ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone 602 417-2410
Fax 602 417-2415

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

December 10, 2002

ARIZONA DEPARTMENT OF WATER RESOURCES

SUBSTANTIVE POLICY STATEMENT

Underground Water Storage Permit Application
Guidance—Technical and Financial Capability and
Unreasonable Harm and Hydrologic Feasibility

This substantive policy statement is advisory only. A substantive policy statement does not include internal procedural documents that only affect the internal procedures of the agency and does not impose additional requirements or penalties on regulated parties or include confidential information or rules made in accordance with the Arizona administrative procedure act. If you believe that this substantive policy statement does impose additional requirements or penalties on regulated parties you may petition the agency under Arizona Revised Statutes § 41-1033 for a review of the statement.

I. BACKGROUND

The Arizona Department of Water Resources ("Department") administers the Underground Water Storage, Savings and Replenishment Program ("UWS Program") in accordance with A.R.S. §§ 45-801.01 *et seq.* Among the permits issued under the UWS Program is the Underground Storage Facility ("USF") Permit.

Although the requirements of obtaining a USF Permit are specified by A.R.S. § 45-811.01(C), the Director has determined that the Department should provide additional written guidance to the public on the criteria specified in the statute. To provide this guidance, the Department has prepared two papers. The first deals with the requirement of the statute that the applicant be technically and financially capable of constructing and operating a USF. The second paper deals with the requirements that the proposed USF be hydrologically feasible and not cause unreasonable harm.

This written guidance is not intended to change any of the requirements of the statute or to impose any additional requirements. Instead, the written guidance is intended to assist applicants and interested members of the public by informing them of the information the Department considers adequate to meet the requirements of the statute. By following the written guidance, a person will be assured of complying with A.R.S. § 45-811.01(C).

II. THIS SUBSTANTIVE POLICY STATEMENT SUPERSEDES, IN PART, POLICY R3

This substantive policy statement supersedes Policy R3 of the Department, the Application Packet for Underground Water Storage, Savings, and Replenishment Projects (7/18/94), to the extent that policy provides contradictory guidance on the information submitted to the Department to meet the requirements of A.R.S. § 45-811.01(C).

III. EFFECTIVE DATE

This substantive policy statement shall become effective immediately. The Director may modify or revoke this policy at any time.

Dated this 10TH day of DECEMBER, 2002.

Joseph C. Smith
Director
Arizona Department of Water Resources

NOTICE PURSUANT TO
ARIZONA REVISED STATUTES
§ 41-1091(B)

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December 10, 2002

TECHNICAL AND FINANCIAL CAPABILITY
A.R.S. § 45-811.01(C)(1)

I. INTRODUCTION

Under the Underground Water Storage, Savings, and Replenishment Program[1], applicants for Underground Storage Facility (USF) permits,[2] in addition to other requirements, must demonstrate to the Director's satisfaction the "technical and financial capability to construct and operate the facility."[3] The purpose of this paper is to assist applicants with the identification of appropriate evidence that may be submitted to establish that the applicant possesses the necessary "technical and financial capability" for the issuance of a USF permit.

The design, construction, and operation of a USF are complex activities. Geologic and hydrologic conditions vary significantly across Arizona and within AMA boundaries. Appropriate siting of a proposed facility requires examination of a number of factors, including the hydrologic feasibility of recharging at the site, proximity to the source of water to be stored, potential impacts to third parties, and contaminants that may already be present in the soil and water in the vicinity.

An applicant must have available to it the technical expertise to be able to study these conditions and to determine the appropriate site and method for its USF. For this reason, the statutes require that the applicant demonstrate that it has the "technical capability" to construct and operate the USF.

The applicant must also have the financial resources to adequately support operation of the facility. A thorough analysis of "financial capability" requires: (1) an estimation of the total costs associated with the completion of all stages of construction and operation of the proposed facility and (2) an evaluation of each individual applicant's ability to meet those estimated costs.

In addition, technical and financial capability encompasses the applicant's ability to access the site where it proposes to construct and operate the facility. To establish technical capability for the USF as designed, the applicant must demonstrate that it can access the site for which the facility is designed. Similarly, if the applicant does not yet have legal access to the site, the costs of acquiring that access may impact the applicant's financial capability to undertake the project.

