

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Department  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-144 CLEZ  
July 21, 2008

For closed-loop systems that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure, submit to the appropriate NMOCD District Office.

5978

**Closed-Loop System Permit or Closure Plan Application**

(that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)

Type of action: ☒ Permit ☐ Closure

**Instructions:** Please submit one application (Form C-144 CLEZ) per individual closed-loop system request. For any application request other than for a closed-loop system that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure, please submit a Form C-144.

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1. Operator: EverVest Operating, LLC OGRID #: 143199  
Address: 1001 Fannin St. Ste 800 Hourson, Texas 77002  
Facility or well name: Jicarilla B #4M  
API Number: 30-039-29922 OCD Permit Number: 5939  
U/L or Qtr/Qtr G Section 21 Township 26N Range 05W County: Rio Arriba  
Center of Proposed Design: Latitude 36.473443 Longitude -107.364172 NAD: ☐ 1927 ☐ 1983  
Surface Owner: ☐ Federal ☐ State ☐ Private ☒ Tribal Trust or Indian Allotment

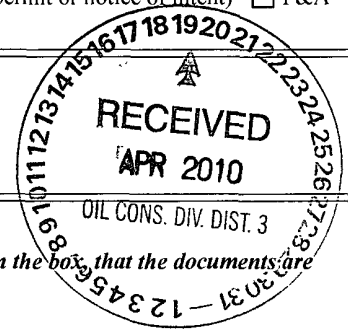
2. ☐ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC  
Operation: ☒ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent) ☐ P&A  
☒ Above Ground Steel Tanks or ☐ Haul-off Bins

3. **Signs:** Subsection C of 19.15.17.11 NMAC  
☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers  
☒ Signed in compliance with 19.15.3.103 NMAC

4. **Closed-loop Systems Permit Application Attachment Checklist:** Subsection B of 19.15.17.9 NMAC  
**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.  
☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  
☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC  
☒ Closure Plan (Please complete Box 5) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC  
☐ Previously Approved Design (attach copy of design) API Number: \_\_\_\_\_  
☐ Previously Approved Operating and Maintenance Plan API Number: \_\_\_\_\_

5. **Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:** (19.15.17.13.D NMAC)  
**Instructions:** Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.  
Disposal Facility Name: Envirotech Inc. Soil Remediation Facility Disposal Facility Permit Number: NM-01-0011  
Disposal Facility Name: T-n-T Land Farm Disposal Facility Permit Number: NM-01-0008  
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will not be used for future service and operations?  
☐ Yes (If yes, please provide the information below) ☒ No  
**Required for impacted areas which will not be used for future service and operations:**  
☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC  
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

6. **Operator Application Certification:**  
I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.  
Name (Print): Ronnie L. Young Title: Compliance Supervisor  
Signature: Ronnie L. Young Date: 4.13.10  
e-mail address: ryoung@enervest.net Telephone: 713-495-6530



7.  
**OCD Approval:** ☒ Permit Application (including closure plan) ☐ Closure Plan (only)

OCD Representative Signature: *Bob Pelt* Approval Date: 4-29-10

Title: Enviro / spec OCD Permit Number: \_\_\_\_\_

8.  
**Closure Report (required within 60 days of closure completion):** Subsection K of 19.15.17.13 NMAC

**Instructions:** Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ Closure Completion Date: \_\_\_\_\_

9.  
**Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:**

**Instructions:** Please identify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name: \_\_\_\_\_ Disposal Facility Permit Number: \_\_\_\_\_

Disposal Facility Name: \_\_\_\_\_ Disposal Facility Permit Number: \_\_\_\_\_

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations:

☐ Site Reclamation (Photo Documentation)

☐ Soil Backfilling and Cover Installation

☐ Re-vegetation Application Rates and Seeding Technique

10.  
**Operator Closure Certification:**

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

e-mail address: \_\_\_\_\_ Telephone: \_\_\_\_\_

# **ENERVEST OPERATING, LLC**

## **CLOSED-LOOP DESIGN PLAN**

In accordance with 19.15.19.11 H (1) NMAC, Enervest Operating, LLC (EV) will design and construct its closed-loop system to insure the confinement of oil, gas, or water to prevent an uncontrolled release.

The design plan for the closed-loop system shall use appropriate engineering principles and practices and follow applicable manufactures' requirements. The plan shall include operating and maintenance procedures and a closure plan as described below.

