

Appendices

Appendix A Soil Association Descriptions

The following Appendices are available from King County
Department of Natural Resources, Water & Land Resources
Division:

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- Data Collection and Analysis Plan
 - Data Management Plan
 - Quality Assurance Project Plan
 - Public Involvement Plan
 - Area Characterization Plan
 - Data Analysis Report
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Appendix G Guidelines for the Development of
Ground Water Management Areas and Programs
(Chapter 173-100 WAC)

Issaquah Creek Valley
Ground Water Management Plan

March 1999

Appendix A

Soil Association Descriptions

**Issaquah Creek Valley
Ground Water Management Plan**

March 1999

APPENDIX A

SOIL ASSOCIATION DESCRIPTIONS

ALDERWOOD ASSOCIATION

The Alderwood association blankets over one-fourth of the Issaquah Creek Valley Ground Water Management Area. It is found in upland areas, including the southeast portion of the Sammamish Plateau, and Cedar Hills and Hobart Plateau in their entirety. It is composed of 85 percent Alderwood soils, 8 percent Everett and 7 percent less extensive soils. In general, they are moderately well drained, variably sloped soils underlain by very low permeability glacial till at a depth of 20 to 40 inches.

The Alderwood series is one of the most commonly found soils throughout the Issaquah Creek Valley Ground Water Management Area. These soils are gravelly sandy loams and are typically found on slopes ranging from 6 to 35 percent. A 75 percent Alderwood and 25 percent Kitsap soil unit is found on steep (25 to 75 percent) slopes. This Alderwood and Kitsap mix also contains pockets of deep, moderate to coarse textured soils.

Runoff is slow to medium on 6 to 15 percent slopes, and medium to very rapid on steeper slopes. Permeability is moderately high in the surface layer. During saturated winter conditions, infiltrated water encounters the dense substratum and moves laterally downgradient.

These soils are severely limiting to septic tank filter fields. Water quality degradation could result where site conditions are inappropriate for septic tank systems. Vertical recharge is probably slow, except along fractures in the till. Lateral subsurface movement to more permeable zones or windows in the substratum could contribute substantially to recharge. The extent and location of these more permeable zones is largely unknown.

BEAUSITE-ALDERWOOD ASSOCIATION

The Beausite-Alderwood association is the most extensive association in the Issaquah Creek Valley Ground Water Management Area, covering primarily the mountainous area (Cougar and Squak Mountains, Grand Ridge, and likely the mostly unmapped Tiger Mountain peak complex). Major soils represented include approximately 55 percent Beausite soils, 30 percent Alderwood soils, 10 percent Ovall soils, and 5 percent miscellaneous soils. These soils are found on rolling to very steep surfaces underlain at 20 to 40 inches depth by sandstone, shale, or dense glacial till. In general, these soils are moderate to well drained.

BEAUSITE SOILS

Beausite soils are gravelly, sandy loams formed in glacial materials. These soils are underlain by fractured sandstone at a depth of about 20 to 40 inches. Rock outcrops are exposed at many locations.

Beausite soils are situated on rolling to very steep slopes (6 to 75 percent). On the east side of Squak Mountain, and north side of Tiger Mountain, slopes greater than 50 percent are common. On 6 to 15 percent slopes, runoff is moderate. On greater slopes, runoff is rapid to very rapid. Permeability is moderately high. Sandstone is not considered a primary aquifer material, so recharge is probably not significant. However, lateral movement of water in saturated soils might play a significant role in adjacent recharge zones.

Due to the thinness of the soils over bedrock, and steep slope conditions, these soils are severely limiting to on-site sewage disposal. Contaminants introduced to the soil surface could enter bedrock fractures and affect local domestic wells. Large contaminant releases would be rapidly transported by shallow subsurface flow and streams, and could impact water quality downgradient.

OVALL SOILS

Ovall soils are gravelly loams formed in thin glacial deposits. They are underlain by weathered, andesite breccia at a depth of 20 to 40 inches. The soils are found on rolling to very steep hills with 15 to 75 percent slopes within the Issaquah Creek Valley Ground Water Management Area. Runoff ranges from moderately rapid to very rapid. Permeability is moderate. Recharge is likely insignificant. Subsurface flow and surface runoff could contribute recharge to more permeable areas downgradient. Due to the shallow presence of bedrock and the steepness of slopes, the soils are severely limiting to on-site waste disposal. Rapid runoff of surface contaminants is likely.

EVERETT ASSOCIATION

Everett association soils are found on northern upland units in the vicinity of Tradition Lake Terrace, lower Grand Ridge, and an adjacent portion of the Sammamish Plateau. A substantial portion the city of Issaquah and the upstream valleys also consists of Everett soils. The association typically consists of 70 percent Everett soils, 15 percent Neilton soils, 7 percent Alderwood soils and 8 percent less extensive soils. The dominant soils are found on both gently undulating surfaces, and steep terrace faces. They are underlain by sand and gravel, and are exceedingly well drained.

EVERETT SOILS

Everett soils are composed of gravelly, sandy loam, underlain by gravelly sand at a depth of 18 to 36 inches. The soils were formed on glacial outwash, and are found on terraces and terrace fronts. At depth, there are unpredictably distributed lenses of low permeability silt. Slopes vary from 0 to 30 percent. Runoff is slow to medium on 0 to 15 percent slopes, medium to rapid on 15 to 30 percent slopes. Permeability is rapid and recharge is likely significant.

Everett soils offer very little protection to ground water quality. This is due to the highly permeable nature of the soils and substrata. The presence of silt lenses or low permeability strata could result in unpredictable lateral movement of ground water.

NEILTON SOILS

Neilton soils are composed of gravelly, loamy sand, and are underlain by stratified glacial outwash. This outwash contains layers of materials that vary greatly in permeability. The soils are found on rolling, undulating terrace slopes of 2 to 15 percent. Runoff is slow to medium. Permeability is very high. Recharge is likely significant. As in the case of Everett soils, Neilton soils offer limited protection to ground water quality.

VALLEY SOILS

There are a number of soils represented in the valleys. A partial listing of these soils includes: Sammamish, Bellingham, Briscot, Puyallup, Puget, Oridia and Sultan. Most of these soils are found in developing areas of the lower Issaquah Creek Valley.

Although not extensively distributed elsewhere in the Issaquah Creek Valley Ground Water Management Area, these soils are significant due to the industrial, urban, and residential development that has occurred or is planned in their vicinity. Large-scale development is likely to include drainage rerouting or enhancement, and substantial earth moving or placement of fill. Such activities greatly disrupt the natural drainage and permeability properties of native soils. The number of potential contaminant sources also increases with intensive land use activities.

