

GRC 2003



April 16, 2003

Wayne Price  
Environmental Bureau  
Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Dave Cobrain  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East  
Building 1  
Santa Fe, NM 87505

RE: Well Placement Approval

Dear Mr. Price and Mr. Cobrain:

Over the past several years, your offices and Giant discussed replacement and addition of wells along the property boundaries in the Northwest corner of the Ciniza Refinery. We submitted a map and description of the proposed wells in our monthly progress reports of 2003. We also included a request for closure of Wells OW-2 and OW-3. The new wells will provide better information about groundwater quality in the area currently monitored by OW-2 and OW-3.

As we understand it, the purpose of these new wells is to ensure that no contamination of groundwater has occurred and to provide a means to monitor the groundwater on a regular schedule (annually) to ensure that any potential future contamination is discovered.

Included with this request for approval and concurrence of the placement of the wells, is the estimated costs (supplied by Precision Engineering, Inc.) for drilling of up to nine wells in three locations and the closure of OW-2 and OW-3 (~\$66,000). We estimate analytical costs at about \$3000/well for the initial sampling, for a total project cost of ~\$100,000.

Because this is a very significant project with substantial costs, Giant requests your concurrence for the location and purpose of the new wells and the closure of OW-2 and OW-3. Once we receive your approval, Ciniza will prepare an internal Request for Expenditure for these funds.

We plan to start drilling in early June, 2003. Your prompt attention and written response is needed to secure the funds in time to meet our proposed start date.



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87301

Please contact me at 505.722.0227 or @ [dmancini@giant.com](mailto:dmancini@giant.com) with any questions or concerns regarding this request. Thank you for your assistance.

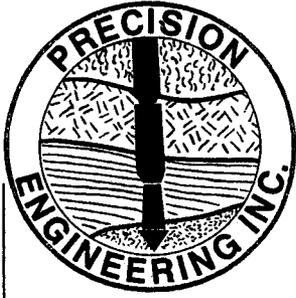
Sincerely,

A handwritten signature in cursive script that reads "Dorinda Mancini". The signature is written in black ink and is positioned above the printed name and title.

Dorinda Mancini  
Environmental Manager, Ciniza Refinery

Enc

CC: Roger Anderson, OCD  
Dave Cobrain, HWB  
Ed Riege, Env. Superintendent  
Matthew Davis, General Manager (w/o enc.)  
File



**PRECISION ENGINEERING, INC.**

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April 8, 2003

Ms. Dorinda Mancini  
Giant Refining Company, Inc.  
Ciniza Refinery  
Route 3, Box 7  
Gallup, New Mexico 87301

Re: Proposal for Refinery Boundary Wells  
Ciniza Refinery Facility Site

Dorinda,

This letter is our proposal for installation of monitoring wells at the perimeter of the refinery property. Briefly summarized we understand the scope of services will be to install up to three (3) wells at each of three (3) locations (up to nine (9) wells total). Additionally, two existing wells, OW-2 and OW-3, will be closed and permanently sealed. Below is a list and brief description of the tasks that will be performed to accomplish the required work to the satisfaction of the OCD, who we understand is requiring the work. Should you require, we will discuss our proposed scope with the OCD so that there is an understanding with all parties as to our perception of the project needs.

**Task 1**

Mobilize all materials and equipment to the site (Ciniza Refinery). Precision Engineering, Inc. will furnish all equipment, personnel, and materials to construct the wells and close out the existing wells. In the past, as a cost saving measure the Refinery has elected to furnish some materials (bagged cement, and concrete mix as examples). Should the Refinery wish to do this for the proposed project the final fee will be adjusted accordingly. Precision Engineering, Inc. will provide lodging and per diem for all its personnel assigned to the project.

**Task 2**

Meet with project related personnel and stake the well locations. The wells at the site are anticipated to be artesian. New Mexico State guidelines indicate that all wells that are artesian in nature are subject to the requirements of the Office of the State Engineer and as such will require permitting. Precision Engineering, Inc. will assist Giant Refining Company in obtaining the required permits to install the wells. Precision Engineering, Inc. will also notify all individuals as required by law as to the time of installation and will invite all OSE officials to be present during the installation. It is unlikely these regulatory officials will wish to be present, however, it is our responsibility to make the offer.