We have attached a diagram of our proposed closed-loop system including a detailed explanation of the operation of the system. A well-sign shall be posted at the well site in accordance with 19.15.16.8 NMAC. We do not plan to install a fence around this closed-loop system as it will be used during the drilling of a new well.

EV shall use the "Sumless Clearwater Drilling/Solids Control System" developed by Tecumseh Industries, Ltd. I have attached a brochure of the system for your review. The skid system consists of containment tanks, Tec Tanks, and centrifuge tanks. This uses super-vac vacuum trucks to haul off solids and non-required liquids instead of the customary haul-off bins.

## **CLOSED-LOOP OPERATING AND MAINTENANCE PLAN**

In accordance with 19.15.17.A NMAC, EV shall operate and maintain the closed-loop system in a manner that will contain all solids and liquids, maintain the system's integrity, prevent contamination of fresh water and protect public health and the environment. This will be accomplished by the following processes:

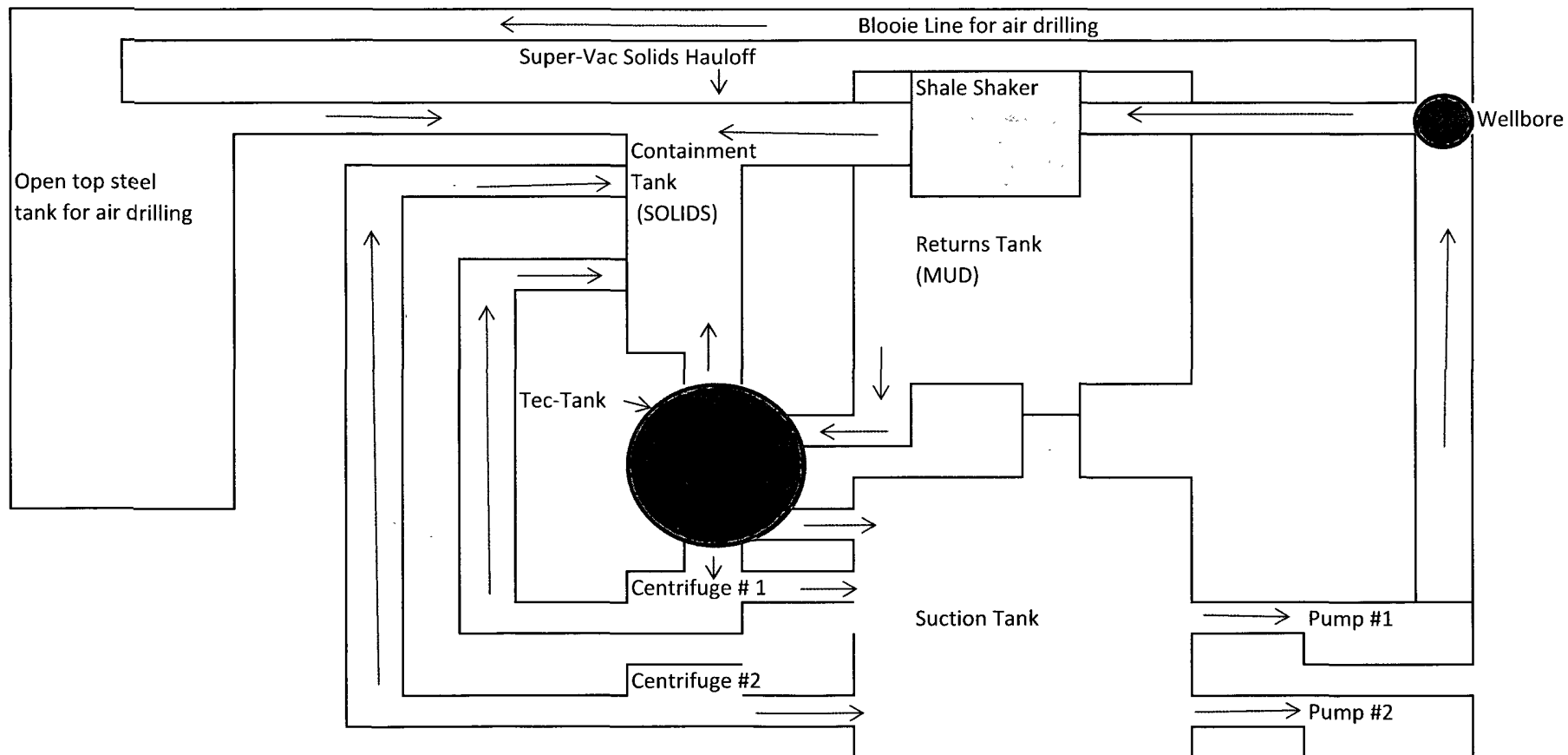
- 1) EV shall recycle, reuse or reclaim, or dispose of all drilling fluids in a manner approved by the current NMOCD rules.
- 2) EV shall not discharge into or store any hazardous waste in the closed-loop system, including the containment tank, nor shall it allow miscellaneous solid waste or debris into the closed-loop system.
- 3) The Tec-Tanks will be of sufficient volume to maintain a safe freeboard prior to disposal of the solids and liquids from drilling rig operations. Disposal will be done on a periodic basis, whenever a containment tank is determined to be at full capacity, maintaining a safe and responsible freeboard. The solids and liquids in the closed-loop system will be transported off the drill site by NMOCD approved transportation and disposed of at a NMOCD-permitted disposal facility or facilities as identified in Section 5 of NMOCD Form C-144 CLEZ.