II. DETERMINATION OF TECHNICAL CAPABILITY

In order for an applicant for a USF permit to establish that it has the technical expertise to construct and operate a USF, the applicant shall submit with its USF application the following items:

A. The name and address of the person or persons who will be principally responsible for overseeing the construction and operation of the USF.
B. Proof of any pertinent licenses or certifications held by that person.
C. A narrative, resume, biography, or related information describing the person's professional training and work experience that is relevant to the construction or operation of the USF.

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[1] *See* A.R.S. § 45-801.01 *et seq.* (establishing and defining program).
[2] *See* A.R.S., Title 45, Chapter 3.1, Article 2 (detailing Storage Facility Permits).
[3] *See* A.R.S. § 45-811.01(C)(1).

The Director shall determine the applicant to have the technical expertise to construct and operate the USF if the information provided by the applicant demonstrates that the person or persons who will be principally responsible for overseeing the construction and operation of the USF has the experience and training necessary to construct and operate the USF. In making this determination, the Director may consider the applicant's and the responsible person's history in the UWS Program and whether any USF for which the applicant was permitted or for which the person was principally responsible has failed to comply with UWS statutes, rules, or permits. In considering past failures to comply with UWS statutes, rules, or permits, the Director shall consider the frequency and substance of any such failure.

III. DETERMINATION OF FINANCIAL CAPABILITY

A. Estimation of Costs

In order for a USF permit applicant to establish that it has the "financial capability" to construct and operate a USF, the applicant shall submit with its USF application a statement establishing the total estimated costs for the USF. The statement shall include:

1. An estimate of all construction costs associated with building the USF; and
2. An estimate of the annual operational costs for the USF for each year of the permit term requested, including all costs for regulatory compliance and proper maintenance of the facility.
3. Explanations, summaries, or accountings of information or data relied upon to form the reasonable basis of any assumptions or projections used to calculate the estimated costs.
4. A statement of verification by a person the applicant has identified on the application as being principally responsible for overseeing the construction and operation of the USF that the statement of estimated costs is a true and best estimate of the total costs associated with construction and operation of the USF.

The Director shall accept the statement of estimated costs unless the statement is not supported by the information on which the estimates are based or is an unreasonable or unrealistic estimation of the total costs.

B. Ability to Meet Total Estimated Costs

In order for a USF permit applicant that is an agency of the United States, an agency of the State of Arizona, a city, town, county, irrigation district, multi-county water conservation district, or other public entity with taxing or public bonding authority, to establish that it has the ability to meet the total estimated costs for construction and operation of the facility, the applicant shall submit with its USF application a sworn statement from the chief financial officer of the applicant certifying that to the best knowledge and belief of the chief financial officer the applicant possesses existing financial resources or adequate taxing or bonding authority to pay the estimated construction and operation costs for the USF, as indicated on the applicant's total statement of estimated costs.

The Director shall determine that an applicant that is an agency of the United States, an agency of the State of Arizona, a city, town, county, irrigation district, multi-county water conservation district, or other public entity with taxing or public bonding authority has the ability to meet the

total estimated costs for the facility, and therefore has established the "financial capability" to construct and operate the USF, if the applicant submits the statement specified above.

In order for a USF permit applicant that is not an agency of the United States, an agency of the State of Arizona, a city, town, county, irrigation district, multi-county water conservation district, or other public entity with taxing or public bonding authority, to establish that it has the ability to meet the total estimated costs for the construction and operation of the facility, the applicant shall submit at least one of the following:

a. A sworn statement from the chief financial officer of the applicant certifying that to the best knowledge and belief of the chief financial officer the applicant possesses financial ability to pay the estimated construction and operation costs for the USF, as indicated on the applicant's statement of total estimated costs.
b. A loan commitment letter or a revolving credit agreement from a recognized financial institution establishing that the applicant possesses the ability to finance the payment of estimated construction and operation costs for the USF, as indicated on the applicant's statement of total estimated costs.
c. Evidence of posting a bond sufficient to meet the estimated construction and operation costs for the USF, as indicated on the applicant's statement of total estimated costs.

The Director shall determine that an applicant that is not an agency of the United States, an agency of the State of Arizona, a city, town, county, irrigation district, multi-county water conservation district, or other local government entity has the ability to meet the total estimated costs for the facility, and therefore has established the "financial capability" to construct and operate the USF, if the applicant submits the information specified above.

