, and the New Mexico Water Quality Control Commission (WQCC) Ground and Surface Water Protection Regulations, 20.6.2 NMAC.

In issuing this UIC Permit, the GWQB has determined that the requirements of Subsection C of 20.6.2.3109 NMAC have been met. The activities authorized by this UIC Permit are principally governed by Work Plan for Site Remediation (Injection Plan), under the authority of NMED PSTB, with oversight by the NMED PSTB. Compliance with this UIC Permit requires compliance with the terms, requirements, and conditions of the Injection Plan. The term of this UIC Permit shall be no longer than five years from the effective date of this UIC Permit.

The injection activities, the location of the injection site, the type of injection and quantities of additives being used are briefly described as follows:

Injection Activities (summary: including injection well type, number of wells, and injection frequency)

Copy of the Injection Plan Attached (required):
Summary of Injection Plan: Soil and groundwater impacted by the past releases of gasoline from underground storage tanks in the area will be remediated by injecting 800 pounds of Regensis PetroFix and electron acceptors mixed with water for a total volume of 1,200 gallons injected into approximately 9 direct push injection points between 9 and 13 feet bgs. A licensed New Mexico Driller will perform the work. Work will be performed under the New Mexico State Contract 22 667 3200 0012 under the supervision and directives of the Ne Mexico Environment Department Petroleum Storage Tank Bureau.

Injection Site Information

Depth to most shallow groundwater (required): 8 ft
Existing concentration of total dissolved solids (TDS) in groundwater (required): 356mg/L
Location (required): 800 Bridge Blvd., SW, Albuquerque, NM
County (required): Bernalillo
Latitude: 35.068967
Longitude: -106.66422
Map Showing Area of Injection Sites Attached (required):

Additives Being Used (including volumes, manufacturer, and mixing ratios)

Approximately 800 pounds of Regenesis PetroFix will be mixed with 40 pounds of electron acceptors and potable water for a total injectate volume of approximately 1,200 gallons and injected using a direct push rig. PetroFix is a suspension of 1-2 micron-size activated carbon with nitrate and sulfate electron acceptors.

Sodium Nitrate and Ammonium Sulfate will be utilized by bacteria to degrade petroleum hydrocarbons and are anticipated to be used up by bacteria within one year after injection.

Anticipated Precipitation, Dissolution, Adsorption, and Desorption Products

Activated carbon, similar to the one used for household drinking water filtration, is inert and will coat soil and adsorb petroleum hydrocarbons. Sodium Nitrate and Ammonium Sulfate are used as amendments within the mix to biologically degrade the adsorbed petroleum hydrocarbons. These amendments are utilized for the degradation of petroleum hydrocarbons by the native bacteria that incorporate them into the bacterial cells or use them for metabolism. Amendments are expected to be utilized by the bacteria within one year after the injection.

Public Notice Posting Locations

2 inch by 3 inch Newspaper Ad required for Renewal applications.

Newspaper: Albuquerque Journal or another selected by the GWQB

3 inch by 4 inch Newspaper Ad required for New, Modification, and Renewal/Modification applications.

Newspaper: Albuquerque Journal or another selected by the GWQB

2 feet by 3 feet sign posted for 30 days in a location conspicuous to the public at or near the facility required for New, Modification, and Renewal/Modification applications.

Sign Location: Onsite at 800 Bridge Blvd., SW, Albuquerque, NM

8.5 inch by 11 inch or larger posted off-site location conspicuous to the public (e.g. public library). Required for New, Modification, and Renewal/Modification applications.

Flyer Location: South Broadway Public Library, 1025 Broadway Blvd., SE, Albuquerque, NM 87102

This UIC Permit consists of the complete and accurate completion of this UIC Permit form as determined by the GWQB.

Issuance of this UIC Permit does not relieve the Permittee of the responsibility to comply with the WQA, WQCC Regulations, and any other applicable federal, state and/or local laws and regulations, such as zoning requirements and nuisance ordinances.

Signatures

Signature must be that of the person listed as the legally responsible party on this application.

I, the applicant, attest under penalty of law to the truth of the information and supporting documentation contained in this application for an Underground Injection Control General Discharge Permit.