SAMMAMISH SOILS

Sammamish soils consist of silt loams stratified with fine sand and clay. The soils exist in alluvium and are found in stream valleys on level 0 to 2 percent slopes. Runoff is slow. Permeability is moderately slow. There is a seasonal high water table at 1 to 2 feet depth. Flooding is a hazard. Recharge is probably slow, but could be significant in those areas underlain by shallow aquifers.

These soils offer limited protection to underlying shallow aquifers. Flooding and the seasonal high water table prevent operation of effective septic tank drainfields. It is logical to assume underground storage tanks or holding pits would face similar high water table constraints.

BELLINGHAM SOILS

Bellingham soils are composed of silt loams with varying amounts of sand and clay in the subsoil. These soils formed in alluvium on level valley areas and upland depressions. Both runoff and permeability are slow. During the rainy season, the water table is at or near the surface. Recharge is probably slow, but it is likely significant for shallow aquifers.

The soil probably offers limited protection to shallow aquifers. Underground storage tanks, holding pits, and properly functioning septic tanks systems are severely constrained by the season high water table. Slow permeability is also a constraint to septic tank systems.

BRISCOT SOILS

The Briscot soils are composed of a silt loam stratified with fine sand. The soils were formed in river valley alluvium and lie on less than 2 percent slopes. Runoff is slow and permeability is moderate. There is high water table in the winter at 1 to 2 feet below the surface. Stream overflow is a moderate hazard. Recharge to shallow, unconfined aquifers is likely significant.

Contamination to shallow unconfined aquifers is possible. Construction of septic tank systems is severely limited due to flooding and high water table conditions. Underground storage tanks or holding pits likely face similar constraints.

PUYALLUP SOILS

Puyallup soils are composed of fine sandy loams and were formed in alluvium on natural stream levees and valleys. Slopes are slightly convex and less than 2 percent. Runoff is slow and permeability moderately high. There is a seasonal high water table at a depth of 4 to 5 feet. Flooding potential is slight to severe. Recharge to shallow aquifers is probably significant. Due to moderately high permeability, shallow depth to a seasonal high water table, and proximity to streams and shallow aquifers, this soil probably offers very limited protection to water quality.

PUGET SOILS

Puget soils formed in valley alluvium and are composed of a silty clay loam. Slopes are flat, less than 1 percent. Runoff is slow to ponded. Permeability is slow. The seasonal water table is at or near the surface. Stream overflow is a severe problem. Recharge to shallow aquifers is likely slow, yet significant.

The high water table severely limits the use of septic tank systems. Underground storage tanks and holding pits are similarly faced with high water table problems. These soils are probably in close proximity to shallow aquifers and offer limited protection.

ORIDIA SOILS

Oridia soils are composed of silt loam, interspersed with fine sand and clay at depth. They formed in alluvium on less than 2 percent slopes. Runoff is slow. Permeability is moderate to moderately slow. The seasonal high water table is at 1 to 2 feet below the surface. There is a moderate flood hazard. Recharge to shallow aquifers is likely significant. The soils offer little protection to shallow aquifers. Due to the presence of a high water table, septic tanks systems cannot be expected to function properly. Underground storage tanks and holding pits are also severely limited by these conditions.

SULTAN SOILS

Sultan soils consist of silt loam with clayey and sandy zones at depth. The soils are formed in alluvium on gently undulating valley floors with less than 2 percent slopes. Runoff is slow and permeability is moderate. There is a seasonal water table at 2 to 3 feet below the surface. In some areas, there is a severe flood hazard. Recharge is probably relatively slow, but significant to underlying shallow aquifers.

The ability of the soil to protect ground water quality is diminished by the presence of shallow aquifers and high water table conditions. The presence of a high water table severely limits the use of septic tank systems. Underground storage tanks and holding pits are also confronted with this limitation.

Appendixes B - F are available From the King County Department of Natural Resources, Water and Land Resources Division:

APPENDIX B HYDROSTRATIGRAPHY

APPENDIX C WELL WATER LEVEL MEASUREMENTS, 1989-1992

APPENDIX D SUMMARY OF PRECIPITATION DATA

APPENDIX E WATER QUALITY

APPENDIX F RELATED DOCUMENTS:

- Data Collection and Analysis Plan
- Data Management Plan
- Quality Assurance Project Plan
- Public Involvement Plan
- Area Characterization Plan
- Data Analysis Report

Appendix G

**Guidelines for the Development of Ground Water
Management Area and Programs
(Chapter 173-100 WAC)**

**Issaquah Creek Valley
Ground Water Management Plan**

March 1999



Guidelines for Development of
Ground Water Management Areas
and Programs

CHAPTER 173-100 WAC

August 1988
86-2

Development
of
Ground Water Management Areas and Programs

In response to growing concern about Washington State's ground water resources, the 1985 legislature passed landmark legislation to assist state and local governments in effectively managing the public's ground water. Substitute House Bill 232 directed the Department of Ecology to establish a process for the identification and designation of ground water management areas and for the development of comprehensive ground water management programs. This process is described in *Chapter 173-100 WAC* of the state administrative code, entitled "*Ground Water Management Areas and Programs*." A copy of these regulations, which became effective on January 17, 1986, are included in this booklet.

There are several advantages to local agencies and user groups in using the process described in Ground Water Management Areas and Programs. The process is designed so that a ground water management program can be initiated and developed on the local level while at the same time be supported by state legislation and regulations. Development of these ground water management programs is intended to be a team planning effort utilizing resources from interested user groups and various local and state agencies. Chapter 173-100 WAC establishes a well defined process which allows for issues, concerns and opportunities from all interested groups and agencies to be incorporated into the planning process in an effective and efficient manner. This coordination should facilitate a wider acceptance of the program and also provide a broader authority to implement and enforce the program. In addition, passage of the Clean Water Bill (ESSB 4519) by the 1986 Legislature will allow Ecology to contribute up to 50 percent in matching funds for the development of ground water management programs which follow this process.

This booklet is intended to assist local governments and water user groups in understanding Chapter 173-100 WAC and to serve as a guide for those who are interested in developing ground water management programs in their area. This booklet is designed to answer general questions about the process. For more detailed requirements and procedures leading to designation of ground water management areas and development of ground water management programs, Chapter 173-100 WAC should be reviewed.