### Task 3

One boring will be advanced at each of the three locations for the purpose of obtaining a detailed stratigraphic log of the site formation. The boring will be sampled continuously using a static split barreled intrusion sampler mounted ahead of the advancing auger. The samples will be logged in detail with special attention paid to the notation of free water locations. This log will be used to locate water bearing zones above the soil/Chinle Formation interface. Precision Engineering, Inc. will meet with project related personnel and decisions concerning the location of screens will be made. Historically, a gravelly or sandy horizon has been observed to directly overly the unweathered Chinle Formation. At many locations at the site this permeable zone is water bearing as a result of water accumulation on top of the impervious siltstones and claystones that form the bulk of the Chinle Shales. Assuming this zone is water bearing a monitoring well will be placed with screen crossing the entire thickness of this layer. If the zone is not water bearing a decision will be made with the concurrence of the Refinery Environmental Department representative and, if necessary, representatives of appropriate regulatory agencies. These wells will be described as "interface wells" and the gravel layer itself will be referred to as the "interface zone" when referred to in this document.

Where the log of the boring indicates there are sand zones above the interface layer that are water bearing an additional well will be placed that discretely monitors the water from that upper zone. Screen length may vary somewhat in these wells since thickness of the zone(s) being monitored are anticipated to vary. Again, prior to placing the screens concurrence from project related parties will be obtained. The wells located above the interface zone will be labeled as the "sand wells" and the monitored zones will be known as the "sand zones" where referred to later in this document.

In addition to the wells monitoring the recent alluvial and fluvial sediments above the Chinle Formation, an additional well will be advanced to the Sonsela Sandstone; a named sandstone bed within the Chinle Formation. It is anticipated that installation of these wells will require a change of drilling methods to rotary. Currently it is planned to use "foam" to drill the borings. The use of foam as a drilling agent will require little water and has no significant environmental impact of the surface or subsurface. The well will be placed to monitor the water that is migrating through the Sonsela Sandstone bed. The well designation in this document will be "Sonsela well".

All wells placed for this activity will be constructed using two (2) inch nominal diameter, schedule 40, PVC riser pipe. Screens will be constructed of machine slotted schedule 40, PVC. Slotted pipe will have openings of 0.010 inch (#10). All wells will have bottom end caps. The screen and casing will be equipped with centralizers that will keep the casing centered in the bore hole and vertical. Centralizers will be placed at a maximum of twenty foot intervals to keep the relatively small diameter casing from buckling. In the deep wells the casing will be suspended as well to prevent buckling.

The screen will be sand packed from a point one (1) foot below the bottom of the screen to a point two (2) feet above the top of the screen. The sand will be sized to limit the amount of fines that migrate laterally into the well. A standard 10-20 grading will be used. It should be noted that because of the limited amount of water available in some of the water bearing sands and their proximity to adjacent clays, development of the wells to clear water is considered unlikely.

A layer of montmorillonite clay (bentonite) pellets a minimum of two (2) feet in thickness will be placed immediately above the sand. It is anticipated that the wells will be somewhat artesian. As a result bentonite coated with "confectioner's lacquer" will be used to retard the reaction (hydration) with water until the pellets are at the desired location. The confectioner's lacquer is a food grade product and will not impact the water quality of the wells. Once the montmorillonite clay has hydrated, the wells will be grouted to the surface with slurry comprised of 6% montmorillonite clay (bentonite) and 94% Portland Type I-II cement.

Once the slurry has been allowed to set, an above ground vault will be constructed. The vault will be constructed of a six (6) inch steel casing mounted in a four (4) foot square pad. At locations where the vault is in danger of being hit by traffic, three (3) inch diameter steel bollards filled with concrete will be placed in the surface pad as well. The pad will be sloped away from the vault pipe to facilitate drainage away from the well annulus.

The primary steel vault that shields the PVC riser pipe will extend into the surface pad approximately twenty-four (24) inches. The steel protective vault will be capped with a lockable aluminum protective casting that indicates the vault contains a monitoring well. The exterior surface of the cap will be imprinted with the well designation. The interior of the cap will have the date the well was placed, total depth of the well, amount of screen and the contact where logs can be obtained. The PVC riser pipe will be equipped with a lockable expansion cap. Locks will not be provided, however, keyed alike locks can be provided if requested.

Drilling will be accomplished using the following unit or combination of drilling units:  
CME 75D and CP-650

#### **Task 4**

The wells will be purged and developed. The primary purpose of the purge and development is to clean the sediment from the sanding effort. Developing the wells to produce clear water will not be part of the development process.

