AP - 001

STAGE 1 & 2 WORKPLANS

DATE: July 31, 1997

BDM

STAGE 2 ABATEMENT PLAN
FORMER BRICKLAND REFINERY SITE
REXENE CORPORATION

July 31, 1997

RECEIVED
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Environmental Bureau
Oil Conservation Division

Prepared for:

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EXECUTIVE SUMMARY

Rexene Corporation (Rexene) has fulfilled the requirements for completion of a Stage 1 Abatement Plan, according to the New Mexico Water Quality Control Commission (NMWQCC) regulation, for the Brickland Refinery Site in Sunland Park, New Mexico. The Final Site Investigation Report, dated December 18, 1996, summarizes the site characterization required for this Stage 1 Abatement Plan. Approval of the plan was received on May 21, 1997. This Stage 2 Abatement Plan presents the proposed remedial design for mitigating the impact to soil and groundwater associated with the site.

The site characterization identified the following impacts to the environment from past operations at the site:

1. Hydrocarbons in the form of benzene, toluene, ethylbenzene, and xylenes (BTEX), polyaromatic hydrocarbons (PAHs), and metals (primarily lead) exist in the soil on the site.
2. Free-phase product on groundwater beneath the site are present in a limited area.
3. Dissolved-phase hydrocarbons have been found in groundwater beneath the site and immediately adjacent to the site in one very localized area.

Additionally, the site characterization determined hydrocarbons and metals in the soil were relatively stable and leaked into groundwater at a slow rate. Lead, the primary metal of concern in soil, has not been detected in any of the on-site monitor wells, demonstrating that it is not leaching into groundwater. Free-phase product occurred in localized pockets and did not occur extensively throughout the site and did not appear to be mobile. Dissolved-phase hydrocarbons occur in groundwater beneath the site and have migrated off site in one area. However, the dissolved-phase hydrocarbons have been contained (or attenuated) and have not impacted the Rio Grande. Groundwater and contaminant transport modeling has shown the Rio Grande will not be impacted in the future.

Based on the results of the site investigation and analyses of remediation technologies applicable to the site, the following approach is planned to abate hydrocarbons and other constituents of concern (COCs) in the soil and groundwater:

- Hydrocarbons in soil will be remediated by natural attenuation.
- Free-phase product on groundwater will be removed by active recovery from monitor well MW-10 and periodic recovery of minor localized product from other monitor wells and well points if it is detected during routine monitoring.
- Dissolved-phase hydrocarbons in groundwater will be remediated by natural attenuation and long-term monitoring.
- Metals in soil that pose a threat to the public through airborne or direct contact will be remediated by capping.

- Bi-annual monitoring for BTEX will continue until approval to cease is obtained from the New Mexico Oil Conservation Division (NMOCD).

A summary of the abatement options, previously cited and summarized in the table below, that were considered and the rationale for selection of the proposed remedial alternatives is presented in this report.

ABATEMENT OPTIONS

Constituent	Medium	Method of Abatement
Hydrocarbons	Soil	Natural attenuation
Metals (primarily lead)	Soil	Capping
Free-phase hydrocarbons	Groundwater	Active recovery
Dissolved-phase hydrocarbons	Groundwater	Natural attenuation

1.0 SUMMARY OF SITE CONDITIONS

The Brickland Refinery site is currently owned by Rexene and consists of 35 acres located in Sunland Park, Doña Ana County, New Mexico. The former petroleum refinery operated from 1933 to 1958 and was subsequently dismantled. Hydrocarbons have been detected in soils and groundwater at the site.

Two extensive environmental investigations have evaluated groundwater chemistry and regional and local hydrogeologic conditions that influence the fate and transport of compounds in subsurface soils and the underlying shallow aquifer. These investigations were also conducted to establish baseline conditions prior to determining an appropriate response to the observed hydrocarbons.

Investigation Results

Data obtained from site investigations conducted by Geoscience Consultants, Ltd. (GCL, 1994), now BDM International, Inc. (BDM), and Eder and Associates, Inc. (Eder, 1990) indicate hydrocarbons in on-site soils are restricted to approximately the southern half of the property. Hydrocarbon constituents detected in groundwater monitor wells show a spatial correlation with areas of impacted soil, and suggest migration of hydrocarbons from soil to groundwater. Free-phase hydrocarbons are observed in several wells and well points in the southern portion of the site, with a maximum thickness of several feet in MW-10 and WP-26S. GCL's studies indicate the areal extent of phase-separated hydrocarbons is much less than originally projected by Eder (1990). Metals are found in the shallow soil on the site, primarily in the southern half of the property. Lead, which is the primary metal of concern, has not been found in groundwater beneath the site.

