



United States Steel Corporation

TEXAS URANIUM OPERATIONS
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October 22, 1979

DUCKET NUMBER
PROPOSED RULE

(35)
PR-30stal
(44FR50012)



Director,
Division of Waste Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

This letter and attached comments are in response to the U. S. Nuclear Regulatory Commission's (N.R.C.) recently proposed regulations concerning criteria relating to uranium mill tailings and the construction of major plants, and the draft Generic Environmental Impact Statement on Uranium Milling (GEIS). Since our company operates the largest commercial in-situ uranium leach operation in the United States, and as the regulations in their presently proposed form will have significant impact upon our operation, it is our hope that the N.R.C. will give careful consideration to each of the comments set forth in this correspondence. In addition to the attached comments, our company endorses the comments submitted by the American Mining Congress on behalf of its member mining companies.

Should the U. S. Nuclear Regulatory Commission staff desire additional information or have any questions concerning our attached comments, they may contact me at their convenience.

Sincerely,

David L. Durler

David L. Durler,
Supervisor - Environmental Affairs

ejc

attachments

- cc: R. L. Pollard, General Manager, Texas Uranium Operations
- R. L. Andes, Environmental Engineer, U. S. Steel Corporation
- J. C. Yelderman, Environmental Engineer, Texas Uranium Operations
- S. L. Keyes, Environmental Engineer, Texas Uranium Operations

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Comments on 10 CFR 40.32
General Requirements for Issuance of
Specific Licenses

40.32 Technical Criteria 8(A)

Comment:

It is apparent that when this criteria was proposed the N.R.C. staff did not consider artificially lined waste retention ponds utilized at in-situ process facilities. Our company currently uses seven (7) such ponds for temporary storage of waste fluids at several of our process sites. Six of these seven ponds are lined with 30 mil chlorinated polyethylene liners; one pond is lined with a 36 mil, reinforced hypalon liner. Four of the seven ponds exceed 10,000 ft² and have underdrain leak detection systems; all of the ponds are surrounded by PVC-cased pond monitor wells. In addition, freeboard limitations are imposed upon all ponds by state regulatory agencies.

From the above information, the staff should reconsider daily inspections of waste retention systems such as those utilized at our facilities. We feel it is unnecessary and burdensome for us to inspect our ponds daily and document the inspections for field review by regulatory personnel. The pond design for our waste retention systems is the best available and, therefore, should not be compared with conventional mill tailings disposal sites. At present, we are required to inspect our pond monitoring systems on a weekly basis and report any failures in the pond system to appropriate state regulatory agencies. We recommend that the N.R.C. recognize the considerable differences in waste retention systems and apply an inspection routine accordingly. At present, there is little flexibility in this requirement as it would apply to an in-situ operator who possesses a waste retention system far superior to any utilized by conventional uranium mill operators (i.e., tailing ponds).

Comments on 10 CFR 40.32
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40.32 Technical Criteria 10 and 12

Comment:

Our comments directed towards these criteria reflect our concern about ambiguities inherent within the rules as they would apply to our in-situ uranium operation in South Texas. It is clear from the supplementary information concerning 10 CFR Part 40 that the definition for by-product material has been amended to include mill tailings and discrete above ground wastes from in-situ or solution extraction uranium mill processes. Although we agree with the staff's recommendation that underground ore bodies depleted by the in-situ process should not be considered mill tailings, it is not apparent whether or not the N.R.C. recognizes mildly radioactive wastewater generated by an in-situ facility as by-product material. Our company is especially concerned about this point because our facilities generate considerable quantities of such fluid, all of which is injected down deep disposal wells located at our process sites. Based on the proposed regulations, it appears that the N.R.C. considers liquid wastes to be by-product material and will, therefore, consider deep disposal well sites subject to long-term surveillance fees, site inspections, and ownership transfer.

On the contrary, we are of the opinion that deep underground injection wells utilized for the disposal of liquid wastes at mill sites should not be subject to a long-term surveillance charge of \$250,000, presumably per well site, as stated in Criteria 10. In addition, we are opposed to required annual site inspections, as stipulated in Criteria 12, since such inspections to confirm the integrity of the deep disposal waste system are unnecessary when the host strata is well below grade and any fresh-water aquifer. Our company feels that deep disposal wells are a viable, safe option for long-term disposition of process waste water generated by our in-situ uranium facilities. It should be recognized by the N.R.C. that state agencies currently permit other industries--i.e., petrochemical--to utilize deep injection wells for the disposal of highly toxic fluids many times more hazardous than those generated by the in-situ uranium industry without, we might add, conditional long-term surveillance charges or annual post-closing site inspections.

