



## APPENDIX B

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### WELLHEAD PROTECTION *RELATED* EXCERPTS FROM THE NAVAJO NATION PRIMARY DRINKING WATER REGULATIONS

The Navajo Nation Environmental Protection Agency Public Water Systems Supervision Program (NNEPA PWSSP) prepared this extract from the Navajo Nation Primary Drinking Water Regulations

A complete copy of §1700 can be obtained by contacting the NNEPA PWSSP or by calling (928) 871-7755.

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| SECTION NUMBER | HEADING   |
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| §104           | General Provisions-Definitions                        |
| §400           | Sampling & Analytical Requirements Monitoring Waivers |
| §1500          | Minimum Design Standards                              |
| §1600          | Construction Permits                                  |
| §1700          | Wellhead Protection                                   |

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#### §104 GENERAL PROVISIONS-DEFINITIONS

**“Contingency Plan”** means that portion of the wellhead protection program section of the water system plan or small water system management program which addresses the replacement of the major well(s) or wellfield in the event of loss due to groundwater contamination.

**“Groundwater under the direct influence of surface water (GWUDI)”** means any water beneath the surface of the ground, which the department determines has the following characteristics: Significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*; or Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH closely correlating to climatological or surface water conditions.

**“Guideline”** means a department document assisting the purveyor in meeting a rule or requirement.

**“Initial Inventory”** means an inventory which consists, at a minimum, of all potential sources of groundwater contamination located within the one year time of travel area of a WHPA and all high risk potential sources of groundwater contamination located within the ten year groundwater time of travel area.

**“Monitoring Waiver”** means an action taken by the NNEPA PWSSP pursuant to § 400 SAMPLING & ANALYTICAL REQUIREMENTS allow a water system to reduce specific monitoring requirements based on determination of low source vulnerability to contamination. Guidance on applying for monitoring waivers is found in the NNEPA PWSSP guideline titled, “Navajo EPA Monitoring Waiver Guidance” which is available from the NNEPA-PWSSP.

**“NNEPA PWSSP”** means Navajo Nation Environmental Protection Agency Public Water Systems Supervision Program.

**“Protected ground water source”** means a ground water source the purveyor shows to the NNEPA PWSSPs satisfaction as protected from potential sources of contamination on the basis of hydrogeologic data and/or satisfactory water quality history.

**"Public water system"** includes all public water systems which serve 25 or more persons or 15 or more connections.

**"Purveyor"** means an entity or agency owning or operating a public water system. Purveyor also means the authorized agents of such entities.

**"Synthetic organic chemical (SOC)"** means a manufactured carbon-based chemical.

**"Time of travel"** means the time required for ground water to move through the water bearing zone from a specific point a well.

**"Vulnerability Assessments"** means the Vulnerability Assessment Form developed by the NNEPA-PWSSP to evaluate the hydrologic setting of the water source and assess its contribution to the sources overall vulnerability to pollution from surface activities.

**"Watershed"** means the region or area which:

Ultimately drains into a surface water source diverted for drinking water supply; and affects the physical, chemical, microbiological and radiological quality of the source.

**"Well field"** means a group of wells one purveyor owns or controls which:

Draw from the same aquifer or aquifers as determined by comparable inorganic chemical analysis; and

Discharge water through a common pipe and the common pipe shall allow for collection of a single sample before the first distribution system connection.

**"Wellhead Protection area (WHPA)"** means the portion of a well's, wellfields's or spring's zone of contribution defined as such using WHPA criteria established by the NNEPA PWSSP.

**"Zone of contribution"** means the area surrounding a pumping well or spring that encompasses all areas or features that supply ground water recharge to the well or spring.

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## §400 SAMPLING & ANALYTICAL REQUIREMENTS

### §406 Waivers for Inorganic Chemicals

#### G. Waivers

1. The system may apply to the Director, in writing, for a waiver from the sampling frequencies specified in subsection **(B)(1) of this section**.
  - (B.)** The frequency of sampling and analyses conducted to determine compliance with the MCLs specified in § 204 for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium and thallium shall be as follows:
    - (1.)** Groundwater systems shall take one sample at each sampling point once every three years. Surface water systems, combined surface/ground water systems or GWUDI shall take one sample annually at each sampling point.)
- a. The Director may grant a public water system a waiver for sampling of **“free” cyanide**, provided that the Director determines that the water system is not vulnerable due to lack of any industrial source of cyanide.

#### E. Waivers

1. The public water system may apply to the Director to waive the **asbestos** requirement based on the following conditions;
  - a. the system is not vulnerable to asbestos contamination in its source water; and/or

#### E. Waivers

There are no waivers of the **nitrate** sampling requirements.