GCL's evaluation of regional and local geologic and hydrologic conditions indicate the heterogeneous clays and silts in subsurface soils have acted to restrict migration of COCs. The observed hydrocarbons are confined to the property itself and the narrow strip of land between the site and the Rio Grande. The gates on the three rainwater culverts located on the southern half of the site have been closed in association with the International Boundary and Water Commission (IBWC). Stormwater runoff from the southern portion of the site, where hydrocarbons and metals are present in soils, cannot occur because the three southern drainage culverts are now closed. There are no known off-site receptors of the observed constituents.

There is no evidence the site poses a significant or imminent threat to human health or the environment. Site conditions make this site a favorable candidate for restoration of soil and groundwater through intrinsic remediation (attenuation and natural biodegradation). A detailed summary of the site characterization is provided in the Final Site Investigation Report (BDM, 1996).

2.0 ABATEMENT OPTIONS

Abatement alternatives for the remediation of the Brickland Refinery Site were assessed to determine the most effective approach. The goal for the remediation is to protect public health and the environment through containment of the COCs and reduction in the levels of contamination. Various abatement options were considered for both soil and groundwater and are discussed in the following sections.

2.1 Soil

COCs in soils that are above regulatory action levels at the site are comprised of BTEX, PAHs, and metals (primarily lead). The Final Site Investigation Report (BDM, 1996) presents the magnitude and distribution of the COCs. Elevated levels of the COCs are mainly confined to the southeastern portion of the site.

Option 2.1.1 Excavate and Dispose/Excavate and Treat On Site

The excavate and dispose abatement option involves excavation of the contaminated materials, backfilling with clean excavated fill material, and transportation and disposal of the contaminated materials at an approved facility. This approach allows for immediate clean up of the site but at great expense. The realized expense would come from excavation and backfilling activities at and sometimes below the water table, and transportation and disposal of large quantities of materials to an approved facility. The excavation option was also evaluated using various on-site treatment processes including thermal desorption and soil washing. Both of these abatement options involve excavations at or below the water table and enormous mobilization and demobilization costs. These methodologies are most effective at sites where contaminants are evenly distributed through uniform lithologies that are easily excavated, or located relatively near to disposal facilities. The methodologies are often desirable at locations where long-term methods create a nuisance to the public or impede local activities. Sites where contaminants are found in pockets or localized areas, or where the subsurface soils vary in composition and/or hardness greatly decrease method effectiveness and increase costs. These types of short-term/high-cost methods are generally not desirable at locations where there is no imminent threat to public health.

This method is not suitable for implementation at this site for several reasons:

1. Significant dewatering would likely be required to excavate all the contaminated soil. Recharge to groundwater from the adjacent Rio Grande would be sufficient to make this effort economically infeasible.

2. In the case of hydrocarbons in soil, should soils be excavated to a depth of lowest seasonal groundwater levels (or to the level of dewatering), clean backfill material would be recontaminated when the groundwater returned to the highest seasonal level.

3. In the case of metals in soil, excavated material containing lead at concentrations that fail Toxicity Characteristic Leaching Procedure (TCLP) analyses would require off-site shipping and disposal at a Resource Conservation and Recovery Act (RCRA)-approved treatment, storage, and disposal (TSD) facility at exorbitant cost. The lead is not reaching groundwater and is stable in the soil, where it poses the least risk to the public.

Option 2.1.2 Soil-Vapor Extraction

The soil-vapor extraction (SVE) abatement approach involves a vacuum system applied to a series of extraction wells to create air flow through the vadose zone. As the air moves through the soil, volatile contaminants are transferred from soil and water to the air. The air is then treated by an emission control system, such as activated carbon, to remove the contaminants. This abatement approach is slower than excavation and dispose/treat methods. This method is desirable at sites where intrusive operations, such as excavation and on-site treatment, would interfere with daily site operations. This method is also effective at sites where volatile contaminants are evenly distributed throughout relatively porous and homogeneous sediments. It cannot remove metals from the soil. The method is ineffective at sites where contaminants occur in sediments of highly variable porosity. Shallow, fluctuating groundwater tables can also render this method ineffective. This method is also not desirable for rural sites where operation and maintenance are difficult due to the remoteness of the site.

The former Brickland Refinery Site contains sediments of variable porosity. While vapors could be extracted from the silt and sand lenses, the discontinuous nature of these lenses would greatly limit the ability of a SVE system to be effective without an extremely high density of extraction points, installed at extravagant cost. A SVE system would not work well on the clay-rich sediments that occur at the site because the clay's fine-grained nature does not easily permit the movement of vapor. This is furhter complicated by the very shallow water table.

Option 2.1.3 Natural Attenuation

Natural attenuation results from a group of naturally-occurring and simultaneous processes. These processes include metabolizing of organic compounds by microorganisms; transformation and/or redistribution of inorganic matter through interaction with certain elements found in the soil; and dilution, volatilization, and adsorption that occur in contaminated soils and groundwaters. Natural attenuation reduces the concentration and/or toxicity of contaminants in the environment without any engineered influence. This remedial option is well suited to sites in rural areas where migration of contaminant from the soil to the groundwater is currently attenuated and there is no imminent threat to public health or the environment. This method is not appropriate at sites where contaminants are migrating unchecked in the subsurface or there is potential for exposure to the public.