IV. ACCESS TO USF SITE

In order for an applicant for a USF permit to establish that it has or can obtain access to the site of the proposed USF, the applicant shall submit with its USF application one of the following items:

a. A copy of a deed, easement, lease, judgement, license, or other proof that demonstrates that the applicant has legal access to the proposed site for the purposes of constructing and operating a USF.
b. Evidence that the applicant is in the process of obtaining a deed, easement, lease, license, or other proof that allows the applicant legal access to the proposed site for the purposes of constructing and operating a USF.
c. If the project will be located in part or in whole within the natural channel of a stream, the application shall note that access to the stream channel is granted under A.R.S. § 45-173.[4]

The Director shall determine the applicant has legal access to the site if the applicant submits the information specified above.

If the applicant submits evidence that it is in the process of obtaining legal access to the site, the Director may issue the permit conditioned upon the applicant obtaining that access. If it is

[4] Note that even if access to the site is granted under A.R.S. § 45-173, the applicant must submit land ownership information for the stream channel to satisfy requirements under the unreasonable harm review.

demonstrated that the applicant cannot obtain legal access to the site, the Director may deny the permit.

December 10, 2002

UNREASONABLE HARM AND HYDROLOGIC FEASIBILITY
A.R.S. § 45-811.01(C)(2), (3), AND (5)

I. INTRODUCTION

This paper presents a modified approach to processing applications for underground storage facilities ("USF"). The modified approach is intended to lessen the burden on applicants during the application review while placing greater emphasis on monitoring the facility after it is permitted. The application process, therefore, requests the applicant to describe the area of the proposed storage facility, analyze and/or model the water mounding impact of the proposed storage, and to take reasonable efforts to identify structures and activities that might be impacted by the proposed storage. The applicant will use this information to design a monitoring plan to guard against causing unreasonable harm to nearby land and water users.

The issues of whether a proposed USF will perform as designed and whether it will cause harm to others are of fundamental importance in deciding whether a USF permit will issue. Thus, three of the criteria that must be met in order for a USF permit to issue deal with these matters.

Before issuing a USF permit to an applicant, the Director must first find that "storage of the maximum amount of water that could be in storage at any one time at the facility is hydrologically feasible."[1] Second, the Director is responsible for ensuring that "storage at the facility will not cause unreasonable harm to land or other water users within the maximum area of impact of the maximum amount of water that could be in storage at any one time."[2] Third, the Underground Water Storage, Savings, and Replenishment ("UWS") statutes provide that, in some instances, the Director of Environmental Quality must find that "the facility is not in a location that will promote either the migration of a contaminant plume or the migration of a poor quality groundwater area so as to cause unreasonable harm or is not in a location that will result in pollutants being leached to the groundwater table so as to cause unreasonable harm."[3]

Water is a public resource, and Arizona policy and law discourage wasteful uses of water. Therefore, the UWS statutes require that an applicant establish that the USF it proposes is hydrologically feasible before it is permitted. To establish hydrologic feasibility, the applicant must study the hydrogeology of the proposed site to ensure that there are no insurmountable barriers to recharge and design the facility and implement a maintenance, monitoring, and operational regime for the USF that ensures optimum recharge efficiency.

The UWS statutes encourage underground water storage; however, that encouragement is tempered to ensure that other land and water users in the area of water storage are not unreasonably harmed by the storage. The importance the legislature assigns to underground water storage is evidenced by the standard of "unreasonable harm." While protecting against certain harms, this standard acknowledges that some harm to third parties may be unavoidable to further the advancement of water storage. Therefore, the law recognizes that a hydrologically

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[1] A.R.S. § 45-811.01(C)(2).
[2] A.R.S. § 45-811.01(C)(3).
[3] A.R.S. § 45-811.01(C)(5).

feasible USF should not be prohibited if it merely impacts persons in the area of storage; the USF should not be permitted only if the harm to others is "unreasonable."

Water quality concerns are an important component when considering potential harms from a proposed USF. Discharges at some USFs, usually those where effluent will be recharged, will require the applicant to obtain an aquifer protection permit ("APP") from the Department of Environmental Quality ("DEQ") before beginning water storage. In these instances, water quality issues are completely within the jurisdiction of DEQ, and the receipt of an APP will establish that no unreasonable harm will result in the operation of the USF from a water quality perspective.

