



North Monterey County Hydrogeologic Study

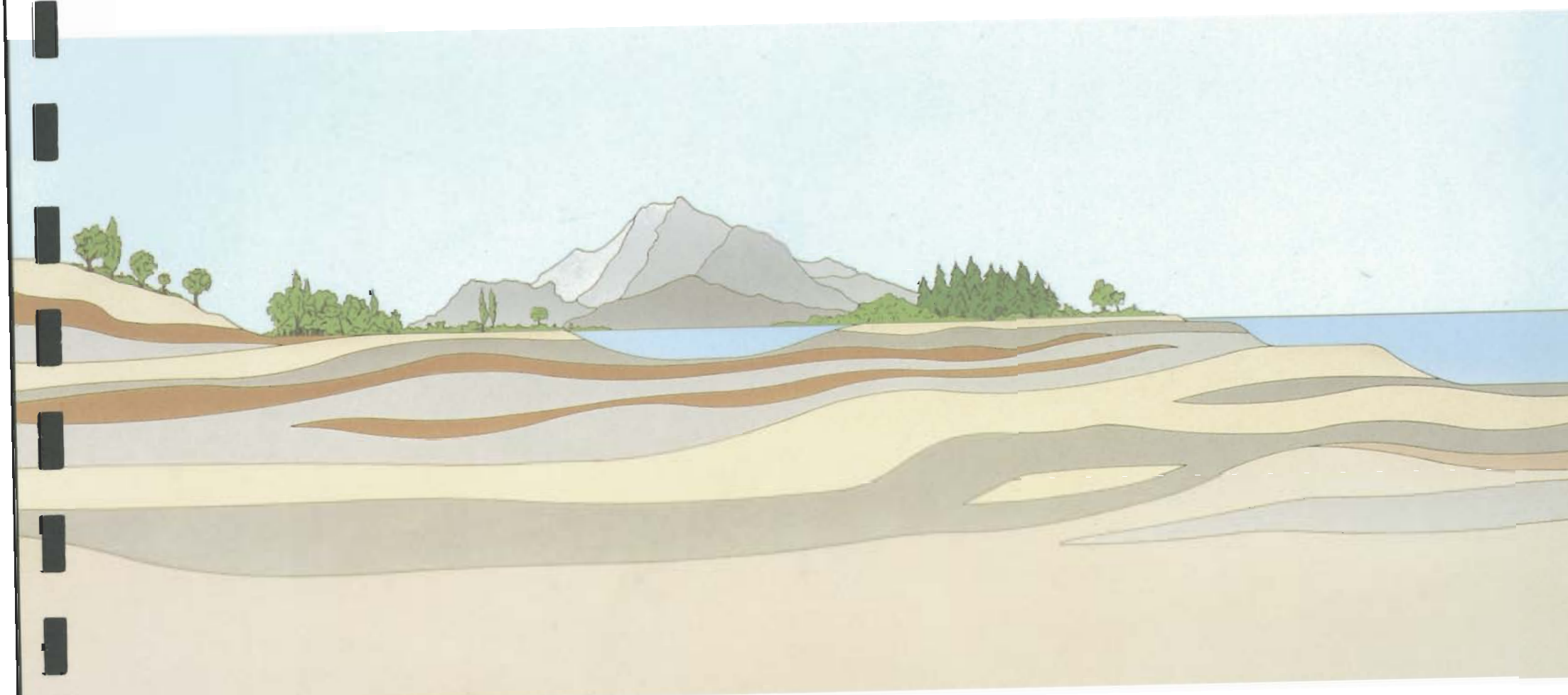
Volume II -- Critical Issues Report and Interim Management Plan

FINAL REPORT

May, 1996

Prepared for:

**Monterey County Water Resources Agency
North County Inter-Agency Committee**



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May 3, 1996
Project No. 94-61-0162

Monterey County Water Resources Agency
855 East Laurel Drive
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Attention: Mr. Matthew Zidar

Subject: North Monterey County Hydrogeologic Study Volume II -- Critical Issues Report
and Interim Management Plan [Final]

Dear Mr. Zidar:

Fugro West, Inc. is pleased to submit this final version of the second volume of the North Monterey County Hydrogeologic Study entitled Critical Issues Report and Interim Management Plan. The report describes the critical problems with water quality and quantity in the North Monterey County study area. The objective of this report is to offer recommendations for managing the water resources of the area in the interim before a comprehensive water resource management plan is developed and implemented.

Thank you again for your consideration. If you have questions during your review, please do not hesitate to contact me.

Sincerely,
FUGRO WEST, INC.

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Senior Program Manager

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Certified Hydrogeologist 145



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Volume II -- Critical Issues Report

and

Interim Management Plan

Public Review Draft

May, 1996

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North County Inter-Agency Committee

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Volume II -- Critical Issues Report

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Volume II -- Critical Issues Report

1.0 INTRODUCTION

1.1 GENERAL STATEMENT

This document is a companion report to the North Monterey County Hydrogeologic Study, Volume I dated October 1995. This document builds from the technical understanding and problem identification developed in Volume I and focuses on key issues relative to developing a management plan for the water resources of the area. These include the interrelated policy, legal and financial issues that complicate the management of the resource. The purpose of the report is to provide an analysis of these issues towards the development of long-range management objectives. This document is available for review in the County offices and libraries.

This report also presents an interim management plan of recommended actions that can be taken in the near future. Following public review of this document, a Comprehensive Water Resource Management Plan for North County Monterey will be developed. In the spirit of the original objective of the process, the scope of work will be detailed and designed to develop real solutions to problems. For the most part, each management option will encounter difficult physical, legal, institutional, political and financial obstacles. Many of these management options will require significant study and effort to evaluate their effectiveness.

An important comment received from the Division of Environmental Health sets forth the limitations of this effort:

“Two significant issues have been acknowledged at a staff level but do not appear in the Draft Report. First is that any management plan (whether short term or long term) will have a relatively limited impact on both water quality and quantity issues. As an example, even if we were to effectively implement all 60 interim measures it would be considered a “success” to keep water use at existing levels (200% overdraft) by the time the area builds-out. Compare this with the Salinas Valley with an 8% annual overdraft. Another example is that even if we were to raise the irrigation efficiency rate of every strawberry field from 70% to 85%, the groundwater will continue to be degraded by nitrates. Furthermore, even with the best computer modeling and a massive Phase II Plan, it is guesstimated that only a 10-20% reduction in water use and nitrate loading could be achieved. This would still leave us with a 180% overdraft and nitrate loadings exceeding drinking water standards.

Second, it should be publicly acknowledged that the County of Monterey can not bring the area back into balance and maintain drinking water standards without assistance from local, State and Federal agencies. It is anticipated that



some type of large scale capital improvement project will be needed. It is also a given that the problems will get worse before they get better.”¹

1.2 SCOPE OF WORK

Fugro West, Inc. was contracted by the Monterey County Water Resources Agency (MCWRA) to prepare this document as a part of the work scope described in their contract with the Agency, and as subsequently amended. Volume I (described above) and Volume II (this report) represent the primary products of Phase I of a larger program to develop a water resource management plan. Phase II of the program, which is not part of this scope, would entail the carrying out of a scope of work such as set forth in Section 3.2 of this report. Phase II would encompass the development of a long-term strategy to manage the use, protection and augmentation of the area's water resources.

1.3 STUDY AREA

As discussed in Volume I, the study area is formally defined in Monterey County Ordinance No. 3496 as the area investigated by the USGS in the 1983 report entitled *Ground Water in North Monterey County, California, 1980*. The roughly 54,000-acre area is generally bounded by the Pajaro River on the north, the San Benito-Monterey County line on the east, Blackie Road on the south, and the Southern Pacific Railroad line, Elkhorn Slough, and Monterey Bay on the west. The City of Watsonville lies directly north of the study area, across the Pajaro River, while the community of Castroville lies just outside the area's southwest boundary. The area is predominantly hilly, comprised of stable deposits of mature coastal dunes that are locally dissected by minor drainages. The central westerly portion of the study area is dominated by the Slough, a brackish to salt water estuary. The eastern portion, toward the San Benito County line, is a prominent ridge of uplifted granite. The study area is shown on Figure 1.

The study area overlies portions of both the Salinas and Pajaro ground water basins and includes the area between the adopted boundaries of these two basins. Although the study area is entirely within Monterey County, ground water management activities and authority in the study area are divided between the Pajaro Valley Water Management Agency (PVWMA) and the Agency, which manage the water resources of the Pajaro and Salinas Valley ground water basins, respectively. Land use planning authority resides with Planning Division of Monterey County Planning and Building Inspection Department.

1.4 SUBAREAS

As a result of the study area's size and complexity, the area has historically been divided into subareas (In the past, several subarea schemes were proposed and these are described in Volume I). Volume I resulted in the revision and adoption of new subareas as the previous subarea schemes were found to be inadequate for the purpose of managing ground water resources in the area. Four new subareas were developed based primarily on hydrogeologic

¹ Memorandum from Walter Wong, Director, Division of Environmental Health, April 14, 1996. The full text of this memo is contained in Appendix D.

factors including: the nature of occurrence of ground water, availability of ground water, sources of recharge and water quality issues. The basis for these subareas is discussed in Volume I. One of the four subareas was further divided to reflect the jurisdictional boundary between the MCWRA and the PVWMA. The subareas, while displaying distinctive differences, are hydraulically connected with each other and the adjacent Pajaro and Salinas Valley areas. Because of this connection between these areas, ground water conditions with the subareas and connected areas are interdependent. The subareas are shown on Figure 2. The subareas as adopted are:

1) **Pajaro Subarea.** This subarea includes the area within the alluvial basin of the Pajaro River south of the Santa Cruz County line and west of the San Benito County line. Although the Pajaro subarea is part of the overdrafted Pajaro Valley Ground Water Basin, ground water is readily available to all but the most coastal pumpers within the Pajaro subarea. Coastal pumpers are restricted due to intruding seawater within the aquifer system.

2) **Springfield Terrace.** This subarea encompasses the area of Springfield Terrace, the area north and west of Elkhorn Slough and south of the Pajaro subarea. The subarea is bounded by the Pacific Ocean to the west and as the result of below sea level water levels has significant seawater intrusion problems.

3) and 4) **Highlands, North and South** These two subareas are hydrogeologically similar and have been arbitrarily divided by the PVWMA boundary. The area encompasses the elevated area between the Pajaro and Salinas Valleys. The primary aquifer system in the area is the Aromas Sand. The area is bounded on the west by Springfield Terrace and the east by the portions of the study area dominated by granitic hydrogeology. Ground water is readily available within this subarea, although the aggregate pumping is contributing to chronic storage depletion. Storage depletion is resulting in falling water levels and seawater intrusion. The ground water within the area is tributary to the Pajaro Valley to north and the Salinas Valley to the south.

5) **Granite Ridge.** The granite ridge area is the eastern portion of the study area where the ground water resources occur within either the weathered or fractured granite. The granite ridge area is the eastern portion of the study area where the ground water resources occur within either the weathered or fractured granite. The western boundary of the area is defined by those areas with less than 100 feet of saturated, unconsolidated materials above regional bedrock surface. The boundary of the area roughly corresponds with the existing Prunedale B-8 area. Ground water availability in this subarea is variable, reflecting the bedrock aquifer. Well yields are variable and generally low. Due to the limited amount of ground water in storage, the area is extremely sensitive to drought conditions.

The subareas boundaries are shown on Figure 2 - Study Area/Subareas Boundaries.

1.5 OVERVIEW OF CURRENT CONDITIONS

The North County study area has significant water supply and water quality problems including falling water levels, seawater intrusion and nitrate ion contamination. North County



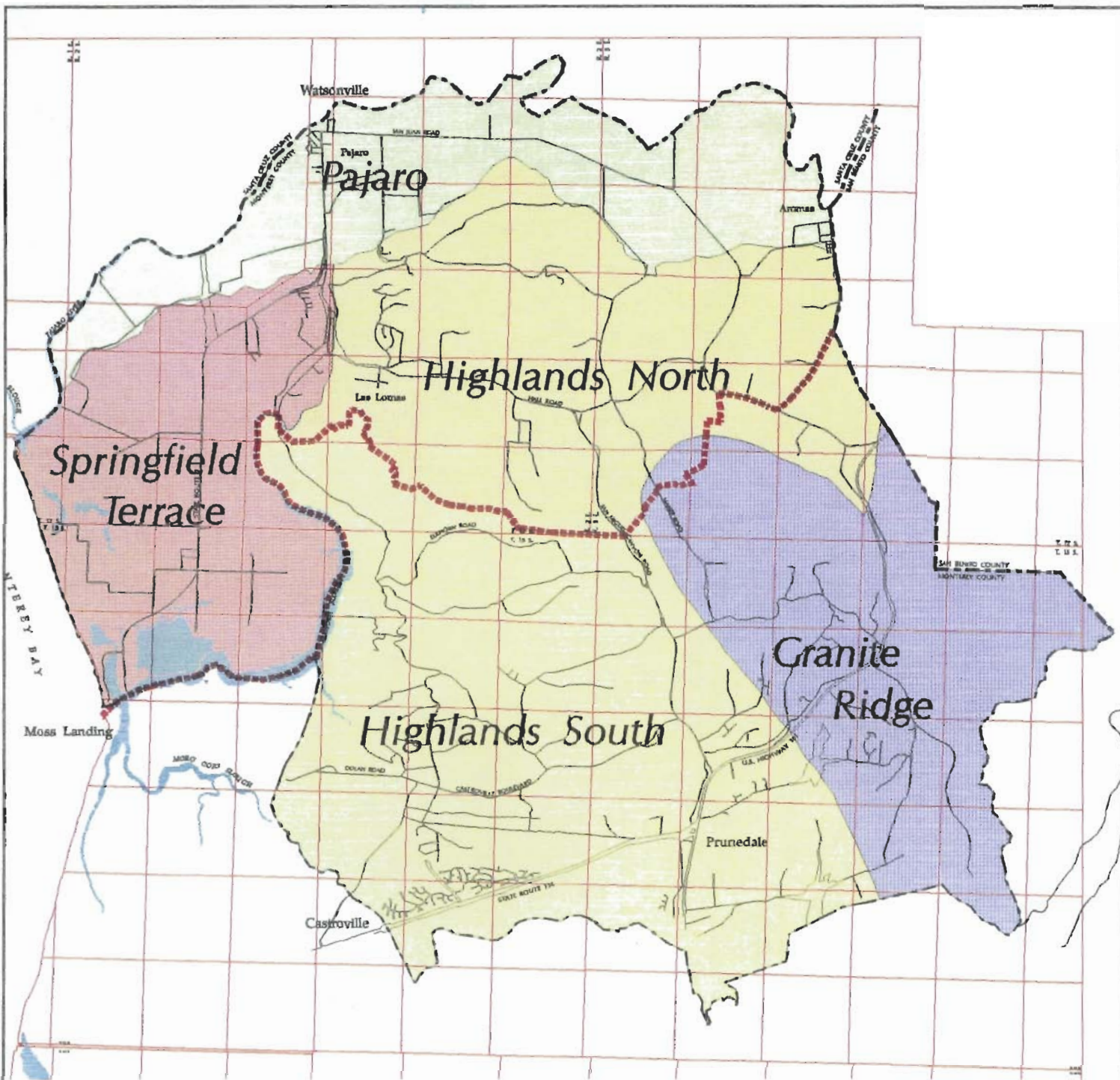
problems not only affect residents and agriculture in the area, they also affect water supply and quality conditions in the adjacent and hydraulically connected Salinas and Pajaro Valleys.

Previous reports have documented the study area to have been in a state of chronic overdraft since the 1950's. Based on the analysis of available data, the study area was confirmed to be severely overdrafted, with annual ground water extractions approximately twice average annual recharge.² At build-out (full development and agriculture cultivation), under existing land use plans, water demand could increase to 300 percent of sustainable yield or more. Under current demand conditions, the ratio of agricultural/non-agricultural demand is approximately 85 to 15 percent. At build-out, this ratio is expected to remain similar (82 to 17), although most of the future potential water demand will be from additional agriculture. Current demand and sustainable yield conditions and required reductions to achieve balance are summarized in Table 1-1 - Current Conditions. A detailed discussion of the water balance for the study area and various subareas is contained in Volume I.

1.6 PUBLIC REVIEW

Public information meetings were held on March 20 and March 21, 1996 at the North County High School and Hall District School, respectively. The draft report was also presented to the Monterey County Water Resources Agency Board of Directors at a public hearing on March 25, 1996. Written comments received from the public and agencies are presented in Appendix D of this report.

² Compare this with an 8% water supply shortfall for the Salinas Valley, an area with 50 times the sustainable yield of North County.



NORTH COUNTY REVISED SUBAREAS

North Monterey County Hydrogeologic Study

Figure 2

-  Pajaro
-  Springfields Terrace
-  Granite Ridge
-  Highlands North
-  Highlands South
-  PWWA Boundaries
-  Study Area Boundary
-  County line
-  Township and Range Grid





Table 1-1. Current Conditions

Area	Current Pumpage ¹ (acre/feet)	Sustainable Yield ² (acre/feet)	Seawater Replacement (acre/feet)	Required Reduction (acre/feet)
Pajaro	9,030	6,490	0	2,540
Springfield Terrace	6,670	0	3,200	6,670
Highlands N. & S.	9,800	7,310	0	2,490
Granite Ridge	610	610	0	0
Total	26,110	14,410	3,200	11,700

1 Gross Pumpage

2 An amount that can be withdrawn without jeopardizing water supplies

As shown on Table 1-1, all of the subareas, with the exception of the Granite Ridge area, require either a reduction in demand or a supplemental supply to achieve a balance with available supply. Most of the overdraft is concentrated in the Springfield Terrace and Pajaro subareas and is the result of intensive agricultural development in these areas. Overdraft is less in the Highlands subareas as agriculture is not as developed. Continued agricultural expansion in the Highlands will increase the imbalance in these subareas. The Granite Ridge area is near to using up its sustainable supply. However, until subareas adjacent to the Granite Ridge area are in balance with supply, storage depletion in these areas will result in falling water levels in the Granite Ridge subarea. This is because subsurface flow from this subarea goes to adjacent down gradient subareas.

The chronic overdraft of the study area has resulted in falling water levels and the degradation of ground water quality. Depressed water levels have induced the vertical leakage of seawater from Elkhorn Slough and horizontal intrusion of seawater from the adjacent ocean into the ground water. Dominant land uses of agriculture and non-sewered residences have resulted in excessive nitrogen loading that has rendered ground water nonpotable in many areas. Continued overdraft of the ground water resource will continue to lower water levels and draw seawater into the basin reducing more of the storage capacity. Continued nitrogen loading will increase nitrate ion concentrations, degrading the potability of additional domestic water supplies. Homes and small water systems in the area will be forced to invest money into new, deeper wells in order to develop potable supply.

There is a fundamental conflict in the competing uses for water between housing and agriculture in the study area. Housing needs considerably less water, but of high quality.



Agriculture needs a large amount of water, but tends to degrade the quality. This fundamental conflict is revealed in both issues of water supply and water quality in the study area.

The problems in the study area affect various users very differently. Ground water users in the areas impacted by seawater intrusion and leakage feel a direct impact and economic hardship from the degradation of ground water quality resulting from the continued overdraft and falling water levels. Inland users, on the other hand, feel minimum impact from the same rate of falling water levels. Individual residences and subdivisions relying on private wells are adversely and economically impacted by increasing nitrogen content in the ground water, rendering their wells nonpotable and forcing replacements. Agricultural users adjacent to these residences, however, are not impacted by the increasing nitrogen content. These very different impacts make a regional solution difficult. Most ground water users are simply participating in regional overdraft and are not directly affected. Those not directly affected will be reluctant to participate in a solution. Based upon current projections, however, it is anticipated that increasing number of users will eventually be impacted.

Solutions to the water supply and water quality problems are also difficult to achieve because the area is rural, and thus lacks the financial ability and other community resources to build infrastructure necessary to augment supply. Supplemental water supplies for the area have been recommended since the 1950's. However, the delivery of water to the area has always been judged to be too expensive. At the present time, with the possible exception of PVWMA proposed water importation project and Salinas River Basin Management Project (BMP) water, imported supply is likely not available. If imported water would become available, delivery of this water to some areas would be difficult. Because of the number and dispersed nature of the agricultural users and small water systems, delivery of imported water would require construction of an expensive distribution system to deliver the water. Development of a distribution system for a small portion of the area was attempted in 1986 by MCWRA and others and was voted down by a margin of four to one. Until a supplemental supply and distribution system is developed, water supply problems in the area in the near term will need to be addressed by demand management.



2.0 MANAGEMENT MECHANISMS

Various mechanisms, both physical and institutional, are available to assist in management of the water resources of the study area. Several of these mechanisms will be applicable to many of the identified critical issues. Rather than discuss them repeatedly, they are presented in detail in this section and referenced in subsequent sections.