Hydrocarbons in soil are within the property boundary and occur below the surface. A localized occurrence of a tar-like material has been covered with clean soil. The culverts that formerly provided a pathway for runoff to wash soil off site into the Rio Grande have been closed, thereby eliminating that pathway. The on-site hydrocarbons will naturally degrade in the soil with no threat to the public. The natural flushing action of the rising and falling water table will further contribute to natural degradation of hydrocarbons in the smear zone. This is an appropriate soil abatement method for this site.

Option 2.1.4 Capping

A cap is usually made of a low permeability material, such as a 2-foot thickness of clay or a layer of plastic sheeting, to restrict infiltration of water through the protected soil. A 1-foot granular drainage layer is added to allow drainage of rain that falls on the site. Next is placed a 2-foot layer of top soil and vegetation to control surface erosion. At this site, however, the existing soils are clay-rich and have demonstrated a natural characteristic of low permeability. The only layer actually needed is one that will provide sufficient drainage while preventing surface erosion from rainfall runoff and wind, and damage to the surface by animals and unauthorized people. Maintenance requirements include systematic removal of weeds and trees that tend to grow through the cap, and repair of the surface whenever it becomes damaged.

The lead contamination is found in shallow soil at the site, primarily in the southern half. The lead contaminants are apparently bound in soil, since no lead has been found in groundwater beneath the site. Although the lead poses no threat to groundwater, it presents a potential human exposure pathway at the ground surface, where the contaminated soil could possibly be accessed directly be people traversing the site, or could be blown by wind or carried by rainfall runoff to a place where people could be exposed. To eliminate these possible pathways, we recommend the site be securely fenced to keep people out, the culverts remain closed, and a limited, localized cap be placed on top of the impacted soils to prevent erosion.

2.2 Groundwater

Dissolved-phase hydrocarbons occur in groundwater and limited free-phase product occurs locally beneath the site. Dissolved-phase hydrocarbons have been observed off site in only one monitor well. Benzene was the only constituent of the BTEX compounds detected in that well above the health-based standards. This limited off-site occurrence indicates the vast majority of hydrocarbons are restricted to the site and migration is attenuated on site by the interbedded silty/clayey sediments as discussed in the Stage 1 Abatement Plan. Various abatement options were examined and are presented in the following sections.

Option 2.2.1 Free-Phase Product Removal

Free-phase product removal involves one or more product recovery wells strategically placed throughout the site to remove hydrocarbon products that tend to float on the top of the water table. This approach is effective where continuous product is found floating on top of unconfined groundwater in relatively homogeneous and porous sediments. This method is not effective where hydrocarbons are discontinuous and/or trapped within fine-grained, clay-rich sediments.

This method has limited applicability to the site in that the localized pockets of free-phase product will be amenable to active recovery. However, the known pockets at the site are expected to be removed relatively quickly, after which passive recovery or natural attenuation would be the more appropriate method.

Option 2.2.2 Pump-and-Treat Dissolved Phase

Pump-and-treat technologies are wide ranging and allow for the disposal of treated groundwater directly on or off site. Pump and treat methods are typically applied to sites with relatively homogeneous and transmissive sediments. Variations in permeability of the subsurface media inhibit the ability of this method to withdraw COCs from the pore space. This approach can be quite effective for the early stages of remediation, however, it has often been proven to be ineffective and costly, when contaminant concentrations approach clean-up goals.

This method would be ineffective at the site for two primary reasons:

1. The layers of clay-rich sediments would greatly inhibit the ability of the pumping system to uniformly collect hydrocarbon laden groundwater from the subsurface.

2. Recharge by the Rio Grande would necessitate extremely high pumping rates for a recovery system to effectively capture all the hydrocarbons beneath the site. The resultant greatly increased volume of water to be treated renders this method economically infeasible.

Option 2.2.3 Air Sparging Dissolved Phase

Air sparging involves the installation of a series of wells for injection of air into the aquifer. It is often combined with SVE, which removes vapors released from the soil and groundwater by the air sparging action. These collected vapors are then treated by an emission control system, such as activated carbon, to remove the contaminants from the air stream. This type of system is effective in areas where contamination is continuous and easily delineated and results are immediately required due to threats on human health or the environment. This system is not cost effective where containment of the contaminants is already occurring, or where levels and product amounts are so low that there is little cost benefit from the system.

This method is not appropriate for use at the site because the interlayers of clay-rich sediments within the more porous silt and sand units would cut off the flow of air to the recovery system, making the method technically infeasible.