Applicant's Signature

Signature: Lorena Goerger Digitally signed by Lorena Goerger
Date: 2022.05.19 10:53:20 -0600 Date: 5/19/2022

Printed Name: Lorena Goerger Title: Acting Bureau Chief

Applicant Note that Submissions Must Include:

- 1- One electronic copy of the application delivered to the GWQB via email or other format
- 2- Two hardcopies of the application delivered to: Ground Water Quality Bureau
Harold Runnels Building
1190 Saint Francis Drive
P.O. Box 5469
Santa Fe, NM 87502-5469
- 3- Payment by check or electronic transfer of one application fee of \$100.00

II. FINDINGS

In issuing this UIC Permit, GWQB finds:

1. The Permittee is injecting fluids so that such injections will move directly or indirectly into groundwater within the meaning of Section 20.6.2.3104 NMAC.
2. The Permittee is injecting fluids so that such fluids will move into groundwater of the State of New Mexico which has an existing concentration of 10,000 mg/L or less of TDS within the meaning of Subsection A of 20.6.2.3101 NMAC.
3. The Permittee is using a Class V UIC well as described in 20.6.2.5002(B)(5)(d)(ii) NMAC for in situ groundwater remediation by injecting a fluid that facilitates vadose zone or groundwater remediation.
4. The Permittee is injecting fluids into groundwater in order to achieve the remediation goals identified in the Injection Plan.

III. AUTHORIZATION TO DISCHARGE

The Permittee is authorized to inject chemical additives into groundwater in accordance with this UIC Permit and the Injection Plan under the oversight of NMED PSTB.

[20.6.2.3104 NMAC, Subsection C of 20.6.2.3106 NMAC, Subsection C of 20.6.2.3109 NMAC]

IV. CONDITIONS

The conditions of this UIC Permit shall be complied with by the Permittee and are enforceable by GWQB.

1. The Permittee shall perform remediation activities in accordance with the Injection Plan and shall notify GWQB of any changes prior to making them.

[20.6.2.3107 NMAC]

2. The Permittee shall monitor the injection activities and their effects on groundwater quality as required by the Injection Plan and shall provide GWQB with electronic copies of the required reporting and any pertinent documentation of activities at the site.

[20.6.2.3107.A NMAC, 20.6.2.3109.A NMAC]

3. If the GWQB or the Permittee identifies any failure of the Injection Plan or this UIC Permit to comply with 20.6.2 NMAC not specifically noted herein, GWQB may require the Permittee to submit a corrective action plan and a schedule for completion of corrective actions to address the failure.

Additionally, the GWQB may require the Permittee to submit a proposed modification to the Injection Plan, this UIC Permit, or both.

[20.6.2.3107.A NMAC, 20.6.2.3109.E NMAC]

4. ADDITIONAL MONITORING REQUIREMENTS – (RESERVED) - Placeholder for any added monitoring and reporting requirements.
5. TERMINATION – Within 30 days of completion of activities authorized by this UIC Permit the Permittee shall submit a closure report and a request to terminate the UIC Permit to the GWQB for its approval. The closure report shall identify how the injection well(s) was (were) closed in accordance with the Injection Plan. The Permittee shall provide NMED GWQB with a copy of this closure report.

[20.6.2.5005 NMAC, 19.27.4 NMAC]

6. INSPECTION and ENTRY – The Permittee shall allow a representative of the NMED to inspect the facility and its operations subject to this UIC Permit and the WQCC regulations. The GWQB representative may, upon presentation of proper credentials, enter at reasonable times upon or through any premises in which a water contaminant source is located or in which are located any records required to be maintained by regulations of the federal government or the WQCC.

The Permittee shall allow the GWQB representative to have access to, and reproduce for their use, any copy of the records, and to perform assessments, sampling or monitoring during an inspection for the purpose of evaluating compliance with this UIC Permit and the WQCC regulations.

Nothing in this UIC Permit shall be construed as limiting in any way the inspection and entry authority of GWQB under the WQA, the WQCC Regulations, or any other local, state, or federal regulations.

