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LA Canyon

Los Alamos

NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: February 29, 2000
In Reply Refer To: ESH-18/WQ&H:00-0063
Mail Stop: K497
Telephone: (505) 665-1859

Ms. Phyllis Bustamante
Ground Water Protection Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

**SUBJECT: NOTICE OF INTENT (NOI) TO DISCHARGE FOR WELL DEVELOPMENT
WATER AND PURGE WATER FROM THE R-7 MONITORING WELL**

Dear Ms. Bustamante:

Los Alamos National Laboratory is submitting the enclosed NOI to the New Mexico Environment Department (NMED) for the discharge of water from the R-7 monitoring well pursuant to Section 1201 of the New Mexico Water Quality Control Commission Regulations. This well is part of the Laboratory's New Monitoring Well Installation Project under the Hydrogeologic Workplan. The R-7 well will be located in the bottom of Los Alamos Canyon directly below the Technical Area (TA)-2 site. A map showing the location of R-7 and future R-series wells was previously submitted to the NMED with the CdV-R-15-3 NOI on December 21, 1999. The estimated depth for the R-7 well is 1480 feet, but the actual total depth may vary as the investigation progresses to ensure that the characterization objectives are adequately addressed.

The total estimated discharge will consist of 150,000 gallons of development and purge water collected from the well and approximately 1,500 gallons wash water used to clean drilling and sampling equipment. The proposed methods of discharge include land application at the site of the drilling operations for re-vegetation purposes and for dust suppression.

The proposed land application area has been reviewed by Laboratory's Environmental Restoration staff familiar with the area. No SWMU's or PRS's were identified that could be impacted by this discharge. All discharges will be performed in a manner that will eliminate any impact to a watercourse.

Please call Harvey Decker (665-2014) or Steve Veenis (665-9735) of the Laboratory's Water Quality and Hydrology Group (ESH-18) if you need any additional information.

Sincerely,



Steven Rae, Group Leader
Water Quality and Hydrology Group



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Ms. Phyllis Bustamante
ESH-18/WQ&H:00-0063

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February 29, 2000

SR/tml

Enclosures: a/s

Cy: B. Hoditschek, NMED/SWQB, w/enc., Santa Fe, New Mexico
S. Yanicak, NMED DOE OB, w/enc., MS J993
J. Young, NMED/HRMB, w/enc., Santa Fe, New Mexico
D. Erickson, ESH Division Director, w/o enc., MS K491
C. Nylander, ESH-18, w/o enc., MS K497
M. Saladen, ESH-18, w/o enc., MS K497
H. Decker, ESH-18, w/enc., MS K497
S. Veenis, ESH-18/ER, w/o enc., MS K497
D. Daymon, EES-13, w/enc., MS M992
D. Broxton, EES-1, w/enc., MS D462
A. Crowder, E-ER, w/o enc., MS M327
D. Hickmott, EES-1, w/o enc., MS D462
R. Bohn, E-ER, w/enc., MS M992
WQ&H File, w/enc., MS K497
CIC-10, w/enc., MS A150

**METHOD OF LAND APPLICATION AND DUST SUPPRESSION USE OF
WATER FROM MONITORING WELL R-7**

1. Name and address of facility making the discharge.

Los Alamos National Laboratory
P.O. Box 1663
Los Alamos, New Mexico 87545

2. Location of the discharge.

The R-7 monitoring well will be located in the bottom of Los Alamos Canyon directly below Technical Area 2. A map including the R-7 well location has been previously submitted for this and other R-series wells with the CdV-R-15-3 NOI on December 21, 1999. Please refer to the aforementioned map for the R-7 well location. The R-7 well is being drilled as part of the Laboratory's Hydrogeologic Workplan in order to better characterize the regional subsurface of the Pajarito Plateau. All water developed or purged from the well and all wash water from equipment and tools will be field screened. If field screening of the water detects contaminants above regulatory limits, discharging will be stopped and samples for fixed laboratory analytical analysis will be collected and analyzed. If samples are collected for fixed laboratory analysis, the data will be submitted to the NMED for review. All field screening data will be documented and submitted to the NMED upon completion of the well.