2.1 LAND USE REGULATION

Regulation, and the planning that precedes it, controls the extent or intensity of development in an area. Resource demand is roughly proportional to the intensity of development. The more residential units allowed, the more water that will be demanded. More significantly, agriculture that comes into production could demand six to ten times the amount of water required of low density residential uses. Reducing the intensity of uses allowed controls the amount of the resource that will be required *in the future*. Land use regulation is more difficult to use for controlling *current* demand.

2.1.1 Zoning

Zoning controls land use in three ways, each of which has the potential to control demand:

1. Controlling the types of uses that are allowed in an area. Certain uses are more water demanding than others. Use districts can emphasize a shift to water-conserving uses. For the North County, the land uses are relatively narrow, mostly low density residential and agriculture.
2. Controlling density. Zoning can control the number of dwelling units per acre. Since each dwelling unit demands water, the fewer units, the less water required.
3. Performance standards. Zoning can place substantial requirements on land development. These include landscape restrictions, water storage requirements, and limitations on water-intensive activities.
4. Interim Ordinances. The County Board of Supervisors is empowered to enact "urgency" regulations [Gov't Code Section 65858] to prohibit certain uses and development while it is contemplating other changes to regulations. The interim ordinance is used like a moratorium to prevent a rush of development when zoning changes are being contemplated or when certain municipal services are inadequate.
5. B-8 Regulation. The County has created a regulatory mechanism to cap development in an area of critical water shortage. Known as a "B-8 Regulation", it prevents the creation of any new parcels of land for the purpose of development, and prevents the construction of any additional dwellings on parcels that currently have dwellings. The B-8 is enacted like an interim ordinance. If a B-8 is functionally an interim ordinance, then the law would require



that the enacting authority move towards a solution to the problem that prompted the enactment. The B-8 does allow some agricultural uses.

2.1.2 Subdivision Control

The Subdivision Map Act allows jurisdictions to require a number of exactions in exchange for permission to create subdivisions. The law requires a clear connection between the need for an exaction and the exaction imposed. Water supply issues are considered extremely strong rationale for exactions on development.

2.2 OPEN SPACE PRESERVATION

California has adopted a number of mechanisms designed to protect valuable open space:

- Open Space Plan. Local open space plans are required for the comprehensive and long-range preservation of valuable open spaces. (Gov. Code 65563)
- Open Space Easement Act. Allows acceptance of easements on private parcels for the preservation of open space (Gov. Code 51050-51065)
- Open Space Constitutional Amendment. Authorizes legislature to define open space lands, create restrictions on use, and create assessments in accordance with the use. (Cal. Const. Article XXVIII, implementing legislation Rev. and Tax. Code 421-432).

2.3 AGRICULTURAL CONVERSION

Several possible approaches exist for managing the conversion of land into or out of agricultural production:

- Prohibition of new cultivation.
- Farm land retirement.
- Conversion to non-agricultural use. This is most commonly accomplished by turning farmland into residential developments.
- Fallow Bank. This could take the form of a fallow program where land is taken out of production on a revolving basis. This could either be on a voluntary basis or possibly subsidized by an overall assessment.

2.4 RESTRICTIONS ON WATER USE

2.4.1 Water Shortage Emergencies

An emergency can be declared by local water suppliers during periods of serious shortage (Water Code Sections 350-359). An emergency exists when normal demand cannot be met without depleting the water supply such that there would be insufficient water for human consumption, sanitation, and fire protection. The declaration requires a public hearing prior to its implementation. Section 353 allows a district to stop new connections and to discontinue service to users who violate conservation restrictions. The statute (and new connection moratorium) has been upheld in court challenges, *Swanson v. Marin Municipal Water District* (1976) 56 Cal. App. 3d 512. In *Swanson*, the appellate court noted the district's obligation to abate the supply problem. A key problem for North County is that most of the area is served by individual or small system wells. Water shortage declarations are available in areas such as Prunedale, Las Lomas, Hillcrest-Fruitland, Aromas and Pajaro, where large systems exist.

2.4.2 Control of Individual Wells

The law can exert the least amount of control over the supply of water that comes from an individual well. Generally, the owner of land which overlies a ground water resource can remove as much water as can be put to reasonable and beneficial use on the overlying land. This right can be modified by adjudication.

2.5 Regulatory Powers

2.5.1 Senate Bill 901

Signed into law in November, 1995, the act requires decision-makers to consult with water agencies and make findings under California Environmental Quality Act (CEQA) regarding the source of water for proposed major developments (e.g. greater than 500 dwelling units).

2.5.2 A.B. 3030

This is ground water management legislation that allows a municipal organization to adopt a plan for a basin in order to regulate issues of quantity and quality. This legislation is useful for this study as a platform for developing a program, although (as it is currently understood) the area does not qualify as a "basin."

2.6 Supplemental Supply

2.6.1 Importation

Importation of a supplemental supply into the area has been suggested as part of every previous study of the area since the 1950's. To date, the development of a supplemental supply was considered too expensive. Two importation projects are currently under consideration that could provide supplemental water to the North County area; the Pajaro Valley Water

Management Agency's Basin Management Plan and the MCWRA's Salinas River Valley Basin Management Plan.

2.6.2 Pajaro Valley Water Management Agency's Basin Management Plan

The proposed PVWMA BMP project consists, in part, of the construction of a pipeline into San Benito County to connect to the Bureau of Reclamation's San Felipe Project. The BMP project has been through a program-level CEQA review and the PVWMA is currently conducting feasibility studies. Additional environmental study of specific project impacts will be required. The construction of this pipeline would allow Pajaro to receive their historical maximum allocation of 19,900 acre-feet of water from this project. However, due to over-allocation and revisions in Federal Water Project operations (CVPIA), Pajaro's historical allocation may not always be available. In years of shortfall, Pajaro would either have to rely of local pumpage or purchase water from other project participants.

The local components of the PVWMA pipeline project are not fully developed at this time. PVWMA is currently conducting a study evaluating various distribution scenarios and conjunctive use concepts. As generally proposed, the imported water would be distributed to the coastal areas replacing coastal agricultural pumping with imported water thereby reducing seawater intrusion. Currently, the distribution area would include all of the Springfield Terrace subarea and the coastal portion of the Pajaro subarea, the subareas with the most significant overdraft. As proposed, this project would eliminate overdraft in these subareas. The project does not include delivery to the other subarea within the PVWMA boundaries, the Highlands North subarea. The importation of water into this subarea as compared with the other two subareas is substantially more difficult. As opposed to the Springfield and Pajaro areas which have dense agricultural operations, the dispersed nature of the agricultural operations in this area makes development of a distribution system cost prohibitive. Further, the land is hilly and would be more difficult to engineer and build a system in this environment. Additionally, many users in this subarea are not directly effected by the chronic overdraft and as such would likely oppose paying for a solution. While direct importation of water to the Highlands North area is not likely, importation to the Springfield and Pajaro subareas will favorably impact this subarea by reducing gradients into adjacent areas. Importation of water to the Springfield Terrace area will also provide additional buffer against seawater intrusion to the large municipal water supply systems in the Las Lomas, Pajaro, and Hillcrest-Fruitland areas.

The PVWMA BMP project purpose is to provide agricultural supply. The project is not designed to provide for domestic supply. It is assumed that rural domestic supply will continue to be supplied from local wells. It should be assumed that ongoing agricultural operations will, in some areas, continue to put at risk the potability of shallow wells due to nitrogen loading of the ground water. Users of these wells may have construct deeper wells to meet drinking water requirements.

2.6.3 Salinas River Basin Management Plan

The Salinas River Basin Management Plan (SRBMP) is still under development. Conceptually, the BMP includes the development of facilities that will allow capture of additional water from the Salinas River and the distribution of this water to users in the northern portions of the basin. This would reduce pumping stress in the northern portion of the basin thereby reducing seawater intrusion. Currently, the North County area is not under consideration for delivery of water from this project. Previously, the SVRBMP project had provided for the delivery of 1,000 acre-feet of water to the Prunedale area. While the delivery of this volume of water to the Prunedale area would reduce water availability and water quality problems for the residents of this rural community, it would not eliminate them. However, the cost of developing a distribution system for this community would far exceed the cost of importing the water from the Salinas Valley. The delivery of SVRBMP project water to the Highlands South subarea for agricultural purposes has not been proposed. Again, provision of water to this subarea is constrained by the lack of an affordable distribution system.

2.6.4 Reclamation

Wastewater reclamation can be a valuable source of water supply. Reclaimed wastewater from the community of Watsonville may constitute a portion of the supply for the PVWMA-Basin Management Plan project. However, in the study area almost all residential development is unsewered and wastewater disposal is provided by septic systems. The lack of a regional sewer system (along with the lack of reclaimed water distribution system) precludes the development of wastewater reclamation. Additionally, septic system discharge is a significant portion of recharge in the residential areas.

2.6.5 Local Recharge Projects

The ground water resources of the area could possibly be augmented by the development of small local recharge projects. These could take the form of retention basins controlling runoff and allowing water to infiltrate into the ground water basin. Retention basins to augment ground water recharge are already required under MCWRA policy. The incremental yield of these projects, however, is very small as the soils in the area are sandy and runoff is minimal.

2.7 Nutrient Management Program

Elevated nitrate ion concentrations have impacted more water systems in California than all of the other environmental contaminants combined. Programs to minimize the volume of nitrogen leached from agricultural operations and discharged from septic systems can be developed. It is likely that the entire issue of nitrate management will be studied on a state-wide basis. It is reasonable to expect new regulations governing fertilizers and water treatment in the not-to-distant future.

The quantity of nitrate ion contamination resulting from residential septic system discharges can be significantly reduced through use of better designed and maintained septic

systems or advanced treatment systems. However, the bulk of the nitrogen loading in the study area is the result of agricultural operations. While it is not possible to completely eliminate the leaching of some of the applied nitrogen, improved fertilizer management and better integration of irrigation and chemigation practices can achieve significant reductions. Growing concern regarding nitrate contamination will likely result in the eventual regulation of synthetic fertilizer in a manner similar to the current regulation of pesticides. Voluntary programs are being adopted to optimize nutrient inputs. These programs commonly include regular and systematic leaf and soil testing in combination with quantification of factors that affect uptake and denitrification (i.e. amount of available organic carbon available).

2.8 Legal Issues

2.8.1 Takings

Many of the proposed solutions raise questions regarding whether the action represents a "taking of private property rights without compensation." In the U.S. Supreme Court case of *Agins v. Tiburon*, the Court articulated the two rules for determining whether a regulation was legitimate and property had not been restricted to the extent that a compensable taking had occurred. First, the regulation had to serve a legitimate public interest, namely, the protection of public health, safety or the general welfare. Protection of water supplies qualifies as a legitimate public purpose. Second, the regulation must not so restrict the property as to leave it with no viable economic value. If agriculture were to be restricted, alternative land uses having economic viability must be allowed in order to avoid a taking.

2.8.2 Water Rights

For water resource management, the most difficult area of control is over an individual property owner's ability to extract ground water. The law recognizes ground water to be a finite resource and has established a priority system for users. First and foremost are the overlying owners, who have a right to extract water from beneath their land for reasonable and beneficial use upon their land that overlies the basin, unless it is shown to be adverse to public health and safety. These rights are (generally) only interrupted when a court of proper jurisdiction has adjudicated the basin. Adjudication is a legal process for establishing allocation of the ground water. Adjudication can be initiated by individual landowners. The State Water Resources Control Board may initiate an adjudication as well. The process begins when a basin has been "officially" determined to be in overdraft. The court will investigate each user's water demand over the last several years. When notice of a pending adjudication is given, landowners will often increase their water consumption in order to put them in better stead for the judicial allocation.

2.8.3 Water Quality and the California Safe Drinking Water Act

Nearly all drinking water in the state is within the jurisdiction of the California Safe Drinking Water Act (Health & Safety Code section 4010 *et seq.*). The State's policy is to ensure a clean and reliable source of potable water to its citizens. The law applies to all public water systems (unless exempted). California's drinking water standards must be at least as stringent as those set forth under



the federal Safe Drinking Water Act (USC section 300j-4.a.2). The authority for setting recommended public health levels for contaminants in drinking water is with the Office of Environmental Health Hazard Assessment (Health & Safety Code, section 4023.c). The maximum contaminant level refers to the maximum level of any specific contaminant which may be supplied to customers by the water supplier. The state regulations that establish primary and secondary standards for drinking water and public water systems are found within Title 22 of the California Code of Regulations. Enforcement of these regulations is the authority of the local health officer.



3.0 CRITICAL ISSUES AND INTERIM MANAGEMENT RECOMMENDATIONS

It will be several years before a comprehensive water resource management plan to be developed in Phase II of this program is implemented. In the meantime, North County continues to experience impacts to both the quantity and quality of available water resources. The purpose of this section is to provide recommendations for actions that can be taken by appropriate County agencies to begin management of North County water resources in the interim before Phase II is implemented. These interim measures are presented for the consideration of the the Inter-Agency Committee, IAC. They will be revised and expanded in future iterations of this report, as directed by (IAC).³

Many of the County's policies, especially as set forth in the North County Land Use Plan segment of the Local Coastal Program, recommend waiting until a hydrogeologic report was prepared before determining how much additional development would be appropriate in the area once 50% of buildout was achieved. With Volume I that report is complete, and it has clearly demonstrated that the area is severely impacted by *current* demand on water resources, let alone future requirements. Further, the future demand analysis performed for Volume I showed that considerable additional demand could come from new agricultural cultivation and, to a much lesser extent, additional residential development.

The recommendations contained in this section are those considered both feasible and appropriate for the interim. They fall into three categories: 1) actions that take advantage of the time before a final plan is adopted, 2) urgent issues that should not wait to be addressed by the final plan, and 3) activities that are preliminary to and lead towards the development of those goals anticipated in the final plan.

Two principles guide these recommendations. First, the problems identified in North County have been known for over thirty years.⁴ It is difficult to justify approaching the problem as an "emergency". Rather, the recommendations are those which seem to be agreed upon by the many agencies in the County with familiarity of the problems. Second, the recommendations are conservative. They are designed to avoid starting many programs simultaneously and without the comprehensive analysis that would be provided by Phase II of this project. The purpose of their selection is to take advantage of the interim and prepare for the development of the comprehensive water resource management plan. An interim goal would be to have no net increase in water demand for the area.

The objective of the recommendations is to outline programs that will help curb water resource degradation and can be implemented now. To this end, the focus is on reducing new water demand in the area, reducing and dealing with nitrogen impacts, and preparing for the comprehensive management program.

³ The PVWMA is part of the current IAC, but at present is only authorized to provide support on technical matters.

⁴ An exception to this statement holds for the problems identified at the Elkhorn Slough; problems which may be solved with appropriate tidegate and levee construction and repair.

What follows is an outline of directions to be taken during the interim period before a comprehensive management plan is implemented.

Overview of Interim Management Recommendations

1. New agricultural cultivation restrictions. About 80% of new water demand will come from agriculture, mostly on non-prime soils in the Highlands. Many existing regulations could be enhanced or further enforced to limit this new cultivation.
2. Agricultural water demand management. Current agricultural demand accounts for 85% of the water used in the North County. Incentives and regulations could be developed to improve irrigation efficiency.
3. Residential water demand management. Many parcels will remain undeveloped after the "50% rule" permit cap in the coastal zone is reached. The rule was considered an interim measure pending definitive determination of the state of water supplies in the North County. Volume I of this report made clear findings that the area is in chronic overdraft. The zoning should be modified now to bring it in line with the development cap in the area plan. Existing residential demand can be reduced through retrofitting and incentive programs.
4. Granite Ridge -- Water Accessibility. While supplies in the area are adequate, their storage in the bedrock makes them difficult to access and unpredictable. The area needs supports for assuring a constant, long-term supply of potable water.
5. Nitrate ion contamination control. This is a long term problem requiring a serious commitment to a program of nitrate management and, perhaps ultimately, treatment of water resources. Immediate steps are appropriate to assist owners of wells impacted by locally high nitrate levels.
6. Seawater degradation. In the North County, this takes two forms 1) seawater intrusion resulting from over-pumping the basin, and 2) infiltration of seawater in the Elkhorn Slough. The most promising method of reducing the first is cessation of pumping near the coast resulting from the importation of irrigation water via the PVWMA BMP project. The slough can be managed through improvement projects on the levees and tidegates.
7. Watershed Erosion. Poor cultivation practices lead to considerable erosion in the watershed of the Elkhorn Slough. The Elkhorn Slough Management Plan sets forth mechanisms for management of this problem.
8. Inter-Agency Coordination. The North County area of Monterey County is under the jurisdiction of several agencies. The PVWMA and MCWRA share responsibility for water management issues within their defined boundaries. These two agencies' jurisdictional areas are defined by their respective founding legislation and is currently adopted as the boundary between the Highlands North and South subareas. While the two water agencies share responsibility for water management issues, land use planning in the study area is solely the responsibility of Monterey County.



9. **Data Management.** Before preparation and implementation of a comprehensive water resource management plan, the IAC should develop a program for data acquisition and management. While not a large expenditure of resources, this effort could save valuable time in plan preparation.

FORMAT OF SECTION

Each subsection begins with a statement of a critical issue. Following this, there is an expansion of the elements of the issue. Following these is information about obstacles that will be encountered for management. Finally, an outline of possible solutions is presented. **References are given to Volume I** for additional discussion of the topic.

The full development of solutions is envisioned for Phase Two of this project, a comprehensive water resource management plan.

These are not set forth in order of magnitude.

3.1 NEW AGRICULTURAL CULTIVATION RESTRICTION

Objective: To reduce the amount of new land that is brought into agricultural production, especially in the Highlands subareas.

Benefits: Once land is brought into cultivation, an expectation is created that it will remain so for the indefinite future. Further, most water allotment mechanisms look to past water use to determine the fair share for a given parcel. Water use in the North County could increase from its current level of two times supply to three times available supply. Most of the increase would be due to new cultivation in the Highlands. Slowing new cultivation in the Highlands is the single greatest step that could be taken towards protecting the North County's water resources.

Statement of the Issue:

- Additional acreage is brought into cultivation each year, mostly in the Highlands, and mostly for strawberries. Strawberries are a \$250 million annual crop in Monterey County. Each acre of cultivation demands one to three acre feet of water and adds nitrogen into ground water system. Grading on hillsides for strawberry conversion increases erosion.

Elements of the Issue:

- Lack of land use controls. There is not a comprehensive program in North County designed to limit the impacts of additional cultivation. Within the Coastal Zone, the County has ordinances that control land clearing. Section 2.6.3 (8) of the North County Land Use Plan (No. County Regs. 20.144.080A.1) restricts conversion of uncultivated



land to agriculture on slopes in excess of 25%. Use permits are required where greater than 50% of the land is on slopes of 10% or greater.

- Land use policies encouraging agriculture. Several County plans describe the importance of agriculture to the regional economy.
- Lack of rational alternative land uses. The choice appears to be between additional, intensive cultivation or residential development.

Obstacles:

- Controlling agricultural expansion is very difficult. Unless the basin is in adjudication, there are currently few avenues available to restrict agricultural expansion. The legislature has not taken a strong stand on this issue.
- Agriculture is a powerful political and economic force in the area. Eighty percent of the nation's strawberries are grown in California. About half of the state's strawberries come from around Salinas and Watsonville. However, the new cultivation in the Highlands subareas is on smaller parcels. The Agricultural Commissioners office does not consider this new cultivation to be a significant part of the market.

