

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

OPERATIONAL MEMO GEN-10
Revision 1

May 14, 1999

TO: All Waste Management Division Staff

FROM: Jim Sygo, Chief, Waste Management Division

SUBJECT: Purge Water Disposal from Well Sampling and Development

This memorandum provides guidance to Department of Environmental Quality (DEQ), Waste Management Division (WMD) staff for determining the most appropriate disposal method of groundwater purged for the purposes of sampling or well development. Attached is a decision tree, or flow chart, and associated text in the form of an outline. This policy is directed to the WMD staff who are involved in the actual sampling of groundwater and/or reviewing groundwater monitoring sampling analysis plans (SAP) submitted to the DEQ for approval. This policy does not address disposal of water generated from processes related to remediation, such as pump test or purge system water. Typically, these processes require an individual permit or exemption from the DEQ.

The generation of purge water resulting from sampling activities by staff should be minimized to the extent possible by coordinating to split samples with facilities or with their designated representative. In most cases, facilities will have an approved groundwater sampling/purge water management plan. In these cases, the purge water should be handled in accordance with the approved site protocol. Split sampling is also beneficial for the purposes of observing the actual field techniques of the samplers and is a simple quality control audit for comparing our DEQ laboratory results with those submitted by the facility. When DEQ staff are independently performing a sampling inspection and not splitting samples with the facility, arrangements should be made with the facility to handle the purge water produced by the inspector.

If WMD staff must generate purge water, this policy provides "decision making guidance" for determining the best method of disposal for the water in accordance with Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), Part 201, Environmental Remediation, of Act 451, and Part 111, Hazardous Waste Management, of Act 451. In general, the majority of the waters generated by staff can be disposed of at the site of generation. Depending on the water quality, site hydrogeology, and site topography, purge water will either be: 1) carefully discharged onto the ground (away from the well but in the same general vicinity), 2) placed into a leachate collection sump, 3) disposed

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in onsite sewer or drain that go to municipal wastewater treatment plant (WWTP), 4) containerized for offsite transport and disposal, or 5) as a last resort, put back down the well (this option needs very thorough review). For water that can not be disposed of on-site, some limited amount of funds may need to be pre-approved to contract with a hauler licensed under the Part 121, Liquid Industrial Wastes, of Act 451. If the use of a licensed hauler is not feasible at a particular site due to logistical or financial reasons, then a decision must be made to either not sample the site, sample it using alternative purge methods (i.e. no purge, micropurge, or use a downhole instrument for insitu analytical of indicator parameters), or hire a contractor to handle both the sampling and disposal of purge water.

The WMD staff are not to haul large quantities (over 25 gallons) of purge water off-site to a WWTP because of the potential liability associated with a potential spill (either on-site or on public roads), and concerns regarding hauler requirements.

Any application of this purge water disposal policy will ultimately depend on the professional judgement of the staff involved.

Attachments: Outline & Notes, Flow chart

A handwritten signature in black ink, appearing to be 'Jaw', followed by the date '5/14/99' written in a similar cursive style.

PURGE WATER DISPOSAL - OUTLINE
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The following outline contains recommended procedures which Waste Management Division staff should consider prior to purging water for the purpose of groundwater sampling or groundwater monitoring well development. Discharges of groundwater produced from processes related to remediation, such as purge or pump test water, require an individual permit or exemption from the Department of Environmental Quality, in lieu of following these guidelines.

The final decision is made using the professional judgement of responsible qualified staff on-site. The decision may be based on the facility history, geology, air monitoring at the wellhead, field analytical readings, and/or appearance of the purge water.

PURGE WATER

Numbers 1 through 21 (below) correspond to the numbers on the decision tree (flow chart).