3. The means of discharge. (to lagoon, flowing stream, water course, arroyo, septic tank, other).

The land application of water will be to the well site after drilling is completed to facilitate re-vegetation or for dust suppression on the access road and drill pad during and after drilling of the well. The method of land application and dust suppression is described below:

1. Land application of water to the drilling site for re-vegetation purposes will be accomplished by the use of commonly available water sprinklers connected to a pump and hose transfer system from the containers holding the water. Each sprinkler will be spaced such that application radii do not overlap.

2. Land application will be conducted as needed to assure re-vegetation of the site. The application of water will be monitored periodically each application day by on-site staff to ensure that no ponding or run-off is occurring, to inspect Best Management Practices (BMPs) and to determine when to rotate the area of land application. **Ponding**, is defined as *a body of standing water, often artificially formed*. **Erosion**, is defined as *the process in which, by the actions of wind or water, soil particles are displaced and transported*.
3. The land application site will be monitored during discharge hours. This will allow site staff, as necessary, to rotate the land application areas or stop application if a problem with the sprinkler system occurs. Additionally, if the application area shows signs of ponding or saturation, application operations will be immediately halted. The area will be evaluated for the need of any additional BMPs and the application will not start again until the area is suitable (i.e., no standing water or run-off visible).
4. Additionally, application of the water for dust suppression on the access road to the well and on to the drilling site will be performed as needed. Water used for dust suppression will be applied by water truck on the road and hand held hose or truck on the drilling site. Amounts may vary for this type of application but is estimated to be 4000 gallons per day along the access road to the well and on the 15,000 square foot drill pad.
5. A SOP 2.01 Surface Water Assessment/Erosion Matrix for the land application location has been performed. An assessment of 46.6-surface/ground water impact for the land application area has been determined for the application described (See enclosed SOP 2.01 worksheets).

4. **The estimated concentration of contaminants (if any) in the discharge.**

Field screening and analytical results of samples collected from the development/purge water will be submitted to the NMED upon completion of the well. Data from nearby boreholes/wells in Los Alamos Canyon can be found in the Laboratory's Environmental Surveillance Report for 1998. These boreholes are drilled to perched and intermediate depths only. The nearest well drilled into the regional aquifer is the Otowi-4 well located down gradient of the R-7 well site. Data for the Otowi-4 well can also be found in the Laboratory's Environmental Surveillance Report for 1998.

5. The type of operation from which the discharge is derived

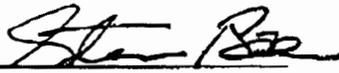
The R-7 Monitoring Well is part of the on-going study undertaken by the Laboratory in order to better understand the hydrogeologic characteristics of the regional aquifer, intermediate perched zones, and unsaturated zones at the Laboratory. The approximately 151,500 gallons of water to be land applied will be collected from the drilling, purging, sampling and equipment and tool cleaning operations at this borehole.

6. The estimated flow to be discharged per day.

The land application amount from the initial development/purging, sampling and equipment and tool wash water is estimated to be approximately 4,000 gallons per day until all water is expended or used as needed at the site for re-vegetation or dust suppression activities. Additional sampling of the well is expected to occur at least four times a year. Each of the four sampling events is anticipated to generate approximately 100 gallons of purge water per sampling event.

7. The estimated depth to ground water (if available)

Current information indicates that the regional aquifer exists at approximately 858 feet below ground level.

Signed: 
Group Leader, ESH-18

Date: 3.1.2000

Los Alamos National Laboratory

Environment, Safety & Health Division
 ESH-18 Water Quality & Hydrology Group

Surface Water Assessment Erosion Matrix for PRS R-7

CRITERIA EVALUATED	Value	Erosion/Sediment Transport Potential			Calculated Score
		Low 0.1	Medium 0.5	High 1.0	
Site Setting (43)					
On mesa top	1	Defined based on topographic setting			13.0
Within bench of canyon	4				
Within the canyon floodplain but not watercourse	13				
Within bottom of canyon channel in watercourse	17				
Estimated % ground and canopy cover	13	>75%	25-75%	<25%	1.3
Slope	13	0-10%	10-30%	>30%	1.3
Surface Water Factors-Run-off (46)					
Visible evidence of runoff discharging? (Yes/No)	5	If no, score of 0 for runoff section. If yes, score 5 and proceed with section.			5.0
Where does runoff terminate?	19	Other	Bench Setting	Drainage/Wetland	19.0
Has runoff caused visible erosion? (Yes/No)	22	Sheet	Rill	Gully	0.0
If no, score as 0. If yes, calculate as appropriate.					
Surface Water Factors-Run-on (11)					
Structures adversely affecting run-on (Yes/No)	7*	If yes, score as 7. If no, score as 0.			0.0
Current operations adversely impacting (Yes/No)	4	If yes, score as 4. If no, score as 0.			0.0
Natural drainages onto site (Yes/No)	7*	If yes, score as 7. If no, score as 0.			7.0
*Select either structures or natural drainages.					
MAX. POSSIBLE EROSION MATRIX SCORE:	100	Total Score			46.6