The following questions and answers will provide information for developing a ground water management program.

What is a "ground water management area?"

A ground water management area is a specific geographic area which encloses one or more aquifers and in which there exists a justifiable concern for the quality and/or quantity of the ground water. The purposes of designating a ground water management area are to:

1. Protect the quality and quantity of ground water.
2. Meet future water needs while recognizing existing water rights.
3. Provide for effective and coordinated management of the ground water resource.

The regulation states that an area must first be designated by Ecology as a ground water management area before an advisory committee can be established to develop a ground water program.

Reference: WAC 173-100-050

What does Ecology consider a "justifiable concern?"

A list of concerns to help guide in the identification of probable ground water management areas is included in WAC 173-100-050 of the regulations. The following is a summary of that list:

1. Geographic areas where ground water quality is threatened or is susceptible to contamination. This includes contamination from land use activities and seawater intrusion.
2. Aquifers that are declining due to restricted recharge or over use. This includes aquifers which have the potential for over use based on projected future demands.
3. Aquifers that have been over appropriated and adjudications of water rights have not been completed.
4. Aquifers designated as "sole source aquifers" by the Environmental Protection Agency. Only three aquifers in the state have been designated as sole source. They are Whidbey, Camano and the Spokane-Rathdrum aquifers.
5. Aquifers identified as the primary source of a public water supply.
6. Aquifers where an approved coordinated water system plan has identified a need for a ground water management program.

What is a "ground water management program?"

A ground water management program is a comprehensive program designed to protect ground water quality and assure ground water quantity for current and future uses.

A water user group or local government agency is interested in developing a ground water management program in their area. What is their first step?

The first step is to develop a request for designation of the proposed area as a probable ground water management area. Development of a request requires several steps in itself, the most important one being coordination with local agencies and water user groups. Early involvement of all interested agencies and groups will help avoid problems later in the process. Coordination with the local county or counties is required so that written concurrence by the county or counties for appointment of a lead agency can be included in the request for designation.

Probable ground water management areas may be proposed for designation at any time by Ecology upon its own motion or at the request of other state agencies, local governments or ground water user groups.

What is involved in developing a request for designation of a ground water management area?

Developing a request for area designation will involve agency and user group coordination, information gathering and a minimum of one public meeting for public comment and review. The request should be in the form of a concise, factual report and contain the following:

1. A general description of and rationale for the proposed ground water management area boundary.
2. A list of concerns along with supporting documentation to substantiate those concerns. Utilizing available data from federal, state and local sources may help justify your concerns. Information from completed ground water studies, land use and water use records, local soils, geology and hydrology conditions and local expertise would be valuable as supporting documentation. Reference should be made as to how the information justifies your particular concern.
3. Goals and objectives for the proposed ground water management area.
4. An estimated cost of developing the ground water management program and potential funding sources.
5. Recommendations for agencies, organizations and groups to be represented on the advisory committee. The advisory committee will oversee and review the development of the ground water program. Membership of the advisory committee should represent

a broad spectrum of the public. A list of potential committee members and the responsibilities of the committee is described in WAC 173-100-090.

6. A recommendation for the lead agency, taking into consideration the responsibilities contained in WAC 173-100-080. Either Ecology or a local government agency may be the lead agency. The recommendation for lead agency shall first be submitted to the county or counties with jurisdiction over the proposed ground water management area. Written concurrence by the county or counties for lead agency should be submitted along with the request for designation. If the proposed area is entirely within one county, that county has the option to be lead agency if it so desires.
7. A list of those who have participated in the development of the request through public meetings, mailing lists and other interaction. The request should specifically address the extent of coordination and involvement by government agencies and user groups.

The request should then be submitted to Ecology, Water Resources Planning and Management, and also to other interested agencies and groups for their review and comments. These groups should be instructed to submit comments directly to Ecology. A list of those to whom copies of the request have been mailed should be sent to Ecology.

Reference: WAC 173-100-050

What happens after a request is submitted to Ecology?

When a request is received by Ecology it will be reviewed to make sure it complies with the intent and requirements of Chapter 173-100 WAC. Ecology will review the request on the following basis:

1. Do the proposed area boundaries constitute a logical ground-water management area based on the local hydrogeology?
2. Does the request contain all of the required components including justifiable concerns, goals and objectives, cost estimates and funding sources and a general description and rationale for the proposed area?
3. Have other interested agencies and groups been involved in formulation of the request? What level of coordination has gone into the development of this request?
4. Has at least one public meeting been held for review and comments? Was a broad spectrum of the public represented at this meeting?

5. Has a recommendation for the lead agency and advisory committee members been made? Has written concurrence for lead agency from the appropriate county or counties been included?
6. Has local government shown a willingness to cooperatively develop a comprehensive ground water management program?

If Ecology determines that the request meets the intent and criteria of WAC 173-100-050, Ecology will identify the proposed area as a probable ground water management area, establish the general planning boundaries and appoint a lead agency. Ecology will also begin to seek nominations for the advisory committee and evaluate the request for ranking on the General Schedule.

How does the General Schedule work?

Ecology intends to designate a ground water management area as soon as possible after a request is received and it is placed on the General Schedule. The General Schedule guides Ecology in the order of designation of ground water management areas and also in the allocation of Ecology's available funding and staffing. The schedule will rank the relative priority of each probable ground water area based on:

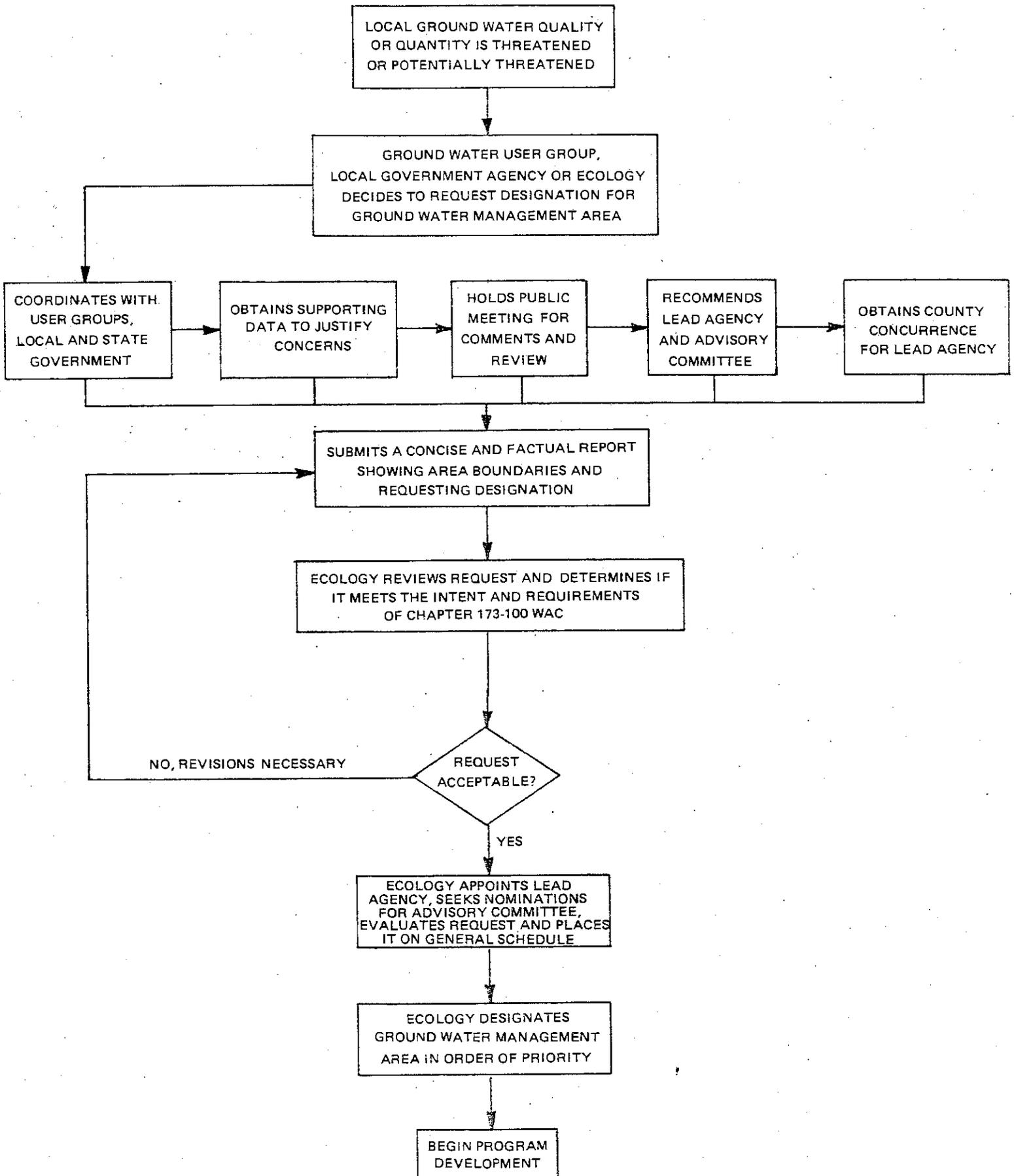
1. The urgency of the problems or potential problems as described in the request for identification. Highest priority will be given to those areas where water quality is imminently threatened.
2. The availability of funding and staff on a local or state level to develop and implement a ground water management program.

As stated above, passage of the Clean Water Bill (ESSB 4519) will allow Ecology to contribute up to 50 percent in matching funds to public bodies for the development of ground water management programs. The ability and willingness at the local level to fund their share of the program will be a significant factor in determining priority.

Although Ecology will make every effort to avoid a delay in designation, a situation may arise where the number of requests for designation is so great that Ecology does not have the funding or staffing to handle all requests. In this case the higher priority areas will be designated first and the lower priority areas later. All requests which are put on the General Schedule will be designated as soon as state resources are available to do so.

Ecology may update and revise the General Schedule at anytime as needed. Ecology will notify the public of revisions through the news media and the Washington State Register. A public hearing will be held during June of each year for public comment on the General Schedule. Although requests may be submitted at any time, Ecology recommends that requests be submitted by April 1 of each year. This will allow time for Ecology to review the requests and place them on the General Schedule prior to the annual public hearing.

REQUEST FOR GROUND WATER MANAGEMENT AREA DESIGNATION



Prior to designation of a ground water management area, Ecology will hold a public hearing within the local area for comments and review of the proposal. Upon designation, Ecology will issue an order which contains a general description of the planning boundary and documents the intent to develop a ground water management program for that area. It should be noted that the proposed boundary is only a planning boundary at this stage and may be modified as data is collected during program development.

Reference: WAC 173-100-060 and WAC 173-100-070

Once the area is designated as a ground water management area, what is the next step?

After the area is designated the lead agency will be eligible to apply for grant funding and program development can begin. Ecology will appoint the ground water advisory committee in cooperation with the local governments and interested user groups. The lead agency shall hold the first meeting of the ground water advisory committee within 60 days of the appointment of the committee.

The lead agency shall be responsible for coordination and undertaking the activities necessary for development of the ground water management program. This includes preparation of a work plan, coordinating data collection and scheduling advisory committee meetings. The lead agency may delegate the development of various elements of the ground water management program to other committee members or it may choose to hire a consultant to complete some tasks.

The advisory committee is responsible for overseeing the development of the ground water management program and assuring it is both technically and functionally sound. The committee will give final approval to the program before it is submitted to Ecology for certification. Ecology will participate on the advisory committee along with other state and local government agencies and ground water user group members.