If the discharge at the USF will not require the applicant to obtain an APP, water quality concerns are examined in coordination with DEQ as a part of the Department's USF permitting process. DEQ must examine the proposed USF and consider any potential harms that might result from the recharge impacting contaminant plumes already underground or from potential hazards in the soils that might be leached by recharging water into an aquifer. The Department, with consultation from DEQ, will also consider potential harms that might result to the quality of the water already in the aquifer.

The details of establishing hydrologic feasibility and no unreasonable harm for a proposed USF are set forth in the remainder of this paper.

II. HYDROLOGIC REPORT

A. Discussion

When designing a USF, the applicant must consider a number of potential impacts that might result from recharging water. First, water storage at a USF may cause local and regional water levels to rise, potentially interfering with underground structures such as basements, underground parking structures, and foundations for aboveground structures. A USF must be designed, constructed, and operated to ensure that neither the integrity nor the function of existing structures are unreasonably harmed.

The applicant must also be concerned that the operation of its USF might interfere with existing uses of land in the area of the facility. For example, if the water table were to be raised to the surface, surface flooding or waterlogging might result in property damage or interference with agricultural activities. Waterlogging of soils where groundwater levels are high can increase the likelihood of evaporation and salinization. Rising water levels could interfere with existing mining activities in the vicinity of the USF. Therefore, the applicant must consider how land in the vicinity of its proposed USF is being used and how the proposed USF may affect those uses.

Another concern is water quality. Water in the aquifer must be protected to ensure that the water is useable in the future. Analysis of a proposed USF must consider water quality concerns to ensure against unreasonable harm that might result from a water supply becoming contaminated.

Under the UWS Program, a key component of examining for unreasonable harms is the "area of impact" where the water storage may occur. The statutes provide that the applicant must consider potential unreasonable harms that may occur within the "maximum" area of impact.

B. Area of Impact

The "maximum amount of water that could be in storage at any one time" necessarily entails looking at the area of impact that would result from the full storage volume proposed for the USF being stored each year for the proposed duration of the USF permit.[4] For example, if a USF permit application requests an annual storage volume of 5,000 acre feet per year and requests a proposed permit duration of 12 years, the "maximum amount of water that could be in storage at any one time" is 60,000 acre feet.

It is possible, however, that a USF applicant in designing and planning its USF may plan to store and/or recover water at the USF on a schedule that limits the amount of water in storage at any one time to an amount less than the annual storage volume multiplied by the years in the permit term.[5] Therefore, the applicant may be willing to commit to, and have included as a limitation in its permit, a maximum amount of storage that could be stored at any one time in the USF. If the applicant proposes such a limitation in its USF application, then this lesser amount of storage may be used to determine the area of impact of the "maximum amount of water that could be in storage at any one time."

C. Parameters of Hydrologic Report[6]

For the purposes of determining the maximum area of impact, identifying potential water mounding, developing a monitoring plan, preventing unreasonable harm, and establishing hydrologic feasibility, the applicant shall submit a hydrologic report with an application for a USF permit, in accordance with the following:

1. The applicant shall submit a description of the proposed USF and the area where it is to be located that includes the following:

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[4] The "maximum area of impact" also applies in the following UWS statutes:

- A.R.S. § 45-814.01(D): In examining whether to renew a USF permit, the Director is not to consider land uses and water uses within the area of impact that were not in existence when the permit was first issued.
- A.R.S. § 45-814.01(F): The Director may require monitoring within the "area of impact."
- A.R.S. § 45-814.01(G): The Director may modify a permit, but in determining whether a modification is necessary, the Director is not to consider land uses and water uses within the area of impact that were not in existence when the permit was first issued.
- A.R.S. § 45-871.01(D): Notice of a proposed USF or water storage permit is provided by first-class mail notice to cities, towns, private water companies, irrigation districts and electrical districts that serve land within the area of impact.