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Comments on 10 CFR 40.32
October 22, 1979

We would recommend that the N.R.C. incorporate within these proposed regulations the provision to exempt any by-product waste systems that can exhibit adequate long-term containment from any requirements for ownership transfer, site inspections, and long-term surveillance fees.

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Comments on the Generic Environmental
Impact Statement on Uranium Milling

Introduction

The Generic Environmental Impact Statement (GEIS) states on page 2 that its principal objectives are:

- "To assess the nature and extent of the environmental impacts of uranium milling in the United States from local, regional, and national perspectives on both short and long term bases, to determine what regulatory actions are needed."

- "More specifically to provide information on which to determine what regulatory requirements for management and disposal of mill tailings and mill decommissioning should be."

- "To support any rule makings that may be determined to be necessary."

The principal objectives of these comments are:

- To show that the GEIS actually addresses only the nature and extent of environmental impacts from conventional uranium milling in the United States.

- More specifically, to provide information that regulatory requirements for management and disposal of mill tailings, and mill decommissioning cannot and should not be applied to the in-situ process.

Comments

Because so much of the GEIS is inapplicable to the in-situ process, the following comments are divided into two types: general comments on major sections, such as chapters which do not apply, and specific comments on key sections within chapters.

CHAPTER 2

Since the history and status of uranium milling operations in the GEIS does not include anything about the in-situ process, then the GEIS should apply only the environmental impacts of conventional uranium mills.

CHAPTER 3

The in-situ uranium industry is presently one of the most dynamic industries

Comments on the Generic Environmental Impact Statement on Uranium Milling

in the United States. Chapter 3 does not adequately represent the up-to-date status of this important part of the uranium industry in the United States. One reason for this is the inadequate set of references used by the GEIS. More reference material is available and much more unpublished information exists.

1) Section 3.3.1 In-Situ Mining - page 3-9

paragraph 1, lines 5 and 6

Original text - The method involves (1)...(2)... and (3) The surface recovery of the uranium from the uranium-complex-bearing solution by conventional milling unit operations.

Suggested change - Delete the last phrase, "by conventional milling unit operations."

Justification - The surface recovery of uranium in the in-situ process is not by conventional milling unit operations. There is no ore pad, no ore crushing or grinding, and no tailings pile; the leaching process is usually alkaline instead of acidic, and the extraction process is almost exclusively ion-exchange instead of solvent. The typical in-situ recovery plant is radically different from conventional milling unit operations (see attachments 1 and 2).

CHAPTER 4

The model region not only is different from the region where most in-situ mining is presently occurring but the in-situ process is affected by different environmental factors.

CHAPTER 5

1) Page 5-1

Paragraph 2, Sentence 2

Original text - The characteristics, operating procedures, processes, and effluents of the model mill were derived from data for existing mills as described in technical literature and various environmental reports and statements.

Comment - The references 1-12 on page 5-15 of Chapter 5 contain little if any data from in-situ operations, therefore should not be subject to the statements inherent within the GEIS since in-situ operations

Comments on the Generic Environmental Impact Statement on Uranium Milling

were not adequately considered in the development of the model mill used for all subsequent statements in the GEIS.

The differences between the model mill described in this Chapter and an in-situ operation are so significant and numerous that a compare and contrast system of tables and diagrams are useless.

The accompanying illustrations exhibit the differences between the principal operating characteristics, the fewer additives, the fewer emissions, and the much fewer radioactive emissions of the in-situ process compared to the model mill described in the GEIS.

CHAPTER 6

- 1) Section 6.2.1.1 Air Quality - Construction - Page 6-4, Paragraph 1 Sentence 1, and Paragraph 2 Sentence 3.

Original text - The principal impact on the air quality of the model site during mill construction would be an increase in suspended particulates as a result of heavy equipment operations.