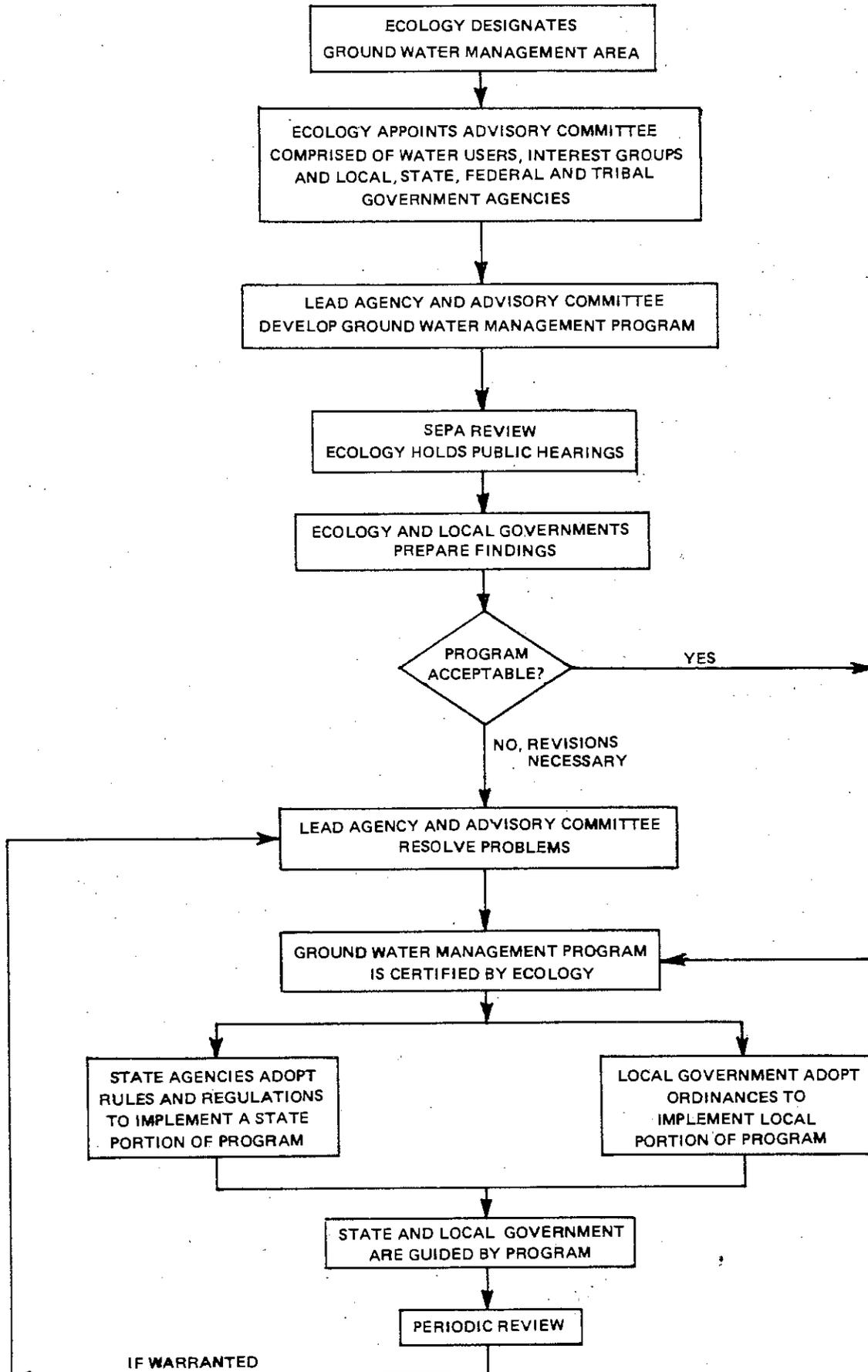
Reference: WAC 173-100-080 and WAC 173-100-090

What should be included in a "ground water management program?"

The program for each management area will be tailored to the specific conditions of that area. Each ground water management program should include the following:

1. A section describing the collection and analysis of data, the area's hydrogeological characteristics, historical and projected ground water usage and jurisdictional boundaries and responsibilities.

GROUND WATER MANAGEMENT PROGRAM DEVELOPMENT



2. A discussion of the type and extent of land use activities potentially affecting ground water quality and quantity.
3. Identification of water quantity and quality goals and objectives.
4. An alternatives section which outlines and evaluates various land and water use management strategies.
5. A section recommending specific management strategies for implementation.
6. An implementation plan including a detailed work plan, model ordinances and a monitoring plan and system for program review to assure goals and objectives are being met.

The time frame for program development will depend on each areas complexity both geologically and politically. Ecology feels an average of two to three years for program completion is a reasonable estimate at this time.

Reference: WAC 173-100-100

What is Ecology's role after the ground water management program is completed?

Upon completion, the proposed ground water management program shall be subject to review pursuant to the State Environmental Policy Act (SEPA). Ecology will hold a local public hearing for comment and review of the program. Following the hearing, the department and each local agency and user group will have 90 days to evaluate the program and submit their findings containing their concurrence or nonconcurrence with the program. Statements of nonconcurrence shall be resolved by the advisory committee, using mediation techniques if necessary. If the program is found to be consistent with the intent of Chapter 173-100 WAC, Ecology will certify the program. Following certification, affected state agencies and local governments shall adopt or amend regulations and policies for implementation of the ground water management program.

Reference: WAC 173-100-120

All correspondence involving ground water management area designation or ground water management program development should be sent to:

Department of Ecology
Water Resources Planning and Management
PO Box 47600
Olympia, WA 98504-7600
(360) 407-6600

SUMMARY OF RESPONSIBILITIES

INITIATOR OF REQUEST -----
(user group, Ecology
or local government)

Coordination with local government,
user groups with state government
Develop request for designation
Recommend lead agency and GWAC
Hold public meeting on request
for area designation
Submit request to Ecology

Provide written concurrence on
lead agency recommendation
Member of GWAC

-----COUNTY GOVERNMENT

LEAD AGENCY -----

Coordinate development of GWMP
Prepares workplan, schedule,
budget for GWMP
Schedule GWAC meetings
Delegate activities to GWAC
Coordinate SEPA review

Oversees development of GWMP
reviews workplan, schedule and
budget for GWMP
Final review of GWMP before
submittal to Ecology
Coordinates public review

-----ADVISORY COMMITTEE

ECOLOGY -----

Places request for area designation
on general schedule
Holds public hearing on request for
area designation
Designates GWMA
Appoints lead agency and GWAC
Participates on GWAC
Holds public meeting upon plan
completion
Certifies GWMP

GWMA - Ground Water Management Area
GWMP - Ground Water Management Program
GWAC - Ground Water Advisory Committee

Chapter 173-100 WAC
GROUND WATER MANAGEMENT AREAS AND PROGRAMS

WAC

- 173-100-010 Purpose.
- 173-100-020 Authority.
- 173-100-030 Overview.
- 173-100-040 Definitions.
- 173-100-050 Probable ground water management areas.
- 173-100-060 General schedule.
- 173-100-070 Designation of ground water management areas for program planning purposes.
- 173-100-080 Lead agency responsibilities.
- 173-100-090 Ground water advisory committee.
- 173-100-100 Ground water management program content.
- 173-100-110 SEPA review.
- 173-100-120 Hearings and implementation.
- 173-100-130 Designation of ground water areas.
- 173-100-140 Intergovernmental agreements.
- 173-100-150 Appeals.
- 173-100-160 Regulation review.

WAC 173-100-010 Purpose.