[5] "Area of impact" for the purposes of recovery of stored water is not required by the UWS statutes to be based on the "maximum amount of water that could be in storage at any one time," which is reserved for examining potential unreasonable harms. For the purposes of recovery, the area of impact can be either a "safe-harbor" area within 1 mile of the USF or an annual area of impact calculated at the end of each year for use in the following year by considering cumulative storage at the USF and recovery within the area of impact.

[6] If the applicant, in its professional judgement, determines that some of the information requested by the Department is not applicable or that alternative methods would be more appropriate for the project proposed by the applicant, the applicant may provide a narrative explaining why the information requested by the Department is not required. The applicant is strongly encouraged to request a pre-application meeting with the Department to explain and review the requested or alternative information or methodology.

a. A description, including schematics, construction details, and any potential design contingencies, and a site layout map for the proposed USF showing the major components, including water quantity measurement and other metering instrumentation, of the facility as it will be constructed.
b. A description, including schematics and construction details, of any wells, including monitor wells, that exist or that may be constructed for use with the USF.
c. A maintenance and operation plan for the proposed USF that establishes that storage efficiency of the USF will be maintained to the extent possible.
d. A description of how evaporation, evapotranspiration, and other losses will be calculated and/or measured.
e. A description and map of the site where the proposed USF will be located.
f. A description of the geologic and hydrologic characteristics of the site and surrounding area.
g. A description, including references and supporting material, of the hydrogeologic characteristics of the vadose zone at the site of the proposed USF.
h. A description and characterization of wastes, contaminated soils, or other materials that have affected and become part of the vadose zone and that may produce pollutants as a result of leaching by percolating water.
i. A description of the characteristics of the aquifer at the site of the proposed USF, including references and supporting material.
j. A description of subsurface geology with supporting cross-section diagrams and narratives, including a description of any known areas of subsurface fine grain units or potential perching units that may intercept the recharging water and impede recharge, including references and supporting material.
k. Copies of any reasonably available geologic/geophysical logs, including well driller logs, for activities that were conducted within one mile of the proposed USF.
l. A list and description of use of any reasonably discoverable wells within one mile of the proposed USF and a map depicting the location of each such well.
m. If an aquifer protection permit will govern the water storage that will occur at the proposed USF, evidence that the permit has been issued or an application for the permit has been filed.
n. If an aquifer protection permit will not govern the water storage that will occur at the proposed USF, documentation of the quality of the ambient groundwater of the receiving aquifer, including organic and inorganic constituents.
o. If an aquifer protection permit will not govern the water storage that will occur at the proposed USF, documentation of the type and quality of the water to be stored, including all of the following:
    i. Physical parameters, cations and anions, inorganic chemicals, trace metals, organic chemicals, herbicides and pesticides, and microbiological constituents, if applicable.
    ii. Any anticipated variations in the quality of the water to be stored.
    iii. Any treatment processes of the water to be stored.
p. A description and map of water levels for both depth-to-water below land surface and elevation of the water table above mean sea level within the maximum area of impact of the proposed USF.

q. A description of current and historic water level changes within the maximum area of impact of the proposed USF, including hydrographs and a discussion of possible causes of recent changes.
r. A description of the impact of surface water flows, if any, on storage capacity, within the area of impact.
s. A narrative addressing any potential for water to be stored rising to land surface.

2. The applicant shall analyze and calculate the maximum area of impact and mounding effect of the proposed USF, in accordance with the following:
   a. The applicant shall use a technique groundwater scientists practicing in Arizona would find appropriate for the method of recharge to be employed at the USF, for the scale and scope of the USF, and for the hydrologic characteristics of the proposed site. The Department strongly recommends that the applicant request a pre-application meeting with Department staff to discuss the appropriateness of the technique selected for use by the applicant, or the applicant may use the Modflow model, which the Department considers the industry standard.
   b. The applicant shall conduct the analysis using the maximum amount of water to be stored requested in the application, which is equal to the maximum annual storage volume multiplied by the number of years requested for the permit duration. (Annual Storage Volume x Requested Years of Permit Duration). If the applicant has agreed in the application to accept a permit limitation that limits the amount of water that may be in storage at any one time, the applicant may use this smaller volume in calculating the maximum area of impact.
   c. The applicant shall assume that no water will be recovered from within the area of impact during the proposed duration of the USF permit unless the applicant has agreed to accept a permit limitation that limits the amount of water that may be in storage at any one time.
   d. The applicant shall use aquifer parameters representative of current conditions in the general area and at the storage location according to the best data available. If data demonstrates a wide range of aquifer parameters at the site of the USF, the applicant shall use a median of those parameters.
   e. The applicant may assume that groundwater pumping and recovery of stored water in the area will continue at current levels, unless there is clear evidence of likely future changes in the pumping regime.
   f. The applicant shall consider the effects of any ongoing or likely water storage at storage facilities that have been permitted at the time the applicant files its application and that have a maximum area of impact that overlaps or is within the proposed maximum area of impact of the proposed USF. The applicant may request this information from the Department.
   g. The applicant shall consider the effects of any natural and incidental recharge and natural inflows and outflows in the area of the proposed USF.
   h. The applicant shall include and describe appropriate aquifer boundary conditions in the calculations.
   i. The applicant shall include localized and regional groundwater level trends in a model used for the analysis or, if the groundwater level trends are not input, the