Option 2.2.4 Natural Attenuation Dissolved Phase

Natural attenuation of dissolved phase hydrocarbons in groundwater is identical to the process for soils. This option is described in Section 2.1.3.

3.0 SELECTED ABATEMENT METHOD

Based on the results of the site investigation and analyses of remediation technologies applicable to the site, the following approach to abate hydrocarbons and other COCs in the soil and groundwater is recommended:

- Hydrocarbons in soil will be remediated by natural attenuation.
- Free-phase product on groundwater will be removed by active recovery from monitor well MW-10 and passive recovery of minor localized product from other monitor wells and well points if it is detected during routine monitoring.
- Dissolved-phase hydrocarbons in groundwater will be remediated by natural attenuation and long-term monitoring.
- Metals in soil that pose a threat to the public through airborne or direct contract will be remediated with local capping.

ABATEMENT OPTIONS

Constituent	Medium	Method of Abatement
Hydrocarbons	Soil	Natural attenuation
Metals (primarily lead)	Soil	Capping
Free-phase hydrocarbons	Groundwater	Active recovery
Dissolved-phase hydrocarbons	Groundwater	Natural attenuation

3.1 Rationale

3.1.1 Hydrocarbons and Metals in Soil

The threat to public health and the environment from hydrocarbons and metals in the soil is derived from (a) possible impact to groundwater, (b) possible displacement of soil from the site by surface water runoff into the Rio Grande, (c) by wind currents carrying contaminants into the air, or (d) direct contact with the soil. The results of the site investigation determined that hydrocarbons and metals in on-site soil are found at highly variable concentrations and in localized areas, primarily in the southern half of the site, and are not readily mobile. The following facts were considered in selecting the soil abatement option:

- The lithology beneath the site is composed of discontinuous interlayers of clay, silt, and fine sand.
- Most hydrocarbons occur locally and are effectively trapped in and between the fine grain layers and remain in place.

- No hydrocarbons have been identified in off-site soils.

- The hydrocarbons move slowly and disperse into groundwater in very small amounts as the water table fluctuates. This is evidenced by the fact that, with the exception of monitor well MW-6S, no off-site exeedences have occurred in groundwater monitor wells.

- Only one TCLP analysis for lead from soil samples exceeded maximum contaminant concentrations for toxicity characteristic wastes, while no lead has been found in water from any of the on-site monitor wells.

- Runoff from a 6-hour, 100-year rainfall event will be contained on site (Appendix A).

- No hydrocarbons or metals have been found in samples collected from the Rio Grande.

- Access to the site is restricted by a security fence with a locked gate. This security will continue to be maintained in the future.

- Hydrocarbons will effectively degrade in soil over time.

- Lead, the primary metal of concern, has been demonstrated to be effectively held in place and is not migrating to groundwater.

- A cap and cover over the area of high lead determination will eliminate wind-blown and direct soil contact.

Based on the above determinations, restriction of access and localized capping are the selected soil abatement actions for hydrocarbons and metals in soil.

3.1.2 Free-Phase Product on Groundwater

Free-phase product is found only in very limited and localized areas on the site. The product is associated with discontinuous silty and sandy lenses and occurs in pockets. In order to select the appropriate method to remove potential continuing sources of hydrocarbons to groundwater, the following facts were considered in selecting the groundwater abatement option:

- Free-phase product occurs only very locally and only on site and does not appear to be migrating.

- No free-phase product has been detected off site.

- Free-phase product is associated with discontinuous silty/sandy lenses.

- Free-phase product may be floating on the water table, trapped below the water table, or trapped above the water table, as a function of fluctuating groundwater levels.

The selected groundwater abatement action is to remove free-phase product from the groundwater, and thereby remove the threat of potentially continuing sources of hydrocarbons that can impact groundwater. As a result of the site investigation, it has been determined that only one monitor well, MW-10, contains a significant thickness of floating product. One other monitor well and several well points contain minor amounts of free-phase product. An active solar- or electric- powered recovery system will be used to remove the floating product in MW-10. Passive product collectors are recommended to collect minor localized product in the other monitor well and well points where free-phase product has collected. They will be manually emptied during routine groundwater monitoring events, as required by the long-term monitoring plan.