[20.6.2.3107.D NMAC, NMSA 1978, §§ 74-6-9.B and 74-6-9.E]

7. MODIFICATIONS and/or AMENDMENTS – In the event the Permittee proposes a change to the injection plan that would result in a change in the volume injected; the location of the injections; or the concentration of the additives being injected by the facility, the Permittee shall notify GWQB prior to implementing such changes. The Permittee shall obtain approval (which may require modification of this UIC Permit) by GWQB prior to implementing such changes.

[20.6.2.3107.C NMAC, 20.6.2.3109.E and G NMAC]

8. COMPLIANCE with OTHER LAWS – Nothing in this UIC Permit shall be construed in any way as relieving the Permittee of the obligation to comply with all applicable federal, state, and local laws, regulations, permits, or orders.

[NMSA 1978, § 74-6-5.L]

9. PERMIT FEES – Payment of permit fees is due at the time of UIC Permit approval. Permit fees shall be paid in a single payment remitted to GWQB no later than 30 days after the UIC Permit effective date.

Permit fees are associated with issuance of this UIC Permit. Nothing in this UIC Permit shall be construed as relieving the Permittee of the obligation to pay all permit fees assessed by GWQB. A Permittee that ceases injecting or does not commence injecting during the term of the UIC Permit shall pay all permit fees assessed by GWQB. An approved UIC Permit shall be suspended or terminated if the facility fails to remit a payment by its due date.

[20.6.2.3114.F NMAC, NMSA 1978, § 74-6-5.K]

Work Plan for Site Remediation (Injection Plan)

March 4, 2022

Mr. Corey Jarrett
Geoscientist/Project Manager
Remedial Action Program
New Mexico Environment Department
Petroleum Storage Tank Bureau
121 Tijeras Ave NE, Suite 1000
Albuquerque, NM 87102

Site Remediation Work Plan
Barelas Bridge, 800 Bridge Blvd., SW, Albuquerque, NM
Release ID #: 54 Facility #: 29854
Contract #: 22 667 3200 0012

Dear Mr. Jarrett:

EA Engineering, Science, and Technology, Inc. PBC (EA) has prepared this Work Plan for remediation activities at the Barelas Bridge site located at 800 Bridge Boulevard, SW in Albuquerque, New Mexico (Figure 1). Remediation activities will be performed under State of New Mexico Environment Department Professional Services Contact No. 22 667 3200 0012. The objective of the remedial action is to trap and treat recalcitrant hydrocarbon concentrations to facilitate a No Further Action at the site.

The remediation activities will be performed in accordance with the requirements of the New Mexico Petroleum Storage Tank Regulations, NMAC 20.5.119. EA maintains the New Mexico Construction Division (CID) GS-29 license #359538 and New Mexico Professional Engineer licensure. All remediation activities will be conducted under the direct supervision of Vener Mustafin, New Mexico Professional Engineer License #17630.

BACKGROUND

A summary of the site background is provided below:

- Contaminated soil in the former UST pit area was excavated and removed in 1989 after the release was reported. Contaminated soil along the southern site boundary was excavated and removed. The current USTs were installed in 2012.
- In 1989 – 1990, initial and additional hydrogeologic investigations were performed.
- In 1992, an air sparge/soil vapor extraction system was installed.
- June 2021 groundwater monitoring results indicated total naphthalene concentrations exceeding the 30 micrograms per liter ($\mu\text{g/L}$) standard in VP-5 (84 $\mu\text{g/L}$), MW-8 (68 $\mu\text{g/L}$), and MW-9 (39.8 $\mu\text{g/L}$). BTEX concentrations were below the standards.
- Groundwater is encountered approximately 10 feet below ground surface (ft bgs); the hydraulic gradient is 0.002 ft/ft and flow is to the south-southeast.
- Dissolved oxygen in the wells of interest ranged between 1 and 5 milligrams per liter, oxidation-reduction potential ranged between 50 and 200 millivolts, and pH was near neutral around 7.5 pH units.
- Saturated soil consists of sand with gravel. Vadose zone soil consists of sands and some clay.

GENERAL APPROACH

The remediation approach includes the following major elements: 1) perform pre-injection monitoring, 2) obtain a discharge permit, 3) develop a Final Remediation Plan (FRP), 4) implement FRP, and 5) perform post-injection groundwater monitoring. Each of these elements is discussed below.