Management Steps:

Interim Management Plan

	Management Strategies for New Agricultural Demand	Responsibility
1	Enhance the enforcement of the existing ordinances designed to minimize erosion and negative impacts to water supplies. The County can enforce, especially in the Coastal Zone, regulations currently on the books designed to prevent erosion and loss of valuable open space.	Planning & Building Inspection Dept.
2	Increase environmental review of new cultivation projects. New cultivation projects should demonstrate a viable water supply. CEQA review should be required for all new cultivation, especially with regard to water supply and erosion issues.	Planning & Building Inspection Dept.
3	Develop land use controls to prohibit agricultural land conversions of residential land.	Board of Supervisors

	Management Strategies for New Agricultural Demand	Responsibility
4	<p>When applications for agricultural subdivisions are approved, it is recommended that some version of the following two conditions should be placed upon the project to run with the land:</p> <ol style="list-style-type: none"> 1. That the applicant must prepare a best management practice plan for both water use and nitrate loadings prior to filing the map, and that the plan shall be implemented as part of the deed. 2. That all agricultural wells on the property be equipped with backflow devices and water meters prior to filing the parcel map if crops using chemigation are to be grown. <p>For discretionary applications/subdivisions involving non-soil dependent greenhouses the following language should be added:</p> <ol style="list-style-type: none"> 3. That all irrigation water be collected, stored and recycled for reuse. The collection and reuse improvements shall be approved and installed prior to the use. 	Board of Supervisors
4	<p>When applications for agricultural subdivisions are approved, it is recommended that some version of the following two conditions should be placed upon the project to run with the land:</p> <ol style="list-style-type: none"> 1. That the applicant must prepare a best management practice plan for both water use and nitrate loadings prior to filing the map, and that the plan shall be implemented as part of the deed. 2. That all agr. Wells on the property be equipped with backflow devices and water meters prior to filing the parcel map if crops using chemigation are to be grown. <p>For discretionary applications/subdivisions involving non-soil dependent greenhouses the following language should be added:</p> <ol style="list-style-type: none"> 3. That all irrigation water be collected, stored and recycled for reuse. The collection and reuse improvements shall be approved and installed prior to the use. 	Board of Supervisors
5	Create an inter-agency task force to take on the issue of new agricultural cultivation.	MCWRA
6	In the inland portion (non-coastal) of North County, establish an ordinance that prohibits the conversion of land to agriculture on parcels not designated for agriculture.	Board of Supervisors

Towards a Comprehensive Water Resource Management Plan

- Policy Development. Working with the Agricultural Commissioners office, the IAC should develop a policy regarding new cultivation. The policy could contain the following language: “Agriculture is the largest sector of the Monterey economy. Vital to agriculture is a reliable and sustainable supply of water for irrigation. The ground water resources of the North County area of Monterey are currently in overdraft. New demand on water resources will threaten the viability of existing agriculture. It is prudent, therefore, to reduce the amount of new land that is brought into agricultural production, especially in the Highlands subareas.” The hilly, highly erodible sandy soils of the Highlands are typically not suitable for agriculture. However, they are suitable for strawberry crops.
- Regulatory program. Currently, the North County Land Use Plan contains a number of policies that should work towards the reduction of new cultivation in the sandy hills of the Highlands. For example:
 - Section 2.5.3 Specific Policies contains “3. The County shall regulate construction of new wells or intensification of use of existing water supplies by permit. Applications shall be regulated to prevent adverse individual and cumulative impacts upon groundwater resources.”
 - Section 2.6.1 Key Policy states the County “shall support the permanent preservation of prime agricultural soils exclusively for agricultural use. The County shall also protect productive farmland not on prime soils if it . . . does not contribute to degradation of water quality.” Virtually all of the new cultivation is on sloping non-prime soils. Specific Policy number 8 in Section 2.6.3 states in part that conversion of uncultivated lands to crop lands shall not be permitted on slopes in excess of 25% except as [otherwise] specified... and shall require preparation of an agricultural Management Plan. Conversion of uncultivated lands to crop lands on lands where 50% or more of the parcel has a slope of 10% or greater shall require a use permit. Approval of the use permit shall follow the submission of an adequate management plan. These plans should include analysis of soils, erosion potential and control, *water demand and availability*...and other means appropriate to ensure the long-term viability of agriculture on that parcel.” [emphasis added] Enforcement of this policy would seem to warrant curtailment of additional cultivation on sloping, non-prime soils, given the extent of the current overdraft of the ground water resources.

Implementation of the policies to protect ground water supplies and quality are found for the coastal zone in Section 20.144.070 Water Resources Development Standards. The intent of the section is, in part, to “...control new development to a level that can be served by identifiable, available, and long-term water supplies...” Subsection D requires a hydrologic report for “...any development which involves intensification of water use...Use where the water will be used for agricultural operations shall not be exempted from the hydrologic report.” Section E. General Development Standards states in subsection 10, “Development shall not be permitted if it has been



determined, through preparation of the hydrologic report, or other resource information [which includes, presumably, Volume I of this report], that: a. the development will have adverse impacts to local agricultural water supplies, such as degrading water quantity or quality; and, b. There are no project alternatives and/or mitigation measures available that will reduce such impacts to levels at which the long-term maintenance of local coastal priority agricultural water supplies is assured. (Ref. Policy 2.5.3.A.1 & A.2)". Subsection 11 states "Development shall not be permitted if...[it] will generate a water demand exceeding or adversely impacting the safe, long-term yield of the local aquifer..." In the definitions for the Regulations for Coastal Development Permits, "development" is defined in part as "8. removal or harvesting of major vegetation including land clearing pursuant to Chapter 16.12 and removal of natural vegetation specified in the applicable ordinances as requiring a coastal development permit. "Development" shall not include removal or harvesting of major vegetation for agricultural purposes, except in North County as per Section 20.144.080.A...[which requires a coastal development permit for new or expanded agricultural operations if 50% or more of the parcel has a slope of 10% or greater...]"

These regulations should be carefully enforced to bring about the two goals of water demand management and erosion control.

3.2 AGRICULTURAL WATER DEMAND MANAGEMENT

Objective: To encourage existing agriculture to improve their irrigation efficiencies.

Benefits: Irrigation is the largest component of water demand in North County. Irrigation efficiency requires considerable planning, commitment and investment on the part of the individual members of the farming community. There is no reason to wait for a management plan to begin the process of efficiency investment. Several thousand acre feet of water could be saved each year with irrigation efficiency.

Statement of the Issue:

- Approximately 85% of the water used in North County is for agricultural irrigation. The amount of water required is a complex calculus of climate, soils, cropping and technology. Since the current demand is at more than twice the sustainable supply, moderate improvements in irrigation efficiency will not be sufficient to solve the problem. Either an outside source of water must be supplied, or existing agriculture must be curtailed, to bring the demand into balance with the supply.

Elements of the Issue:

- Agriculture, as a land use activity, is protected and promoted in the North County as it is in most of California.



- Agriculture is the foundation of North County's economy. However, much of the strawberry production in the Highlands is done on small parcels by marginal operations (often tenant farming). Additional impediments to these operations (possible future methyl bromide ban or water shortage) will have a significant impact on their viability.
- There are limitations on the ability of existing land use regulation to control agriculture.
- Substantial acreage zoned for residential use is currently in agricultural production.
- Agriculture in North County is supplied by individual wells on private property. The law establishes strong rights for "overlying owners" in ground water.

Obstacles:

- Agriculture is a powerful industry in Monterey County and will be politically difficult to regulate. Requiring water meters will be met with strong resistance. However, meters are already required in the Springfield and Highlands North Subareas (note: the metering requirement applies to larger wells in all of the area under the jurisdiction of the PVWMA).
- The use of ground water is a property right. Overlying owners (typically) have the highest priority to water beneath their property. Current water law does not encourage (in fact discourages) water use reduction.
- While agricultural conversion generally reduces water demand, it also creates demands for increased infrastructure. Allowing residential development in lieu of agriculture creates demands for roads, schools and other public services.
- Agriculture, in some residentially zoned areas, has a higher economic value than residential use. The initial investment to grow strawberries may be substantially lower than residential development.
- A fallow bank would require financial incentives to make it feasible. Purchasing land for retirement and maintaining it requires substantial public funds.
- There is little statutory assistance to agricultural water management. The legislature repealed a stronger approach in favor of the non-mandatory Agricultural Water Supplier's Efficient Water Management Practices Act (Water Codes Sections 10900 *et seq.*).
- Methyl bromide fumigants may be banned in the near future. This may curtail strawberry cultivation.



Management Steps:

Interim Management Plan

	Management Strategies for Existing Agriculture	Responsibility
1	Encourage crops which are less water demanding.	Ag Comm.
2	Improve irrigation practices through equipment, education and cooperation.	Growers
3	Establish a fallow bank for agricultural properties.	County
4	Develop a realistic data base for agricultural water demand. The current GIS can be augmented to fully track water demand in North County.	MCWRA
5	Prohibit conversion of land to agricultural uses in residential zoned areas.	Planning
6	Support the PVWMA BMP supply augmentation program	All
7	Purchase land not appropriate for cultivation	Public and Private efforts

Towards a Comprehensive Water Resource Management Plan

- Make agriculture central to North County water resource planning objectives. Establish a forum for farmers to be involved in the planning of the area.
- Establish minimum irrigation efficiency requirements such as those adopted in 1993 by the Fox Canyon Ground Water Agency in Ventura County (FCGMA Ordinance No. 5). By ordinance, this Agency requires an irrigation efficiency of eighty percent. Compliance is by annual irrigation system efficiency audits conducted by a mobile irrigation laboratory. Mobile labs are provided by both public and private (for-profit) enterprises. This approach has broad support as it accounts for soil and climatic differences and changing market conditions. A copy of the Fox Canyon ordinance is contained in Appendix C.
- Establish a program of incentives, e.g. water use fees, to encourage irrigation efficiencies. The PVWMA Basin Management Plan supports the development of an incentive-based program, which has been partially implemented through metering requirements and water use fees.
- Limit the amount of water used for agriculturally designated lands brought back into production. Require efficient irrigation systems, the installation of water measuring devices such as meters, and reporting of water use to monitor the effectiveness of water management programs.

- Encourage agriculture in some areas to convert to less water-intensive uses as provided for in the North County Land Use Plan (coastal) and Area Plan (non-coastal).
- Purchase and retire land. The use of conservation easements and outright purchase can permanently protect land from development and cultivation.
- Form a district to provide a supplemental source of water.
- Establish water use fees. The PVWMA currently has fees in place. Use GIS water demand as a data base to establish water use fees.
- Support the supply of an outside source of water supply to agriculture (esp. Pajaro and Springfield Terrace)
- Require meters as is currently done in PVWMA.

3.3 RESIDENTIAL WATER DEMAND MANAGEMENT

Objective: To reduce the addition of residential demand to the area through modifying zoning densities to bring them into line with the “50% rule” and to manage current residential demand.

Benefits: While it is inappropriate to halt all further development in North County, the zoning in the area can be brought into conformance with the reductions required in the Land Use Plan (coastal zone). This will help to reduce the number of future residences relying upon the ground water resources.

Statement of the Issue:

Current Demand

Residential water use accounts for approximately 15 percent of the total water demand in the study area. Because potential existing residential water savings are relatively small, draconian methods in this arena are not appropriate. However, the County can always strive to find ways to reduce water use by residences in the area.

Potential Demand

North County is a rural area experiencing demands for increased residential development. The area is within the “commute-shed” of San Jose and the southern Bay Area. Speculative investment in real estate will be looking for a return. Although residential water use will always be a smaller component of overall water demand, residential development creates “hard” demand for *potable* water supplies.

Elements of the Issue:

Current Demand

- It is difficult to estimate water use in a low density residential area. Most residences in the area are on single or small group wells. These wells are not metered and records seldom kept. Further, there is a wide range of demand on larger parcels. Ranchettes, homesites consisting of one or more acres, vary in demand. Some ranchettes use little more than typical suburban homes. Others have extensive gardens, orchards and livestock, all requiring considerable water. It is estimated that the average homesite of more than two acres will use over an acre foot of water per year, compared to suburban use of one-third acre foot.
- Residential water demand is a small percentage of the area's demand. Because agricultural water use is difficult to regulate, energy is typically directed towards regulating residential use, even when this represents approximately 15% of total demand. Extensive programs can result in only a small savings overall.
- Without meters and government monitoring, it is difficult to enforce restrictions on water use by residences. Low flow installations are very effective at reducing demand. Voluntary programs are also effective.

Potential Demand

- Residential development creates "hard" demand for water supplies. Hard demand does not go away. If agriculture runs out of water, fields go fallow until supplies return or are augmented. A residence needs a constant supply, otherwise there is a "state of emergency".
- Agricultural water use in parallel with residential use can put existing hard residential supply at risk by continued participation in regional overdraft. When supply is "used up" agriculture goes fallow, hard demand remains. Alternatively, continued nitrogen loading can render currently potable water supply nonpotable.
- Residences need potable water. The water must be above drinking level standards. Only approximately 5% of domestic supplies are used for drinking, they must all meet drinking water standards. Further, domestic use comprises less than 15% of the overall water consumption in North County. Therefore, less than one percent of the water used in North County drives the quality standard for the resource.
- Build-out projections show that over 2,000 more dwelling units could be permitted under current zoning, which includes a permit cap in the coastal zone.

Obstacles:

Current Demand

- Individuals vary widely in their capacity and interest in saving water.
- Enforcing restrictions on the level of the individual house is very difficult, costly and intrusive.
- Retrofitting costs money and incentives are required for implementation.
 - Metering private wells at individual homes is very unpopular. Meters are interpreted as the first step towards taxation/assessment on the resource. It is commonly believed that property owners have unlimited rights to water beneath their land. The PVWMA currently has water fees required of all users. Small wells are not metered, their usage is estimated.

Potential Demand

- Residential development is lucrative and a basic expectation of most landowners. Challenges to any rezoning are likely from landowners who stand to lose substantial potential profits from development.
- Rezoning may reduce density potential, but they are not guarantees of low development. Land use regulation can be changed by future boards with less concern for the issue of water conservation. Mechanisms more permanent than zoning are required.
- The coastal zone rule will be difficult to enforce once the permit cap is reached. There will be as many as 2,000 new homes that could be built under the current zoning scheme. These landowners are probably not aware or at least not concerned with the permit cap. They will be concerned when their application for a permit is denied because of the cap. Many undeveloped parcels of land will remain after the limit is reached. It will be very difficult for the county to deny permits for these properties without creating a taking. The basis for the regulation is the protection of the public health.
- Currently some areas of North County are under a B-8 restriction, which means they cannot be further subdivided or have a second dwelling unit built. The use of the B-8 regulation is considered temporary until a solution is found to the water shortage. This expectation creates a tension to resolve the problem.
- Lower density makes more difficult the provision of a community water supply system. Because units are spread out, the cost of connecting each one is much greater.



Management Steps:

Interim Management Plan

Current Demand

	Management Strategies: Existing Residential Demand	Responsibility
1	Establish educational and retrofitting programs in the North County. Education can include instruction on water-saving plants. Educational programs are effective in reducing demand. The last drought saw many communities reduce demand without mandatory restrictions. The Aromas Water District and Pajaro Community Services District have already implemented some level of retrofit and/or conservation program. The City of Watsonville funds conservation and outreach activities that reach the North County area.	MCWRA Various Agencies Water Suppliers
2	Require retrofit of showers, toilets and faucets with low flow devices. All residential units should be required to retrofit to water saving devices upon sale.	Board of Supervisors
3	Continue to encourage landscaping that does not require extensive irrigation reduces demand.	Various Agencies
4	Require new development to offset its demand through retro-fitting existing development, or agricultural land retirement.	Board of Supervisors
5	Establish a fee on new development calculated to pay for improvements necessary to bring the area into balance.	Board of Supervisors



SAMPLE: Existing residential demand can be modified in a number of ways. The most substantial savings can be gotten through the retro-fitting of those dwellings that do not currently have water saving devices. An excellent opportunity to require retrofitting is at the sale of the property. An ordinance should be adopted with language similar to the following:

“X.1 Purpose. In order to conserve water resources in North County area where ground water resources are currently in overdraft, it is deemed appropriate to reduce the consumption of water where appropriate.

“X.2 Applicability. This regulation shall apply to any residential unit which is being sold or otherwise transferred (except through probate or by bequest);

“X.3 Retro-fitting. Any residential unit as described in X.2, shall be fitted with water saving devices including toilets (flushing with 1.5 gallons) and shower heads (consuming 2.5 gallons per minute) and faucet aerators;

“X.4 Inspection. Any residential unit described in X.2, above, shall provide proof upon sale that the residence is currently fitted with water saving devices described in X.3, above.

“X.5 Enforcement.

Future Demand

	Management Strategies: Future Residential Demand	Responsibility
1	Modify the general plan to direct new residential development towards areas of greater supplies of high quality water and away from areas with accessibility and nitrate problems.	Board of Supervisors
2	Maintain low levels of residential development. Avoid rezonings that allow higher densities.	Board of Supervisors
3	Reduce water demand and consumption in new development.	Various Agencies
4	Replace the existing B-8 zoning with a general plan modification (and rezoning) that achieves the same result without the impermanence of the B-8. The land use plan can be modified to eliminate the second dwelling allowance, if allowed by law.	Board of Supervisors
5	Any new development in Granite Ridge, Springfield Terrace, and Pajaro should make provisions for receiving a community water source (i.e. connections to the street). Any large subdivision in the Highlands should make provision for receiving outside water as well. Insure new subdivisions provide water distribution infrastructure. Retrofitting water supply lines is far more expensive than installing them prior to finishing road construction.	Board of Supervisors

Towards a Comprehensive Water Resource Management Plan

- Work towards bringing the zoning density into line with the “50% rule” in the North County coastal area. That policy is stated as follows:

2.5.3 Specific Policies

A. Water Supply

“3. New lots or units may be created to a level of 50% of the build-out remaining at the time of LUP certification, for each North County subarea, as defined in the report entitled Ground Water in North Monterey County, California, dated 1980, by the U.S. Geological Survey. The 50% build-out figures are calculated by subtracting the existing units by subarea from the potential build-out of each subarea, based on existing zoning. After the existing lots of record are subtracted, the build-out figures are adjusted by a method that includes limiting factors of overdraft, water in storage and nitrate loading. This calculation will provide the remaining buildable units for each subarea. This build-out figure calculated for each subarea shall include senior citizen units, caretakers units, multiple family dwellings, employee housing and lots created through subdivision, but shall exclude development of a single family dwelling on a vacant lot of record.

Fifty percent build-out, limiting new development to the safe yield level based on existing hydrologic information, is permitted on an interim basis until additional North County hydrologic studies are completed. Additional development beyond the numbers calculated for each subarea will only be permitted after the North County Hydrologic Studies are completed and a ground water management plan has been developed. At that time, new development allocations will be calculated based on the additional hydrologic information provided by the studies. The development allocations will be implemented as an amendment to the North County Land Use Plan and Coastal Implementation Plan.”

- The policy, with the publication of Volume I, is now obsolete. It should be further implemented by reducing land use densities for the area within the jurisdiction of the North Coast Land Use Plan to a level that would accommodate no more dwelling units than allowed by the 50% rule. This should allow an economically viable use of residential land within the North County, while not adding considerably to the ground water demand. Map and text changes are required to implement this rule, which is currently a simple permit cap. If the permit cap is allowed to remain without a commensurate reduction in densities in the area, a serious anomaly will arise when the cap is reached. Many parcels will remain without any development. The County will be faced with instituting a moratorium on further development at that time, or withdrawing the rule. The build-out analysis showed as many as 3,547 new units (requiring 1,200 to 1,500 acre feet of water per year) would be allowed by the underlying zoning of the coastal portion of North County. At the time of the study, the 50% rule would only allow an additional 667 units.



The difference, nearly 3,000 units, constitutes considerable development pressure that will be exerted when the cap is reached. Explore the necessity and validity of metering individual wells. Wells should not be metered until a comprehensive program is developed for the use of the information. The County should decide the more difficult question of assessment for water before it takes on the metering issue. Meters are perceived as the "camels nose under the tent" and in many cases rightfully so. Metering wells develops valuable data and is the first step in developing a water management program for residential water use.

- Develop a source of water adequate to meet the needs of the area's build-out population.
- Manage runoff within hilly areas by requiring drainage systems which include flow retention/recharge basins. This will enhance recharge and reduce erosion and sedimentation. (Current County policies are in place).

3.4 GRANITE RIDGE -- WATER ACCESSIBILITY

Objective: To insure a viable and regular supply of potable water to the Granite Ridge area.

Benefits: This will protect the residents and their real estate investments.

Statement of the Issue:

Although water balance studies reveal that recharge in the area meets or exceeds demand, water supply availability problems exist in the Granite Ridge subarea. This is not so much a function of volume of water as it is the nature of the bedrock geology that limits access to the volume of water in storage.

Elements of the Issue:

- As a result of the granitic bedrock dominated geology of the Granite Ridge area water supply availability can be a significant issue. Ground water users in this area commonly encounter dry holes and have wells that may seasonally go dry.
- Ground water in bedrock occurs within fractures and other structural discontinuities. Both the production rate and the recharge capability of the well is a function of the number and degree of connectedness of the fractures. The wells must intersect enough intersecting water-filled cracks to provide for an adequate flow to a well. In these geologic conditions it is possible to drill a well that intersects so few fractures that it is deemed "dry".
- The limited amount of ground water in storage along with fracture controlled flow paths limit the amount of dilution of tributary septic system return flow that can occur. The limited dilution and channeled flow can create situations where wells display nitrate ion

concentrations far in excess of estimated loading rates. The past practice of allowing sewage pits in areas where granite is shallow may contribute to contamination of ground water supplies. The existence of these pits together with the use of a minimum 50 foot well seal in a gravel-packed well may allow the continued degradation of water supplies.