applicant shall discuss localized and regional groundwater level trends in a narrative and the impact of those trends on storage capacity in the aquifer.

3. In support of its analysis of the maximum area of impact and mounding effects, the applicant shall submit to the Department:
   a. A narrative describing:
      i. The technique(s) used to conduct the analysis and why that technique was appropriate for the method of recharge to be employed at the USF, for the scale and scope of the USF, and for the hydrogeologic characteristics and conditions of the proposed site.
      ii. The parameters, assumptions, and water infiltration and/or injection rates used in the analysis, with justification and support for the use of those parameters, assumptions, and rates.
   b. Any evidence referenced in the narrative.
   c. A digital copy of all model inputs and outputs and the results of any calculations.
   d. If a numeric technique is used, a discussion of the sensitivity analysis and calibration of the modeling exercise.

4. To identify potential impacts from the proposed USF, the applicant shall also submit with its application the following:
   a. A map showing the areal extent of a one-foot contoured rise in water level from the proposed USF, which is the maximum area of impact of the proposed USF. Any water level rise that is less than one foot is considered negligible and may be excluded from the area of impact.
   b. A mounding analysis of water storage at the proposed USF, including a graph of the anticipated rate of groundwater level rise over the duration of the permit.
   c. A list and map depicting the location of the following structures, activities, conditions, and facilities within the maximum area of impact in areas not held by the applicant, if they are known to the applicant or could be known to the applicant through the use of reasonable effort[7]:
      i. Structures that extend greater than 10 feet below land surface that are likely to be impacted by rising water levels after the storage of the maximum amount of water that could be in storage at any one time. For the purposes of this item, wells are not structures.
      ii. Active sand and gravel and mineral extraction operations that are likely to be impacted by rising water levels after the storage of the maximum amount of water that could be in storage at any one time.
      iii. Any permitted storage facilities for which the maximum area of impact overlaps or is within the maximum area of impact of the proposed USF.
      iv. Any wastewater treatment facilities, active agricultural land, industries with high hazard ratings, buried waste or soil contaminants, septic leach fields or seepage pits, rapid infiltration basins, cemeteries, aqueducts, rivers, streams, landfills, air transportation facilities, and any other activities, conditions, and facilities that are

[7] The comprehensiveness of this inventory will vary based on the nature of the water level rises anticipated from the project and the spatial distribution of those rises.

likely to be impacted by rising water levels after the storage of the maximum amount of water that could be in storage at any one time.

v. A listing, location, and extent of known areas of groundwater contamination, including leaking underground storage tank sites and sites identified by RCRA, CERCLA, WQARF, or the Voluntary Remediation Program.

d. A description of the actions taken by the applicant to identify structures, facilities, water users, and conditions listed in this Paragraph 4.

e. A narrative describing how the facility will be operated and monitored so as not to cause unreasonable harm, as described in Section III, below.