3.1.3 Dissolved-Phase Hydrocarbons in Groundwater

Dissolved-phase hydrocarbons occur in groundwater beneath the site and off site in the immediate area of monitor well MW-6S. The threat to public health and the environment is from the possible migration of dissolved-phase hydrocarbons from groundwater to the Rio Grande, and from the possible installation of new water wells on or immediately adjacent to the site. The following rationale was considered in selecting the groundwater abatement option for dissolved-phase hydrocarbons:

- Dissolved-phase hydrocarbons in groundwater are constrained within the site boundaries, with the exception of the area around monitor well MW-6S, between the Rio Grande and the site.
- Dissolved-phase hydrocarbons have not been detected in surface water samples collected from the Rio Grande, indicating the dissolved-phase hydrocarbons that occur around MW-6S are not impacting the Rio Grande.
- There are no known pumping centers from private, industrial, or municipal water wells in the immediate area of the site.
- A covenant has been executed with the IBWC, who owns or controls the land and water rights to the adjacent property, to prohibit installation of water wells to ensure that no new pumping centers will be created that may draw hydrocarbons beyond current constraints (Appendix B).
- Contaminant transport modeling has demonstrated that dissolved-phase hydrocarbons in groundwater beneath and adjacent to the site will not impact the Rio Grande.
- Natural attenuation of dissolved-phase hydrocarbons in groundwater is occurring. This is evidenced by the lack of dissolved-phase hydrocarbon migration to the Rio Grande and other off-site monitor wells, demonstrated by eight consecutive quarters of groundwater monitoring.

Based on the above determinations, natural attenuation is the selected abatement alternative for dissolved-phase hydrocarbons in groundwater. To ensure migration does not occur undetected in the future, a long-term monitoring program will be implemented and remain active until it is demonstrated that groundwater quality is within regulatory standards.

3.2 Implementation - Free Product Recovery

Free-phase product in monitor well MW-10 will be recovered using a stand-alone recovery system. The stand-alone system is designed to periodically remove the free-phase product in remote locations where continual monitoring is not possible. The system will either be solar or electric powered.

The proposed recovery system would consist of a Xytech pneumatically-operated skimmer pump with an electronic timer and a high-level product tank shutoff, a 55-gallon product holding tank in a secondary containment lined-dike, and a solar panel and storage battery for power delivery. If electric power can be cost effectively supplied to the site, it will replace the solar panel and associated equipment. Literature for this system is included as Attachment 1. Additionally, the system will be enclosed with a locked access since the location is remote and vandalism in the area is recognized as a possible problem.

The product recovery phase will initially be set for 5 minutes per day for the first 12 months. When active pumping is determined not to be practical, the system will be disconnected. If after 12 months sufficient progress is not achieved, additional periodic product recovery may continue on the same schedule or be accelerated or decelerated as deemed necessary.

Other monitor wells and well points have periodically contained minor, but measurable thickness of product. Active pumping of these monitor wells and well points is not practical since product may take weeks or months to recover after each removal. Therefore, monitor wells and well points will be measured for product thickness during semi-annual monitoring events, and any trace thicknesses of product will be hand bailed. Minor thicknesses of product that do not warrant active removal will be removed with passive product collectors (Attachment 2). The collectors will be manually emptied during routine groundwater monitoring events, as required by the long-term monitoring plan. Hand-bailed product and product collected from passive collectors, will be contained with the MW-10 product recovery system.

3.3 Operations and Maintenance

Once the product recovery system has been installed, operation and maintenance of the system will be required and will consist of emptying the product holding tank at an approved disposal facility, ensuring equipment is functioning and connected properly, and verifying the system has not been damaged or deactivated. Operation and monitoring activities shall be conducted concurrent with the semi-annual sampling events for the first year of operation and will continue while the system is in operation.

The perimeter fence, all gates and locks, and the product recovery system housing will be inspected for breaches in integrity. In addition, the culverts will be inspected to ensure complete closure is maintained. The inspection will occur concurrent with semi-annual sampling. Any identified breaches will be repaired or immediately corrected.

3.4 Groundwater Monitoring

Groundwater monitoring will continue on a semi-annual basis according to the existing approved groundwater and surface water monitoring plan. The plan requires sampling of MW-3S, MW-3D, MW-6S, MW-6D, MW-9S, and two river samples (one upstream from the site and one immediately downstream from MW-6S). Once free-phase product removal is complete, on-site monitor wells MW-8 and MW-10 will be added to the monitoring plan. The June and December sampling events will include analyses for BTEX, water level measurements in all monitor wells, and product thickness measurements in all monitor wells and well points. The June sampling event will also include analyses for PAHs and metals. An annual report will be submitted no later than February of each year summarizing the results of both sampling events.

3.5 Public Notice

Public notice will be performed following the requirements cited in Sections 4108.B and 4108.C of the NMWQCC Regulations.

3.6 Schedule

Rexene will begin implementation of the work scope within 60 days after NMOCD approval of the Stage 2 Abatement Plan.

4.0 CONTINGENCY PLANS AND CLOSURE CRITERIA

Section 4111.A and 4111.B of the NMWQCC Regulations provide guidelines for modification of the abatement plan summarized in this document if the monitoring program determines the plan does not meet the stated requirements. If the abatement activities at the site are ineffective at meeting the state goals, then Rexene will meet with the NMOCD to determine appropriate modifications to restore abatement plan effectiveness.