#### E. Waivers

There shall be no waivers of the **nitrite** sampling requirements.

### §407 Volatile Organic Compounds and Synthetic Organic Compounds

#### F. Waivers - Volatile Organic Compounds

3. The Director may grant a waiver after evaluating a vulnerability assessment survey which includes the following factor(s):
  - a. Knowledge of previous use (including transport, storage, or disposal) of the contaminant(s) within the watershed or zone of influence of the system. If a determination by the Director reveals no previous use of the contaminant(s) within the watershed or zone of influence, a waiver may be granted.
  - b. If previous use of the contaminant(s) is unknown or has been used previously, then the following factors shall be used to determine whether a waiver is granted.
    - ii. The proximity of the system to a potential point or non-point source(s) of contamination. Point sources include, but are not limited to, spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.

- iii. The environmental persistence and transport of the contaminants.
  - v. How well the water source is protected against contamination whether it is a surface or groundwater system. Groundwater systems must consider factors such as depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.
4. As a condition of the waiver a groundwater system must:
- b. Update its vulnerability assessment survey every three years. If and when new potential sources of contamination have been identified to impact a drinking water source, then the vulnerability assessment survey must be updated and submitted to the Director.
  - c. Based on this vulnerability assessment the Director must:
    - i. Reconfirm that the system is not vulnerable.

F. **Waivers - Synthetic Organic Chemicals**

2. A Director may grant a waiver after evaluating the following factor(s):
- a. Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the public water system. If a determination by the Director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.
  - b. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.
    - ii. The proximity of the public water system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.
    - iii. The environmental persistence and transport of the pesticide or PCBs.
    - iv. How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the integrity of the well casing.
    - vi. Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.)

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# §1500 MINIMUM DESIGN STANDARDS (for new source approval)

## §1506 WATER SOURCES

The Engineer shall provide all necessary information to the Director to ensure that the source(s) selected are of satisfactory quality, or shall be treated to meet the requirements of the NNPDWR and can meet/exceed the demand of the system. The best available source of water, which is both economically and technically feasible shall be utilized for the water supply. All water systems should identify an alternative source of supply in case of emergency when the current source can not be used.

### C. Surface Water Sources:

#### 1. Quality:

An engineering evaluation shall be made considering all factors, both natural and man made, which will affect the quality of the source water. The evaluation shall include, but not be limited to:

- a. Determining possible future uses of impoundments or reservoirs;
- b. Assessing degree of hazard to the source from the accidental spillage of materials that may be toxic, harmful or detrimental to treatment processes;
- c. Obtaining samples over a sufficient period of time to assess the microbiological, physical, chemical and radiological characteristics of the water and their variation;
- d. Assessing the capability of the proposed treatment process to comply with the NNPDWR; and
- e. Consideration of currents, wind and ice conditions, and the effect of tributary streams at their confluence.

### D. Ground Water - Wells:

#### 1. Location

- a. Except as otherwise justified by calculations performed pursuant to Part XVII of these regulations or approved by the Director, no water well shall be located within 1000 feet of a landfill, septic tank or absorption field, community sewer lagoon or any other source of pollution or contamination.
- b. The proposed well site must:
  - i. be readily accessible for cleaning, testing, monitoring, and maintenance;
  - ii. have the finished grade sloped away from the well to prevent any surface runoff from collecting or ponding;
  - iii. Be located up-slope and away from potential contaminants; and
  - iv. Be fenced to prevent unauthorized access.

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## §1600 CONSTRUCTION PERMITS

### §1609 REQUIREMENTS FOR OBTAINING APPROVAL TO PLACE PERMITTED CONSTRUCTION INTO OPERATION

- A. Newly-constructed facilities shall not be placed into operation until written approval is issued by the Director, except where a waiver is issued by the Director. . . . . The following information, where applicable, shall be submitted with the professional engineer's letter of certification:
10. Vulnerability assessment report showing wellhead/watershed protection area delineation along with the inventory of the potential sources of contamination to the well and the aquifer being utilized;

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## §1700 WELLHEAD PROTECTION

### § 1703 REQUIREMENTS FOR WELLHEAD PROTECTION

- A. Public water system owners and operators are required to develop and implement wellhead protection plans for their water system to protect drinking water wells from manmade contamination. Private water suppliers should coordinate wellhead protection activities with the appropriate chapter governments. The Wellhead Protection Plan (WHPP) emphasizes community involvement in all aspects of wellhead protection, generating interest and public participation in wellhead protection activities through public outreach and education.

It is recommended that the concepts of wellhead protection should also be applied to springs and livestock wells that are utilized as drinking water sources. This will be principally dependent on the population that serves the specific spring/livestock well. A spring/livestock well protection area should be delineated using the guidelines for a wellhead protection delineation.