Los Alamos National Laboratory SURFACE WATER SITE ASSESSMENT

Part B: page 2 of 4

SITE INFORMATION

1a) PRS Number 1b) Structure Number 1c) FMU Number

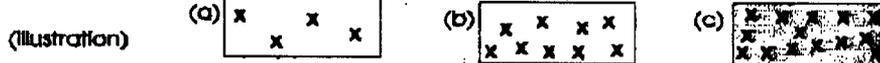
2. Date/Time (M/D/Y H:M am/pm)

SITE SETTING (check all that apply)

3. On mesa top (a). In the canyon floor, but not in an established channel (c)
 Within a bench of a canyon (b). Within established channel in the canyon floor (d).

Explanation: Proposed well pad site is located in within the bottom of Los Alamos Canyon +/- .5 mile below the TA-2 Omega Reactor.

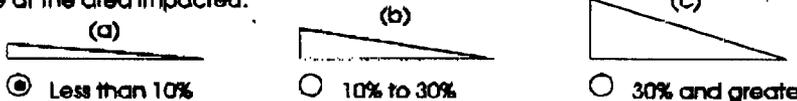
4. Estimated ground and/or canopy cover at site: (deciduous leaves, pine needles, rocks, vegetation, trees,



Estimated % of ground/canopy cov 0% to 25% 25% to 75% 75% to 100%

Explanation: Mixed canopy cover with pine needles and grasses.

5. Steepest slope of the area impacted:



Explanation: The area is mostly flat with a gentle slope towards the east.

RUNOFF FACTORS

Y / N

6. Is there visible evidence of runoff discharging from site? If yes, answer a) - c) below:
 6a) Is runoff channelized? if yes, describ Man-made channel. Natural channel.

Explanation: Evidence of sheet flow runoff in the area of the proposed well pad. The canyon channel is located +/- 50' to the north of the proposed site.

RUNOFF FACTORS, CONT'D

6b) Where does evidence of runoff terminate?

- Drainage or wetland (name)
- Within bench of canyon setting (name)
- Other (i.e., retention pond, meadow, mesa top)

Explanation: Runoff terminates within the canyon itself.

Y / N

- 6c) Has runoff caused visible erosion at the site? If yes, explain below Sheet Rill Gully

Explanation: No erosional features were observed.

RUN-ON FACTORS

Please rate the potential for storm water to run on to this site: (Check EITHER #7 or #9)

- 7. Are structures (i.e., buildings, roof drains, parking lots, storm drains) creating run-on to the site?

Explanation: No structural impacts.

- 8. Are current operations (i.e., fire hydrants, NPDES outfalls) adversely impacting run-on to the site?

Explanation: No known operational impact to the floodplain. Runoff from TA-2 discharges into the adjacent canyon channel.

- 9. Are natural drainage patterns directing stormwater onto site?

Explanation: Upslope drainage impacts the site.

ASSESSMENT FINDING:

- 10. Based on the above criteria and the assessment of this site, does soil erosion potential exist? (REFER TO EROSION POTENTIAL MATRIX.)

Veenis, Steve

11. Signature of Water Quality/Hydrology Representative

_____ Initials of independent reviewer.

Check here when information is entered in database:

This page is for ESH-18 notes, recommendations, and photos.

Y / N

12. a) Is there visible trash/debris on the site?

b) Is there visible trash/debris in a watercourse?

Description of existing BMPs:

Are BMPs being properly maintained? If no, describe in "Other Internal Notes."

Are BMPs effectively keeping sediment in place and reducing erosion potential?