1. PERFORM PRE-INJECTION MONITORING

The following is the scope of work for pre-injection (baseline) groundwater monitoring:

- Gauge six (6) monitoring wells (VW-2, VP-5, MW-4, MW-7, MW-8, and MW-9).
- Purge stagnant groundwater
- Collect groundwater samples from six (6) wells (VW-2, VP-5, MW-4, MW-7, MW-8, and MW-9).
- Analyze samples for volatile organic compounds (VOCs), including total naphthalenes, by the United States Environmental Protection Agency (EPA) Method 8260B and sulfate and nitrate by EPA Method 300.1. Also, analyze a sample from VP-2 for Total Dissolved Solids by SM 2540C.
- Prepare and submit a one-page analytical summary and provide laboratory reports.

The following activities will be completed as part of the pre-injection groundwater monitoring:

- Before conducting fieldwork, EA will prepare a site-specific Health and Safety Plan (HASP) describing activities, hazards, personal protective equipment, route to the hospital, emergency contacts, and other required elements.
- EA assumes that the Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) has an access agreement with the site owner that will be utilized to access the site.
- EA will notify the NMED PSTB project manager and site owner at least 96-hours before conducting field activities.
- EA personnel will review the work plan, HASP, order equipment, obtain supplies, and discuss the scope of work with the project manager.
- Before gauging, well caps will be removed on each monitoring well to allow groundwater to equilibrate with the atmospheric pressure.
- Gauging will be conducted using an interface probe.
- Before sampling, purging will be performed to remove stagnant water using dedicated, clean, disposable bailers and twine or a variable speed peristaltic pump. Three casing volumes will be purged before sample collection. If wells go dry, they will be allowed to recover until a sufficient sample aliquot is present to collect a sample.
- During purging, dissolved oxygen (DO), oxygen-reduction potential (ORP), pH, temperature, and specific conductivity will be measured using a calibrated water quality meter.
- Samples will be collected in clean sealed containers supplied by Hall Environmental Analysis Laboratory (HEAL), labeled, placed in protective pockets and into coolers packed with ice, entered onto a chain of custody, and delivered to HEAL under direct custody.
- Upon receipt of the laboratory analytical data, EA will prepare and submit a one-page analytical summary with the laboratory report.

2. OBTAIN DISCHARGE PERMIT

Before injection, EA will obtain an Underground Injection Control General Discharge Permit (UIC DP) from the NMED Ground Water Quality Bureau (NMED GWQB). As part of the UCI DP, the following will be completed:

- EA will prepare and submit a UIC DP application to the NMED GWQB on behalf of the NMED PSTB.
- Public notice will be published in the local newspaper.
- A 2' x 3' sign will be posted for 30 days in a location conspicuous to the public at or near the site.
- An 8.5" x 11" notice will be posted in a public library.
- A public notice flyer will be mailed by 1st Class mail to the property owners within 1/3 mile of the site.
- A public notice flyer will be mailed by certified mail to the owner of the site.
- An affidavit of posting of a public notice, a list of names and addresses to whom the public notice was mailed, a list and names and addresses of owners of discharge sites, certified mail receipts, and a copy of the newspaper ad will be submitted to the NMED GWQB.

3. DEVELOP FINAL REMEDIATION PLAN

An FRP will be prepared in accordance with 20.5.119.1923 NMAC. The design and engineering of the FRP will be executed under the supervision of Vener Mustafin, P.E., Professional Engineer registered to practice engineering in the State of New Mexico. The FRP will minimally include the following:

- Goals of remediation and target concentrations.
- A site history summary, which includes current soil and groundwater conditions.
- Site maps identifying roads, buildings, utilities, existing monitoring wells, groundwater contours, dissolved-phase contaminant distribution, and planned injection locations.
- A discussion of the planned injection strategy, including a description of the planned injectate, rationale for the selected injectate, the injection process, target injection depth intervals, and calculations supporting planned injection point spacing and volumes.
- An implementation schedule.
- A discussion of planned observations and monitoring during the injection.
- Copies of required discharge permits and anticipated public and agency notifications.
- Copies of subcontractor/injection contractor's datasheets.
- A health and safety plan.
- Additionally to the contract-defined scope, EA 1) will post FRP public notice onsite and in the local library and 2) EA will mail FRP public notice flyers to the owners of the adjacent properties by certified mail.
- NMED PSTB will publish twice the FRP public notice in the Albuquerque Journal or another local publication.