- Areas with 40 or more septic systems per square mile are considered to be a high density septic area and have the potential for nitrate contamination problems. The density of septic systems in areas zoned one acre minimum far exceed this level and may be a source of contamination to adjacent ground water users.
- As a result of the limited access to the volume of water in storage, many wells in the bedrock are prone to seasonal failure in response to deficient recharge.
- Water supply is low when water is needed most. During summer supplies diminish in the wells. Summer and fall is when the need for fire protection, landscaping and recreational water is at its peak. Water consumption increases by about 100% in summer over the low point of winter.

Obstacles:

- Locating an adequate, affordable source of water for the area. With low density development, the per-unit cost of providing water is expensive.
- Water systems are often either under-funded, small mutual water companies, or for-profit, private utilities. Their ability and motivation to improve/expand systems is unreliable.
- Placing the needed infrastructure for a water supply system will be expensive because the dwellings are spread apart.
- Drought-resistant landscape permit conditions of new development can significantly reduce water demand. While the water demand for these new units can be reduced through water conserving fixtures and landscape restrictions, the bulk of the residential water demand is existing. The ability to restrict or require modification of landscaping of existing residences which are supported by ground water extracted as overlying users is difficult.
- Down-zoning is politically difficult. Development expectations exist in spite of the B-8 restriction.
- The B-8 limits creation of new subdivisions. New subdivisions have the means to develop multiple or deeper wells providing for some redundancy in the water supply system. The B-8 has no effect on curtailing the development of single-family dwelling on existing lots of record. Ironically, these are the type of units typically developed based on the most vulnerable water supply--a shallow well.



Management Steps:

Interim Management Plan

	Management Strategies for Granite Ridge	Responsibility
1	Curtail further residential development until a source of water is made available to the area.	Board of Supervisors
2	Place strong restrictions on existing and future landscaping. Promote and assist with the establishment of water-saving landscaping.	Board of Supervisors
3	Maintain adequate water for fire fighting.	Fire Department
4	Perfect the B-8 restriction through zoning change.	Board of Supervisors
5	Develop an aggressive retro-fit program for existing dwellings (especially upon sale of the residence).	Board of Supervisors
6	Require greater storage capacity for all dwellings (water tanks, cisterns).	Planning & Building Inspection Dept.
7	Establish water system design and construction standards which will allow eventual tie in with regional system.	Board of Supervisors

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- Promote importation of potable water to the area.
- Develop area wide water supply distribution infrastructure.
- Reevaluate Community Service Area for water supply as was considered in 1985.

3.5 NITRATE ION CONTAMINATION CONTROL

Objective: Reduce nitrogen loading and slow resulting degradation of ground water quality. Protecting the quality of water protects the available quantity of water.

Benefits: Nitrogen loading is a long term problem requiring a long term program for solution. Like irrigation efficiency, it will take considerable individual resources and commitment to achieve a meaningful reduction in loading.

Statement of the Issue:

Area-wide

Ground water quality in the study area is generally good to excellent. However, ground water quality is locally impacted by elevated concentrations of nitrate and chloride ions. Nitrate ions concentrations in North County exceed drinking water standards in many locations. Elevated nitrate ion concentrations are the result of both agriculture practices and domestic wastewater disposal in the study area. More than ninety percent of the nitrogen loading in the area is derived from agriculture, the remaining ten percent is from residential development. As could be expected, elevated nitrate ion concentrations in the North County area are most pronounced in areas of intensive agricultural cultivation and residential development. Like many areas of intensive agricultural cultivation, nitrate ion concentrations in the ground water will likely continue to display an upward trend in nitrate ions concentrations in response to infiltration of excess applied nutrients. Additionally, almost all residential development in the North County area is unsewered and contributes to nitrogen loading through septic systems.

Individual Wells

As stated above, nitrate ion concentrations in some wells are far higher than would be predicted given the nitrogen loading and the volume of ground water in storage. The problem is particularly pronounced in ground water derived from either the shallower portions of the regional aquifer system or ground water derive from shallow perched aquifer systems. Analysis of existing data suggested that elevated nitrate ion concentrations impact wells that are perforated with 125 feet of the water table. The occurrence of elevated nitrate concentrations in the shallower portions concentrates the impacts to owners of shallow wells, typically individual well owners or small water systems. Elevated nitrate ion concentrations have forced many of these shallow well owners to abandon existing wells and replace the wells with deeper wells to meet drinking water standards. This has been a substantial economic impact to these ground water users.

Elements of the Issue:

Area-wide

- Regardless of management steps taken today, nitrate ion concentrations in shallow ground water will continue to increase. The nitrate ion is chemically conservative and travel time from ground surface to water table can be tens of years depending on conditions. Nitrate ion concentrations in ground water likely reflect loadings of last decade. Volume of nitrogen in water in transit through unsaturated zone is considerable.
- Commercial agriculture is dependent on significant inputs of synthetically derived nitrogen based fertilizers. Application of additional nutrients is an accepted and necessary practice.

Fertilizer application practices can be improved, but variations in soil types, inherent inefficiencies in irrigation application, and market forces to increase yields all but assure that some significant portion of applied nitrogen will be lost to ground water system.

- Raising domestic animals (horses, cows) contributes to nitrogen problems. Manure spreading on fields increases loading.
- Without a regional sewer system, residential development in the area can only occur based on on-site waste water disposal. Disposal through septic systems results in additional nitrogen loading. Disposal of wastewater through spray fields reduces nitrogen loading, however, this practice increases water demand by elimination of return flows.

Individual Wells

- Many individual wells experience very high nitrate ion concentrations, even though others in the immediate area are not so affected. These higher levels are typically the result of wells being completed in either perched aquifers or in the shallow portion of the regional aquifer. These shallow aquifers are most impacted by septic effluent and agricultural infiltration. The nitrates ion concentrations slowly decrease with increasing depth into the aquifer system, the result of mixing and dilution
- Many of the shallow wells in the area support individual residences and/or small water systems supply a number of individual residences. When nitrate ion concentrations in the well increase above drinking water standards, the water system or well no longer constitutes a legal supply. Typically, the only solution is the construction of a deeper well at significant cost to homeowner or water company.
- Forty percent of the parcels in the area are served by private wells that have a single connection. No data are available regarding the nitrate ion concentrations in these wells as the use of single connection wells is unregulated. Many users in the area may unknowingly be consuming water that contains high concentrations of nitrate ion.
- Current real estate disclosure requirements appear limited to whether or not a water system meets drinking water standards, and does not require the fact that a system is increasing in concentration and approaching the maximum contaminant level (MCL) be disclosed.

Obstacles

Area-wide

- The large majority of the nitrogen loading in the study area derives from agricultural fertilizers. The leaching of excess fertilizer results in the eventual degradation of ground water to the extent where the use of the water for drinking water is impaired. The use of water for drinking water is the highest and best use in the state and this use is being



impacted by the *legal* use of fertilizers. This situation creates a policy conflict between water quality protections (Porter Cologne, etc.) and land use/fertilizer use. While current regulations prohibit the degradation from point sources of nitrogen contamination (fertilizer distributors, feed lots, back-siphon events) the non-point source degradation associated with legal use of fertilizer is not addressed. This problem is not unique to North County and effects areas with intense agriculture throughout the western United States. This contradiction in policies will allow continued degradation of ground water quality to the point where the State Water Resources Control Board could intercede. However, the effect of interceedence of the SWRCB would depend on what actions the SWRCB actually took.

- Prohibiting the use of percolation pits for sewage disposal for residential development could make some lots in the area unbuildable. This could be construed as a regulatory taking. Alternatively, percolation pits could be allowed only after a thorough evaluation of all other options. (This is currently department policy, but could be made part of the ordinance.)
- Use of nonpotable plumbing systems not currently legal in Monterey County. Reclaimed water is being utilized for toilet flushing on a pilot-project scale (commercial use only) at several locations in California. Some progress on this issue could be forthcoming in the future.
- Use of dual-systems has significant cross-connection risks.
- Well head treatment systems require maintenance and service. It is difficult to assure that this work is being done. Well head treatment for nitrates also may entail waste effluent disposal issues. Treatment units are approved when small systems treat at the source. However, treatment is not to be considered in the approval of a subdivision.
- Funding for data collection is inadequate.

Individual Wells

- The complex geology makes prediction of high risk wells difficult. Identification of low permeability strata in a borehole does not assure the areal extent of this strata and its ability to restrict nitrate contamination.
- Water quality testing is difficult to implement. People may not be aware of the potential for high nitrates in their wells.
- Private well users can use "point of use" treatment systems.
- A new well is a considerable financial burden for a homeowner. Individuals will vary in their ability to afford a new, deeper well.



Management Steps:

Area-wide

	Management Strategies for Water Quality	Responsibility
1	Continue and expand water quality data collection. The data collection program should be evaluated to determine whether current sampling locations are adequate in terms of spatial distribution and, more importantly, in regards to depth within aquifer system. Consideration could be given to supplement current analytical program with additional geochemical constituents to help determine contribution of various sources (i.e. radio-age dating of nitrogen compounds, MBAS compounds, caffeine).	MCWRA, Env. Health, AG COMM, PVWMA
2	Establish on-farm nutrient management programs integrated with efficient irrigation practices. Implementation of such programs would reduce both the amount of fertilizer applied and the volume of leaching thereby reducing nitrogen loading to the ground water system. This would include education, as well as on-farm consultation consisting of irrigation water, soil, and tissue testing. Existing wells should be tested for total nitrogen content to allow for accommodation of the total mass of nitrogen in nutrient input planning. In this manner, agricultural pumping can begin to beneficially utilize excess nitrogen in ground water. Soil and tissue testing can assist in scheduling nutrient inputs. Possible funding sources for this would include grants from pro-active fertilizer producers.	Ag. Commissioner, Env. Health, MCWRA, PVWMA
3	Adopt residential septic system standards requiring the use of advanced designs that reduce nitrogen loading by increasing denitrification. These advanced designs typically incorporate a source of organic carbon within the subsurface to maximize denitrification of the effluent. Research existing technology and develop revised septic system standards which incorporate nitrogen reducing technology. Prohibit or severely restrict the use of percolation pits.	Env. Health
4	Require developments to connect to existing water systems where feasible	Board of Supervisors
5	Develop a program whereby an assessment is charged to users of nitrate fertilizers based on application rates. This would establish an incentive towards best management practices and the "taxes" could be used to further specified interim measures.	Board of Supervisors

Individual Wells

	Management Strategies for Individual Wells	Responsibility
1	Develop an educational and regulatory program so that future wells are not developed in waters of high concentration. Develop educational materials for mailing to homeowners.	Env. Health
2	Control septic system installation at locations to minimize impacts of discharge of effluent to perched aquifers that would contaminate nearby wells.	Env. Health
3	Provide financial assistance to replace impacted wells.	Various Agencies
4	Modify real estate disclosure requirements to include water quality history and explicit disclosure of concentrations relative to MCLs. This should include discussion background on nitrate ion concentration in the area and health risks of elevated nitrate ions. This could take the form of an informational flyer produced by MCWRA and MCHD-EHD.	Board of Supervisors
5	Encourage water quality testing to individual well owners.	Env. Health
6	Revise minimum well construction standards requiring uppermost perforations to be a minimum of 125' below static water level. MCHD-EHD requires E-logs on some new wells to assist in identifying strata for deep seals.	Env. Health
7	Initiate a low interest revolving loan fund for replacement of nitrate ion impacted wells that provide domestic supply. (This could possibly be funded by an assessment of land in agricultural production, a surcharge on synthetic fertilizer or some other mechanism.	Various Agencies
8	Continue to build the County's database on wells and well problems.	All Agencies
9	Expand prohibition of seepage pits to areas outside the B-8.	Env. Health
10	Develop source of funding to support data acquisition efforts, interim demand management measures and ground water quality management functions.	All Agencies

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Area-wide

- Participate in efforts to remove contradictions in policy regarding fertilizer use and effects.
- Disclosure of information on nitrate concentration in wells should be improved. The disclosure should require information on the current water quality of the well, drinking water standards, a discussion of how nitrate contamination occurs, background levels of nitrate in North County, and the Health implications of high nitrate in water
- Encourage consolidation of water systems to assure adequate financial resources to respond to water quality problems.

Individual Wells

- Although not currently legal, consideration should be given to well head treatment of ground water to meet drinking water standards. This might have less economic impact than a requirement for deeper wells or restriction of agricultural practices. Well *systems* are currently required to treat water quality problems.

3.6 SEAWATER DEGRADATION

Objective: To reduce the amount of seawater displacing the basin's storage capacity. This would include both ocean intrusion (horizontal movement of seawater through an aquifer) and slough infiltration (vertical leakage from Elkhorn Slough).

Benefits: Over the very long term, water quality near the coast will improve if pumping is ceased and the slough freshened. Bringing the area back into balance will allow the resumption of some near-coast pumping, reducing reliance upon imported water

Statement of the Issue:

Seawater Intrusion

There is evidence of seawater intrusion in the Springfield Terrace and Pajaro areas of the study area. Seawater intrusion has advanced at least as far as Highway 1 (approximately 1 mile inland) and additional data suggest that intrusion may have advanced across the Highway.

Seawater infiltration

Available data suggest that the elevated chloride ions in the ground water in the areas adjacent to the Elkhorn Slough are the result of vertical leakage from this water body.

This continued degradation impacts agricultural and domestic supplies in these areas requiring the drilling of deeper or more inland wells.

Elements of the Issue:

Seawater Intrusion

- The volume of seawater intrusion was quantified as part of the ground water modeling effort at an average annual value of approximately 750 AF/Y over the last 22 years.
- The migration of seawater into the aquifer system requires pressures in the aquifer system to be less than sea level thereby creating a gradient favorable for movement into the aquifer system. If water levels were above sea level intrusion from the subsea outcrops would diminish
- Seawater intrusion impacts only coastal landowners, however, seawater intrusion is caused by water levels at the coast being below sea level--the result of both coastal *and* inland pumping.

Seawater Infiltration

- Water quality data reveal Elkhorn Slough to contain water of similar chemical character and concentration as seawater the majority of the year. Analysis of ground water quality data from this area suggests the occurrence of elevated chloride ion concentrations in the ground water at elevations just below sea level, suggesting a surface source. Additionally, records from several wells located immediately adjacent to Elkhorn Slough show a significant and sudden increase in chloride ion concentration after 1983 when Elkhorn Slough levees were abandoned.
- Analysis of the hydraulics of Elkhorn Slough/ground water system suggest that under current conditions, Elkhorn Slough is estimated to be leaking approximately 3,000 to 5,000 AF/Y of seawater into the ground water system. This analysis is consistent with the ground water modeling of the study area which quantifies the average recharge from Elkhorn Slough at approximately 3,660 AF/Y.
- Leakage of seawater from the Slough impacts only users near the Slough, however, leakage is the result of water levels underlying the Slough being below sea level--the result of both local and more inland pumping.



Obstacles:

Seawater Intrusion

- Political resistance to PVWMA BMP project could prevent building of the water supply project. Voter concerns include cost of the project and equity issues regarding services areas and assessment zones.

Seawater Infiltration

- Years of human alterations to the Slough have resulted in continual disruptions to the Slough ecology. Efforts to alter Slough environment, regardless of motivation, may encounter resistance from the environmental community.
- Cost of modifications and operation/maintenance of existing and new tide control structures.
- There may be conflicts among varying groups as to what the appropriate constitution of the Slough should be. The Slough has alternated from salt to fresh water several times both historically and over geologic time.

Management Steps:

Interim Management Plan

Seawater Intrusion

	Management Strategies for Seawater Intrusion	Responsibility
1	Support the PVWMA BMP project process. Service to the Springfield Terrace area is included in the PVWMA Basin Management Plan which will include the construction of a pipeline and the importation of water to the PVWMA area from outside the area. While importation of water will halt or reverse seawater intrusion, it will not quickly, if ever, restore water quality in the intruded areas. Intruded areas of the aquifer will remain degraded for the foreseeable future.	Board of Supervisors PVWMA MCWRA Various Agencies
2	Reduce pumping near the coast. The mitigation of seawater intrusion in the Springfield area will require the cessation of the majority of pumping in this area. This would require land fallowing/retirement and/or the development and delivery of an alternative source of water. Short-term solutions in the Springfield Terrace area are limited to the construction of deeper wells and wells at more inland locations.	Growers

Seawater Infiltration

	Management Strategies for Seawater Infiltration	Responsibility
1	Develop a tidegate structure at Parson's Slough. An hydraulic analysis of seasonal and tidal flows in the Slough should be performed to optimally site and install additional tidal flow control structures. (Existing tide gates have been repaired at Elkhorn Road.)	Various Agencies
2	Require well design standards for areas near Slough area that would require perforation be placed below specified elevation would minimize leakage and protect well owner. (Leakage from the Slough is greatest in areas where horizontal and vertical separation between well and Slough are small.) In the short term, construct wells with perforations below elevations of -100 feet MSL to assure adequate dilution of percolating water from Elkhorn Slough with native ground water. To mitigate degradation resulting from leakage from Elkhorn Slough, restrict pumpage and allow water levels to recover. Well application should be rooted to MCWRA and PVWMA for review of infiltration issues.	Various Agencies
3	Consider removing CAP zoning on properties within 1000' of sloughs to allow future conversions and to allow restoration as a buffer between development and the slough.	Board of Supervisors

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Seawater Intrusion

- Support the use of tertiary treated effluent for agricultural irrigation. Reclaimed tertiary-treated water for agricultural use could be developed with water from the Watsonville Treatment Plant. Currently this source of reclaimed water is being considered as a possible component of the PVWMA BMP project.

Seawater Infiltration

- As the current water quality conditions within Elkhorn Slough are the result of man-made alterations to this system, consideration could be given to the alteration of Elkhorn Slough operations that would prevent seawater from migrating as far inland within the Elkhorn Slough system. Currently, Elkhorn Slough water is typically the concentration of seawater as far inland as Elkhorn Road and seawater fills the various fingers of the Elkhorn Slough system along Dolan and Russo Roads. In the absence of modification of Elkhorn Slough operations, the quality of the shallow ground water near Elkhorn Slough will continue to degrade. Alterations to Elkhorn Slough hydrology could take the form of additional tide gates or other flow control measures. The re-establishment of brackish to

fresh water conditions within Elkhorn Slough and associated fingers would have significant beneficial impact on the ground water system.

- The Elkhorn Slough Management Plan promotes restoration of freshwater wetlands. Control of Slough salinity should be considered a cost of ground water quality protection and funded as such. A project to change the Slough environment will likely require NEPA and CEQA review. Availability of baseline data should be evaluated.
- Develop an education outreach program to inform the public as to the impacts of the current Slough environment.
- Form an Elkhorn Slough IAC through the Elkhorn Slough Foundation's Research Advisory Committee to assist in implementing the Management Plan recommendations that address issues of salinity, flow control, sediment loading, organic contamination, etc.
- Restoration of a fresh water wetlands in the Elkhorn Slough will have an almost immediate effect on ground water quality near the Slough. Because of the density differences between salt and fresh water, salt water naturally moves downward mixing with fresh ground water in storage. Simply the removal of the source of percolating seawater will allow natural mixing to improve water quality. The replacement of overlying seawater with fresh water regime will further improve water quality. Specific interim actions to reestablish fresh water wetlands environment should include:
 - ◇ Complete repairs and replacement of existing tide sluice/gates.
 - ◇ Conduct hydraulic studies to site additional tide sluice/gates.

3.7 WATERSHED EROSION

Objective: To reduce the amount of land scour and minimize sediment entering the surface waters of the North County.

Benefits: Reducing erosion has numerous benefits: improving agriculture viability, reducing municipal maintenance costs and private property damage, and reducing the loss of wetlands in and near the Elkhorn and Moro Cojo Sloughs.

Statement of the Issue:

- Salinity, development, and agricultural practices all contribute to erosion damage within the watershed(s) of the North County. Runoff carries excessive loads of sediment as well as pollutants into receiving water bodies. The discussion below is derived principally from the "Watershed Plan and Environmental Assessment" developed for the Elkhorn Slough

Watershed Project.⁵ The conclusions and numerical estimates quoted below are from this source.

Elements of the Issue

- Erosion in the watershed creates a variety of serious problems for the region. An estimated 40,000 tons of sediment is deposited per year on roads or in roadside ditches. The Monterey county road department spends an estimated \$100,000 per year to remove sediment from roads and drainages.
- An estimated 80,000 tons of sediment is delivered to the two sloughs (Elkhorn and Moro Cojo) and adjacent watersheds each year. Wetland losses are estimated by the Project at 2.5 acres per year around Elkhorn Slough. As salinity in the slough increased, salt sensitive plants on the edge of the slough have been replaced with salt water vegetation. Tidal action has scoured the banks, creating erosion into the slough.
- The cultivation of several hundred acres of land in the North County each year creates erosion and sediment transport. The problem is exacerbated by the ability to plant strawberries (the primary crop of new cultivation) on hillsides, where erosion is far worse. According to the findings of the Elkhorn Slough Watershed Project⁶, citing the Soil Conservation Service (1984), average long-term rates of erosion for strawberry fields is estimated to be 33 tons per acre per year. Compare this to one ton for native vegetation, and only three to five tons for field crops and artichokes. An acre of bushberries, another hillside crop, erode 15 tons per year.
- There may be some abandonment of marginally successful strawberry fields as a result of a potential methyl bromide ban. The hilly-sandy land is generally unsuitable for other types of crops. When abandoned, these fields will revegetate.