OTHER INTERNAL NOTES:

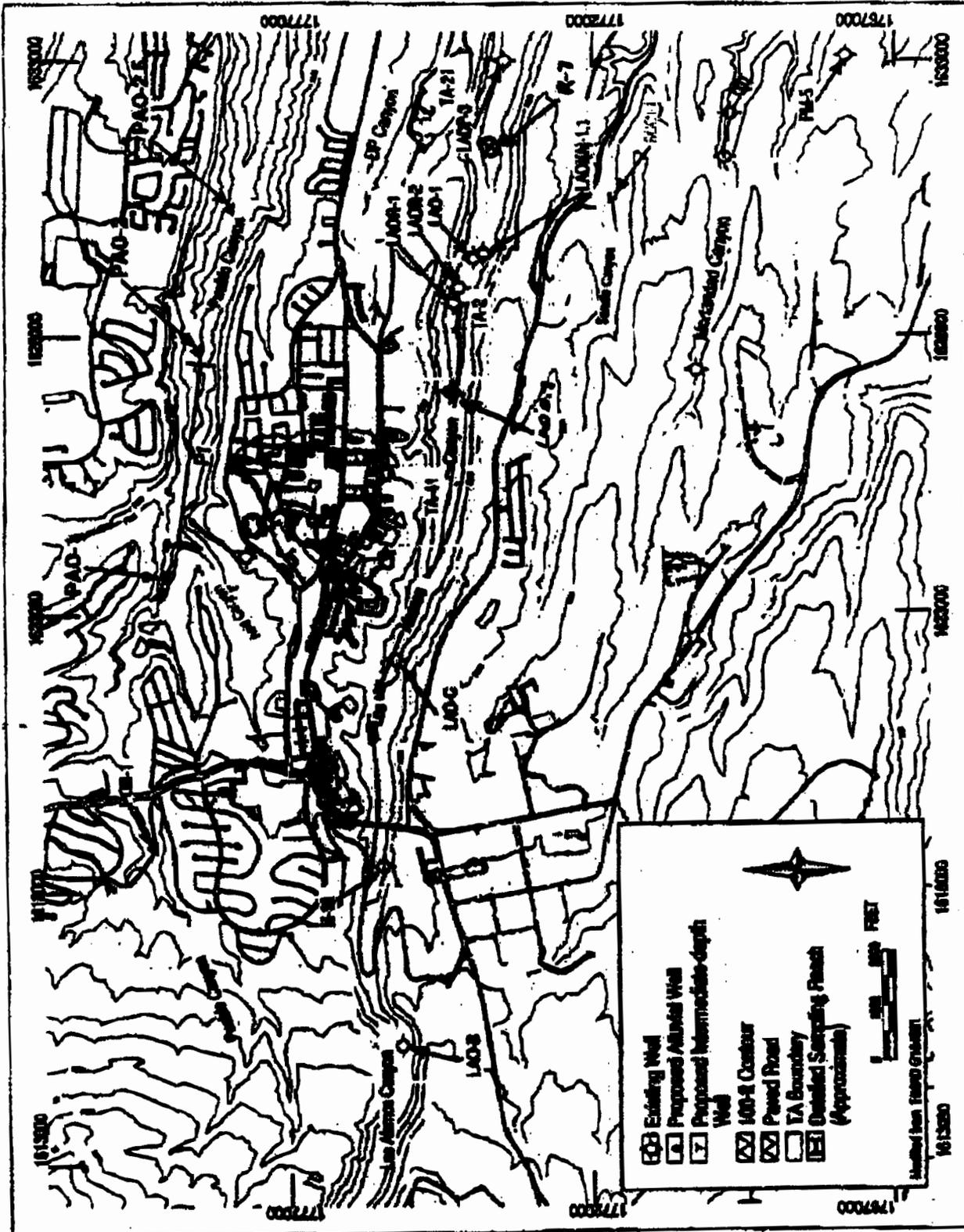
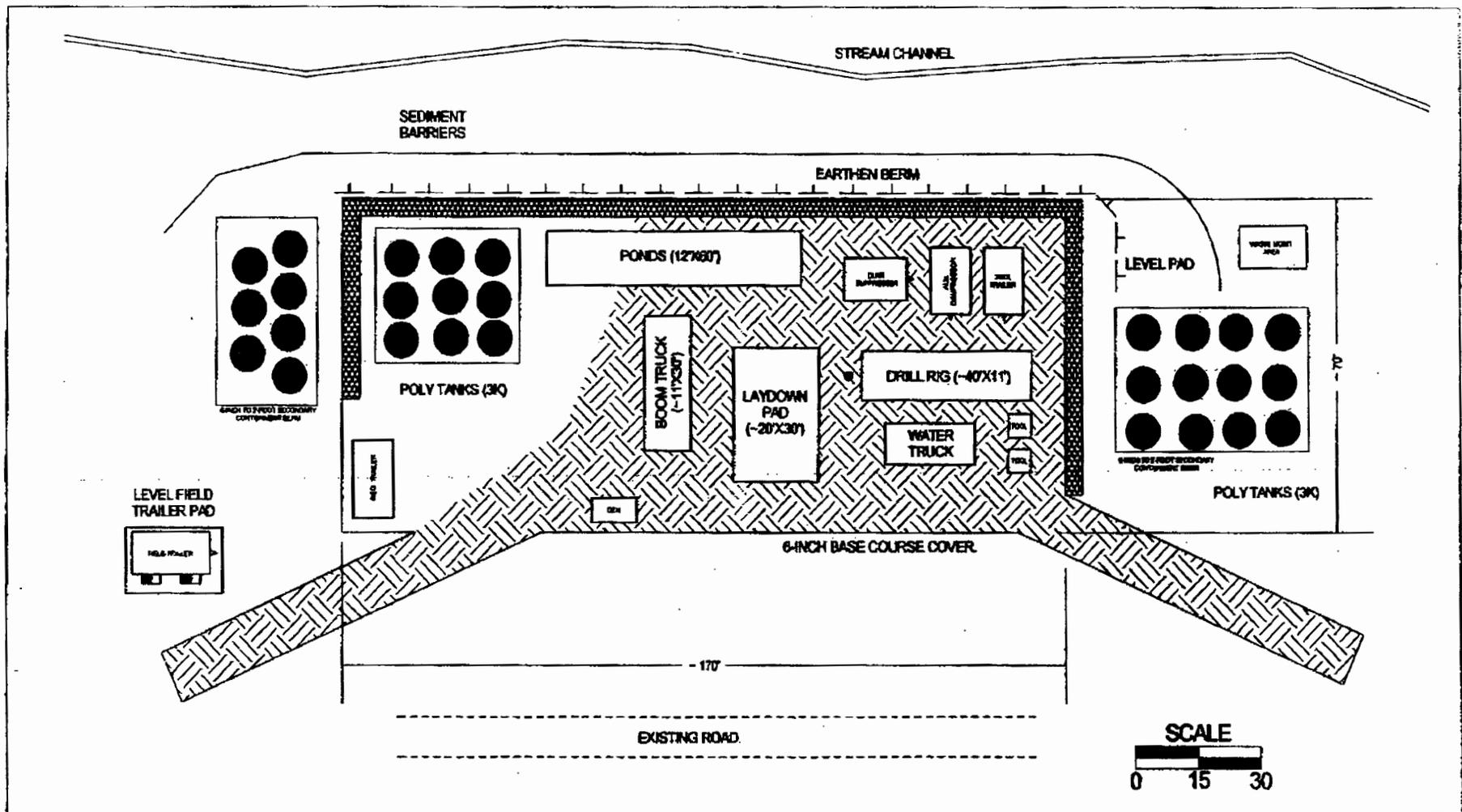


Figure 1. Proposed E-7 location with existing wells in upper Los Alamos Canyon.



NOTES:

ALL DIMENSIONS ARE APPROXIMATE. THE DRILL PAD WILL BE CONSTRUCTED TO BEST FIT THE TERRAIN.
 BASE COURSE 6-INCHES THICK SPECIFIED TO COVER THE ACCESS ROADS AND THE AREA OF THE PAD OUTLINED BY HATCH MARKS.
 ALL 3K POLY TANKS WILL BE SURROUNDED BY A SECONDARY CONTAINMENT BERM RANGING IN HEIGHT FROM 6-INCHES TO 2-FEET.

CHECKED BY/DATE:

APPROVALS/DATE:

KEY:

EARTHEN BERM: 

BASE COURSE: 

TITLE: REGIONAL WELL R7 CONCEPTUAL DRILL PAD DESIGN

DRAWN BY: DAVE FRANK

DATE: 15 NOVEMBER 2000

PROJECT NUMBER: 4932 0018 03 02

SCALE: SEE ABOVE

PAGE NUMBER: 1 OF 1