5. The applicant shall submit a proposed plan to monitor the USF sufficient to establish that the USF will not cause unreasonable harm, as described in Section III, below. The proposed monitoring plan shall include the following:

a. A sufficient number of monitor wells and piezometers to monitor for water quality, water levels, and vadose zone perching conditions to establish that the USF will not cause unreasonable harm.

b. The monitor wells and piezometers shall be located and constructed so as to establish that the USF will not cause unreasonable harm.

c. A description of the manner and frequency for which water levels and water quality shall be measured, which frequency shall be sufficient to establish that the USF will not cause unreasonable harm. At a minimum, monitoring shall comply with the following at each monitoring point:

i. For water level monitoring for projects within urban areas, if ten or more structures not held by the applicant are located within a quarter mile radius of the USF[8], the water levels shall be measured every two weeks until such time that the USF has been operated for a period of twelve consecutive months during which there were less than two instances of the alert levels having been reached. After this twelve-month period, water levels shall be measured once each month. In areas with fewer than ten structures not held by the applicant are located within a quarter mile radius of the USF, water levels shall be measured once each month.

ii. For water quality, water quality shall be sampled every three months until such time that the USF has been operated for a period of twelve consecutive months during which there were no instances of any aquifer water quality standards being reached. After this twelve-month period, water quality shall be sampled every six months.

d. Operation Prohibition Limits that require all storage activities to cease if water levels reach the Operation Prohibition Limits and that comply with all of the following:

i. For constructed USFs, Operation Prohibition Limits that are established at least 15 feet below land surface in areas not held by the applicant.

ii. For constructed and managed USFs, Operation Prohibition Limits that are established at least 5 feet below any structures identified in Paragraph 4(c)(i) of this Section.

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[8] For purposes of this standard, the boundary of a USF from which the radius is drawn is the edge of the individual basin, stream channel or well. If a USF contains multiple basins or wells, individual radii are drawn around each feature. If there are more than ten structures within the combined radii, water levels shall be measured every two weeks as described in the standard.

iii. For constructed and managed USFs, Operation Prohibition Limits that are established to prevent unreasonable harm to the activities, conditions, and facilities identified in Paragraph 4(c)(ii), (iii), (iv), and (v) that are occurring and ongoing at the time the application is submitted.

iv. The Operation Prohibition Limits comply with any federal, state, or local statute, ordinance, rule, or permit that establishes a maximum water level in the area of the USF.

e. Alert Levels for water levels, which shall be designated further below land surface than the Operation Prohibition Limits for water levels, and the course of action that shall be undertaken, if water levels reach the Alert Levels. The Alert Levels and course of action shall be sufficient to prevent water levels from reaching the Operation Prohibition Limits for water levels.

f. Operation Prohibition Limits for water quality that require all storage activity to cease if either of the following occur:

i. Any aquifer water quality standard is reached and causes an immediate risk to human health or safety.

ii. Ongoing or repeated instances of aquifer water quality standards being reached which indicate that the water storage is causing or will cause a degradation of the quality of the water in the aquifer.

g. Alert Levels for water quality, established at 80% of state aquifer water quality standards, and the course of action that shall be undertaken, if a water contaminant reaches the Alert Levels. The course of action shall be sufficient to prevent a water contaminant from reaching the Operation Prohibition Limits for water quality.[9]

h. The course of action to be taken by the permit holder if an Alert Level is reached shall include, but not be limited to, the following:

i. Notifying the Department within 48 hours of any Alert Level or Operation Prohibition Limit being reached, followed within two weeks by a report to the Department detailing the incident.[10]

ii. Daily measuring to monitor for water levels during any period in which Alert Levels for water levels have been reached and for two weeks thereafter.

iii. Weekly reporting to the Department of measurement results during any period in which Alert Levels for water levels have been reached and for two weeks thereafter.

iv. Verification sampling and monthly sampling during any period in which Alert Levels for water quality have been reached and for one month thereafter.

v. Monthly reporting to the Department of sample results during any period in which Alert Levels for water quality have been reached and for one month thereafter.

i. A narrative and justification of the monitoring plan, which shall include the following:

i. Any modeling that was used to develop the plan.

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[9] Operation Prohibition Levels and Alert Levels for water quality need not be submitted if the USF will be governed by an APP.

[10] If the deadline for notifying the Department falls on a weekend or holiday, the notice shall be provided by the close of the next business day. An Alert Level or Operation Prohibition Limit being reached shall be considered to have occurred when the permit holder knows or should have known of the Level or Limit being reached.

ii. The locations of the monitor wells and piezometers in relation to those structures, activities, conditions, and facilities identified in Paragraph 4(c), above.
iii. Why the locations of the monitor wells and piezometers were selected.
iv. Why the Alert Levels for water levels were selected.
v. How the course of action to be taken by the permit holder if an Alert Level is reached was developed.