- 4) The closed-loop system will be inspected daily as long the drilling rig or workover rig are in operation. EV will maintain a log of such inspections.
- 5) In the event of a leak from any of the component systems within the closed-loop system, or if any penetration of a component occurs below the liquid's surface, then EV shall promptly remove all liquid above the damage or leak line, and notify the appropriate NMOCD district office within 48 hours of the discovery and repair the damage or replace the affected closed-loop component.

#### CLOSED-LOOP CLOSURE PLAN

In accordance with 19.15.17.13 NMAC, EV will not use any temporary pit or drying pads during any of our drilling or workover operations. The closed-loop system and all other associated activities will be performed on the drilling pad, and will not be performed on or in areas that will not be used for future service and operations of the wells location. The closure for the closed-loop system will be performed as follows:

- 1) Immediately following termination of rig operations, all solids and liquids remaining in the closed-loop skid will be disposed of in the approved facilities as outlined in Section 5 of NMOCD Form C-144 CLEZ.
- 2) The closed-loop system components, including any and all containment tanks, will be removed from the location in conjunction with the move of the drilling or completion rig from its current well site.
- 3) Within six months from the date that EV ceases drilling operations, EV shall complete and execute items 9 and 10 of the attached C-144 CLEZ and file the same with the appropriate NMOCD district office.



# **ENERVEST OPERATING, LLC**

## **CLOSED-LOOP SYSTEM**

### **Physical Operations**

The mud system that is utilized is a combination of fresh water, gel, and polymer.

The solids bind to the polymer during the drilling circulation process through polymer sweeps and are sent over our drilling rig shaker as part of the first process of the closed loop system.

The shaker extracted solids vibrate off of the shaker screens into our Containment Tank that is specifically notched to accept the shaker and mud cuttings.

Two (2) Sharples P-3400 (high speed) centrifuges are also mounted on top of the Tec Tank that resides side by side to the rig's mud pit.

The active mud that is returned into the first shale compartment of the Tec Tank after being processed by the shale shaker where it is introduced to the Tec Tank to extract more solids. The active mud system then cascades over the shale compartment into the Tec Tank compartment where a 2" submersible Fisher pump pumps the active mud over to the centrifuges.

Typically only one centrifuge is utilized for most shallow wells and the other centrifuge is on standby if problems occur or it is energized if the mud weight cannot be maintained with only one centrifuge.

As the active mud passes through the high speed centrifuge the extracted solids drop out the bottom into the Containment Tank below and the cleaned mud is returned back to the rig Suction Tank system.

The active mud is also introduced to the Return Tank desilter unit as another means of extracting the solids and keeping the mud weight to an acceptable limit. The closed loop mud system is supplied with a service tech that maintains the equipment and monitors the system.

The closed loop mud system utilizes less fresh water than a typical drilling operation with a typical mud pit because the norm is to either dump your mud pits when the solids become too high and/or introduce more fresh water into the mud system to dilute the mud solids as much as possible.

The closed loop mud system treats the problem by reducing the solids and recycling the mud as opposed to simply diluting the solids problem. It is possible that the mud utilized on the first well can be recycled and utilized for the second well as a means of capturing additional mud and water savings.