1. Is Groundwater Chemistry Known?
No - Go to 2
Yes - Go to 7
2. Is Contamination Suspected?
No - Go to 3
Yes - Go to 4
3. Follow site protocol or professional judgement.
4. Does suspected source involve **LISTED** hazardous waste?
No - Go to 14
Yes - Go to 5
5. Can you contain water and wait for sampling results?
No - Go to 6
Yes - Go to 7
6. Clearly justify and document why it is not possible (to containerize water).
Go to 14

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7. Does Purge Water contain a **Listed** Hazardous Waste?
No - Go to 9
Yes - Go to 8
8. Is purge water over Type B, Act 307 criteria?
No - Go to 9 (therefore not listed)
Yes - Go to 10 (is a listed waste)
9. Is purge water a Characteristic Hazardous Waste?
No - Go to 11
Yes - Go to 10
10. Dispose of Purge Water according to Part 111.
11. Is purge water less than or equal to natural or site-specific background?
No - Go to 12
Yes - Go to 13
12. Is purge water less than Part 201 Generic Residential Drinking Water Criteria?
No - Go to 14
Yes - Go to 13
13. Dispose of water on ground away from the well.
(See Note 1 on page 5 of 6)
14. Is approved leachate Treatment, Storage, and Disposal (TSD) facility available on site?
(See Note 2 on page 5 of 6)
No - Go to 16
Yes - Go to 15
15. Contain for On-site treatment.
16. Is there an approved TSD facility or public WWTP nearby?
No - Go to 19
Yes - Go to 17
17. Can a contract hauler be hired?
No - Go to 19
Yes - Go to 18
18. Contain water for hauling and treatment.

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19. Is the plume in a surficial aquifer with a thin unsaturated zone (i.e., the surficial aquifer is unconfined and contaminated, overlain by thin permeable soils that extend to the surface)?
No – Go to 21
Yes – Go to 20
20. Dispose of water on ground away from well.
(See Note 1 on page 5 of 6.)
21.
 - a. Don't sample
 - b. Use alternate purge method for sampling (see Note 3 of page 5 of 6).
 - c. Contract the sampling out in which case that party would be responsible for the purge water.
 - d. Reintroduce purge water to same well. This is the LAST RESORT! (See Note 4 on page 6 of 6). This can be considered in situations where there are sensitive pathways nearby (surface water, uncontrolled site access, erosion, or runoff concerns), where the upper aquifer is not contaminated (purge water from deeper saturated zone), or sampling is essential and there are no other options available.

NOTES

1. Surface discharges of the purge water should not result in unsightly or nuisance conditions or contamination of surface soils above the Part 201 generic criteria applicable to the facility, including but not limited to ponding or pooling outside the designated discharge area, erosion or runoff, or odors that may cause an unreasonable interference with the comfortable enjoyment of life and property.
2. Typical TSDs include: on-site leachate collection and/or treatment system, approved hazardous waste facility, and approved municipal wastewater treatment facility.
3. Use alternative approaches to purging if purge water disposal is a problem. The following are some suggested sampling techniques:
 - a. Pump\Packer System: To minimize the need for well purging, place the pump in the screened interval and pack off the well just above the screen. By isolating the stagnant water column above the screen from the pump inlet, the purge volume is greatly reduced and easier to handle. Two examples of pumps available with a pump and packer arrangement are the Well Wizard Pump and the Keck Pump.

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- b. Low Flow Sampling: Sample the water at the well screen at a very slow rate which is much less than the rate at which the formation will yield water. A typical pumping rate using this method is about 100 ml/minute. This method should pull water through the screen without vertically mixing water from the stagnant column above the screen. The following are two techniques that can be used to collect samples without significantly disturbing the water column:
 - i) A dedicated pump permanently installed which can be adjusted down to a low flow rate in the screened interval of the well;
 - ii) Slowly lower a small diameter grab sample syringe to the middle of the screen to avoid mixing the stagnant water column. Activate the syringe to slowly collect a discreet sample.
- c. Downhole instrumentation: Do not take a sample, and simply use downhole instrumentation to get qualitative data on upgradient versus downgradient wells. For example, take conductivity readings downhole and see if there is an observable difference up to down gradient.