III. CRITERIA FOR DETERMINING UNREASONABLE HARM AND HYDROLOGIC FEASIBILITY

A. Determination of No Unreasonable Harm by the Department

In order to establish that a proposed USF will not cause unreasonable harm, the Director will examine two general categories of potential harm—harm that might be caused to land use by rising water levels and harm that might be caused by changes in water quality.

The Director shall determine that a proposed USF will not cause unreasonable harm if the information and monitoring plan submitted by the applicant demonstrates all of the following:

1. Storage of the maximum amount of water that could be in storage at any one time will not cause unreasonable harm to existing and ongoing uses of land within the maximum area of impact unless the land is held by the applicant.

2. Storage of the maximum amount of water that could be in storage at any one time will not impair the structural integrity or function of existing structures within the maximum area of impact unless the structures are held by the applicant.

3. One of the following apply:
   a. The water storage at the USF will be governed by an aquifer protection permit.
   b. The proposed USF will not cause or contribute to a violation of state aquifer water quality standards, or if the aquifer already violates the state aquifer water quality standards, the water storage will not cause or contribute to further degradation of the aquifer.[11]

B. Determination of Hydrologic Feasibility by the Department

The issue of hydrologic feasibility centers first on whether the full amount of storage contemplated can be accomplished at the proposed USF site, and second, on whether the facility will be maintained in a way that ensures the water will, in fact, be stored. These issues necessarily entail examining the design, hydrogeology, and location plans for the proposed USF, as well as considering how the facility will be operated and maintained after it is permitted.

Examining whether storage of the maximum amount of water proposed for storage is feasible avoids issuance of USF permits with unrealistically high storage volumes. This can complicate the permitting process for future USF permit applicants that desire to locate a facility in the vicinity of the original USF. It is also important when using a recharge facility to support an

[11] It should be noted that the Department does not consider the presence of total dissolved solids in Central Arizona Project water that has not previously been used to cause unreasonable harm, even if the level of total dissolved solids in the CAP water is higher than found in the aquifer that is to receive the stored water.

Assured Water Supply designation to ensure that the permit capacity reflect a realistic expectation for recharge capability.

In order to ensure the long-term feasibility of the water storage, the applicant must commit to a maintenance plan that maintains the storage capability of the USF to the extent possible. The efficiency of almost any recharge facility will diminish over time, as fine sediments and biological clogging build and interfere with the recharge of the water. The maintenance plans must, among other things, include maintenance methods that will periodically remove these impediments to recharge and maintain storage efficiency to the extent possible. The applicant must consider maintenance requirements as it designs its USF, particularly if the USF is expected to serve multiple purposes, to ensure that the maintenance regime is consistent with the other purposes of the facility.

The Director shall determine that a proposed USF is hydrologically feasible if the information and monitoring plan submitted by the applicant demonstrates both of the following:

1. The maximum amount of water that could be in storage at any one time can be stored underground without causing unreasonable harm to surrounding land and water users and without reaching the Operation Prohibition Limits set forth in the monitoring plan.

2. The proposed USF will be designed, constructed, monitored, maintained and operated in accordance with principles generally accepted by groundwater scientists practicing in Arizona to ensure underground storage of water.

C. Determination of No Unreasonable Harm by the Director of Environmental Quality

If an applicant proposes to operate a USF at which water storage will not be governed by an APP, the applicant must establish to the satisfaction of the Director of Environmental Quality that the water storage will not cause any pollutants that may be present in the soil to be leached into the aquifer by the stored water in a concentration that will violate an aquifer water quality standard. The applicant must also establish that its water storage will not cause unreasonable harm by causing the migration of contaminant plumes or poor quality water that may be present in the vicinity of the proposed USF so as to cause or contribute to a violation of an aquifer water quality standard.

The Director of Environmental Quality will determine whether the proposed USF is in a location that will promote either the migration of a contaminant plume or the migration of a poor quality groundwater area so as to cause unreasonable harm or is in a location that will result in pollutants being leached to the groundwater table so as to cause unreasonable harm in accordance with practices and policies adopted by the Department of Environmental Quality.