4. IMPLEMENT FINAL REMEDIATION PLAN

Target Area and Contaminants. The objective of remediation will be to address recalcitrant naphthalene concentrations in the monitoring wells MW-8, MW-9, and VP-5 (Figure 1). The injection will be conducted around these recalcitrant wells. The remediation goal is to decrease total naphthalene concentrations to below 30 µg/L.

Selected Injectate. Regenes PetroFix™, which is a suspension of 1-2 micron activated carbon with nitrate and sulfate electron acceptors, was selected as a trap-and-treat remediation amendment. PetroFix™ will remove hydrocarbons from the dissolved phase by adsorbing them onto activated carbon particles ("trap"). Thereafter, nitrate and sulfate electron acceptors will stimulate hydrocarbon

biodegradation (“treat”). Nitrate is a fast-acting electron acceptor that will be utilized by bacteria first. This will be followed by the utilization of sulfate. Activated carbon will be self-regenerating as adsorbed contaminants degrade in time. PetroFix™ combines elements of trap-and-treat and in-situ degradation.

Access. EA assumed that NMED PSTB has existing site access as it typically has for other existing State-Lead projects that it will provide to EA.

Dosage. A conservative estimate of up to 10 mg/L TPH-gasoline concentration was used to estimate the dosing of PetroFix™. Using an online Regenesys PetroFix™ calculator and extrapolation to residual site contaminant levels, dosing was estimated to be approximately 800 pounds of PetroFix™. To deliver PetroFix, it will be mixed with water for a mixture volume of approximately 1,200 gallons (Attachment A). Initially, a small batch will be mixed and injected to determine a practical injectable volume. Based on that, the dilution with water will be adjusted to match site conditions.

Utilities and Notifications. Before intrusive activities, a utility locate will be requested and marked by the respective utility entities. At least 96-hours before field activities, NMED PSTB, and site owner will be notified.

Injection Methodology, Spacing, Target Zone, Pressure. Direct push technology will be used to inject the remediation fluids using a top-down application. Concrete surfaces will be cored before advancing direct pushrods. Spacing of 10-foot on-center was selected for borehole placement based on professional judgment (Figure 1). This spacing would result in approximately 9 injection points and is considered sufficient for distribution of injectate in the subsurface and is practical to fit the scope of the small procurement project. Injection points will be placed around the impacted wells. The site is an active gas station with a convenience store, pumping islands, canopy, underground conveyance, underground storage tanks, and utilities; therefore, after locating and marking underground utilities, locations of the injection points may be adjusted based on site conditions. Injectate will be delivered into the saturated impacted zone between 9 and 13 feet below bgs. Pressures will be increased gradually to preclude surfacing. If surfacing occurs, the tool will be advanced deeper and injection attempted again. If that fails, the injection tool will be advanced in another location in the general vicinity. Injections will be moved between locations to dissipate pressure. Dilution factor will be decreased if delivery of estimated volume is not achievable for the site conditions. **Mixing and Injection.** PetroFix™ and electron acceptors will be mixed with potable water using a mechanical mixer in a mixing vessel. An injection pump equipped with control valves and a pressure gauge will be used to inject fluids through the injection tool. A high-pressure hose will be run from the pump to the top of the drilling rod. Injection volume will be measured using a mixing vessel or a totalizing flow meter. Injection volume, pressure, and times will be recorded on the field forms. Activities will be documented by taking photographs.

Monitoring. During injection, the following monitoring will be performed:

- Proportions of PetroFix™ acceptors and water in each batch will be recorded.
- Groundwater levels in VP-5, MW-8, and MW-9 and surrounding wells will be measured before and during the injection. A bailer may be lowered to evaluate the color of groundwater; black color may indicate the arrival of PetroFix™ into the well.
- Injection interval, pressure, and volume for each borehole/interval will be recorded.