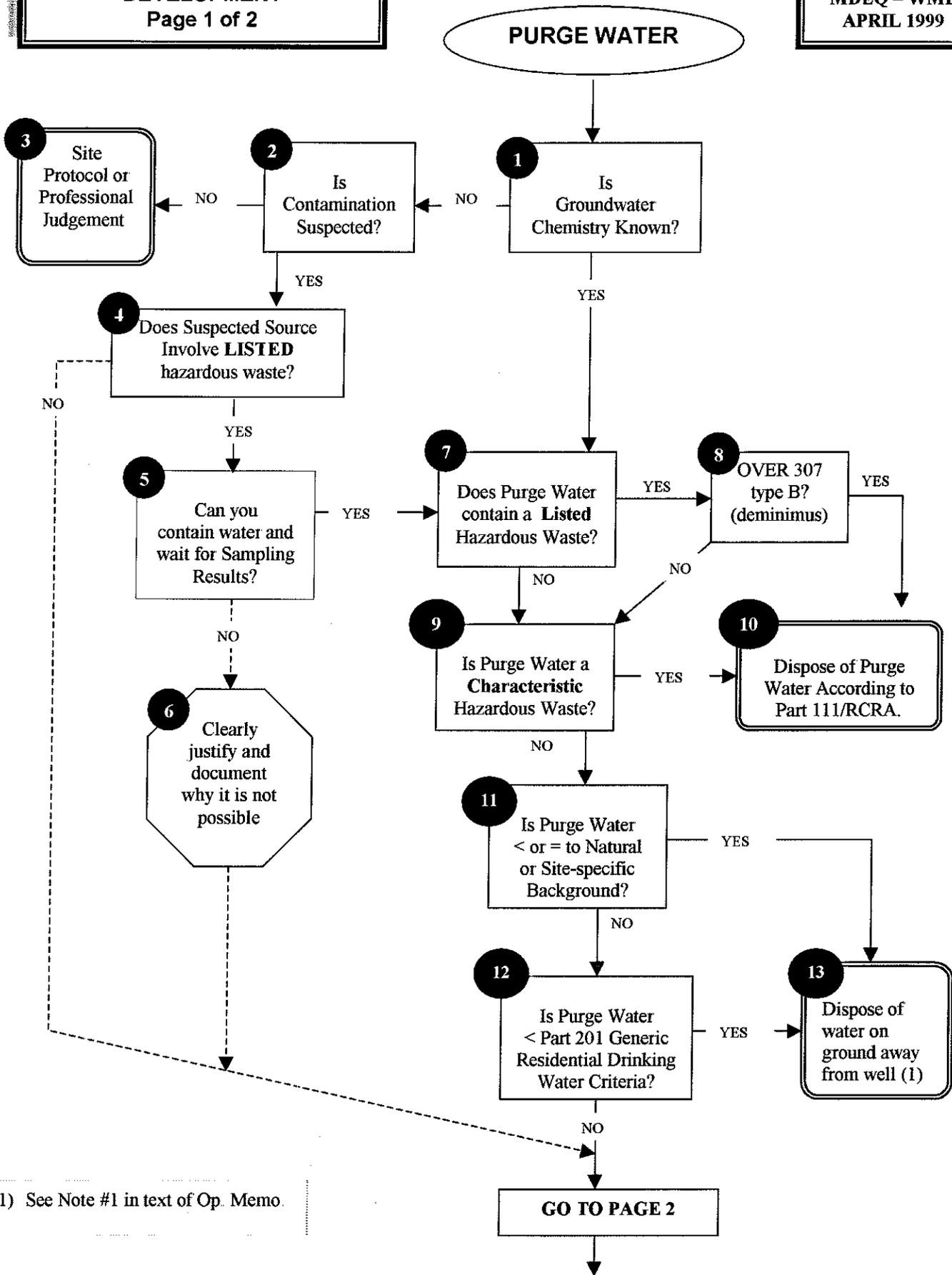
- 4. Disposing of purge water back into the same well should be a last resort. If no other purge water disposal options are available, and sampling must be done, then this option can be considered.

Discharges back down the well must not destroy the integrity of the screen, (i.e., filterable solids must not plug the screen openings) and the formation in which the well is screened must allow for the disposal of purged water. If purge water is discharged back down the well, care must be taken so that new contaminants are not introduced into the well and cross-contamination does not occur between sampling points. Purge water that will be reintroduced into the well should be placed in dedicated containers or containers with dedicated liners. If purge water is collected in a non-dedicated container, the container must be thoroughly decontaminated between sampling locations, and sampling should proceed from the least contaminated well to the highest.