Frac tanks are utilized to store and transfer the cleaned/recycled mud and also store fresh water if needed.

The excess cement was likewise hauled off using a vacuum truck with a gel coat lining on the inner tank and the cement was mixed with sugar to retard and it was hauled to a land farm as well.

**TECUMSEH**  
Industries Ltd.



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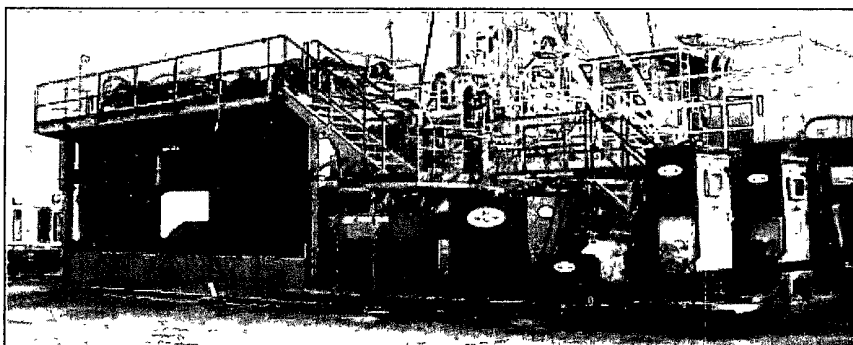
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Dewatering Equipment  
Other Equipment  
Services  
Equipment Rental  
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## SOLIDS CONTROL EXPERTS

### Sumplless Clearwater Drilling/Solids Control System

**Tecumseh Industries Ltd. is proud to introduce our new concept in Sumplless Clearwater Drilling technology.**

If you are looking for the best solution to help reduce water consumption, disposal volumes, reduce high trucking costs, maximize space used on location, minimize environmental hazards (proper oil based cuttings containment) and save time on each well while ensuring the safety of your employee's, you have found it!



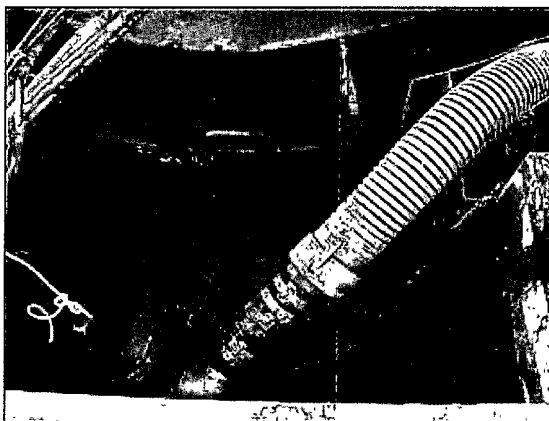
### Contact Us

**Tecumseh Industries Ltd.**  
604 21st Street S.E.  
High River, Alberta  
T1V 2A6

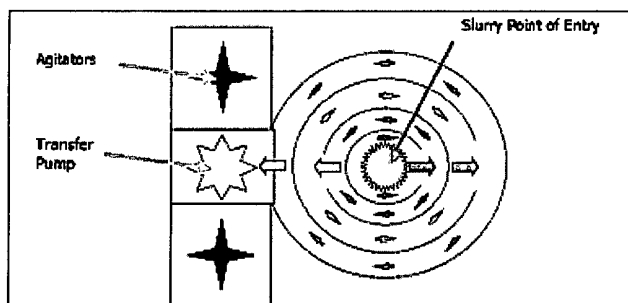
Toll Free: **1-877-602-2424**  
Phone: **(403) 601-2424**  
✉ Email

The reputation this system has earned for its efficiency and performance is attributed to the combination of Tecumseh's unique patented (US Patent # 7,135,107 B2) and Canadian patent pending concentration tank design, utilized with our superior Full Variable Speed centrifuges.