Obstacles:

- There are political and social obstacles to managing erosion in the region. The Elkhorn Slough Watershed Project found that a high percentage of the strawberry growers in the area are tenants. Further, these growers tend to occupy the "steepest and most erodible areas within the watershed."⁷ Many of these have difficulty communicating in English or with government representatives, and thus do not take advantage of the programs available for sediment and erosion management.
- Slough management requires significant capital investment and public funds are dwindling.

Management Steps:

⁵ USDA, Soil Conservation Service, "Final Watershed Plan and Environmental Assessment, Elkhorn Slough Watershed Project, Monterey and San Benito Counties, California." April 1994.

⁶supra, page 15

⁷ supra, page 8



Interim Management Plan

	Management Strategies for Watershed Erosion	Responsibility
1	Reduce or eliminate new cultivation in steep sandy portions of the area. Prohibit conversion of land zoned for residential use to agricultural use.	Board of Supervisors
2	Follow the recommendations set forth in Elkhorn Slough Management Plan. Implement conservation practices in existing fields.	Various Agencies
3	Implement conservation practices in existing fields. The programs set forth in the Elkhorn Slough Watershed Project should be supported. The plan is designed to strengthen the ability of local growers to manage their fields in ways that will reduce erosion. This requires information, education, institutional strengthening, as well as the financial resources necessary to achieve them.	Ag. Commissioner/NRCS Various Agencies

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- The Elkhorn Slough Watershed Project ⁸ was undertaken to reduce erosion and sediment damage and non-point source pollution in Elkhorn and Moro Cojo Sloughs and their watersheds. The plan proposes establishment of a team to provide technical assistance to growers on the installation of land treatment practices to reduce erosion and resulting sedimentation and pesticide transport. Special focus will be given to assisting ethnic minority farmers and strawberry growers. The goal of the project is to reduce sediment yield by 50 percent. The recommended plan stresses the socioeconomic aspects of the delivery of technical assistance, rather than specific conservation practices.”

3.8 INTER-AGENCY COORDINATION

Objective: To improve the ability of various agencies of the government to manage water quantity and quality issues.

Benefits: This will lead towards a reduction in governmental costs and better provision of services for the residents of North Monterey County.

Statement of the Issue:

- The North County area of Monterey County is under the jurisdiction of several agencies. The PVWMA and MCWRA share responsibility for water management issues within their defined boundaries. These two agencies’ jurisdictional areas are defined by their respective founding legislation and is currently adopted as the boundary between the

⁸ supra, abstract.

Highlands North and South subareas. While the two water agencies share responsibility for water management issues, land use planning in the study area is solely the responsibility of Monterey County.

Elements of the Issue:

- The overlapping responsibilities of various agencies impedes the development of area-wide solutions. The study area historically has not been treated as extensively as the other parts of the Pajaro or Salinas Basin. Until the development of the impact fee program, there had been a lack of funding to support investigative activities. It is important to note that the impact fee is for the development of a comprehensive management plan. Additional funding mechanisms will be necessary to carry on work in the future.
- The PVWMA boundaries include the entire Pajaro Valley area and as such the majority of the area is within Santa Cruz County. Additionally, the majority of the PVWMA area is that of an generally flat alluvial basin with the dominate land use being conventional row crop agriculture. While the Springfield Terrace area is similar, the Highlands North area is significantly different in terrain and land use. These differences make the inclusion of these subareas into PVWMA water supply augmentation plans awkward.
- The MCWRA has responsibility for water management issues throughout the County. [PVWMA has primary responsibility for water supply within the PVWMA area, per a memorandum of agreement dated 12/15/91, amended 2/17/93.] However, historically the MCWRA focus has been predominately on the water supply issues of the Salinas Valley. Given the economic significance of agriculture in the Salinas Valley and the comparative extractions between the two areas (500,000 AFY in Salinas Valley vs. 20,000 AFY), the priority is understandable.
- Land use regulation is the responsibility of the Planning and Building Inspection Department. Because they have little control over agriculture, their focus is on residential and commercial development. In the past, their water resource protection power has been weak.

Obstacles:

- Water resources extend beyond the county line. Santa Cruz and (to a lesser extent) San Benito and Santa Clara Counties need to be involved in water resource decisions.
- Various agencies have differing and conflicting missions and there is the lack of a super-agency to make final decisions.
- Valuable planning data is scattered amongst many agencies. Efforts are often duplicated by various agencies and departments. Communication is varied..

Management:



Interim Management Plan

	Management Strategies for Agency Coordination	Responsibility
1	Clarify which agency should have ultimate planning and management authority for the Pajaro Valley floor and Springfield Terrace. While the Board of Supervisors of both counties will retain land use jurisdiction, water resource management should either be with MCWRA or PVWMA. Modify existing MOA between MCWRA and PVWMA, to establish primary responsibility and outline powers. This action may require modification of agency legislation.	MCWRA/PVWMA, State Legislature, Boards of Supervisors
2	Establish formal lines of communication with all groups concerned with water resource management.	All Agencies
3	Recognize the new subareas adopted as part of this study as subdivisions for water management purposes. These subareas provide a means of aggregating users in similar classes and providing for solutions by subarea.	Boards of Supervisors, MCWRA/PVWMA

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- Revise boundaries of PVWMA to include only area to be serviced by PVWMA-BMP. This would allow unified approach to problems of Highlands area by one Agency (MCWRA). This solution may require some form of equitable compensation to PVWMA for indirect ground water recharge benefits provided to the Highlands area.



3.9 DATA COLLECTION PROGRAM

Objective: To organize and expand the North County's information that is relevant to the management of its water resources. The data should be consistent with data collected for other parts of the County, in other studies. Basic hydrologic data are sparse in the study area. Development and defense of a adaptable water management plan for the area will require the continued building of the data base. Information provides the basis of the justification for action.

Benefits: One of the most difficult aspects encountered in the development of the hydrogeologic study was the acquisition and formatting of data. The interim before the implementation of the water resource management plan should be utilized to acquire data, so valuable time and information is not lost.

Obstacles:

- Data is currently maintained with various agencies. Many agencies are not aware of what others may have.
- Often, agencies maintaining certain data bases are not aware of the value their data may have to others. In such instances, the data may not be kept as complete as it could be, thus making it more useful to others.



Management Steps:

Interim Management Plan

	Management Strategies for Data Collection	Responsibility
1	Designate one Agency to be a repository for water resource data in the area based upon revised boundaries. Develop a protocol for making sure information generated by any agency or group is eventually deposited in the centralized information database. In the meantime, data sharing arrangements could be established to reduce overlap and conflicts. Alternatively, assign a library location for each data source. Data need not be contained at a single location. It should be available to all of the agencies, however. The location of data should be noted in the Data Source Reference List.	IAC/ISD, MCWRA/PVWMA
2	Convene to a workshop format to develop and agree upon a methodology for data required, it's organization, format and location. Volume I of the North Monterey County Hydrogeologic Study contains significant data that can serve as a basis for expansion.	IAC/ISD, MCWRA/PVWMA
3	Develop a Data Source Reference List showing all available data relevant to North County water resource management. It was found that many organizations (County, State and Federal) have accumulated data for the North County, but that not all are aware of what each other has. Inquiries should be made to many agencies to see what information they may have, or what information they are planning on developing.	IAC/ISD, MCWRA/PVWMA
4	Make all data GIS compatible. This is simple to do, but precautions must be taken to insure data is readily convertible to GIS format.	ISD
5	Complete a field survey to identify existing agr. Lands immediately adjacent to creeks, wetlands, and the slough. The majority of this work could be done using the existing maps. This would be used to prioritize which agricultural lands should be removed from production first via a land bank system or should be restored to wetlands/wildlands via non-profit organizations and/or federal/state grants. Steeper properties could be prioritized due to erosion potential. A similar program for agricultural lands in identified groundwater recharge zones of the large water purveyors could be instituted.	IAC/ISD

Suggested data:

- ◇ Type: Land Use--including dwelling units, agriculture, commercial and other water demanding uses. Purpose: to refine and maintain an understanding of water demand in North County. The current land use and build-out analysis can be improved with newer assessor's records. Additional information can be gathered regarding new crops and other changes to agriculture.

- ◇ Type: Well Data -- Refine "study" well network in North County. Existing "study" wells network for both water quality and water level requires revision. Wells need to be aggregated by aquifer system, perforation elevations and location. Utilizing WRAGIS this could be a simple resorting of the database.
- ◇ Type: Water Quality -- Nitrate Ion concentrations. Purpose: to develop predictive modeling capabilities to allow optimal siting of potable water supplies. Records of individual well depth, elevation, seal depth and elevations, and time-series concentration data should be maintained in WRAGIS for further analyzing the extent and distribution of contamination.
- ◇ Type: Water Quality -- Chloride Ion concentrations. Purpose to continue to monitor the advance of salt water intrusion as well as the effects of changes in Elkhorn Slough management practices on salt water infiltration.

Towards a Comprehensive Water Resource Management Plan

- Develop within each department a procedure for data acquisition. After agreement is reached on what data should be maintained, a department should be assigned with the responsibility of maintaining an appropriate data set. For example, it is natural that the Planning and Building Inspection Department would keep the land use data current. The Agricultural Commissioner's office is the likely source of cropping information.
- Prepare a "Water Resource Data Handbook". The handbook should explain for each type of data; how it is collected, in what format, and where it is maintained. The objective of the handbook would be to allow all departments to regularize data acquisition--any new personnel could immediately become educated on how to acquire and store information. This could be given to consultants and interns used for future collection efforts. Contents should include:
 - ◇ Data Source Reference List described above. This would include the library location for each data set.
 - ◇ A clear description of each data type, as well as its purpose. The description should explain how it was acquired, by whom, and when. Sample sets of each data would be annotated for explanation.
 - ◇ Protocols. Each data type should have a set of explanations for how additional data should be collected. This step-by-step section would educate the new data collector on how to acquire and store data.

3.10 INTERIM RECOMMENDATIONS MATRIX

The following pages contain a matrix of the recommendations set forth in this report. They are presented with a suggested set of responses to questions regarding their effectiveness, etc. These are presented as a guide for decision-makers.

North Monterey County		Suggested Responses	Staffing Requirements	Implementation Timing	Urgency	Feasibility	Political Acceptance	CEQA Requirements	Relative Cost	Effectiveness	Existing Authority	Government Involvement	Overall	Comments
		Responsible Agency(ies)	(1-5)	months	(1-5)	(1-5)	(1-5)	(Y/M/N)	(1-5)	(1-5)	(Y/M/N)	(1-5)	(1-5)	
Interim Management Recommendation														
3.1 New Agriculture														
1	Enforce existing policies	P & BI	1	1	5	5	3	M	1	5	Y	5	5	
2	Environmental review	Lead Agency	3	1	3	5	1	Y	3	3	Y	5	3	
3	Prohibit ag. in residential zones	P & BI	1	1	5	3	3	Y	1	5	N	5	5	Key measure
4	Inter-agency task force for ag	MCWRA/PVWMA	1	1	3	5	5	N	1	3	Y	5	3	
5	Inland ag conversion on poorer soils	P & BI	1	1	5	3	3	Y	1	5	N	5	5	
3.2 Existing Agriculture														
1	Water efficient cropping	MCWRA/PVWMA	3	5	3	3	3	N	3	3	Y	3	3	longer-term
2	Improve irrigation practices	MCWRA/PVWMA	3	5	3	3	3	N	3	3	Y	3	3	
3	Fallow bank	MCWRA/PVWMA	5	5	5	3	1	Y	5+	5	N	?	5	complex transactions
4	Ag water demand data base	MCWRA/PVWMA	1	1	3	5	5	N	1	3	Y	3	3	
5	Prohibit conversion of res. land	P & BI	1	1	5	3	3	Y	1	5	N	5	5	
6	Support the PVWMA BMP	All Agencies	1	1	5	5	5	Y	5	5	5	5	5	crucial to supply
3.3 New Residential Development														
<i>Existing Demand</i>														
1	Educational/retrofit programs	MCWRA	1	3	3	5	5	N	3	3	Y	3	3	
2	Require retrofits	EH	1	3	3	3	3	N	3	5	N	5	3	
3	Xeroscape landscaping	MCWRA/P&BI	1	3	3	5	3	N	3	3	N	5	3	
5	Demand offsets for new development	P & BI	1	3	5	3	3	N	3	4	N	5	4	
6	Fee on new development	P & BI	2	3	4	5	1	N	3	4	N	3	4	
<i>Potential Demand</i>														
1	Direct development away from problems	MCWRA/P&BI	3	3	5	3	1	Y	5	3	N	5	3	
2	Maintain low levels of development	B of S	1	1	5	5	3	N	1	5	Y	5	5	
3	Reduce new development demand	P & BI	3	3	3	3	3	Y	5	3	N	5	3	
4	Perfect B-8 zoning	P & BI	1	3	5	5	3	Y	3	5	N	5	5	
5	New development, community source	B of S	1	2	3	4	4	N	3	4	N	4	4	

North Monterey County		Suggested Responses	Staffing Requirements	Implementation Timing	Urgency	Feasibility	Political Acceptance	CEQA Requirements	Relative Cost	Effectiveness	Existing Authority	Government Involvement	Overall	Comments
			(1-5)	months	(1-5)	(1-5)	(1-5)	(Y/M/N)	(1-5)	(1-5)	(Y/M/N)	(1-5)	(1-5)	
		Responsible Agency(ies)												
Interim Management Recommendation														
3.4 Granite Ridge														
1	Curtail further development	P & BI	3	3	5	1	1	Y	5	5	N	5	3	
2	Landscaping controls	P & BI	1	3	3	5	5	N	1	3	N	5	3	
3	Adequate fire water	No Co Fire	1	3	3	5	5	N	3	3	N	5	3	
4	Perfect B-8 zoning	P & BI	3	3	5	3	3	Y	3	5	N	5	5	
5	Retrofit for existing development	MCWRA	1	3	3	3	3	N	3	5	N	5	3	
6	Greater storage for dwellings	EH/MCWRA	1	3	3	5	5	N	3	3	N	5	3	
7	Design systems for tie-in	B of S	1	2	3	4	4	N	3	4	N	4	4	
3.5 Nitrate Ion Control														
<i>Area-wide</i>														
1	Expand water quality data	EH	3	3	3	5	5	N	3	5	Y	5	5	
2	On-farm nutrient management	MCWRA	3	3	5	3	3	M	5	3	M	3	5	large program
3	Septic system standards	EH	1	3	3	5	3	Y	3	3	N	5	5	
4	Design systems for tie-in	B of S	1	2	3	4	4	N	3	4	N	4	4	
5	Fertilizer Assessment	B of S	3	3	5	3	3	M	5	3	M	3	5	
<i>Individual wells</i>														
1	Education program	EH/MCWRA	3	3	3	5	5	N	3	3	Y	3	5	
2	Septic systems/perched aquifers	EH	3	3	5	5	5	Y	3	3	N	5	5	
3	Financial assistance to impacted wells	EH	3	3	3	3	3	N	5	5	N	5	3	
4	Modify real estate disclosure	EH	1	1	3	3	5	N	1	3	N	3	5	
5	Water quality testing	EH	3	3	3	5	5	N	3	5	Y	5	5	currently done/expand
6	Minimum well standards (-125' static)	EH	1	1	5	3	1	N	3	3	N	5	3	
7	Low interest loan fund for wells	EH/MCWRA	3	3	3	3	3	N	5	5	N	5	3	
8	Build database on wells and problems	EH	3	3	3	5	5	N	3	5	Y	5	5	
9	Prohibit seepage pits beyond B-8	EH	3	3	5	5	5	Y	3	3	N	5	5	
10	Develop funding sources	EH	3	3	3	3	3	N	5	5	N	5	3	

North Monterey County	Suggested Responses	Staffing Requirements (1-5)	Implementation Timing (months)	Urgency (1-5)	Feasibility (1-5)	Political Acceptance (1-5)	CEQA Requirements (Y/M/N)	Relative Cost (1-5)	Effectiveness (1-5)	Existing Authority (Y/M/N)	Government Involvement (1-5)	Overall (1-5)	Comments
Interim Management Recommendation													
3.6 Seawater Degradation													
	<i>Seawater Intrusion</i>												
	1 Support the PVWMA BMP	1	1	5	5	5	Y	5	5	Y	5	5	
	2 Reduce coastal pumping	1	5	5	3	3	Y	5	5	N	5	5	
	<i>Seawater Infiltration</i>												
	1 Tidegate at Parson's Slough	3	3	3	3	5	Y	3	5	Y	5	5	
	2 Revise well standards near slough	1	1	5	3	1	N	3	3	N	5	3	
	3 Remove CAP zoning near slough	3	3	4	3	3	M	3	4	N	3	5	
3.7 Watershed Erosion													
	1 Reduce cultivation in steep sandy areas	1	1	5	3	3	Y	1	5	N	5	5	
	2 Follow Elkhorn Mgt Plan	3	5	3	5	5	N	1	3	Y	5	3	
	3 Conservation programs	3	3	3	5	5	N	1	5	Y	3	5	
3.8 Inter Agency Coordination													
	1 Clarify MCWRA/PVWMA roles	1	3	3	3	?	Y	1	3	N	5	3	legislation (?)
	2 Formal communication, all groups	1	1	3	5	5	N	1	3	Y	5	5	
	3 Recognize new subarea boundaries	1	1	5	5	5	N	1	5	N	5	5	



North Monterey County		Suggested Responses	Staffing Requirements	Implementation Timing	Urgency	Feasibility	Political Acceptance	CEQA Requirements	Relative Cost	Effectiveness	Existing Authority	Government Involvement	Overall	Comments
		Responsible Agency(ies)	(1-5)	months	(1-5)	(1-5)	(1-5)	(Y/M/N)	(1-5)	(1-5)	(Y/M/N)	(1-5)	(1-5)	
Interim Management Recommendation														
3.9 Data Collection Program														
1	Designate agency for data repository	IAC/ISD	3	3	3	5	5	N	3	3	Y	5	3	
2	Workshop on data management	IAC/ISD	1	1	3	3	5	N	1	3	Y	5	3	
3	Data source reference list	IAC/ISD	1	1	3	5	5	N	1	3	Y	5	3	
4	Make data GIS compatible	ISD	3	3	3	5	5	N	3	5	Y	5	3	
5	Identify special ag. lands	IAC/ISD	2	3	3	5	5	N	3	5	Y	5	3	
Responses														
(1 - 5)														
1	low, none, poor, infeasible, etc	(Y, M, N)		Agencies										
2	moderate, fair, feasible, etc	Y = yes		MCWRA	=									Monterey County Water Resource Agency
3	high, good, very feasible	M = maybe N = no		PVWMA	=									Pajaro Valley Water Management Agency
				P & B I	=									County Planning and Building Inspection
				EH	=									County -- Environmental Health
				No Co Fire	=									North County Fire District
				B of S	=									Board of Supervisors
				IAC	=									Inter-Agency Committee
				ISD	=									Information Systems Division

4.0 PROGRAM FOR A WATER RESOURCE MANAGEMENT PLAN

The following sets forth objectives and scope of work for the development of a Comprehensive Water Resource Management Plan as Phase II of the North County project.

4.1 Objectives

1. **Comprehensive Program.** The Plan should encompass the broad range of water resource issues in the North County. These include the primary concerns of ground water supply and quality. They also include watershed management, erosion control, salt water infiltration and intrusion.
2. **Area-wide Management Compatibility.** Develop a program consistent with state goals for water resource protection and management. Any plan should look to AB 3030 for guidance. While this may not be a ground water basin plan, it will serve much the same purpose. It behooves everyone to make the programs in the plan consistent with others in nearby basins. These include the Pajaro Valley Water Management Agency Basin Management Plan and Salinas River BMP.
3. **Information Database.** Develop an extensive, GIS-based, information database that contains information on land use, ownership, water quality and quantity, natural resources and infrastructure. This should be built upon the existing MCWRA GIS database (in accordance with the findings of the future feasibility study commissioned by the agency). This database should be available for use by the public, other County agencies (Planning, Environmental Health, etc.), other government organizations (AMBAG, Coastal Commission, EPA) and others. Prepare a database of all wells in the North County, including pumpage and water quality issues. In addition, establish appropriate procedures for data acquisition and storage. Develop a relationship amongst the various agencies that promotes careful and useful data acquisition.
4. **Water Supply Distribution.** Evaluate options for the placement of area-wide distribution systems, especially in the Granite Ridge (Prunedale), and Highlands subareas. The plan should investigate mechanisms for requiring existing and future subdivisions to install water distribution lines for future use. Programs should be evaluated for laying distribution lines in roadways during maintenance. Funding and regulatory mechanisms should be explored.
5. **Land Use Planning and Regulation.** Build a program of (existing and new) land use policies and regulations designed to maximize water resource management, protection and utility. Prepare necessary changes to the existing planning structure for the North County to achieve these objectives. This would include the preparation of implementable plan changes and ordinances.
6. **Supply Augmentation.** Investigate importation schemes that would provide water to the area, most notably from the Pajaro and Salinas Valley projects. These proposed projects could be



expanded/reconfigured to provide water to the study area. While importation may not be part of the final solution, the timing of the review is critical so as not to lose these options.