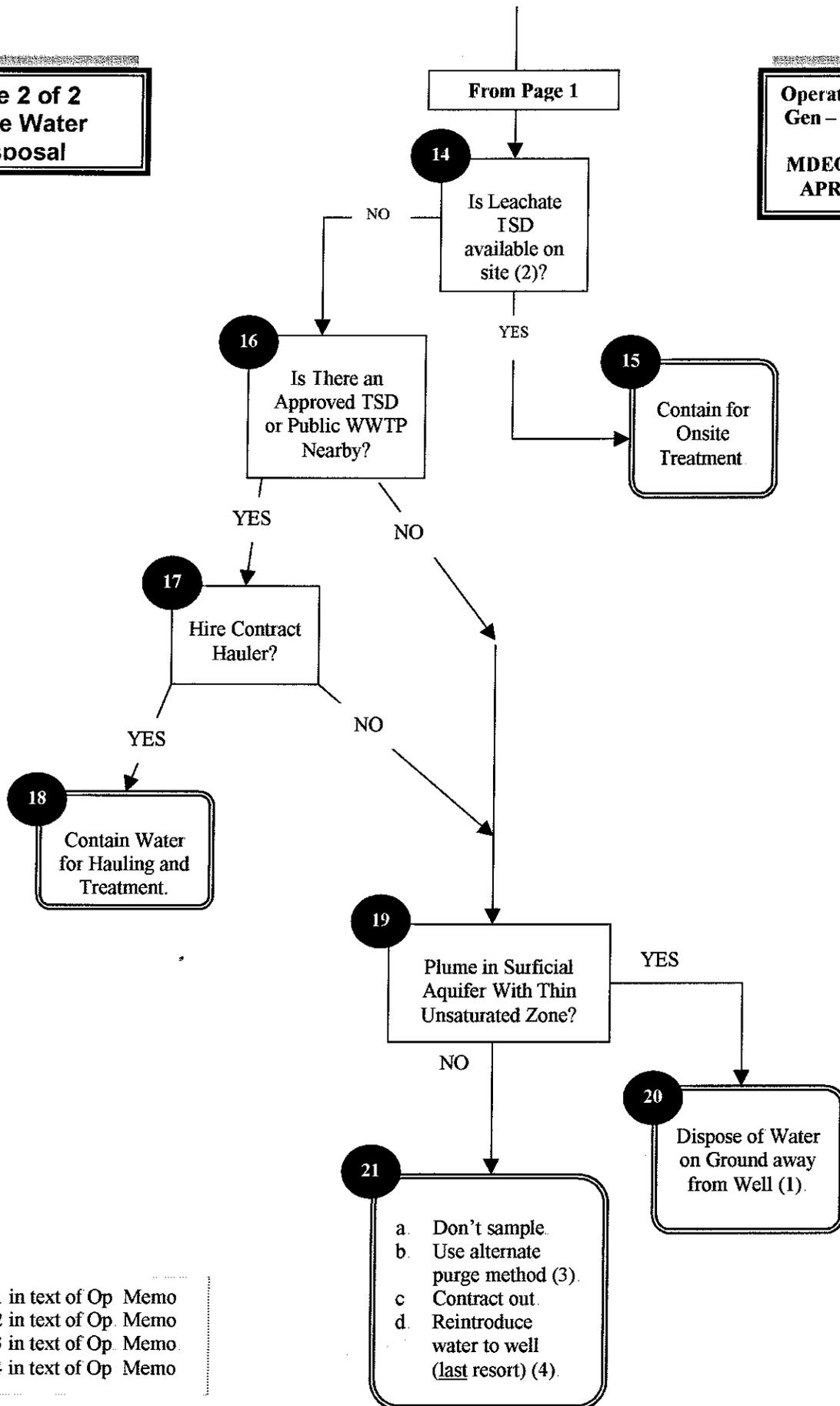
**PURGE WATER DISPOSAL
FROM WELL SAMPLING AND
DEVELOPMENT**
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**MDEQ - WMD
APRIL 1999**



(1) See Note #1 in text of Op. Memo.



- (1) See Note #1 in text of Op Memo
- (2) See Note #2 in text of Op Memo
- (3) See Note #3 in text of Op Memo
- (4) See Note #4 in text of Op Memo