#### **Task 5**

After all work is complete at each of the three locations the site will be cleaned up and restored as close as practical to the predrilling condition. Cuttings will be leveled, or if they are contaminated they will be transported to a holding area as designated by Giant Refining Company Environmental Department representatives.

#### **Task 6**

After it is determined the wells that are installed in the above tasks are producing at a rate acceptable to Giant Refining Company, wells designated as OW-2 and OW-3 will be closed. Both wells report they have been finished with grouted in place PVC casing making pulling the casing impossible or impractical at best. It is proposed that the closure process be as follows:

- 1) Tremmie a fluidized portland cement grout from the bottom of the well to the top. Grout will be treated with fluidizing agents so that it will intrude into the formation and all gravel pack areas.

- 2) A heavy portland cement grout will then be pumped into the well and pressurized to fill all annular spaces. Since the casing has been grouted in place, casing splitting then grouting will not be required.
- 3) Grout volume will be monitored. A grout volume that is a minimum of one and three-fourths (1-<sup>3</sup>/<sub>4</sub>) of the computed theoretical volume of the well will be injected.
- 4) The surface vaults will be removed and disposed of at a location on the facility property designated by Giant Refining Company.
- 5) Any exposed casing will be cut off below grade and the site will be cleaned up and leveled.

**Task 7**

Well collar (ground) elevations and top of casing elevations will be determined.

**Task 8**

Logs and notes taken during the installation of the wells and during the closure of OW-2 and OW-3 will be provided to Giant Refining Company. All well stratigraphy will be entered into the Giant Refining-Ciniza data base kept by Precision Engineering, Inc. Although subsurface models will not be updated as a part of this project the information will be available for incorporation into any future subsurface model updates required by the client.

**End of Tasks**

Because of the decisions that must be made on the site as well as the need for accurate and detailed logging, a registered professional geological engineer as well as a geologist will be present at the site at all times throughout the project. The engineer and geologist assigned to this project are:

William H. Kingsley, PE and Nathan A. Sanders

Additional technicians will be used on this project as required. If you require resumes of the above personnel please contact our office.

Because the presence or absence of water above the interface zone is not known at the facility boundary, a lump sum price is not practical. It is also not 100% certain that there will be water at the interface zone, although it is assumed that this will be a monitoring point. It is known that the Sonsela Sandstone is located at all points below the facility property. The following has been developed considering the variable nature of the upper sediments.

|   |              |
|---|--------------|
| Mobilization:   | \$4,750.00   |
| Drill and Log Continuous Boring (Three Locations lump sum): | \$6,930.00   |
| Install Interface Wells (per Each):                         | \$2,140.00   |
| Drill and Install Sand Wells (per Each):                    | \$2,870.00   |
| Drill and Install Sonsela Wells (Three Wells lump sum):     | *\$36,500.00 |
| Close Wells OW-2, OW-3 (lump sum):                          | \$1,700.00   |

\* - If 4" materials are used for these wells - \$37,310.00

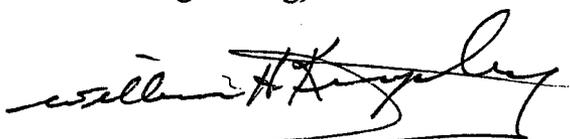
If the total possible scope of this project is performed there will be a total of three (3) sand wells, three (3) interface wells, and three (3) Sonsela wells. The nine (9) wells will be located on a total of three (3) sites on the Giant Refining-Ciniza Refinery Site. For the purpose of this proposal it

has been assumed that the sand wells will not exceed seventy (70) feet in depth, the interface wells will not exceed ninety (90) feet in depth, and the Sonsela wells will not exceed a total depth of one hundred sixty (160) feet. If all portions of the project are performed, and the 4" material option is selected for the Sonsela wells only, the fee will not exceed **\$65,720.00**.

New Mexico Gross Receipts Tax at a rate of 6.5% (\$4,271.80 max.) will be added to the final fee for this project.

We will schedule the project to fit your timelines upon receipt of notice to proceed. If you have questions concerning the intent of the proposal or require clarification concerning the proposed tasks, contact our office. We look forward to working with you on this project.

Sincerely,  
Precision Engineering, Inc.



William H. Kingsley, PE