-This estimate is based on application of the methods of Turner to the assumptions that approximately 32 ha (80 acres) would be disturbed by heavy equipment at any given time and that during heavy equipment operation, dust release, would be 4.5 kg/ha - hr (4 lb/acre - hr)².

Comment - Does not apply to in-situ operations.

Justification - The in-situ process does not involve excavating the ore and has negligible heavy machinery use. The limited use of heavy equipment is only for a short time in the initial construction phase. Also, in-situ mines and plants are typically smaller than conventional ones.

- 2) Section 6.2.1.2. Air Quality - Operation - Page 6-4, Paragraph 1 Sentence 1.

Original text - The major operational impact upon the air quality of the model site would be an increase in suspended particulated as a result of releases from the tailings piles, the ore pads, and a small amount from the yellowcake dryer, as well as dust raised by vehicles moving on unpaved haul roads.

Comments on the Generic Environmental Impact Statement of Uranium Milling

Comments - Major operational impacts as stated do not apply to the in-situ process.

Justification - The in-situ process does not have tailings piles or ore pads, and the small amount of particulate matter coming from the yellowcake dryer is usually less in volume than at in-situ plants. The in-situ process does not involve unpaved "haul roads" because the uranium bearing fluid is usually piped or transported in resin trailers on paved roads.

- 3) Section 6.2.1.3 Air Quality - Post Operational - Page 6-5
Paragraph 1 Sentence 1.

Original text - The principal impact on air quality after cessation of milling activities would be the wind blown transport of dust from the tailings area.

Comment - Does not apply to the in-situ process.

Justification - The in-situ process has no tailings area.

- 4) Section 6.2.2.4 Topography and Land Use - Summary - Page 6-5,
Paragraph 1 Sentence 1.

Original text - For an uncovered tailings pile at a model mill the major land use impact would be the permanent commitment of about 100 ha (250 acres) of rangeland to tailings disposal.

Comment - Does not apply to the in-situ process.

Justification - The in-situ process does not have tailings piles.

- 5) Section 6.2.3 Mineral Resources - Pages 6-5 and 6-6.

The potential for limiting post-operational mining activities due to tailings dispersion does not apply to the in-situ process because there are no tailing piles.

- 6) Section 6.2.4 Water Resources - Pages 6-6 through 6-12.

The principal impact on the water resources would not apply to the in-situ because there are 1) no tailing piles to allow seepage, 2) there is much less surface drainage affected, 3) all ponds in the in-situ process are temporary and are required to have artificial liners, and 4) the groundwater is both extensively monitored and controlled.

Comments on the Generic Environmental Impact Statement on Uranium Milling

- 7) Section 6.2.5.4 Soils - Summary - Page 6-14,
Paragraph 1 Sentence 1.

Original text - The major impacts to soils of the model mill site would be loss of soils on about 150 ha (375 acres) and salinization of about 1.3 ha (3.2 acres).

Comment - Does not apply to the in-situ process.

Justification - There is no soil loss associated with the in-situ process because the soil is not removed, and there are no tailing piles which would permanently cover any soil resources.

- 8) Section 6.2.6.1.4 Biota - Summary - Page 6-17,
Paragraph 1 Sentence 1.

Original text - For the base case model mill, the major impacts to terrestrial biota would arise from removal of habitat and from contamination of forage with potentially toxic elements originating in seepage and fugitive dust from the tailings impoundment.

Comment - Does not apply to the in-situ process.

Justification - Because there are no tailings impoundment with the in-situ process, there is little or no permanent loss of habitat and no seepage or fugitive dust from the tailings impoundment to contaminate forage.

- 9) Section 6.5.2 Summary - Radiological Impacts - Page 6-73,
Paragraph 1 Sentence 1.

Original text - With respect to health impacts the critical mill-released radionuclides and their primary sources are, in descending order of importance : Rn-222 from the tailings pile; Ra-226 and Pb-210 from the tailings pile; and U-238 and U-234 from yellowcake operations.

Comments - Only the last and least important are applicable to the in-situ process.

Justification - The in-situ process does not have tailing piles.

CHAPTER 7

Environmental Effects of Accidents

This Chapter divides accidents into three categories :

1. Trivial incidents,

Comments on the Generic Environmental Impact Statement on Uranium Milling

2. Small releases to the environment, and
3. Large releases to the environment.

Large releases involve the tailings pond or tailings distribution system which are not present with the in-situ mining process. Therefore, the in-situ mining is involved in only two (of the three) potential accident categories.