The purpose of this chapter is to establish guidelines, criteria, and procedures for the designation of ground water management areas, subareas or zones and to set forth a process for the development of ground water management programs for such areas, subareas, or zones, in order to protect ground water quality, to assure ground water quantity, and to provide for efficient management of water resources for meeting future needs while recognizing existing water rights. The intent of this chapter is to forge a partnership between a diversity of local, state, tribal and federal interests in cooperatively protecting the state's ground water resources.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-010, filed 12/20/85.]

WAC 173-100-020 Authority.

This chapter is promulgated by the department of ecology pursuant to RCW 90.44.400, 90.44.410, 90.44.420, 90.44.430 and 90.44.440.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-020, filed 12/20/85.]

WAC 173-100-030 Overview.

This regulation establishes a process for the identification and designation of ground water management areas and for the development of comprehensive ground water management programs. From a general schedule of probable ground water management

areas, the department of ecology in cooperation with local government will designate specific ground water management areas, subareas, or depth zones within such areas and will appoint a lead agency to develop a ground water management program and an advisory committee to oversee the development of the program for each designated area. Following completion of the program and a public hearing to be held by the department of ecology, the program must be certified to be consistent with the intent of this chapter. The program will then be implemented through state regulations and local ordinances. The programs must thereafter be periodically reviewed.
[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-030, filed 12/20/85.]

WAC 173-100-040 Definitions.

For the purposes of this chapter the following definitions shall apply:

- (1) "Aquifer" means a geologic formation, group of formations or part of a formation capable of yielding a significant amount of ground water to wells or springs.
- (2) "Department" means the Washington state department of ecology.
- (3) "Ground water" means all waters that exist beneath the land surface or beneath the bed of any stream, lake or reservoir, or other body of surface water, whatever may be the geological formation or structure in which such water stands or flows, percolates or otherwise moves.
- (4) "Ground water advisory committee" means a committee appointed by the department to assist in the development of a ground water management program.
- (5) "Ground water area or subarea" means a geographic area designated pursuant to RCW 90.44.130.
- (6) "Ground water management area" means a specific geographic area or subarea designated pursuant to this chapter for which a ground water management program is required.
- (7) "Ground water management program" means a comprehensive program designed to protect ground water quality, to assure ground water quantity and to provide for efficient management of water resources while recognizing existing ground water rights and meeting future needs consistent with local and state objectives, policies and authorities within a designated ground water management area or subarea and developed pursuant to this chapter.
- (8) "Ground water management zone" means any depth or stratigraphic zone separately designated by the department in cooperation with local government for ground water management purposes within a ground water management area. Ground water management zones may consist of a specific geologic formation or formations or other reasonable bounds determined by the department consistent with the purposes of this chapter.
- (9) "Ground water right" means an authorization to use ground water established pursuant to chapter 90.44 RCW, state common or statutory law existing prior to the enactment of chapter 90.44 RCW, or federal law.
- (10) "Ground water user group" means an established association of holders of ground water rights located within a proposed or designated ground water management area.

(11) "Lead agency" means the agency appointed by the department to coordinate and undertake the activities necessary for the development of a ground water management program. Either the department or an agency of local government may be the lead agency.

(12) "Local government" means any county, city, town, or any other entity having its own incorporated government for local affairs including, but not limited to, a metropolitan municipal corporation, public utility district, water district, irrigation district, and/or sewer district.

(13) "Local government legislative authority" means the city or town council, board of county commissioners, special district commission, or that body assigned such duties by a city, county or district charter as enacting ordinances, passing resolutions, and appropriating funds for expenditure.

(14) "Probable ground water management area" means a specific geographic area identified by the department, in cooperation with other state agencies, local government and ground water user groups, as a candidate area for designation as a ground water management area pursuant to this chapter.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-040, filed 12/20/85.]

WAC 173-100-050 Probable ground water management areas.

The department in cooperation with local government and ground water user groups shall identify probable ground water management areas.

(1) Probable ground water management areas may be proposed for identification at any time by the department upon its own motion or at the request of other state agencies, local government or ground water user groups.

(2) Probable ground water management area boundaries shall be delineated so as to enclose one or more distinct bodies of public ground water as nearly as known facts permit. Probable ground water management subareas shall be delineated so as to enclose all or any part of a distinct body of public ground water. Boundaries shall be based on hydrogeologic properties such as limits to lateral extent of aquifers, major perennial rivers, and regional ground water divides or as deemed appropriate by the department to most effectively accomplish the purposes of this chapter.

(3) The criteria to guide identification of probable ground water management areas shall include, but not be limited to, the following:

- (a) Geographic areas where ground water quality is threatened;
- (b) Aquifers that are declining due to restricted recharge or over-utilization;
- (c) Aquifers in which over-appropriation may have occurred and adjudication of water rights has not yet been completed;
- (d) Aquifers reserved or being considered for water supply reservation under chapter 90.54 RCW for future beneficial uses;
- (e) Aquifers identified as the primary source of supply for public water supply systems;
- (f) Aquifers underlying a critical water supply service area where the coordinated water system plan established pursuant to chapter 70.116 RCW has identified a need for a ground water management program;

(g) Aquifers designated as sole source aquifers by the federal Environmental Protection Agency;

(h) Geographic areas where the ground water is susceptible to contamination or degradation resulting from land use activities;

(i) Aquifers threatened by seawater intrusion; or

(j) Aquifers from which major ground water withdrawals have been proposed or appear imminent.

(4) The state agency, local government or ground water user group requesting probable ground water management area identification shall provide sufficient information for the department to determine if the area should be so identified. The department and other affected state and local governments and user groups may cooperate in preparing the request for identification.

(a) The request for identification shall be presented in a concise, factual report form and shall consider the guidelines and criteria set forth in subsections (2) and (3) of this section as they relate to the proposed area. It shall also contain: (i) Supporting data as to the need for such identification; (ii) a general description of and rationale for the proposed ground water management area boundary; (iii) goals and objectives for the proposed ground water management area; (iv) an estimated cost of developing the ground water management program and potential funding sources; (v) recommendations for agencies, organizations and groups to be represented on the ground water management area advisory committee; and (vi) a recommendation for the lead agency, taking into consideration the responsibilities contained in WAC 173-100-080.

(b) The recommendation for lead agency shall first be submitted to the county or counties with jurisdiction for written concurrence. Such written concurrence shall be included with the information required in (a) of this subsection. If such concurrence cannot be obtained, the department shall attempt to mediate an agreement between the parties.