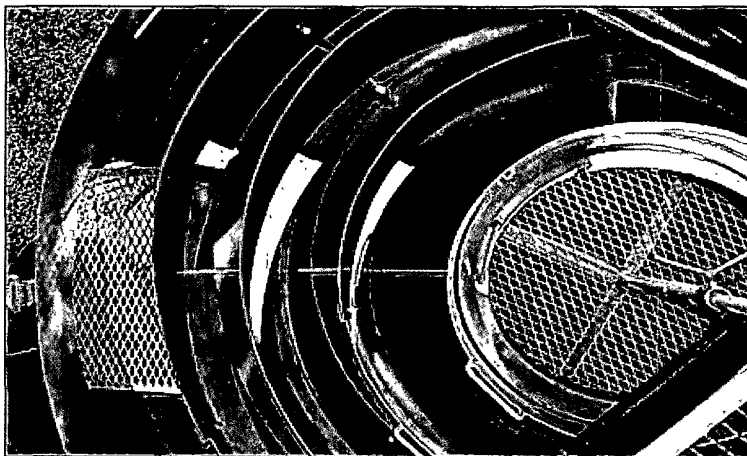
When the slurry from the flow line, after running through the rig shakers is fed into the centre of the "TecTank" along with polymer or flocculating agent, these baffles direct the solids that separate or settle from a slurry stream directly towards the bottom of the tank where the centrifuge(s) suction outlet is located.



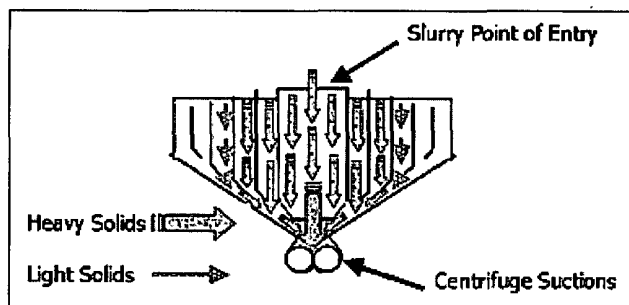
As the solids settle from the slurry stream, the clean fluids flow away from the centre to the outside of the TecTank where a clean fluid or centrate compartment is located. This centrate compartment is equipped with a submersible transfer pump, which transfers the clean fluid back to the rig suction tank for reuse. This allows for the most efficient solids removal possible! (See figure below)



Our unique centre baffle or cylinder is where most of the processing is done. Slurry enters the TecTank at this centre baffle where the solids are concentrated by dropping them directly over the centrifuge suction outlet. The solids compress themselves downward while they are simultaneously pulled down by the centrifuge feed pump(s).



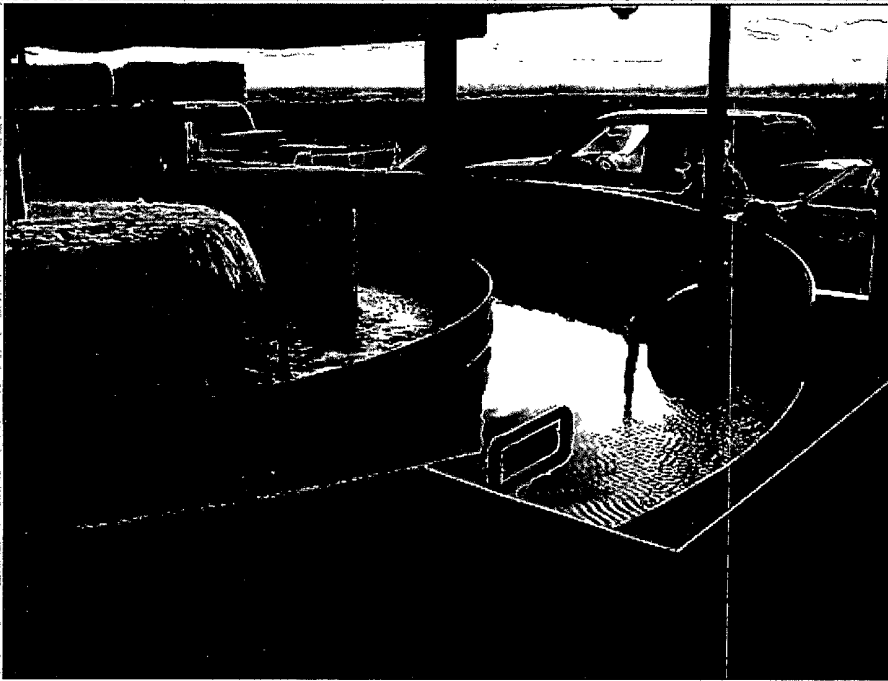
The cylindrical baffle adjacent to the centre baffle or cylinder then restricts the movement of any solids that want to flow away from the centre of the TecTank. This keeps the solids concentrated over the centrifuge suction outlet.