Transportation accidents include three areas also :

1. Shipments of chemicals,
2. Shipments of yellowcake, and
3. Shipments of ore.

In-situ mining does not include shipping ore. Therefore, the in-situ process involves only two of the three potential accident categories.

CHAPTER 8

- 1) Section 8.1 Introduction - Page 8-1,
Paragraph 1.

Original text - Alternative techniques considered by the staff to be capable of mitigating the impacts of uranium milling (Chapter 6) are described in this Chapter. Three categories of alternatives are considered:

- a) Those which could control emissions during milling operations,
- b) Those encompassing tailings disposal programs,
- c) Those involving decommissioning of the mill facilities, excluding the tailings disposal area.

Comment - Emissions from in-situ operations are almost negligible. Since there are no tailings to cause a problem, the second category of alternatives does not apply. This means the in-situ process is involved in little of the areas' impact.

- 2) Section 8.2 Alternative for Emission Control During Operation - Page 8-1,
Paragraph 1.

The GEIS suggests 5 possible areas of milling activity that may need emission control :

<u>Area</u>	<u>Possible Emission</u>
1. Ore Stockpile	Not applicable to the <u>in-situ</u> process

Comments on the Generic Environmental Impact Statement on Uranium Milling

<u>Area</u>	<u>Possible Emission</u>
2. Ore Crushing and Grinding	Not applicable to the <u>in-situ</u> process
3. Yellowcake Drying and Packaging	Product particulate matter and gaseous NH ₃
4. Tailings Disposal Area	Not applicable to <u>in-situ</u> mining
5. Roads	Particulates (negligible)

Note that only two of the five apply to in-situ mining. Particulate emissions from roads are negligible since much fewer non-paved roads are involved.

3) Section 8.2.2 Summary - Page 8-6.

Table 8.1.

The original text is shown on the left hand side of the diagram below and the corresponding control of emissions already built into the in-situ process is shown on the right hand side.

Table 8.1. Alternatives Considered for Control of Emissions during Operations

<u>Conventional Model Mill</u>	<u>In-Situ Process</u>
<u>Ore Storage</u>	<u>No Ore Storage</u>
No control (base case)	100% control
Windbreak (30%)	
Windbreak and sprinkling (60%)	
<u>Ore Crushing and Grinding</u>	<u>No Ore Crushing and Grinding</u>
Orifice scrubber (base case) (97%)	Completely wet process.
Bag filters (89%)	100% control
Wet, semi-autogenous grinding (100%)	
<u>Yellowcake Drying and Packaging</u>	<u>Yellowcake Drying and Packaging</u>
Wet impingement scrubber (base case) (98%)	All three alternatives used.
Venturi scrubber (99%)	98%-100% control
Wet shipment (100%)	
<u>Tailings Disposal Area</u>	<u>No Tailings Disposal Area</u>
37% covered (base case)	The ore remaining after mining is completely covered.
75% covered	
90% covered	100% control
100% covered	

Comments on the Generic Environmental Impact Statement on Uranium Milling

Comment - The in-situ process does not have the problems associated with conventional mills or the model mill described in the GEIS. In fact, all the mitigating alternatives suggested by the GEIS, except wet shipment of yellowcake, are built into the in-situ process.

CHAPTERS 9, 10, 11, 12, 13, and 14

These chapters relate to conventional mills and tailings and are not applicable to the in-situ process.

CHAPTER 10

The suggested monitoring programs are designed for the impacts of conventional mills and tailings. Hence, most of them do not apply to in-situ process.

CHAPTER 15

Summary of Environmental Impacts, Productivity and Resource Commitments

The entire impact statement should use the words "conventional milling" as they are utilized in this chapter.