(c) The agency or ground water user group initiating the request for identification shall hold at least one public meeting for the purpose of receiving comments from the public, affected local, state and tribal agencies and ground water user groups.

(d) Upon completion, the request for identification shall be submitted to the department and other affected state and local agencies and ground water user groups for their review and comment. Comments shall be submitted to the department.

(5) If the department is proposing an area for identification, the department shall prepare a report containing the information in subsection (4)(a) of this section, hold a public meeting, and submit the report to affected state and local agencies and ground water user groups for their review and comment.

(6) Based upon review of the request for identification together with any comments received and a finding that the proposed area meets the guidelines and criteria of subsections (2) and (3) of this section, the department shall identify the proposed area as a probable ground water management area, establish the general planning boundaries and appoint a lead agency. When a probable ground water management area is included within only one county and that county indicates its desire to assume lead agency status, the department shall appoint the county as lead agency. The department shall notify

affected state and local agencies, ground water user groups, tribal governments and local news media of such identification.

[Statutory Authority: Chapters 43.27A and 90.44 RCW. 88-13-037 (Order 88-11), § 173-100-050, filed 6/9/88. Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-050, filed 12/20/85.]

WAC 173-100-060 General schedule.

The department shall establish a general schedule for the designation of specific ground water management areas. The general schedule shall guide the department in the designation of specific ground water management areas and in the allocation of the department's available water resources funding and staffing.

(1) The general schedule for designation of ground water management areas shall identify the relative priority of each of the probable ground water management areas. The relative priority of the probable ground water management areas shall be based upon:

(a) The availability of local or state agency resources to develop and implement a ground water management program;

(b) The significance, severity or urgency of the problems or potential problems described in the request for identification submitted for each area, with the highest priority given to areas where the water quality is imminently threatened;

(2) The department shall revise the general schedule as needed to comply with the intent of this chapter. After each revision the general schedule shall be published in the news media and the Washington State Register. A public hearing will be held in June of each year to receive public comment on the general schedule.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-060, filed 12/20/85.]

WAC 173-100-070 Designation of ground water management areas for program planning purposes.

The department shall designate ground water management areas by order of the department in accordance with the general schedule. The department shall hold a public hearing within the county or counties containing the probable ground water management area prior to such designation. The order shall be issued to the lead agency as well as the agency or ground water user group originally requesting identification of the areas, with copies sent to other affected state agencies, local governments, tribal governments and those parties recommended for ground water advisory committee membership. Copies of the order shall be published by the department in newspapers of general circulation within the area. The order shall contain a general description of the planning boundary for the ground water management area and shall state that the department, in cooperation with the lead agency and local government, intends to appoint a ground water advisory committee to oversee the development of a ground water management program for the area.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-070, filed 12/20/85.]

WAC 173-100-080 Lead agency responsibilities.

The lead agency shall be responsible for coordinating and undertaking the activities necessary for development of the ground water management program. These activities shall include collecting data and conducting studies related to hydrogeology, water quality, water use, land use, and population projections; scheduling and coordinating advisory committee meetings; presenting draft materials to the committee for review; responding to comments from the committee; coordinating SEPA review; executing inter-local agreements or other contracts; and other duties as may be necessary. The lead agency shall also prepare a work plan, schedule, and budget for the development of the program that shows the responsibilities and roles of each of the advisory committee members as agreed upon by the committee. Data collection, data analysis and other elements of the program development may be delegated by the lead agency to other advisory committee members.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-080, filed 12/20/85.]

WAC 173-100-090 Ground water advisory committee.

(1) The ground water advisory committee shall be responsible for overseeing the development of the ground water management program; reviewing the work plan, schedule and budget for the development of the program; assuring that the program is technically and functionally sound; verifying that the program is consistent with this chapter and with the respective authorities of the affected agencies; and formulating and implementing a public involvement plan.

(2) The membership of each ground water advisory committee shall represent a broad spectrum of the public in order to ensure that the ground water is protected and utilized for the greatest benefit to the people of the state. The committee shall include, but not be limited to, representation from the following groups:

- (a) Local government legislative authorities within the designated area;
- (b) Planning agencies having jurisdiction within the designated area;
- (c) Health agencies having jurisdiction within the designated area;
- (d) Ground water user groups within the designated area, including domestic well owners;
- (e) The department;
- (f) Department of social and health services;
- (g) Other local, state, and federal agencies as determined to be appropriate by the department;
- (h) Tribal governments, where a ground water management program may affect tribal waters;
- (i) Public and special interest groups such as agricultural, well drilling, forestry, environmental, business and/or industrial groups within the area, as determined to be appropriate by the department.

(3) The department shall appoint, by letter, members and alternates to the ground water advisory committee after seeking nominations from the groups listed above. Members and alternates shall serve until the ground water management program for the

area is certified. The department may appoint replacement members or alternates upon request of the appointee or the ground water advisory committee.

(4) The lead agency shall hold the first meeting of the ground water advisory committee within sixty days of the appointment of the committee. Public notice shall be given for each meeting. The lead agency shall chair the first meeting, during which the advisory committee shall determine, by general agreement, rules for conducting business, including voting procedures, and the chairperson of the advisory committee.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-090, filed 12/20/85.]

WAC 173-100-100 Ground water management program content.

The program for each ground water management area will be tailored to the specific conditions of the area. The following guidelines on program content are intended to serve as a general framework for the program, to be adapted to the particular needs of each area. Each program shall include, as appropriate, the following:

(1) An area characterization section comprised of:

(a) A delineation of the ground water area, subarea or depth zone boundaries and the rationale for those boundaries;

(b) A map showing the jurisdictional boundaries of all state, local, tribal, and federal governments within the ground water management area;

(c) Land and water use management authorities, policies, goals and responsibilities of state, local, tribal, and federal governments that may affect the area's ground water quality and quantity;

(d) A general description of the locale, including a brief description of the topography, geology, climate, population, land use, water use and water resources;

(e) A description of the area's hydrogeology, including the delineation of aquifers, aquitards, hydrogeologic cross-sections, porosity and horizontal and vertical permeability estimates, direction and quantity of ground water flow, water-table contour and potentiometric maps by aquifer, locations of wells, perennial streams and springs, the locations of aquifer recharge and discharge areas, and the distribution and quantity of natural and man-induced aquifer recharge and discharge;

(f) Characterization of the historical and existing ground water quality;

(g) Estimates of the historical and current rates of ground water use and purposes of such use within the area;

(h) Projections of ground water supply needs and rates of withdrawal based upon alternative population and land use projections;

(i) References including sources of data, methods and accuracy of measurements, quality control used in data collection and measurement programs, and documentation for and construction details of any computer models used.