Plugging and Restoration. Upon completion, boreholes will be plugged with bentonite pellets or grout. Surfaces will be restored and material, supplies, and equipment will be removed.

Schedule and Costs. Schedule and costs are provided as Attachment B.

Duration of Remediation. The initial adsorption of contaminants would occur shortly after injection upon contact with contaminated groundwater. Additional adsorption will occur as contaminated groundwater flows through the injected zone. Utilization of nitrate and sulfate for biodegradation is anticipated to occur within a year. As contaminants are degraded, new areas would become available for sorption onto activated carbon. Overall, it is anticipated that concentrations would be decreased to below the standard within the first year.

Plugging and Restoration. Upon completion, injection boreholes will be plugged with bentonite pellets or grout. The surface will be restored to match existing conditions and materials, supplies, and equipment will be removed.

Prepare a Completion Report. Within 30 days after completion of the injection, EA will prepare a report which will include the following:

- A discussion of the injection process;
- A site map showing the injection locations;
- Table(s) of injection depth intervals, pressures, and volumes;
- Field notes; and
- Photographic documentation.

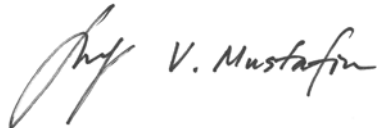
5. PERFORM POST-INJECTION GROUNDWATER MONITORING

The post-injection monitoring will be identical in scope and execution to Task 1.

Please feel free to contact me at (505) 296-1070 or vmustafin@eaest.com if you have questions or comments.

Sincerely,

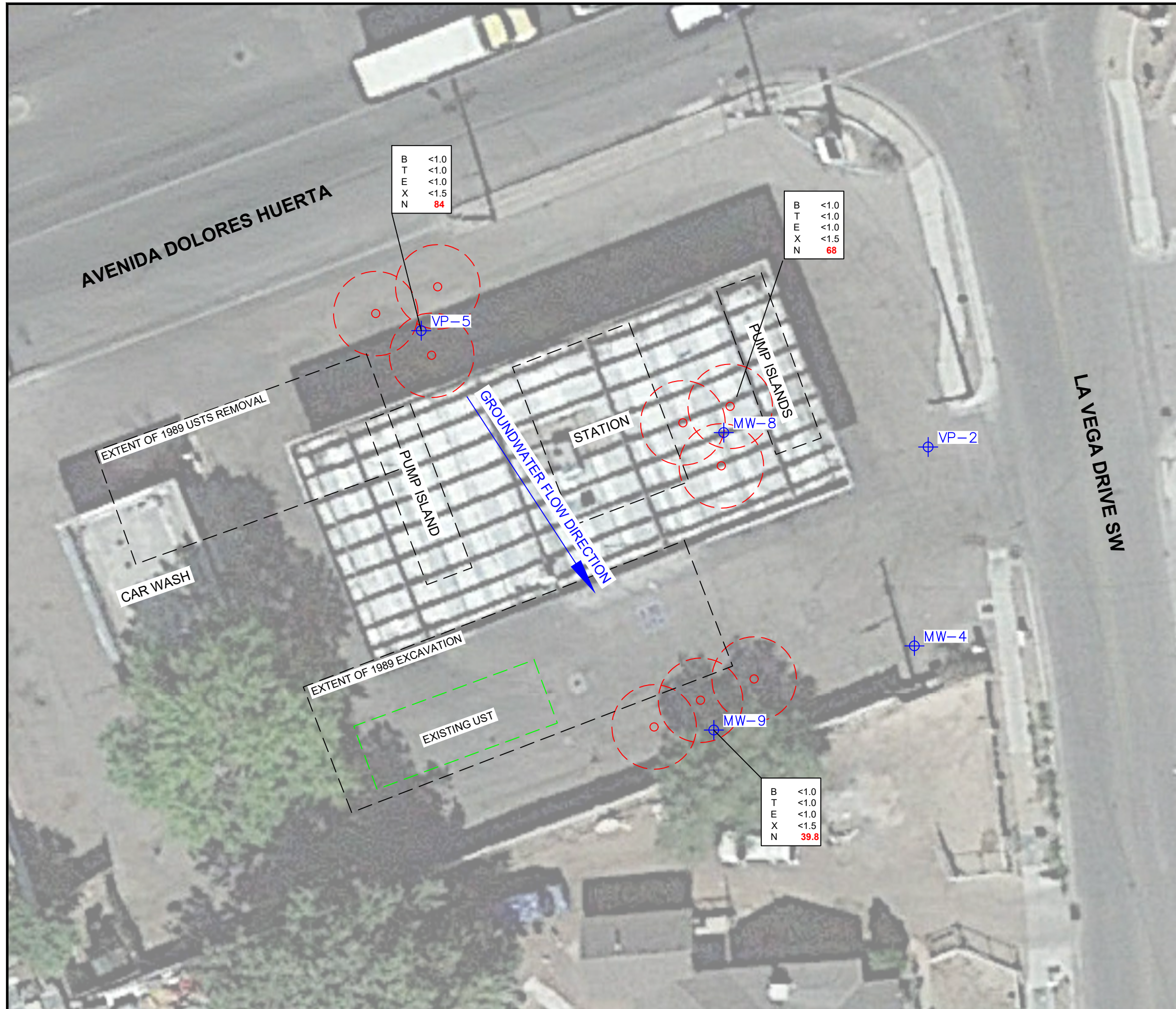
EA Engineering, Science, and Technology, Inc., PBC