1. The water system owner's wellhead protection program shall contain, at a minimum, the following elements:
  - a) Specification of the duties of the public water supply systems with respect to the development and implementation of a wellhead protection program;
  - b) Vulnerability Assessment Form(s);
  - c) Wellhead Protection Area (WHPA) delineation for each well, wellfield, or spring with the one, five and ten year time of travel boundaries marked, or boundaries established using alternate criteria approved by the NNEPA PWSSP in those settings where ground water time of travel is not a reasonable delineation criteria. WHPA delineations shall be done in accordance with recognized methods such as those described in the following sources:
    - i) NNEPA PWSSP Wellhead Protection Guidance Document 2002;
    - ii) EPA Guidelines for Delineation of Wellhead Protection Areas, EPA 440/6-87-010;
  - d) A list / inventory of all actual and potential ground water contaminant sources located within the defined WHPA(s). This list shall be updated every two years;

- e) Documentation of the water system owner's notification to all owners/operators of actual and potential sources of ground water contamination within the WHPA boundaries;
- f) Documentation of the water system owner's notification to regulatory agencies and local chapter governments of the boundaries of the WHPA(s) and the finding of the WHPA inventory;
- g) A management plan to reduce the likelihood that potential contaminant sources will pollute the drinking water supply. General guidance concerning the application of various management strategies is contained in § 1711 of this section. The NNEPA PWSSP will provide information and examples of management options as guidance to analogous communities that are initiating WHPP. The NNEPA PWSSP will also provide assistance as requested in facilitating federal and interagency communication in the management of WHPAs;
- h) Develop an Emergency Water Supply Plan (EWSP) to ensure consumers have an adequate supply of potable water in the event that contamination results in the temporary or permanent loss of the principal source of supply (major well(s) or wellfield). An EWSP is required pursuant to §405 of the NNSDWA;
- i) For new water wells and springs, the water system owner shall provide the NNEPA PWSSP the following documentation:
  - (i) Vulnerability Assessment Form(s);
  - (ii) A preliminary WHPA designation using the calculated fixed radius method, with the one, five, and ten year time of travel criteria;
  - (iii) In initial inventory of potential sources of groundwater contamination located within the WHPA;
  - (iv) A copy of the water well report including the Navajo Nation Tribal Well Identification number, depth to open interval or top of screened interval, overall depth of well, and location (both plat location and latitude / longitude);
  - (v) Well source development data establishing the capacity of the source. Data shall include:
    - 1. Static water level;
    - 2. Wellhead elevation;
    - 3. Yield;
    - 4. The amount of drawdown;
    - 5. Recovery rate;
    - 6. Duration of pumping; and
    - 7. Interference between existing sources and the source being tested.
- j) To the extent possible, the NNEPA PWSSP shall establish procedures, including but not limited to, the establishment of technical and citizens' advisory committees, to encourage the public to participate in developing the protection program for WHPAs. Such procedures shall include notice and opportunity for public hearing on the Wellhead Protection Program before it is submitted to the Administrator. The NNEPA PWSSP is encouraging public participation in all elements of community WHPPs. Some activities in which the Navajo Nation has engaged to foster public participation in wellhead protection activities are outlined in Section § 1712;
- k) Documentation of coordination with local emergency spill responders (including police, fire and health departments), including notification of WHPA boundaries, results of

vulnerability assessment, inventory findings, and EWSP; and

- I. Describe a program that contains, as appropriate, technical assistance, financial assistance, implementation of control measures, education, training, and demonstration projects to protect the water supply within the wellhead protection areas from such contaminants.
- B. Geographic Information Systems (GIS) analysis or assessments are a series of hydrogeologic and cultural overlay maps that create a picture of the known availability, use, and potential threats to groundwater. The results of this geographic analysis will be used in the NNEPA WHPP prioritization process. Prioritization will be based on the analysis of compiled overlay data, and will include a combination of such factors as quantity, quality, and use issues, aquifer vulnerability and risk to population. The specific overlay layers envisioned include the following types of data:
1. groundwater basin locations, geomorphic type, designated status;
  2. geographic distribution of groundwater quantity data (availability, type of use, type of water supply);
  3. population density and distribution;
  4. land status and land use;
  5. location of wells;
  6. contour map of depth of water table;
  7. contour map of total dissolved solids;
  8. areas of impaired groundwater (natural and human-induced); and
  9. actual and potential point sources of contamination (activities permitted or regulated by the Navajo Nation).
- C. An analysis of these overlay maps will enable NNEPA PWSSP to prioritize and determine aquifer vulnerability. Outreach activities will be conducted by the NNEPA PWSSP to identify those public groundwater supplies which appear most susceptible to contamination.