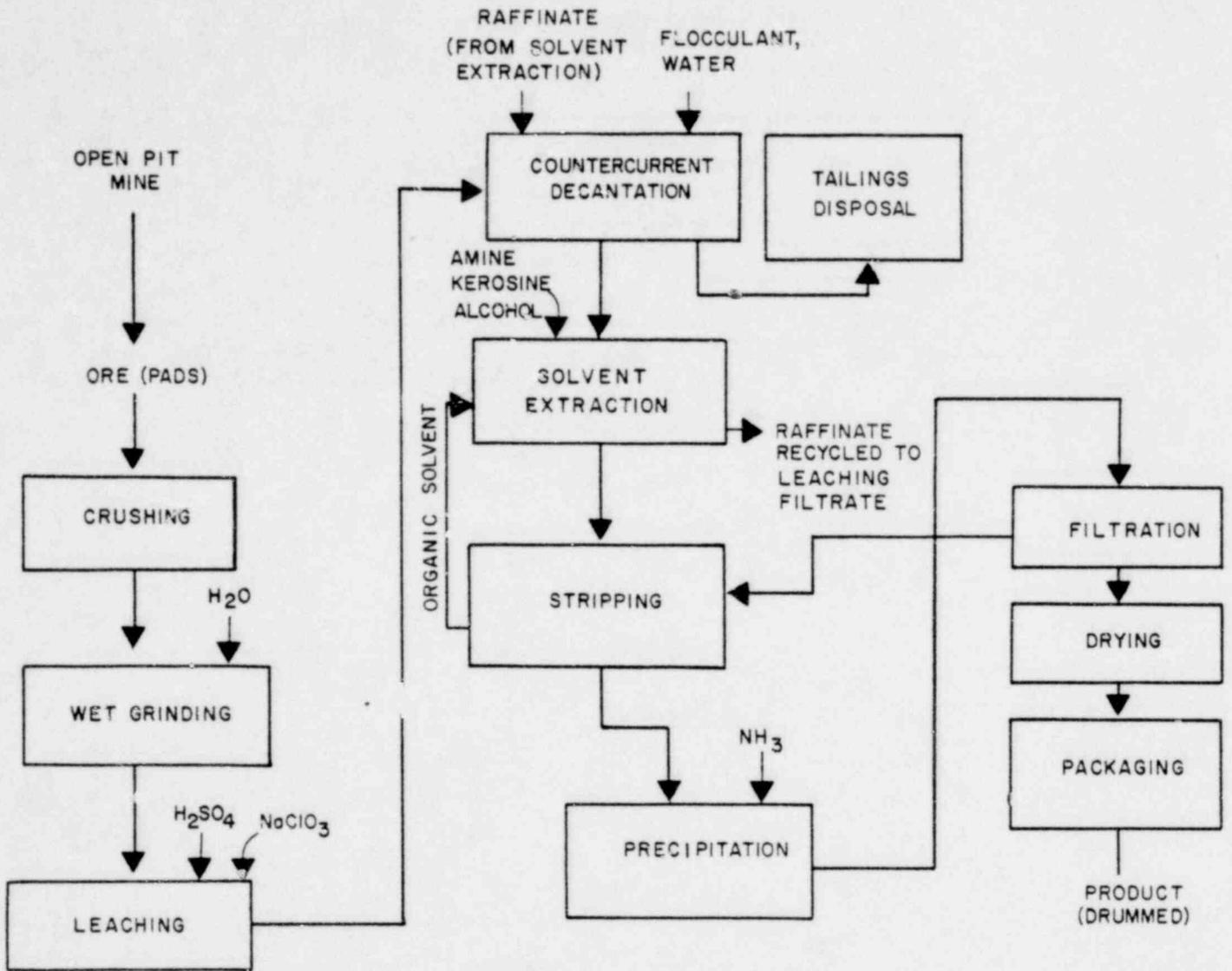
Conclusion

The method of assessment used in the GEIS involves the evaluation of a base case (model mill) featuring a low level of environmental control and characterizes the nature and extent of potential impacts from milling operations, primarily from tailings. Since the in-situ process presently has a high level of environmental control and does not generate mill tailings, it should be apparent that the overall content of the GEIS is not applicable to the in-situ milling process.

Based on the existing contents of the GEIS and its inapplicability to the in-situ process, it is recommended:

1. The final GEIS apply only to conventional uranium mines and mills,
2. The title be changes to read "Generic Environmental Impact Statement on Conventional Uranium Milling,"
3. That proposed regulations or standards based on the final GEIS be applied only to conventional uranium mines and mills.