Vener Mustafin, P.E.
Project Manager/Engineer

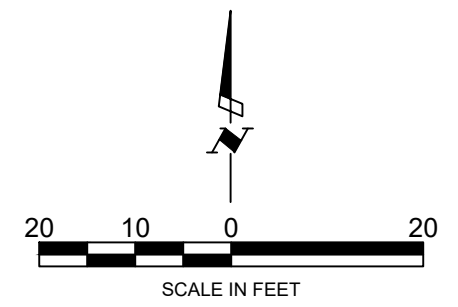
Attachments:	Figure 1 – Site Layout and Proposed Injection Points
Attachment A	Dosage and Mixture
Attachment B	Tasks, Costs, Payment Triggers, and Schedule

FIGURE



- LEGEND:**
-  MONITORING WELL
 -  PROPOSED BOREHOLE LOCATION WITH ESTIMATED RADIUS OF INFLUENCE
 -  GROUNDWATER FLOW DIRECTION
- B BENZENE
T TOLUENE
E ETHYLBENZENE
X XYLENES
N NAPHTHALENES

NOTE: LOCATIONS OF FEATURES ARE APPROXIMATE AND BASED ON WESTERN TECHNOLOGIES AND LEGETTE, BRAHEARS, & GRAHAM INC. FIGURES.