When COC concentrations sampled from the compliance monitoring network are below the regulatory action level for four consecutive semi-annual sampling events, monitoring will cease and an abatement completion report will be submitted requesting site closure.

5.0 REFERENCES

BDM International, Inc. (BDM), 1996. Final Site Investigation Report for the Former Brickland Refinery, Stage 1 Abatement Plan, Document Number REX114C.DOC.

Eder and Associates Consulting Engineers, P.C., 1990. Phase I Site Investigation, Field Investigation Report for Old Brickland Refinery Site, Sunland Park, New Mexico (Draft).

Geoscience Consultants, Ltd. (GCL), 1994. Remedial Investigation Report for the Former Brickland Refinery, Document Number REX89.DOC.

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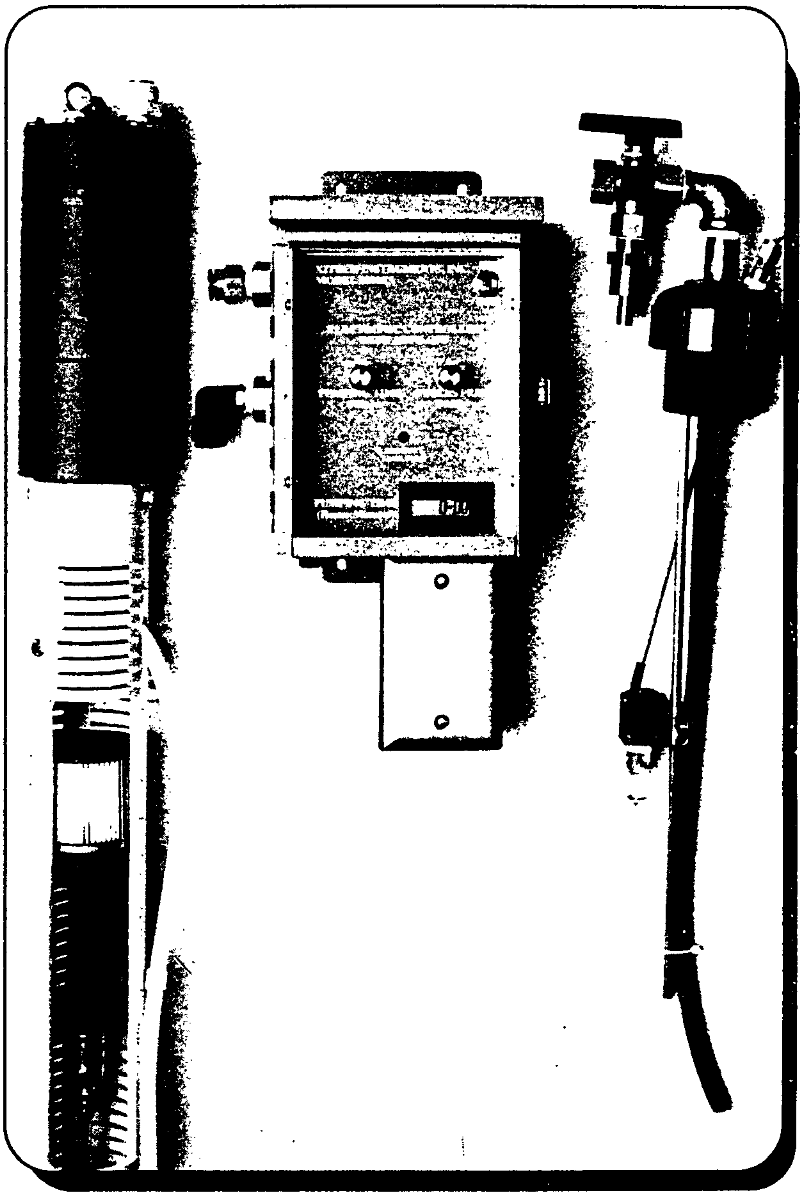
XITECH
Instruments, Inc.

Product Recovery System

Our Product Recovery System can operate without the use of AC power, remove product ONLY down to a sheen, operate on bottled gas, and can be installed in less than 2 hours. The Xitech Product Recovery System consists of a pneumatically operated Smart skimmer, electronic timer, and electronic high level product tank shutoff. The Smart skimmer requires no above ground controls to operate, has 30 inches of float travel, uses a high volume hydrophobic filter, pumps over 25GPH, and consumes less than .5CFM of air. The electronic timer provides intermittent pumping control for several Smart skimmers, provides continuous monitoring of the high level tank shutoff sensor, displays total run time of system, and operates on 12DC/120AC/220AC. The electronic high level shutoff assembly has a three way product inlet switching valve, double wall tubing fitting for the product line, and an infrared electronic liquid level sensor that is intrinsically safe.