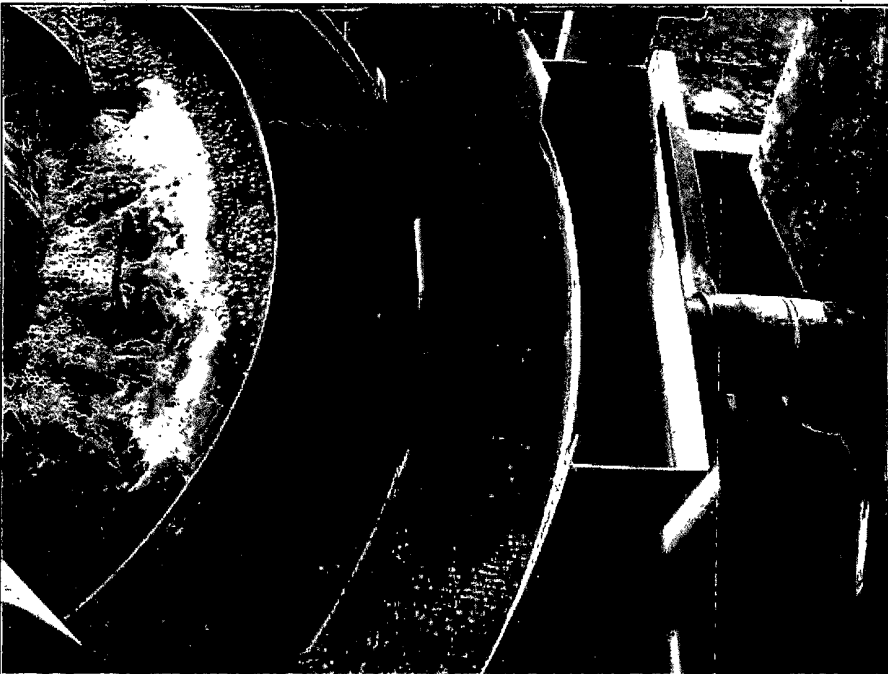
This solids concentrating process blocks most of the fluid in the TecTank from entering the centrifuge(s) through the centrifuge suction. This allows for mainly solids to enter the centrifuge(s), and is essentially what keeps the separation process so efficient.

Most of the processing is accomplished within the first three cylindrical baffles of the TecTank. This is what allows us to reduce water consumption by roughly 75% when compared to conventional water drilling systems.

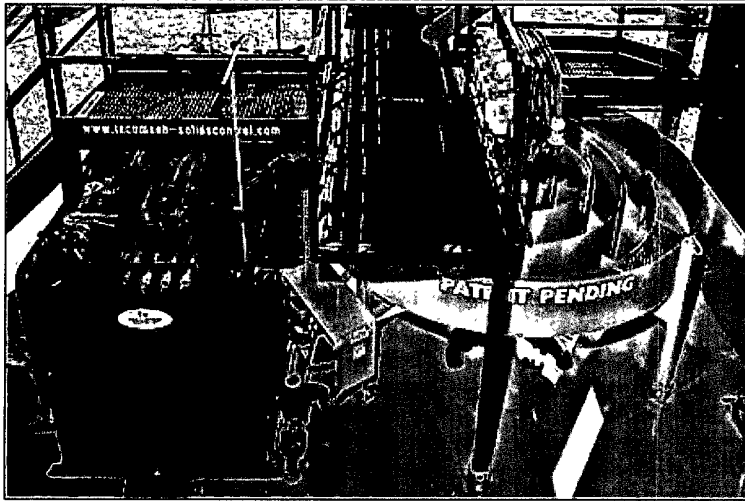
Once concentrated in the TecTank, the solids enter the centrifuge feed pump(s) where polymer (floculant) is injected into the solids rich slurry before it is introduced to the centrifuge(s) for final processing (polymer is only used on water based fluids)