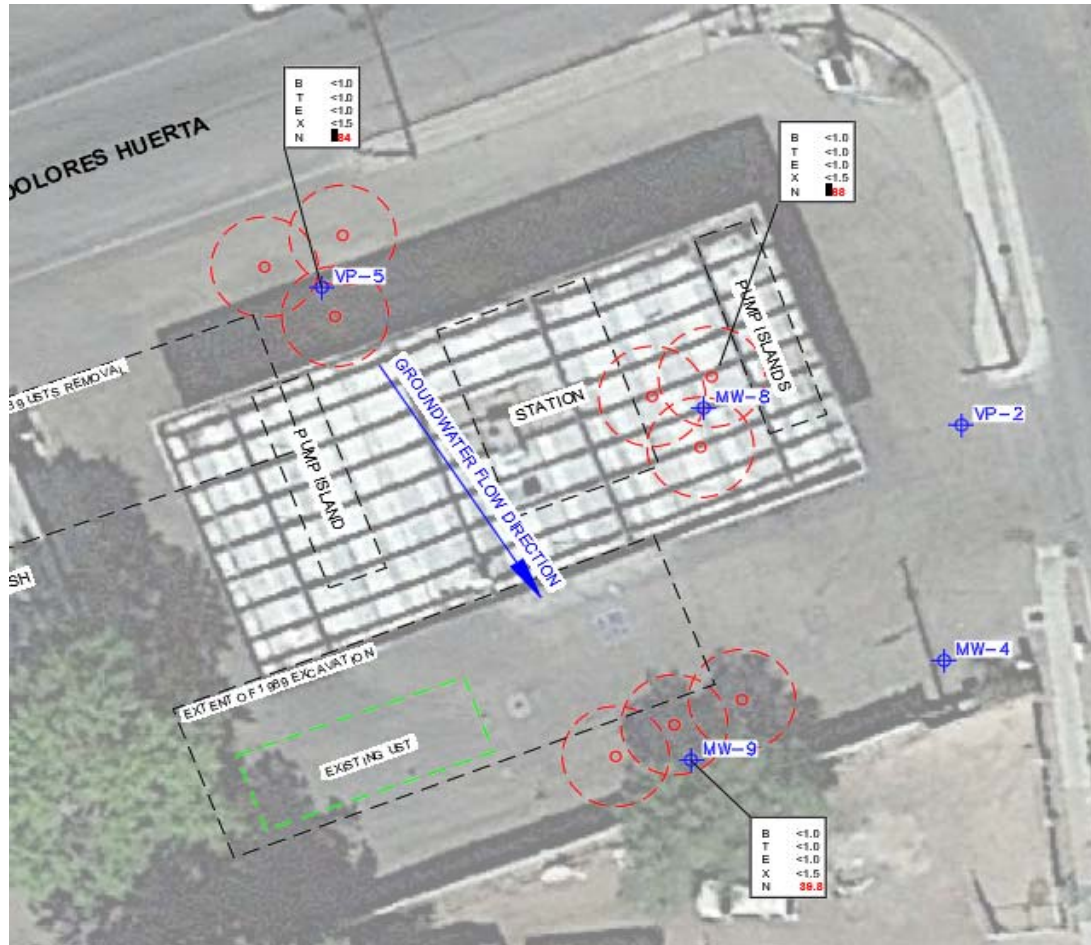
BARELAS BRIDGE, 800 BRIDGE BLVD SW,
ALBUQUERQUE, NEW MEXICO

FIGURE 1
SITE LAYOUT AND PROPOSED
INJECTION POINTS

PROJECT #:	PROPOSAL	PROJECT PHASE:	01	PROJECT MANAGER:	VM
------------	----------	----------------	----	------------------	----

ATTACHMENT A
CALCULATIONS AND DOSAGE

**ATTACHEMENT A - DOSAGE AND MIXTURE
BARELAS BRIDGE, ALBUQUERQUE, NEW MEXICO
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC. PBC**



REVIEW OR ADJUST		BARELAS BRIDGE	
Application Details		Application Summary	
Injection volume and point spacings are critical to achieving good product coverage. We have provided recommended starting values, but you may edit the fields as needed. Warnings are displayed for concerns with edited values.		DELIVERY POINTS	9
MIX TANK VOLUME		Product Volume	82 Gal
275 gal		Water Volume	721 Gal
INJECTION POINT SPACING		TOTAL VOLUME	802 Gal
10 ft		Inject Volume/Point	89 Gal
CAUTION: Injection point spacing is larger than recommended to ensure adequate coverage. Larger injection spacing is possible, but should be field verified. Download application instructions for more detail.		Volume Per Vertical ft.	22 Gal
DILUTION FACTOR		Soil Type	>75% sand/gravel
9.8		EFFECTIVE PORE VOL. FILLED	12%
		Mix Tank Fill Volume	275 Gal
		Product to Add	28 Gal
		Water to Add	247 Gal
		Number of Batches Required	2.92

Barelas Bridge Results		LAST UPDATED: 12.30.21
Reported GW Concentrations (µg/L)	TREATMENT AREA	900 ft²
Benzene 1	TREATMENT THICKNESS	4.0 ft
Toluene 1	TREATMENT VOLUME	133 yd³
Ethylbenzene 1	SUGGESTED DOSE	6.00 lb/yd³
Xylenes 1	TOTAL Product Required	800 lbs
Trimethylbenzenes 1		
Naphthalenes 50		
MTBE 5		
TPH-GRO 10,000		
TPH-DRO 0		
Total Groundwater Concentration 10,056		