" Smart Skimmer
Pumping range from 5-25 GPH
Skimmer float travel: 30 inches
Operating pressure range: 35-125 PSIG
Maximum operating well depth: 200 feet
Maximum air requirements: .5 CFM @ 125 PSIG
Air quality requirements: 5-10 Microns
Weight: 8 LBS
Size: 3-1/2" DIA. X 48" long
Materials : PVC, sst, viton, Buna, Aluminum
Order No. **ADJ 1000**

Electronic Timer with Tank Shutoff
Selectable pumping cycles
Infrared sensor tank over-fill protection
Visual indicator displays tank full condition
Elapsed pumping timer displays in hours and minutes
Power supply choices: 12DC&110AC, or 12DC, 220AC
Size: 8"X6"X4" NEMA 3R locking enclosure
Pumping times (MINS):5,10,20,30,60,CONT.
Pumping cycles per day: 1,3,6,12,24,48
Infrared sensor assembly requires a 2"IPS tank port
Order No. **2500ES**

Xitech Instruments, Inc.
300-C Industrial Park Loop, Rio Rancho, New Mexico 87124 USA
Phone: 505-892-6501 Fax: 505-892-6637

WELEX ENVIRONMENTAL, INC.

HYDRO-SKIMMER

NEW:

The WELEX Hydrocarbon Skimmer is now available in a ***clear calibrated*** PVC collection chamber. This will aid in:

(1) Determining the volume of hydrocarbon collection.

(2) Allowing the field technician to view the filtration element for maintenance purposes.

WELEX **HYDRO-SKIMMER** Has:

✔ **FILTER ELEMENT** easily cleaned or changed by a field technician to prevent cross contamination and improve the efficiency of the **HYDRO-SKIMMER**

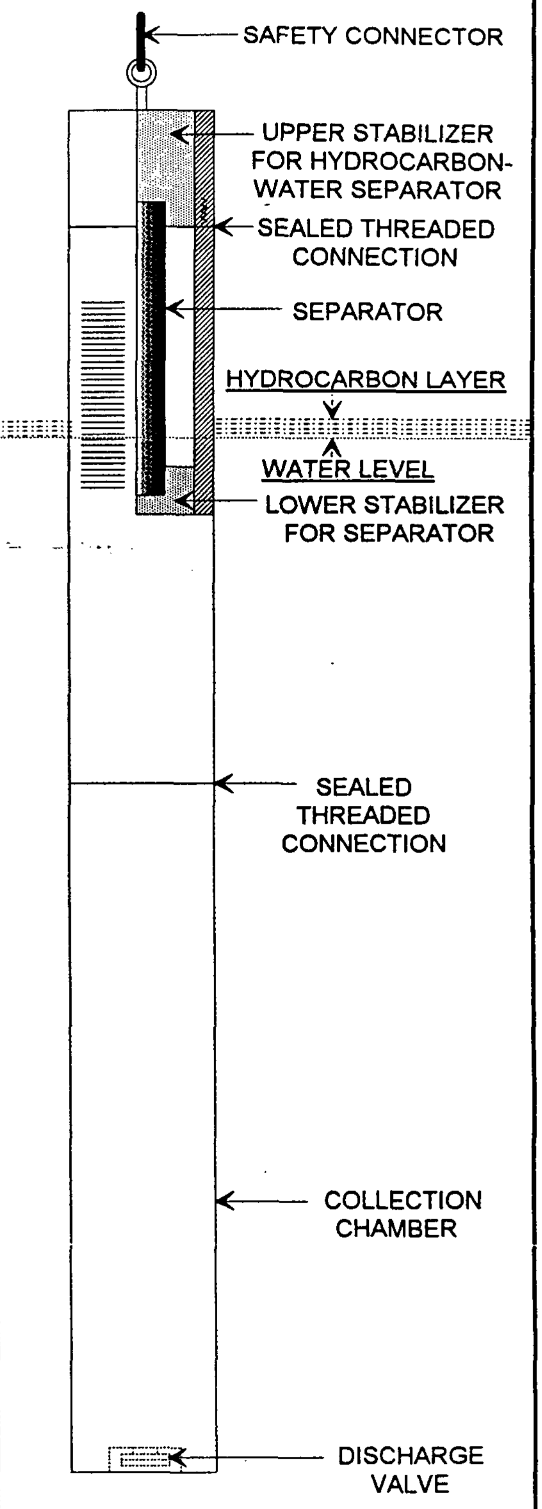
✔ **NO HYDROCARBON BASED (PVC) GLUES** that will leach in water thus giving off contaminates that will set off hydrocarbon detection equipment.

✔ **NO MOVING PARTS:** Eliminates springy collection tubes that eventually impede flotation. Eliminates need for vent tubes.

✔ **ACCESSORY EQUIPMENT** can be added to make the basic **HYDRO-SKIMMER** a continuous or active system.

✔ **THREADED CONNECTIONS** allow you to add or remove an extra collection chamber as needed.