7. Nitrate Management. Develop a program to reduce the amount of nitrates that enter and degrade the ground water. Explore the legality and viability of cost-effective options available to support small users whose supplies are degraded.
8. Sea Water Intrusion. Develop a program to reduce sea water intrusion. Incorporate the work of the PVWMA BMP towards solution of this problem.
9. Elkhorn Slough -- Sea Water Infiltration. Consider a plan for reconstructing the dikes and improving tidegates necessary to 'freshen' the water in the slough. Ensure that these options are consistent with other management objectives of the Elkhorn Slough Watershed Project.
10. Well Protection Measures. Review all current standards for the development of domestic wells. Identify specific problems (perched water tables, septic system interference, shallow wells, etc.). Develop remediation programs for existing wells and regulations/procedures for avoiding well problems in the future.
11. Demand Management. Continue to inform residents and farmers of ways they can improve the situation through conservation and reasonable agricultural practices. Expand management measures through development of education, financing, and other measures.
12. Economic Analysis. Evaluate the costs of the various programs proposed. Consider these costs in light of other issues concerning environmental and social consequences.
13. Watershed Management. Develop a program to manage irrigation and storm water runoff, reduce soil erosion and sedimentation in streams and sloughs, and increase ground water recharge.

4.2 Outline for a Scope of Work

The following request for the development of a scope of work for a Comprehensive Water Resource Management Plan is based upon the work and recommendations contained in Volumes I and II of the North Monterey County Hydrogeologic Study

4.2.1 Plan Format

4.2.1.1 Contents. Each area of the plan should contain the following components:

- **Objective.** A clear statement of the problem to be solved by each component of the plan.
- **Research.** The consultant should first determine what is currently known about this type of problem, and what has been done elsewhere (successfully or unsuccessfully). Sources should include literature, other agencies, the state government agencies, and the EPA.
- **Approach.** Based upon research and knowledge of the North Monterey County area, set forth a program that describes a solution to the problem, and explains why it is appropriate. Alternative strategies should be discussed as counterpoint, especially to augment the rationale for the selected approach.
- **Funding.** Develop an estimate of each project's cost. Each implementation strategy must be accompanied by a possible funding source/mechanism.
- **Implementation.** Set forth a series of steps necessary to achieve the stated objective. The responsible agency(ies) should be able to follow the steps and implement a solution.
- **Schedule.** Set forth each implementation measure in terms of priority and establish a schedule for project development.
- **Management.** Describe the agency(ies) who will be responsible for the implementation program. It will outline a management strategy for the implementation plan. For example, it will establish protocols for public participation, inter-agency coordination, and project tracking.



[The following sections would constitute the substantive sections of the plan]

4.2.2 Water Quality Management

- Develop a program for fertilizer management.
- Investigate other areas of the state, and the work of the state and federal government to ascertain the direction that nitrate management is developing.
- Develop a program in conjunction with Environmental Health to improve information on nitrate concentration in wells.
- Review possible changes in regulations that may effect water quality standards or procedures.
- Investigate the consolidation of water systems to assure adequate financial resources to respond to water quality problems.
- Evaluate dual systems with non-potable (in terms of nitrate) domestic supply with (undersink) treated water for drinking.
- Develop a wellhead protection program for the larger (municipal) supply wells in the North County.

4.2.3 Water Demand Management

4.2.3.1 Agricultural

- Policy Development and Regulatory program. Develop a program to assist agriculture in managing water demand, including education, irrigation efficiency requirements, and cropping limitations.
- Evaluate the ability and economics of establishing water use fees. Determine the need for metering.
- Coordinate the development of the plan with the PVWMA's BMP, especially with regard to the supply of an outside source of water supply to agriculture (Pajaro and Springfield Terrace)
- Land acquisition. Using the Agency's GIS database, establish criteria for land appropriate for acquisition, with the purpose of removing land on steeper slopes from cultivation or from future cultivation. Develop strategies for acquisition (esp. funding), including coordinated efforts with non-profit, land preservation organizations.



- Manage runoff within hilly areas by requiring drainage systems which include flow retention/recharge basins. This will enhance recharge and reduce erosion and sedimentation. (County policies are currently in place).

4.2.3.2 Residential.

- Evaluate the effectiveness of current programs that involve retrofitting, landscape water conservation and other measures designed to maintain or reduce demand. Make recommendations to improve these programs.
- As a part of a supply augmentation program, evaluate the costs and feasibility of requiring each new residential development to provide water supply piping to the street allowing for future connections to a larger distribution system.
- Land use regulation. Develop a plan to support the Planning Department's efforts in the North County to control conversion of residential land to agricultural cultivation. [if this hasn't been achieved in the interim]
- Develop a program to bring the zoning density into line with the "50% rule" in the North County coastal area. Consider legal issues associated with cap.

4.2.4 Saline Management Program

4.2.4.1 Saltwater intrusion.

- Investigate the use of tertiary treated effluent for agricultural irrigation. Reclaimed tertiary-treated water for agricultural use could be developed with water from the Watsonville Treatment Plant. Currently this source of reclaimed water is being considered as a possible component of the PVWMA BMP project. This would include analysis of availability as well as costs for distribution system and water quality impacts.

4.2.4.2 Slough Water infiltration.

- Develop a program, in coordination with the Elkhorn Slough Foundation, for the investigation of the Slough's freshening. The program should include mechanisms for determining the impacts resulting from changing the saline regime of the Slough. Physical solutions should be described along with appropriate permitting and funding requirements.

4.2.5 Water Supply Augmentation

- Granite Ridge. Investigate the need and feasibility of developing the necessary infrastructure to bring a water supply to those areas of Granite Ridge impacted by seasonal falling water levels, water availability and water quality problems.



- **Highlands.** Investigate the need and feasibility of developing the necessary infrastructure to bring a water supply to those areas of Highlands impacted by declining water quality.
- **Springfield Terrace.** Investigate the need and feasibility of developing the necessary infrastructure to bring a water supply to those areas of Springfield Terrace impacted by seawater intrusion. This is part of the PVWMA BMP.

4.2.6 Interagency Coordination

- **Revise boundaries of PVWMA** to include only the areas to be served by PVWMA-BMP. Determine the need for any equitable compensation to PVWMA for indirect ground water recharge benefits provided to the Highlands area.
- **Review the PVWMA~MCWRA MOA.**
- **Database Development.** Develop within each department a procedure for data acquisition that is consistent with other agencies and departments.
- **Prepare a "Water Resource Data Handbook".** The handbook should explain for each type of data; how it is collected, in what format, and where it is maintained.

5.0 CONCLUSION

A Comprehensive Water Resource Management Plan for North Monterey County is needed to assure that the area is not "left out" due to the concentration of efforts in other parts of the County. The Plan will have utility for all areas of the County that are lightly settled and lack centralized infrastructure. Implementing the interim solutions will assist with the development and viability of the long-term resource protection strategies.

6.0 REFERENCES

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Appendix A

Appendix A

POLICIES RELATING TO WATER RESOURCES IN THE NORTH COUNTY

The following material contains excerpts from various County planning and regulatory documents that have relevance to water resources.

The General Plan

Chapter I: Natural Resources

Issues for Natural Resources (Pages. 14-15)

3. Considerable development pressure exists to convert valuable agricultural lands to urban uses, particularly around Salinas.
7. Chronic water shortages are occurring in many areas of the County, with ground water overdrafting making up the difference between demand and net supply. Acute water shortages are likely to occur in still other areas during drought years.
8. Several means available to increase the effective supply of water in deficient areas, including importing water from outside the County, building new canals or pipelines to redistribute water, enlarging existing or creating new ones, tapping new aquifers, and water reclamation and conservation.

Goals, Objective, and Policies for Natural Resources - Water Resources (Pages. 19-21)

5. Goals

To conserve and enhance the water supplies in the County and adequately plan for the development and protection of these resources and their related resources for future generations.

Objective

- 5.1 Protect and preserve water sheds and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.

Policies

- 5.1.1 Vegetation and soil shall be managed to protect critical watershed areas.
- 5.1.2 Land use and development shall be accomplished in a manner to minimize runoff and maintain ground water recharge in vital water resource areas.

Objective

- 5.2 Promote the use of public water reservoirs for multiple purposes, where appropriate, i.e., water conservation, flood control, recreation, and hydroelectric generation.

6 Goal

To promote adequate, replenishable water supplies of suitable quality to meet the County's various needs.

Objective

- 6.1 Eliminate long-term ground water overdrafting in the County as soon as practicably possible.

Policies

- 6.1.1 Increased uses of ground water shall be carefully managed, especially in areas known to have ground water overdrafting.
- 6.1.2 Water conservation measures for all types of land uses shall be encouraged.

Objective

- 6.2 Explore and implement measures to supply additional water to critically deficient areas.

Policy

- 6.2.1 The County shall pursue development of suitable water supplies in keeping with broad conservation goals.

Chapter II: Environmental Constraints
Issues for Air and Water Quality (pg. 71)

5. Improved management of wastewater effluent is needed to prevent continued pollution of surface waters.
6. Information on ground water systems is insufficient to adequately analyze potential growth impacts on ground water quality. Without additional information, degradation of ground water could result.
7. Nitrate pollution of ground water has created health hazards. Sources of this contamination have yet to be substantiated.
8. Ground water quality is being impaired by faulty private wells.

10. Overdrafting of ground water reserves leading to saltwater intrusion has been a continual problem in Monterey County for over 40 years.

Goals, Objectives, and Policies for Air and Water Quality (Pages. 72-75)

21 Goal

To ensure that the County's water quality is protected and enhanced to meet all beneficial uses, including domestic, agricultural, industrial, recreational, and ecological.

Objective

- 21.1 Protect and enhance surface and ground water quality by implementing current adopted water quality programs and by continuing to evaluate new problems; develop new programs in accordance with the following policies by 1984.

Policies

- 21.1.1 The County shall establish growth policies which are integrated with the natural limitations of the County's surface and ground water bodies to sustain acceptable quality.
- 21.1.2 The County shall assume an active role in initiating and supporting beneficial water quality programs that affect the County.
- 21.1.5 The County shall continue to monitor effluent from major wastewater dischargers.
- 21.1.6 The County shall identify, and have the property owner repair or destroy, wells that contribute to ground water degradation; wells shall be repaired or destroyed according to state standards and such actions shall be reviewed and approved by the County Environmental Health Department.
- 21.1.7 The County shall monitor surface and ground water quality to warn of potential problems.
- 21.1.8 The County shall cooperate with state and federal agencies identifying seawater intrusion problems and shall seek available state or federal assistance in solving these conditions.
- 21.1.9 The County shall promote and support the investigation of the source of, and remedies to, the nitrate pollution problems.
- 21.1.10 The County shall implement a program to prevent further seawater intrusion by developing supplemental sources of water for the North County. This may include water importation, water conservation, and wastewater reclamation.

Objective

- 21.2 Enhance the quality of water in the County by regulating the type, location and intensity of land use, and grading operations.

Policies

- 21.2.1 The County shall require all new and existing development to meet federal, state, and County water quality regulations.
- 21.2.2 The County shall allow only those land uses which do not pollute the ground water system beyond acceptable limits.
- 21.2.3 Residential, commercial, and industrial developments which require 20 or more parking spaces shall include oil, grease, and silt traps, or other suitable means, as approved by the Monterey County Surveyor, to protect water quality; a condition of maintenance and operation shall be placed upon the development.
- 21.2.4 The County shall require the installation and maintenance of appropriate check valves on irrigation systems where liquid fertilizers are dispensed.

Objective

- 21.3 Ensure that sewage and industrial waste disposal from new and existing development will not contaminate surface or ground waters.

Policies

- 21.3.1 The County should support sewage treatment projects that reduce contamination of surface and ground water to acceptable levels.
- 21.3.2 The County shall encourage the investigation, under supervision of County health officials, of the cost-effectiveness, reliability and health acceptability of alternative wastewater disposal methods when they are safe and acceptable to the Environmental Health Department.
- 21.3.3 No division of land or use permit for residential, commercial, or industrial uses shall be approved without proof that an adequate waste disposal system can be developed.
- 21.3.4 The County should determine the number of septic systems that can be developed in an area before ground water is threatened. Except for single-family residences on existing lots of record, development should not exceed that number unless approved alternative wastewater systems are provided. The North County Planning Area should be given first priority in any studies undertaken.

Chapter IV: County Development

Goals, Objectives, and Policies for Land Use - General Land Use (Pages. 101-103)

26 Goal

To promote appropriate and orderly growth and development while protecting desirable existing land uses.

Objective

26.1 Direct development and conservation efforts in the County through use of the planning process.

Policies

26.1.4 The County shall designate growth areas only where there is provision for an adequate level of services and facilities such as water, sewerage, fire and police protection, transportation, and schools. Phasing of development shall be required as necessary in growth areas in order to provide a basis for long-range services and facilities planning.

26.1.4.3 A tentative map application for either a standard or minor subdivision shall not be deemed complete until:

1) An applicant provides proof of an assured, long-term water supply in terms of sustained yield and adequate quality for all lots which are proposed to be created through subdivision. The water supply must meet both water quality and quantity standards expressed in Title 22 of the California Administrative Code and Title 15.04 of the Monterey County Code subject to review of the Director of Environmental Health, and

2) an applicant provides evidence that sewage disposal systems, both individual and package, for all lots which are proposed to be created through subdivision will not exceed nitrate and chemical loading levels in aquifers pursuant to the Regional Water Quality Control Basin Plan. If wastewater reclamation is proposed for a subdivision, the reclamation system must comply with the Basin Plan and the California Administrative Code subject to the review of the Director of Environmental Health.

26.1.13 The County shall encourage infilling on vacant non-agricultural lands within existing developed areas and shall encourage new development within designated urban service areas. Infilling development shall be compatible with surrounding existing development.

26.1.18 Development proposals which are consistent with the land use plan designation (Figures 13a, 13b, and 13c) may be denied due to factors including, but not limited to, lack of public facilities and services, infrastructure phasing problems, water availability

and sewage problems, or presence of environmental and/or plan policy constraints which cannot be mitigated.

Public/Quasi-Public (pg. 109)

33 Goal

To encourage the use of the County's major inland water bodies for multiple purposes such as water supply, flood control, recreation, and hydroelectric generation.

Objective

33.1 Identify desirable levels of multiple use and known limitations to multiple use of the County's major water bodies.

Policies

33.1.1 The County, based on recommendations developed jointly by appropriate departments and agencies, shall recommend priorities for multiple use of the major water bodies.

33.1.2 Compatibility shall exist between surrounding land uses and multiple uses of major water bodies.

Issues for Public Services and Facilities (pg. 137)

9. The County has 30 water service companies and a substantial number of mutual water companies and private wells which draw from common water tables. Should the County encourage greater coordination among those who draw from common water tables to ensure a sustained water supply?

Public Services and Facilities - Water Service (pg. 147)

53 Goal

To promote adequate water service for all County needs.

Objective

53.1 Achieve a sustained level of adequate water service.

Policies

53.1.1 The County shall encourage coordination between those public water service providers drawing from a common water table to assure that the water table is not overdrawn.

- 53.1.2 The County shall, through the Flood Control and Water Conservation District and other appropriate agencies, assure adequate monitoring of wells in those areas experiencing rapid residential growth.
- 53.1.3 The County shall not allow water consuming development in areas which do not have proven adequate water supplies.
- 53.1.4 New development shall be required to connect to existing water service providers which are public utilities, where feasible.
- 53.1.5 Proliferation of wells, serving residential, commercial, and industrial uses, into common water tables shall be discouraged.

Public Services and Facilities - Wastewater Treatment Plant Facilities (pg. 148)

54 Goal

To ensure adequate levels of wastewater treatment by directing growth into areas where densities are either low enough for effective septic system disposal or high enough to support sewage treatment plant facilities.

Objective

- 54.2 Improve ground water recharge through the use of reclaimed wastewater in accordance with health and safety standards.

Policies

- 54.2.1 The County shall, to the fullest extent possible, actively promote to federal and state levels of governments the continuation of existing research on the Monterey Wastewater Reclamation Study for Agriculture.
- 54.2.2 The County shall expeditiously implement the proper application of reclaimed wastewater when proven safe to do so.

Chapter VII: General Plan Environmental Impact Report
Hydrology (pg. 186)

Impacts

- 2. New development could significantly reduce ground water recharge due to an increase in impervious surface area.
- 5. Ground water supplies may be significantly reduced by overdrafting, with consequent impacts to vegetation and water quality, particularly where saltwater intrusion may occur.

Mitigation Measures

2. Reduced ground water recharge would be mitigated by policy 5.1.2.

Water Quality and Sewage (Pages 189-190)

Impacts

1. The insufficient management of wastewater effluent generated by new development could significantly impact public health by contaminating soil, ground water, and surface water.
2. Increased dumping of agricultural wastewater into surface waters and aquifers, coupled with increased pesticide use and the increasing chemical complexity of commercial pesticides and herbicides, could significantly impact public health and safety.
3. Development in areas having low suitability for septic sewage systems could significantly impact public health and safety due to overloading of septic systems and slope failure.

Mitigation Measures

1. The adequate treatment and disposal of effluent would be ensured by policies 21.1.6 through 21.1.9, 54.1.3, 62.1.2, and 62.1.5.
2. Water quality impacts generated by the distribution of agricultural wastewater would be mitigated by policies 21.1.3, 21.1.4, 21.2.4, 54.2.1, and 54.2.2.
3. Impacts to public health and safety resulting from the proliferation of septic systems in areas of marginal suitability for septic systems would be mitigated by policies 3.2.1, 21.3.3, and 21.3.4.

Public Services and Facilities (pg. 191-192)

Impacts

6. Lack of coordination between all major ground water users may degrade ground water quality and reduce availability.
7. Lack of coordination between wastewater treatment facilities may contribute to inefficient treatment of wastewater.

Mitigation Measures

6. Impacts resulting from the lack of coordination between major ground water users would be mitigated by policies 6.1.1, 6.1.2, 21.1.6, 21.1.8 through 21.1.10, 21.2.2, 21.3.1, 53.1.1, 53.1.4, and 53.1.5.
7. Impacts resulting from the lack of coordination between wastewater treatment facilities would be mitigated by policies 21.3.1, 21.3.2, 21.3.4, and 54.1.3.

North County Land Use Plan - Local Coastal Program

2.5.1 Key Policy (Page 32)

The water quality of the North County ground water aquifers shall be protected, and new development shall be controlled to a level that can be served by identifiable, available, long term water supplies. The estuaries and wetlands of North County shall be protected from excessive sedimentation resulting from land use and development practices in the watershed areas.

2.5.2 General Policies (Pages 32-33)

1. The County shall limit the kinds, locations and intensities of new development, including agriculture to minimize further erosion in the watersheds of Elkhorn and Moro Cojo Sloughs and sedimentation of the Sloughs. All development shall incorporate all available mitigation measures to meet these goals, including, at a minimum, the measures identified in Policy 2.5.3.C.(6).
2. Point and non-point sources of pollution of coastal waters shall be controlled and minimized. Restoration of the quality of degraded surface waters shall be encouraged.
3. New development shall be phased so that the existing water supplies are not committed beyond their safe long term yields. Development levels that generate water demand exceeding safe yield of local aquifers shall only be allowed once additional water supplies are secured.
4. Adequate quantities of water should be maintained instream or supplied to support natural aquatic and riparian vegetation and wildlife during the driest expected year.
5. New rural development shall be located and developed at densities that will not lead to health hazards on an individual or cumulative basis due to septic system failure or contamination of ground water. Onsite systems should be constructed according to standards that will facilitate long term operation. Septic systems shall be sited to minimize adverse effects to public health, sensitive habitat areas, and natural resources.
6. The use of appropriate technology onsite wastewater management systems that reduce the risk of failure or ground water contamination and are approved by the Health Department should be encouraged.
7. Developments shall be designed to maximize ground water recharge capabilities and to minimize runoff from the property.