(2) A problem definition section that discusses land and water use activities potentially affecting the ground water quality or quantity of the area. These activities may include but are not limited to:

- Commercial, municipal, and industrial discharges
- Underground or surface storage of harmful materials in containers susceptible to leakage

- Accidental spills
- Waste disposal, including liquid, solid, and hazardous waste
- Storm water disposal
- Mining activities
- Application and storage of roadway deicing chemicals
- Agricultural activities
- Artificial recharge of the aquifer by injection wells, seepage ponds, land spreading, or irrigation
- Aquifer over-utilization causing seawater intrusion, other contamination, water table declines or depletion of surface waters
- Improperly constructed or abandoned wells
- Confined animal feeding activities

The discussion should define the extent of the ground water problems caused or potentially caused by each activity, including effects which may extend across ground water management area boundaries, supported by as much documentation as possible. The section should analyze historical trends in water quality in terms of their likely causes, document declining water table levels and other water use conflicts, establish the relationship between water withdrawal distribution and rates and water level changes within each aquifer or zone, and predict the likelihood of future problems and conflicts if no action is taken. The discussion should also identify land and water use management policies that affect ground water quality and quantity in the area. Areas where insufficient data exists to define the nature and extent of existing or potential ground water problems shall be documented.

(3) A section identifying water quantity and quality goals and objectives for the area which (a) recognize existing and future uses of the aquifer, (b) are in accordance with water quality standards of the department, the department of social and health services, and the federal environmental protection agency, and (c) recognize annual variations in aquifer recharge and other significant hydrogeologic factors;

(4) An alternatives section outlining various land and water use management strategies for reaching the program's goals and objectives that address each of the ground water problems discussed in the problem definition section. If necessary, alternative data collection and analysis programs shall be defined to enable better characterization of the ground water and potential quality and quantity problems. Each of the alternative strategies shall be evaluated in terms of feasibility, effectiveness, cost, time and difficulty to implement, and degree of consistency with local comprehensive plans and water management programs such as the coordinated water system plan, the water supply reservation program, and others. The alternative management strategies shall address water conservation, conflicts with existing water rights and minimum instream flow requirements, programs to resolve such conflicts, and long-term policies and construction practices necessary to protect existing water rights and subsequent facilities installed in accordance with the ground water management area program and/or other water right procedures.

(5) A recommendations section containing those management strategies chosen from the alternatives section that are recommended for implementation. The rationale for choosing these strategies as opposed to the other alternatives identified shall be given;

(6) An implementation section comprised of:

(a) A detailed work plan for implementing each aspect of the ground water management strategies as presented in the recommendations section. For each recommended management action, the parties responsible for initiating the action and a schedule for implementation shall be identified. Where possible, the implementation plan should include specifically worded statements such as model ordinances, recommended governmental policy statements, interagency agreements, proposed legislative changes, and proposed amendments to local comprehensive plans, coordinated water system plans, basin management programs, and others as appropriate;

(b) A monitoring system for evaluating the effectiveness of the program;

(c) A process for the periodic review and revision of the ground water management program.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-100, filed 12/20/85.]

WAC 173-100-110 SEPA review.

The proposed ground water management program shall be subject to review pursuant to the State Environmental Policy Act, chapter 43.21C RCW, as required under the applicable implementing regulations.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-110, filed 12/20/85.]

WAC 173-100-120 Hearings and implementation.

(1) Upon completion of the ground water area management program, the department shall hold a public hearing within the designated ground water management area for the purpose of taking public testimony on the proposed program. Local governments are encouraged to hold joint hearings with the department to hear testimony on the proposed management program. Following the public hearing, the department and each affected local government shall prepare findings on the ground water management program within ninety days. This period may be extended by the department for an additional ninety days. The findings shall evaluate the program's technical soundness, economic feasibility, and consistency with the intent of this chapter and other federal, state and local laws. The findings shall identify any revisions necessary before the program can be certified and shall contain a statement of the agency's concurrence, indicating its intent to adopt implementing policies, ordinances and programs if required, or a statement of nonconcurrence with the program if such be the case.

(2) The lead agency will consolidate the findings and present them to the advisory committee. Statements of nonconcurrence shall be resolved by the committee and the program revised if necessary.

(3) The program shall then be submitted by the ground water advisory committee to the department which shall certify that the program is consistent with the intent of this chapter.

(4) Following such certification, state agencies and affected local governments shall adopt or amend regulations, ordinances, and/or programs for implementing those provisions of the ground water management program which are within their respective jurisdictional authorities.

(5) The department, the department of social and health services and affected local governments shall be guided by the adopted program when reviewing and considering approval of all studies, plans and facilities that may utilize or impact the implementation of the ground water management program.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-120, filed 12/20/85.]

WAC 173-100-130 Designation of ground water areas.

The procedures provided in RCW 90.44.130 may be utilized by the department to designate ground water areas, subareas, or zones for the purposes described therein either in conjunction with the procedures of this chapter or independently thereof.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-130, filed 12/20/85.]

WAC 173-100-140 Intergovernmental agreements.

In order to fully implement this chapter, the department may negotiate and enter into cooperative agreements with Indian tribal governments, adjacent states and Canadian governmental agencies when a ground water management area is contiguous with or affects lands under their jurisdiction. Such cooperative agreements shall not affect the jurisdiction over any civil or criminal matters that may be exercised by any party to such an agreement. Intergovernmental agreements shall further the purposes of this chapter, and shall serve to establish a framework for intergovernmental coordination, minimize duplication, and efficiently utilize program resources to protect ground water resources.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-140, filed 12/20/85.]

WAC 173-100-150 Appeals.

All final written decisions of the department pertaining to designation of ground water management areas, certification of ground water management programs, permits, regulatory orders, and related decisions pursuant to this chapter shall be subject to review by the pollution control hearings board under chapter 43.21B RCW.

[Statutory Authority: RCW 90.44.400. 86-02-004 (Order DE 85-24), § 173-100-150, filed 12/20/85.]

WAC 173-100-160 Regulation review.

The department of ecology shall initiate a review of the rules established in this chapter whenever new information, changing conditions, or statutory modifications make it necessary to consider revisions.

[Statutory Authority: Chapters 43.27A and 90.44 RCW. 88-13-037 (Order 88-11), § 173-100-160, filed 6/9/88.]