WELL DIAMETER	ASSEMBLY LENGTHS		
	64 INCH	96 INCH	128 INCH
2" OR LARGER	.29 GALLON	.51 GALLON	.72 GALLON
	MODEL 201	MODEL 202	MODEL 203
3" OR LARGER	.57 GALLON	1.02 GALLON	1.47 GALLON
	MODEL 301	MODEL 302	MODEL 303
4" OR LARGER	1.33 GALLON	2.34 GALLON	3.36 GALLON
	MODEL 401	MODEL 402	MODEL 403



U.S. PATENT No. 5,322,388

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HYDRO-SKIMMER INSTALLATION PROCEDURES

I. Take measurements:
   A. Total well depth to top of well casing.
   B. Depth to water.
   C. Depth to hydrocarbon product.

   Taking the above measurements is important because when installing the Hydro-Skimmer, the displacement of water may create a false water table, and cause the Hydro-Skimmer to be installed at an improper height, impeding collection.

II. Attach safety cord to eyebolt at top of Hydro-Skimmer.

III. Installation can be accomplished easier with the use of color cut paste to determine that the water/hydrocarbon interface comes within two to three inches of the lower slotted area of the Hydro-Skimmer.
   If color cut paste is not available, <u>SLOWLY</u> lower Hydro-Skimmer into monitor well, allowing it to locate its own buoyancy.

IV. Remove Hydro-Skimmer from well. The Hydro-Skimmer is preweighted to be buoyant with the water/hydrocarbon interface ideally within two inches into the lower slotted area of the skimmer. If the Hydro-Skimmer is not resting in this position, the following conditions should be considered:
   A. If the hydrocarbon thickness as measured in Step I exceeds 12", the Hydro-Skimmer will ride above the suggested level but will function properly as it will weight itself when collection of hydrocarbon product begins.
   B. If the hydrocarbon product is in excess of 6", the Hydro-Skimmer will collect to capacity in approximately 30 minutes, thus requiring the collection chamber to be emptied.
   C. If water salinity does not allow the Hydro-Skimmer to rest within the recommended water/hydrocarbon area, galvanized washers (included in shipment) may need to be threaded onto the safety connector to weight the unit so that EFFECTIVE collection may take place.

V. After above adjustments have been made, reinsert the Hydro-Skimmer into monitor well allowing 4" of slack in safety connector between the two eyebolts when the well cap is in its installed position.

VI. Removal and collection procedures:

A. Remove Hydro-Skimmer from monitor well.

B. Hold unit upright over recommended hydrocarbon collection container and open valve at base, allowing product to drain into container.

C. Close valve and reinsert Hydro-Skimmer into monitor well following installation procedures as outlined above.

VII. Maintenance of separator element:

The Hydro-Skimmer is designed with a removable separator element, thus allowing it to be cleaned. **REMOVE SEPARATOR ONLY WHEN NECESSARY.** Replacement elements are available if the element becomes damaged.

A. Remove upper stabilizer cap from Hydro-Skimmer. With your fingers carefully pull up on the inner aluminum tube. This will disengage the element from an O-ring seal in the lower stabilizer.

B. The element may be sprayed or immersed in any EPA approved hydrocarbon cleaning solution. If immersed in a solution, use a gentle rotation action to facilitate cleaning. **DO NOT SQUEEZE OR MASH ON PLASTIC WEBBING AREA.** This could dislocate or tear the inner filtration element.

C. To re-install the separator, place a non-hydrocarbon lubricant such as soap on the lower two inches of the aluminum tubing. Check bevel on lower edge of tubing to insure it is free of burrs that might cut O-ring in lower stabilizer. Place separator in Hydro-Skimmer and align with hole in lower stabilizer. Gently push down on separator (approximately one inch) until it is fully engaged in the lower stabilizer. The separator is held in place when the upper stabilizer cap is fully screwed onto the top of the Hydro-Skimmer.

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PRICE LIST
HYDRO SKIMMER

The prices quoted are Net 30 and are effective September 1, 1994.

Opaque Chamber Models		Clear Chamber Models	
Model 201	$295.00	Model 201C	$349.00
Model 202	355.00	Model 202C	424.00
Model 203	415.00	Model 203C	499.00
Model 301	349.00	Model 301C	395.00
Model 302	419.00	Model 302C	485.00
Model 303	489.00	Model 303C	575.00
Model 401	425.00	Model 401C	495.00
Model 402	515.00	Model 402C	620.00
Model 403	605.00	Model 403C	745.00

2" Locking well cap arranged to tie off safety line	$19.50
4" Locking well cap arranged to tie off safety line	$26.50
Filtration element replacement (fits all models)	$79.95

Quantity Discounts

For orders of 6-10 units, a 10% discount is offered.
For orders of 11-20 units, a 20% discount is offered.

For quantity discounts, any variety of models may be ordered and are payable net 30.

Distributorships Available