8. Conjunctive use and reuse of water and domestic wastewater from methods such as rainwater collection, collection of greenhouse moisture, use of grey water, reverse osmosis and desalination shall be used as a means of addressing current water problems, where feasible.
9. The County shall place a high priority on water development projects that can offer a viable water supply to water-deficient areas in North County.
10. The County shall work with the Water Resources Agency and Pajaro Valley Water Management District in working toward comprehensive Basin Management Plans.

2.5.3 Specific Policies (Pages 34-37)

A. Water Supply

1. The County's Policy shall be to protect ground water supplies for coastal priority agricultural uses with emphasis on agricultural lands located in areas designated in the plan for exclusive agricultural use.
2. A ground water management plan shall be developed as part of a comprehensive basin management plan and implemented for all ground water basins and subareas in North County. The plans shall identify environmentally sound methods to promote recharge of aquifers, ensure water quality, and safe, long term supplies for all water users. These methods may include, but shall not be limited to, water conservation measures, development of additional long term water resources, pumping restrictions on existing and future wells, and land use restrictions. A ground water management plan (Phase II) for North County shall be coordinated with other jurisdictions sharing responsibility for planning the use of water resources and shall be completed within two years after receiving adequate funds (i.e., completion of Phase I). If this does not occur, consideration shall be given to the imposition of limits on development other than the first single family dwelling on a vacant lot of record until such a time as the plans are completed.
3. New lots or units may be created to a level of 50% of the build-out remaining at the time of LUP certification, for each North County subarea, as defined in the report entitled Ground Water in North Monterey County, California, dated 1980, by the U.S. Geological Survey. The 50% build-out figures are calculated by subtracting the existing units by subarea from the potential build-out of each subarea, based on existing zoning. After the existing lots of record are subtracted, the build-out figures are adjusted by a method that includes limiting factors of overdraft, water in storage and nitrate loading. This calculation will provide the remaining buildable units for each subarea. This build-out figure calculated for each subarea shall include senior citizen units, caretakers units, multiple family dwellings, employee housing and lots created through subdivision, but shall exclude development of a single family dwelling on a vacant lot of record.

Fifty percent build-out, limiting new development to the safe yield level based on existing hydrologic information, is permitted on an interim basis until additional North County hydrologic studies are completed. Additional development beyond the numbers calculated for each subarea will only be permitted after the North County Hydrologic Studies are completed and a ground water management plan has been developed. At that time, new development allocations will be calculated based on the additional hydrologic information provided by the studies. The development allocations will be implemented as an amendment to the North County Land Use Plan and Coastal Implementation Plan.

4. The Monterey County Water Resources Agency and Pajaro Valley Water Management Agency shall strongly consider means of providing North Monterey County agricultural land not in the reclaimed water area but affected by salt water intrusion, including agricultural areas in the Salinas Valley basin (Moro Cojo to Elkhorn Slough) and the Pajaro Valley basin (Springfield Terrace area), with usable water in ground water/basin management plans. These agricultural areas will become ineffective as agricultural land since there is no offset for these intruded wells. If this is not done, the Coastal Act's priority protection of agricultural land cannot be maintained, since without water source alternatives or intrusion reversal, the water resource will only support limited residential land use or other nonagricultural land uses.
5. The County shall regulate construction of new wells or intensification of use of existing water supplies by permit. Applications shall be regulated to prevent adverse individual and cumulative impacts upon ground water resources.
6. Water conservation measures should be required in all new development and should also be included in Agricultural Management Plans. These measures should address siting, construction, and landscaping of new development, should emphasize retention of water onsite in order to maximize ground water recharge, and should encourage water reclamation.
7. The moratorium imposed by the County on lot divisions in the Granite Ridge area should be maintained until the water supply issues are resolved.
8. Formation of mutual water systems shall be prohibited where privatization of the water system is feasible or where existing public or private water purveyors are available to serve new development.
9. Construction of individual wells within the service boundaries of existing water systems shall be discouraged. Construction of individual wells within the service boundaries of existing water systems shall be prohibited on parcels of less than 2.5 acres.
10. Consolidation of water systems shall be encouraged. Proliferation of wells serving residential, commercial, and industrial uses, into common water aquifers shall be discouraged.

11. A sustainable long term potable water supply must be proven prior to considering an application for new development to be complete.

B. Water Quality

1. All dumping of spoils (dirt, garbage, refuse, etc.) into riparian corridors and other drainage courses shall be prohibited.
2. Agricultural runoff shall be monitored and techniques established through the proposed North County Agricultural Management program to reduce pesticide and nitrate contents.
3. In order to minimize cumulative impacts on ground water and surface water reservoirs, two and one-half acres shall be considered the maximum density of parcels resulting from a subdivision of property that will require septic systems. In areas where there is evidence that ground water quality is begin degraded due to contamination by on-site systems, and sewer service is not available, development shall be allowed only on parcels with adequate area and soil characteristics to treat and absorb the wastewater without causing further degradation of local ground and surface waters.
4. Adequate maintenance and repair of septic systems shall be required to limit pollution of surface waters and protect the public health.
5. New onsite waste disposal systems shall not be allowed on slopes exceeding 30 percent as required by the Regional Water Quality Control Board Basin Plan. Potential point sources of pollution such as industrial discharges and community wastewater treatment systems shall be examined on a regular basis to monitor water quality impacts. Expansion of facilities generating point sources of pollution shall only be allowed if pollution levels remain at acceptable standards compatible with protection of public health and biological habitats.
6. The crucial problems of saltwater intrusion shall be studied and reasonable measures undertaken to retard or halt its advance.

2.5.4 Recommended Actions (Pages 46-47)

1. The County Water Resources Agency, the Pajaro Valley Water Management Agency, and the County Planning and Building Inspection Department should meet regularly to develop and implement a system of monitoring the effects of increasing development on the ground water resources. The County should establish a fee as part of permit applications (or some other financial arrangement) in order to provide a fund to support monitoring of ground water use and to support further studies of ground water resources or potential surface water projects that could serve the North County.
2. County growth management studies now in progress should recognize the water supply limitations in the North County Coastal Zone as a chief factor and resource constraint in

determining an appropriate annual-growth rate for the area. An ordinance should be drafted by the County to phase development at a level compatible with the availability of ground water supplies.

3. The septic tank ordinance and regulations should be amended to require dual leach fields in areas with a history of septic system failures and septic tank and drainfield risers for any new development on existing lots of record in areas which are not expected to be served by sewers.
4. An onsite wastewater management program should be initiated by the County according to the guidelines of Senate Bill 430, 1977, to provide for public or private monitoring, maintenance, repair, and replacement services.
6. The County should amend the North County Area Plan to include policies which are consistent with the policies of this Land Use Plan which limit development by subarea to 50% in an effort to allow development on an interim level until additional water studies are completed.
7. The Monterey County Water Resources Agency should increase assessments of Zone 7 as a means of distributing the cost of water management activities over all users in the North County area. The Pajaro Valley Water Management Agency should similarly consider new or increased assessments for North County to achieve the same means. This would provide a consistent revenue source and will help guarantee implementation of any ground water management plan whose purpose is to quantify and manage the available water resources.
8. The County should increase staff in an effort to more adequately enforce provisions of the Erosion Control Ordinance.

2.6.3 Specific Policies (Page 52)

8. Conversion of uncultivated lands to crop lands shall not be permitted on slopes in excess of 25% except as specified in policy 2.5.3(4) of this plan and shall require preparation and approval of an Agricultural Management Plan. Conversion of uncultivated lands to crop lands on lands where 50% or more of the parcel has a slope of 10% or greater shall require a Coastal Development permit. Approval of the Coastal Development permit shall follow the submission of an adequate management plan. These plans should include analysis of soils, erosion potential and control, water demand and long-term availability, proposed methods of water conservation and water quality protection, protection of important vegetation and wildlife habitats, rotation schedules, and such other means appropriate to ensure the long-term viability of agriculture on that parcel.

2.6.4 Recommended Actions (Pages 52-53)

1. Monterey County should develop a comprehensive agricultural management plan for existing and future agricultural uses in North Monterey County, in coordination with other appropriate public and private agencies, including but not limited to the County Agricultural Commissioner, Agricultural Extension, Soil Conservation Service, and the Monterey Coast Resource Conservation District. The goal of this plan would be the protection of long-term agricultural production, ground water availability, water quality, and public welfare.
2. Monterey County should support the completion of the Castroville agricultural irrigation project currently underway, and should evaluate the potential applications of wastewater as needed to guarantee an adequate supply of high quality water. However, local funds shall not be spent on such projects not directly or indirectly supplying local benefits.

3.2.1 Key Policy (Page 73)

The rural areas of North County should continue to be served by septic or high technology onsite wastewater management systems at appropriate densities to avoid individual or cumulative effects to public health and natural resources. To insure the availability of a long-term potable water supply for development, the County shall implement a trigger mechanism limiting development to a level not detrimental to local potable ground water supplies. Centralized wastewater treatment service should be provided for areas designated for medium and high density development concentration, infilling, and areas which present significant public health hazards due to continued failure of onsite systems which cannot be corrected by onsite wastewater management programs.

3.2.2 General Policies (Page 73)

1. Capacity for a wastewater management service area shall be reserved according to the following ranking of priorities, especially in areas where the capacity of wastewater collection and treatment facilities are limited:
 - (1) Existing uses within the service area;
 - (2) New or expanded coastal-dependent industries within the service area;
 - (3) New or expanded essential public services, basic industries and recreational uses, or the first single family dwelling on a vacant lot of record within the service area;
 - (4) All other uses.If additional capacity is available after the above uses are served, and infilling has occurred, then the service area may be expanded to adjacent areas according to the same ranking of priorities. Specific service priorities for the Moss Landing wastewater collection system are described in Chapter 5.

3.2.3 Specific Policies (Pages 74-75)

3. Any expansion of the Castroville County Sanitation District/MRWPCA service area in the vicinity of Oak Hills shall be limited to the area north of Highway 156, east of Castroville Boulevard and south of Meridian Road and the adjacent agriculture, in order to avoid

conflict with the preservation of large areas of agricultural land adjacent to the boundaries and to concentrate development.

4. Prunedale should be considered as an area for future extension of the proposed MRWPCA collection system in order to support residential development and regional commercial development serving areas within the North County coastal zone.
7. Where the nitrogen equilibrium of inflow within a hydrologic subarea, as defined in "Water-Resources Investigations Report 83-4023", U.S. Geological Survey, exceeds 8.5 mg/l nitrate-nitrogen, consideration shall be given to imposing limits on development, other than the first single family dwelling on a vacant lot of record, which contributes to ground water recharge through percolation of nitrogen laden waters. This policy shall be effective until such time as the hydrology and nitrate loading study authorized by Ordinance 3496 has been completed and new information indicates other mitigations would be more effective. If determined to be more effective by County staff, the County shall implement other policies consistent with the findings of the hydrology study to minimize wastewater impacts to compromised subareas.
8. A completed North County Hydrologic and Nitrate Loading Study to be funded by development fees generated from Ordinance 3496 or other means, shall be completed in two phases within two years after receiving adequate funds for each phase. If this does not occur, consideration shall be given to imposing limits on development, other than the first single family dwelling on a vacant lot of record, until such time as the study is complete.
9. A tentative map application for a subdivision shall not be deemed complete until an applicant provides: proof that sewage disposal systems for all proposed lots will not cause nitrate and chemical loading levels in aquifers to exceed limits established by this plan; and proof of an assured long-term potable water supply in terms of sustained yield and adequate quality for all proposed lots.

3.2.4 Recommended Actions (Pages 75-76)

1. The County should develop wastewater reclamation research and projects such as the Castroville Irrigation Project proposed by the Water Resources Agency, MRWPCA and the Bureau of Reclamation, that could contribute to the solution of the problem of increasing saltwater intrusion in North County. Reclamation opportunities to be pursued should include retention of the Castroville plant until an alternative reclamation project is in effect; allowing reclaimed wastewater pipelines as a permitted use in agricultural areas (citing a preference to locate outside of cultivated fields); and requiring reclamation to the maximum extent feasible.
2. New development, especially that served by sewers, should have water conservation devices installed in the plumbing system to minimize the rate of ground water withdrawal

and potential overdraft. This should be required on all discretionary permits, as well as permits issued by the Building Department.

3. A wastewater management plan should be developed and implemented by Monterey County for all ground water subareas in the North County, including non-coastal areas. The plan should identify methods to promote protection of ground water from nitrate contamination by wastewater disposal systems. The plan should include a feasibility study for the provision of regional sewer service and all other possible solutions or alternatives in those areas exceeding 8.5 mg/l nitrate-nitrogen and most impacted by wastewater disposal. Lastly, the plan should include a nitrate monitoring program.
4. The County should amend the North County Area Plan to include policies which are consistent with the policies of this Land Use Plan which limit development in subareas with 8.5 mg/l nitrate/nitrogen content in the ground water.

4.3.4 Key Policy (Page 90)

All future development within the North County Land Use Plan must be clearly consistent with the protection of the area's significant human and cultural resources, agriculture, natural resources, and water quality.

4.3.5 General Policies (Pages 90-91)

4. Where there is limited land, water, or public facilities to support development, coastal-dependent agriculture, recreation, commercial and industrial uses shall have priority over residential and other non-coastal-dependent uses.
6. Industrial uses shall be located near major transportation facilities and population centers. The only industrial facilities appropriate for the area are coastal or agriculture-dependent industries which do not demand large quantities of fresh water and contribute low levels of air and water pollution. Industries not compatible with the high air quality needed for the protection of agriculture shall be restricted.
7. New subdivision and development dependent upon ground water shall be limited and phased over time until an adequate supply of water to meet long-term needs can be assured. In order to minimize the additional overdraft of ground water accompanying new development, water conservation and onsite recharge methods shall be incorporated into site and structure design.

7.2.2 Development Permits (Page 162)

2. The area of review concerns conformance to the policies of the plan contained in Chapters 2 through 6. If the proposal is not consistent with policies contained in these chapters, it shall not be approved unless it is modified so that it is consistent. Considerations that may be reviewed for any given permit application include:

- geologic, flood, and fire hazards
- erosion potential
- environmentally sensitive habitat protection
- vegetation
- water quality
- water availability
- septic tank suitability
- compatibility with adjacent land uses
- roads, transit, schools, and other public service and facilities
- agricultural protection
- visual resources
- coastal access
- other necessary concerns to minimize site and cumulative impacts of development.

North County Area Plan

ASSUMPTIONS (Pages 43-44)

6. The Local Coastal Program's North County Land Use Plan will continue to regulate land use in the coastal zone and will not be superseded by this area plan.
11. Current water shortage and/or water quality problems will preclude significant development increases in many areas until those problems are solved.

ISSUES (Pages 44-80)

Adequacy of Water Resources

1. All three major ground water basins underlying North County experience long-term overdraft conditions.
2. Overdrafting in the Pajaro-Springfield Basin is causing saltwater intrusion along the coast between Moss Landing and the Pajaro River. Similarly, the Pressure Area of the Salinas Valley Basin is experiencing a substantial salt water intrusion problem between the Salinas River and Moss Landing, extending eastward for several miles.
3. Overdrafting in the Prunedale Basin and the East Side Area of the Salinas Valley Basin has caused gradual declines in ground water surface levels. In the Prunedale Ground water Shortage Area, the overdrafting problem has become especially acute, with some wells drying up completely.
4. Chronic ground water overdrafting in North County has led to consideration of a number of additional water supply strategies, including tapping a deeper aquifer, importing water from within or outside the County, water conservation and wastewater reclamation. To

which of the options, if any, should the County commit itself? And which would be of greatest benefit to North County residents?

Adequacy of Water Quality

1. Localized contaminants, such as nitrates, saltwater intrusion, salts buildup and trace elements, threaten ground water quality in a number of areas. How can the County alleviate these threats to the water supplies of North County residents?
2. What steps should be taken to ensure adequate future capacity of wastewater treatment systems?

Water Resources

- 5.1.3(NC) Development shall be designed to maximize ground water recharge capabilities and to minimize runoff from the property.
- 6.1.3 (NC) A groundwater management plan shall be developed and implemented for all ground water basins or sub-basins in North County. The plans shall identify methods to promote recharge protection, erosion control, drainage management, water quality control, and safe, long-term yields of aquifers. These methods may include, but shall not be limited to, water conservation measures, development of additional long-term water resources, pumping restrictions on existing and future wells, and land use restrictions. Ground water management plans for North County shall be coordinated with other jurisdictions sharing responsibility for planning the use of water resources.
- 6.1.4 (NC) New development shall be phased until a safe, long-term yield of water supply can be demonstrated and maintained. Development levels that generate water demand exceeding safe yields of local aquifers shall only be allowed once additional water supplies are secured.
- 6.2.2 (NC) The County shall place a high priority on water development projects that can offer a viable water supply to water-deficient areas in North County.

Water Quality

- 21.2.2.1 (NC) In areas where there is evidence that ground water quality is being degraded due to contamination by onsite septic systems and sewer service is not available, development shall be allowed only on parcels with adequate area and soil characteristics to treat and absorb the wastewater without causing further degradation of local ground and surface waters.

27.1.2.1 (NC) The moratorium imposed by the County on lot divisions in the Prunedale Ground water Shortage Area shall be maintained until the water supply and quality issues are resolved.

Water Resources (Page 80)

Impacts

- 6.1.4 (NC) Delaying or preventing development in potential overdraft areas could indirectly increase housing costs by reducing the land area available for development. Requiring development to procure new water supplies in overdrafted areas could directly increase housing costs.
- 6.2.2 (NC) Development of new water supplies for North County could require significantly more energy and public investment than expended for existing supplies.

Mitigation Measures

1. Overdrafting problems and the costs associated with developing new supplies could be mitigated by policies 5.1.3 (NC) and 6.1.3 (NC), providing for protection and maximization of existing water resources.
2. The mitigation measure for housing impacts is the same as for policy 3.1.1.2 (NC).

Water Quality (Page 81)

Impact

21.2.2.1 (NC) Reducing the number of parcels available for development because ground water quality could restrict the housing supply.

Mitigation Measure

1. The mitigation measure for housing impacts is the same as for policy 3.1.1.2 (NC).

Monterey County Coastal Implementation Plan

The Monterey County Coastal Implementation Plan
Is Published In Six Parts:

PART 1: Coastal Zone Regulations (Chapters 20.105 - 20.139) Regulations for Coastal Development Permits (Chapter 20.140)
General Provisions and Exceptions in the Coastal Zone (Chapter 20.142)
Title 20 (Zoning Ordinance)

PART 2: Regulations for Development in the North County Land Use Plan Area (Chapter 20.144)

Chapter 20.140 Regulations for Coastal Development Permits

20.140.040 Definitions (Pages CZ/B-2, B-3)

M. Development means, on land, in or under water:

1. Placement or erection of any solid material or structure, including, but not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line;
5. change in the intensity of use of water, or of access thereto;
6. Expansion or construction of water wells, surface water diversions, or septic systems, except for replacement thereof;

20.140.070 EXEMPTIONS (Pages CZ-B6, B-7, B-8)

The projects listed below shall be exempt from the requirement for a Coastal Development Permit. Requirements for any other permits are unaffected by this Section.

- A. The maintenance, alteration, or addition to existing single-family dwellings, including the establishment or expansion of non-habitable accessory structures normally associated with residential uses such as garages, decks, workshops, and storage buildings not exceeding 500 square feet; however, the following classes of development shall require a permit because they involve a risk of adverse environmental impact:
3. The expansion or construction of water wells or septic systems.
 5. In areas determined to have critically short water supply that must be maintained for the protection of coastal resources or public recreational use, the construction of any specified major water using development not essential to residential use including but not limited to swimming pools, or construction or extension of any landscaping irrigation system.
- B. The maintenance, alteration, or addition to existing structures other than single-family dwellings and public works facilities; however, the following classes of development shall require a permit because they involve a risk of adverse environmental impact:
3. The expansion or construction of water wells or septic systems.

5. In areas determined to have critically short water supply that must be maintained for the protection of coastal recreation or public recreational use, the construction of any specified major water using development including but not limited to swimming pools or the construction or extension of any landscaping irrigation system.

Title 20 Zoning

20.144.070 WATER RESOURCES DEVELOPMENT STANDARDS (Page NC-42)

Intent of Section: The intent of this Section is to provide development standards which will protect the water quality of the North County surface water resources and ground water aquifers, control new development to a level that can be served by identifiable, available, and long-term water supplies, and protect North County streams, estuaries, and wetlands from excessive sedimentation resulting from land use and development practices in the watershed areas. (Ref. Policy 2.5.1)

A. Critical and Non-Critical Erosion Area Determination

1. For all proposed development, a determination shall be made by the project planner as to which portions of the parcel are in Critical and Non-Critical Erosion Areas. The determination shall be made prior to the application being determined complete.