ATTACHMENT I

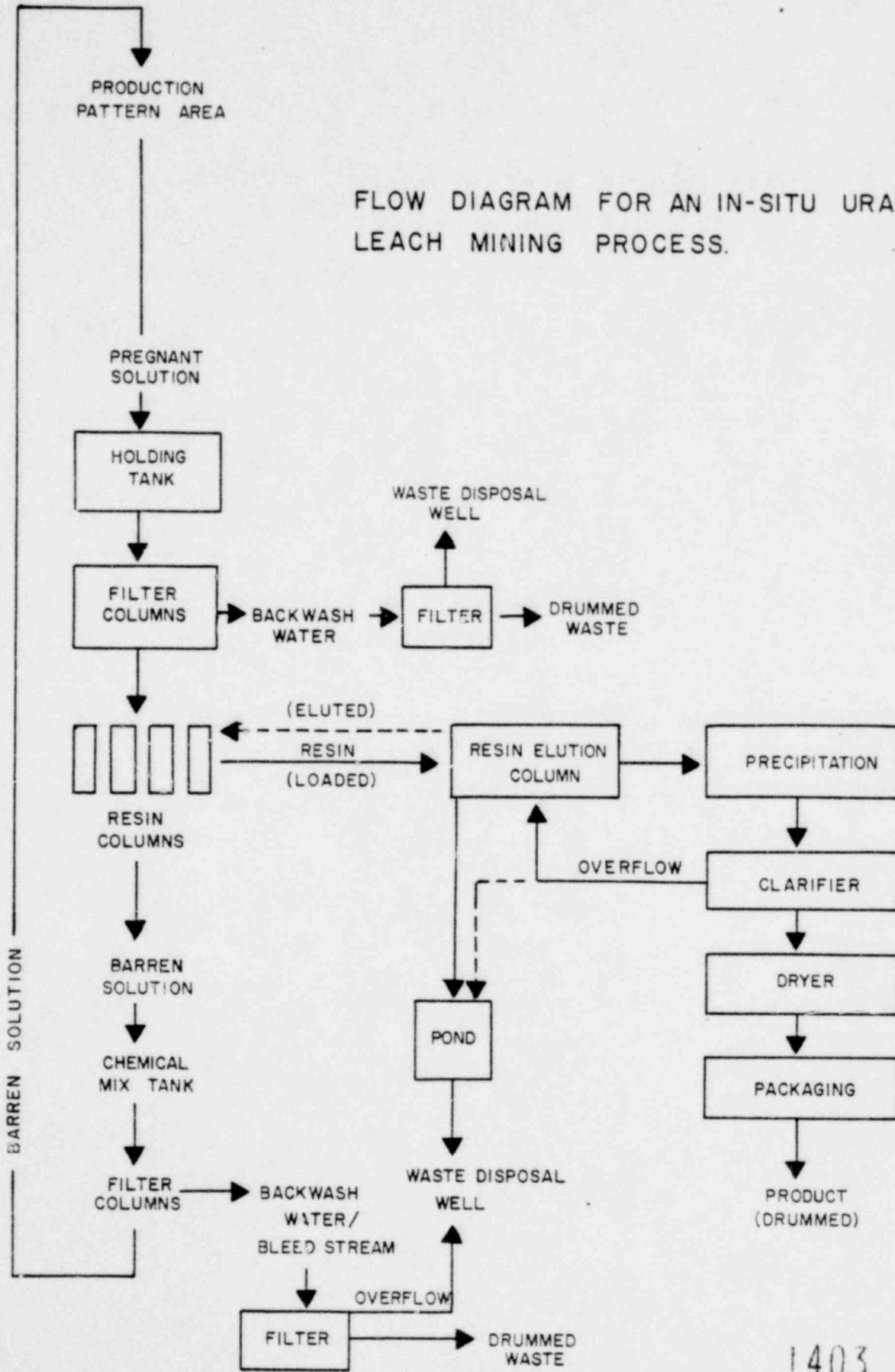


FLOW DIAGRAM FOR A CONVENTIONAL URANIUM OPEN PIT/ACID - LEACH MINING PROCESS.

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ATTACHMENT 2

FLOW DIAGRAM FOR AN IN-SITU URANIUM LEACH MINING PROCESS.



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