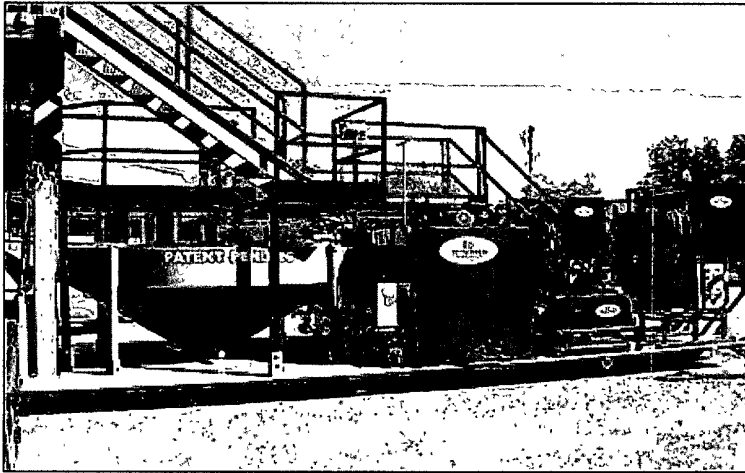
To assist in maximizing efficiency, the cylindrical baffle assembly of our patent pending design includes adjustable windows or "weirs" which direct fluid around the TecTank to achieve the most efficient processing possible. These windows are located in select parts of our cylindrical baffle assembly in a sequence that allows fluid to move and achieve the maximum benefit from the flocculating agent and / or by increasing the amount of settling or retention time.



Our Tecumseh Solids Control System is so efficient, we have been able to reduce surface water volumes needed for processing down to as little as 1190 US gallons or 4.5m<sup>3</sup>(volume in TecTank only). This alone will greatly reduce water consumption, which equates to reduced disposal costs.



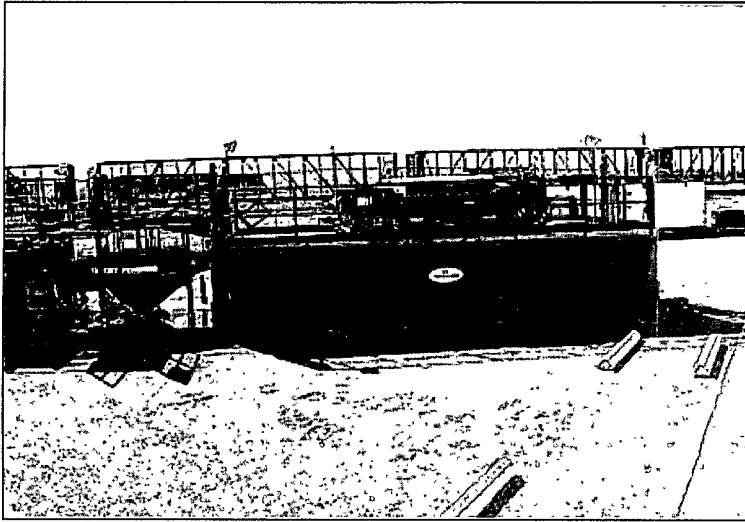
At Tecumseh, Safety is never compromised! Every piece of Tecumseh equipment is designed with the safety of our operators in mind. All Tecumseh equipment is engineered with stairs eliminating ladders and the need for fall protection. Adequate lighting is supplied along with anti-slip material to help prevent injuries. Emergency escape exits are also installed for an alternate escape route if the need arises.



## Benefits to Using our TecTank System

The following is also a list of benefits to using our technology:

- Less water consumption (only 1190 US Gallons or 4.5m<sup>3</sup> in TecTank required for water drilling).
- No vacuum truck required for clear water drilling.
- No crane required for rig-up/out.
- Centrifuges can ride on tank platform and never have to be moved.
- System will accommodate centrifuges of almost any kind (1 or 2).
- Shale tank, flocc tank, and centrifuges are all part of system eliminating 2 loads on rig moves.
- Safety lights are installed all over the system including in the shale tank.
- Flocc tank has no moving parts (i.e. auger) to freeze up or bridge off with solids.
- Flocc tank can be utilized on surface hole and the main hole mud sections to aid in solids removal and reduce tank cleaning when WOC and at the end of each well.
- 1-centrifuge rated for 265 US gpm or 1m<sup>3</sup>/min can be utilized on water sections pumping up to 370 US gpm or 1.4m<sup>3</sup>/min.
- System is equipped with stairs and handrails throughout so there is no risk of falling off walkways and causing injury.
- Feed pumps, and VFD's can be permanently mounted on skid with no handling on rig moves.
- 2 – polymer injection tanks for proper chemical mixing and pre-hydration c/w agitators, pumps and mixing hoppers (always have a backup injection pump if one fails).



**"Tec Tank" in transport mode**

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