D. Hydrologic Report Requirement (Pages NC-48, NC-49, NC-50)

1. A hydrologic report shall be required for any development which involves intensification of water use. As an exemption to this requirement, a hydrologic report will not be required for the following: a) development of a single residence on a vacant, undeveloped parcel; and, b) development of an accessory structure, including a guesthouse. Uses where the water will be used for agricultural operations shall not be exempted from the hydrologic report.
2. The report shall be required, submitted, and approved by the Director of Environmental Health prior to the application being determined complete.
3. The hydrologic report shall be prepared by a registered civil engineer or hydrologist, at the applicant's expense. A minimum of 4 copies shall be submitted.
4. The report shall be reviewed by the Health Department, Flood Control District and other departments or agencies appropriate for the specific project. A copy of the submitted report shall be sent to each reviewing agency by the Health Department, with comments requested by a specified date. After comments have been received, the Health Department may require that the report be revised to include additional information or assessment as deemed necessary by the reviewing agencies. A third

party review, by a civil engineer or hydrologist at the applicant's expense, may also be required. All departmental review, report revisions, and third party review must be complete before the report may be approved by the Director of Planning and accepted by the Director of Planning.

5. The hydrologic report shall contain, at a minimum, the following elements:
 - a. location map;
 - b. to-scale site plan showing the entire parcel and proposed and existing structures, roads, land use, landscaping, wells, and water lines, and hydrologic and drainage features;
 - c. description of how water is currently supplied and how it will be supplied to the proposed development;
 - d. assessment of existing and proposed water usage, including water usage for landscaped and other vegetated areas;
 - e. description of hydrologic setting and features on the parcel and in the area, and for areas presently cultivated or proposed for cultivation;
 - f. description of investigation methods, including review of well logs, (subject to owner's permission) onsite and offsite testing, and contacts with Health Department and Flood Control District staff;
 - g. description of other development activity in the area, both proposed and under construction;
 - h. assessment of the individual and cumulative impacts of the proposed development on the quantity and quality of the ground water table and local aquifer, specifically addressing nitrates, TDS, and toxic chemicals;
 - i. assessment of the proposed development's individual and cumulative impact on the aquifer's safe long-term yield level, saltwater intrusion, and long-term maintenance of local coastal-priority agricultural water supplies;
 - j. Description and assessment of project alternatives, including reduced density, if needed, to mitigate the proposed development's adverse impacts as identified above; and,
 - k. recommendations for water conservation measures, addressing siting, construction, and landscaping, and including retention of water onsite to maximize ground water recharge and reclamation of water.

E. General Development Standards (Pages NC-53, NC-54)

10. Development shall not be permitted if it has been determined, through preparation of the hydrologic report, or other resource information, that:
 - a. the development will have adverse impacts to local agricultural water supplies, such as degrading water quantity or quality; and,
 - b. there are no project alternatives and/or mitigation measures available that will reduce such impacts to levels at which the long-term maintenance of local coastal priority agricultural water supplies is assured. (Ref. Policy 2.5.3.A.1 & A.2)

11. Development shall not be permitted if it has been determined, through preparation of a hydrologic report, or other resource information, that:
 - a. the development will generate a water demand exceeding or adversely impacting the safe, long-term yield of the local aquifer; and,
 - b. there are no project alternatives and/or mitigation measures available that will reduce the development's water use to a level at which it will not exceed or adversely impact the safe, long-term yield of the local aquifer.

As such, each hydrologic report shall be reviewed by the Flood Control District and Health Department, pursuant to Section 20.144.070.D.4. Department review shall include an on-going monitoring of cumulative impacts of development on ground water resources through review of hydrologic reports previously prepared for other development projects in the area. (Ref. Policy 2.5.2.3)

12. Development shall incorporate water conservation measures, such as recommended in the hydrologic report, in the hydrologic report element of the Agricultural Management Plan (as per Section 20.144.080.C), and by County agencies, as a condition of project approval. Such measures may include (but are not limited to) modifications in siting, location, project density, construction and landscaping, water reclamation, and ground water recharge if approved by the Director of Environmental Health. (Ref. Policy 2.5.3.A.4 and 4.3.5.7)

13. Development, including subdivisions, shall not be permitted where onsite septic systems will result in adverse impacts to public health, environmentally sensitive habitats, or natural resources through causing or contributing to degradation of ground/surface water quality or quantity. As such, the proposed development shall be subject to Health Department requirements and other measures necessary to mitigate adverse impacts. Modifications shall be made for the development's location, siting, density, and other techniques where such modifications will

mitigate adverse impacts of septic system development. 2.5 acres per unit shall be considered to be the maximum density for parcels resulting from a proposed subdivision, for replacement of nonconforming uses, for setting a maximum density for residential development, or from a plan or zoning ordinance amendment where onsite septic systems would be required. (Ref. Policy 2.5.2.5 & 2.5.3.B.3)

20.144.080 AGRICULTURAL DEVELOPMENT STANDARDS (Page NC-57)

Intent of Section: The intent of this Section is to provide development standards which will support the permanent preservation of prime agricultural soils exclusively for agricultural use, and protect productive farmland not on prime soils if it meets State productivity criteria and does not contribute to degradation of water quality. Development adjacent to prime and productive farmland shall be planned to be compatible with agriculture.

C. Agricultural Management Plan Requirement (Page NC-59)

- e. water availability and demand, and the relationship to appropriate agricultural management on the parcel;

20.144.140 LAND USE AND DEVELOPMENT STANDARDS (Pages NC-86, NC-87)

3. Residential

a. Build-out

In the North County Land Use Plan area, a total of 2,043 new lots or units may be created after certification of the LUP in June, 1982. This figure represents development at a level of 50% of the build-out remaining at the time of LUP certification. It was calculated by subtracting the number of existing units from the potential build-out (i.e. 7,835 units - 3,750 units = 4,085 units; 4,085 units x 50% = 2,043 units), at the time of LUP certification as provided in LUP Policy 4.3.3. The 50% build-out is permitted as the first phase of new development which limits ground water use to the safe yield level. Additional development beyond this first phase shall require a Local Coastal Program amendment, pursuant to Appendix 13 of this ordinance, and shall only be permitted after safe yields of ground water use have been established and water supplies are determined to be available, according to definitive water studies.

Between the time of LUP certification (June, 1982) and Coastal Implementation Plan preparation (July, 1987), a total of 168 lots were approved and a total of 119 final building permits were issued. As well, there were a total of 405 vacant residential parcels as of July, 1987. (These figures were calculated through use of County Planning Department and Assessor computer records.) Subtracting these figures from the 2,043 new lots or units provides the remaining build-out that may be permitted after County assumption of coastal development permitting authority,

exclusive of one single family dwelling on a vacant lot of record. That remaining build-out figure is 1,351 new lots or units. This figure shall include senior citizen units, caretaker units, multiple family dwellings, employee housing, and lots created through subdivision approved after County assumption of permitting authority, but shall exclude development of a single-family dwelling on a vacant lot of record. (Ref. Policy 2.5.3.A.2 & 4.3.3)

Zoning Ordinance (Title 21)

21.64.170 Water Facilities in Approved Subdivisions. (pg. 21-224)

- A. Purpose: It is the purpose of this Section to provide a mechanism whereby a Use Permit is not required for water system facilities in approved subdivisions.
- B. Applicability: The provisions of this Section are applicable in all zoning districts.
- C. Regulations: A Use Permit is not required for any water facility which has been approved by the Appropriate Authority in conjunction with a tentative map or tentative parcel map. All conditions of the map approval which pertain to the water facility must be met prior to the construction or installation of said facility. The water facility may be used only for all development within the subdivision for which it is designed unless a Use Permit is obtained.

21.64.180 Density of Development.

- A. Purpose: The purpose of this Section is to provide a mechanism to calculate the maximum residential development allowed in accordance to an established formula to determine land use densities.
- B. Applicability: The provisions of this section shall apply in the following zoning districts: "LDR", "RDR", "RG", and "RC".
- D. Density of Development Standards

The maximum density established under this Section shall be utilized as the basis to begin consideration of the density appropriate for development of a specific parcel. Such established maximum density is not a guarantee of possible development potential of any given property. Density of development shall ultimately be determined through the permit process, consideration of site conditions on the specific property and of details of the specific development proposal without imposing undue restrictions on private property. Such considerations may include but are not limited to:

- 1. soils;
- 2. available supply and priorities for water;
- 3. traffic;

4. sewage disposal;
5. development design;
6. known hazards;
7. public facilities, such as schools and police and fire facilities;
8. environmentally sensitive habitat;
9. archaeological and historical resources;
10. housing demands of the County;
11. employment needs;
12. development of the County's economic climate; and
13. attainment of State mandated fair share housing.

Appendix B

Appendix B

AGENCIES WITH WATER RESOURCE JURISDICTION¹

FEDERAL AGENCIES

Six federal agencies have jurisdiction or interest in the water resources of the North County area. These agencies are as follows: U.S. Geological Survey (USGS), U.S. Bureau of Reclamation (USBR), U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), and the U.S. Resource Conservation Service (RCS). A brief description of each agency's roles and responsibilities is provided below.

U.S. Geological Survey

The USGS is responsible for monitoring and collecting data and preparing technical reports for the nation's water resources. The USGS has been involved in the preparation of numerous technical reports for the North County area, including: Water Resources of the Salinas Valley (1904), Ground Water in North Monterey County (1980), and Simulated Effects of Ground Water Management Alternatives for the Salinas Valley (1988).

U.S. Bureau of Reclamation

The USBR is responsible for monitoring and development irrigation and agricultural land reclamation projects in the western United States. The USBR is primarily concerned with the construction and maintenance of large dams and water development projects. The USBR has been involved with the development of alternative strategies to alleviate the overdraft and seawater intrusion in the Salinas Valley Basin, which extends north from the Salinas River to the Castroville area within the North County area.

U.S. Army Corps of Engineers

The primary role of the ACOE involves issues of flood control, management of navigable waterways, and wetlands management. Under the Rivers and Harbors Act of 1899, the ACOE is given jurisdiction over the construction of navigable waters. This jurisdiction also has been applied to environmental protection, through the discharging of refuse material into navigable waters. Under Section 404 of the Clean Water Act of 1977, the ACOE is responsible for dredge and fill permits of wetlands.

¹ Some of this material was derived from the Pajaro Valley Water Management Agency Draft Basin Management Plan.

U.S. Environmental Protection Agency

The North County area lies within Region 9 of the EPA, headquartered in San Francisco. The EPA's role in water resource protection is primarily related to the promulgation of regulations relating to water quality. EPA has set standards for drinking water quality under the Safe Drinking Water Act of 1974. The EPA regulates the discharge of wastes into water of the United States through the National Pollution Discharge Elimination System (NPDES). The EPA is also involved with the remediation of hazardous waste sites under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), also known as Superfund. Under the Coastal Zone Management Act, the EPA has the responsibility of reviewing and approving state coastal zone management plans. In California, the California Coastal Commission is responsible for coastal zone issues.

U.S. Fish and Wildlife Service

The USFWS is the responsible federal agency for the protection of endangered species under the federal Endangered Species Act. The harming of endangered species, including its natural habitat, is prohibited under the ESA.

U.S. Resource Conservation Service

The RCS provides technical assistance to agencies and private landowners regarding the conservation of soil and water resources through improved land use practices. Services provided by the RCS include: irrigation evaluation program, watershed planning, basin surveys, and resource conservation and development.

STATE AGENCIES

There are seven state agencies with roles and responsibilities with regards to North County area water resource issues. These agencies include the following: State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), California Department of Water Resources (DWR), California Coastal Commission (CCC), California Environmental Protection Agency (CalEPA), California Department of Fish and Game (CDFG), and California Water Commission (CWC). A brief description of each entity's roles and responsibilities is provided below.

State Water Resources Control Board

The SWRCB is responsible for protecting the state's water quality and allocating water rights. The SWRCB works closely with the RWQCBs to protect the state's waters. The Porter-Cologne Water Quality Control Act, created these entities. The SWRCB primary function under

the Act is to direct the RWQCBs to establish and enforce water quality standards. The SWRCB sets water quality control policy and priorities, administers the Clean Water Grant programs, coordinates planning, conducts research, administers appropriation of water, conducts adjudication proceedings on surface and ground waters, and hears appeals of RWQCB actions. The SWRCB also has powers for regulation waste discharges into surface or ground waters.

The Division of Water Rights within the SWRCB has the role of resolving water rights questions referred by the Superior Court or can initiate court actions in cases of unlawful water taking. The SRWCB has the power to adjudicate ground water basins where the continued unregulated use of ground water may lead to irreparable injury to the quality of such water. In 1953, the SRWCB prepared the Santa Cruz-Monterey Counties Investigation.

Regional Water Quality Control Board

The state of California is divided into nine hydrologic regions by the SWRCB. Each region has a RWQCB that is responsible for the enforcement of water quality standards and waste discharges requirements for point source dischargers. The North County area lies with Region 3 - Central Coast Region RWQCB, based in San Luis Obispo.

The RWQCB is actively working with the MCWRA in addressing water resource problems in the North County area.

California Department of Water Resources

The DWR is responsible implementing state policy regarding water resources. The DWR investigates water development projects, administers the State Water Plan, provides permit approval and inspection of dams, and conducts surveys and investigations into the reclamation of water for beneficial purposes. The DWR acts as a liaison with other agency's on water policy and technical matters. The DWR also is responsible for the development of alternative solutions to water resource problems.

The DWR has prepared numerous reports on the water resources of the North County area, including: Salinas River Basin Special Investigation (1969), North Monterey Water Resources Investigation (1977), Sea Water Intrusion - Salinas and Pajaro Rivers (1981).

California Coastal Commission

The CCC is responsible for the approval of local coastal plans and programs in order to comply with the California Coastal Act. The CCC also has discretionary approval of development projects and land use plans within the coastal zone. Preservation of wetlands and water quality is also of concern to the CCC.

California Environmental Protection Agency

The CalEPA is an umbrella agency containing the Department of Health Services, the Department of Toxic Substances Control, and other departments involved in the implementation of environmental policies in the state. The Department of Health Services and the Department of Toxic Substances Control are primarily concerned with threats to public health and safety, such as hazardous waste contamination, drinking water standards under the California Safe Drinking Water Act, and the regulation of public drinking water systems.

California Department of Fish and Game

The CDFG enforces laws protecting fish and wildlife from water pollution and SWRCB regulations. The CDFG is charged with the protection of fish and wildlife resources and to restore aquatic habitats that are now degraded because of waste disposal or adverse land use practices. The CDFG is a permitting agency for the alteration of stream beds.

California Water Commission

The CWC functions in an advisory capacity to the Director of the DWR. The commission is regarded as a trustee of the people of the state; a forum before which the people may appear and make known their needs and desires; a liaison between the legislative and executive branches of state government; and, a coordinator of federal, state, and local efforts to use the waters of the state to the greatest benefit.

REGIONAL, COUNTY AND CITY AGENCIES

Numerous local agencies are involved in the water resources issues related to the North County area. Their roles are described below.

Association of Monterey Bay Area Governments

The Association of Monterey Bay Area Governments (AMBAG) is an organization of the counties of Monterey and Santa Cruz and 15 cities in the region of Monterey Bay. The purpose of AMBAG is provide a forum for the discussion and solution of regional problems. AMBAG also provides a regional clearinghouse of planning information to the local governmental agencies.

Monterey County Planning and Building Inspection Department

The Monterey County Planning and Building Inspection Department is the agency responsible for implementing land use plans and programs, processing development applications, and performing environmental review on development projects and plans. The Planning Department refers development applications that will result in increased water use in the North County area to the Water Resources Agency for review and comment.

Monterey County Health Department

The Monterey County Health Department is responsible for monitoring and regulating on-site water and wastewater disposal systems, issuing permits for water well construction and abandonment. The Health Department reviews development proposals for impacts on water requirements and possible water quality degradation.

The Health Department played an important role in the Monterey Regional Water Pollution Control Agency's study of the use of filtered wastewater effluent for agricultural irrigation.

Pajaro Valley Water Management Agency

The Pajaro Valley Water Management Agency (PVWMA) is responsible for the protection and maintenance of water resources in the Pajaro Valley basin of Monterey and Santa Cruz counties. The PVWMA was created by the State Legislature in 1984. One-half of the North County area lies within the PVWMA's management area.

Monterey County Information Systems Division

Information Systems has County-wide responsibility for the planning, execution, and control of the development, maintenance and operation of information systems. Information Systems provides direction over centralized, decentralized and distributed information systems to all Monterey County departments and agencies. This includes data processing, office automation and data, voice and radio communications services.

Monterey County Water Resource Agency

MCWRA has county-wide authority over the management of water resources. MCWRA works in cooperation with other water management agency's.

Appendix C

ORDINANCE NO 5.2

AN ORDINANCE TO REDUCE GROUNDWATER EXTRACTIONS

The Board of Directors of the Fox Canyon Groundwater Management Agency, State of California, hereby repeals Ordinance No. 5.1 and ordains as follows:

ARTICLE 1. General

Section 1. Title

This ordinance shall be known as the "Groundwater Extraction Limitation and Control Ordinance" of the Fox Canyon Groundwater Management Agency.

Section 2. Purpose and Intent

The purpose and intent of this ordinance is to eliminate overdraft from the aquifer systems within the boundaries of the Agency and bring the groundwater basins to safe yield by the year 2010. This ordinance is only one means by which this goal will be met. It is not the intent or purpose of this ordinance to determine or allocate water right entitlements, including those which may be asserted pursuant to California Water Code sections 1005.1, 1005.2 or 1005.4.

Section 3. Periodic Review Procedure

The Board will periodically review the effectiveness of this ordinance toward meeting its purpose and intent. This review shall occur at least once every five years. If necessary, this ordinance will be amended by the Board to insure that the goals of the Agency are met.

Section 4. Definitions

As used in this ordinance, the following terms shall have the meanings stated below.

- A. "Agency" means the Fox Canyon Groundwater Management Agency.
- B. "Agency Coordinator" means the individual appointed by the Board to administer Agency functions.
- C. "Agricultural extraction facility" means a facility whose groundwater is used on lands in the production of plant crops or livestock for market, and uses incidental thereto.
- D. "Annual" means the calendar year January 1 through December 31.

- E. **"Aquifer"** means a geologic formation or structure that transmits water in sufficient quantities to supply pumping wells or springs. A confined aquifer is an aquifer with an overlying less permeable or impermeable layer.
- F. **"Board"** means the Board of Directors of the Fox Canyon Groundwater Management Agency.
- G. **"Developed Acreage"** means that portion of a parcel within the boundaries of the Agency that is receiving water for reasonable and beneficial agricultural, domestic or municipal and industrial (M & I) use.
- H. **"Excess extractions"** means those extractions in excess of an operator's extraction allocation or adjusted extraction allocation.
- I. **"Extraction"** means the act of obtaining groundwater by pumping or other controlled means.
- J. **"Extraction allocation"** means the amount of groundwater that may be extracted from an extraction facility for a given calendar year, before a surcharge is imposed.
- K. **"Extraction facility"** means any device or method (e.g., water well) for extraction of groundwater within a groundwater basin or aquifer.
- L. **"Foreign Water"** means water imported to Ventura County through the State Water Project facilities or other water as approved by the Board.
- M. **"Groundwater"** means water beneath the surface of the earth within a zone in which the soil is sufficiently saturated with water to allow collection and extraction.
- N. **"Groundwater basin"** means a geologically and hydrologically defined area containing one or more aquifers which store and transmit water yielding significant quantities of water to extraction facilities.
- O. **"Historical extraction"** means the average annual groundwater extraction based on the five (5) calendar years of reported extractions from 1985 through 1989 within the boundaries of the Agency. This average will be expressed in acre feet per year.
- P. **"Injection/storage facility"** means any device or method for injection/storage of water into a groundwater basin or aquifer within the boundaries of the Agency.
- Q. **"Municipal and Industrial (M & I) Provider"** means a municipality, waterworks district, water company, mutual water company or person which provides water for domestic, industrial, commercial, irrigation or fire protection purposes within the boundaries of the Agency.

- R. "Operator" means a person who either owns or operates a groundwater extraction facility with the written approval of the owner. In the event the Agency is unable to determine who operates a particular extraction facility, then "operator" shall mean the person to whom the extraction facility is assessed by the County Assessor, or, if not separately assessed, the person who owns the extraction facility or the land upon which it is located.
- S. "Overdraft" means the condition of a groundwater basin where the average annual amount of water extracted exceeds the average annual supply of water to a basin or aquifer.
- T. "Person" includes any state or local governmental agency, private corporation, firm, partnership, individual, group of individuals, or, to the extent authorized by law, any federal agency.
- U. "Recharge" means natural or artificial replenishment of groundwater storage by percolation or injection of one or more sources of water at the surface.
- V. "Safe Yield" means the condition of groundwater basin when the total average annual groundwater extractions are equal to or less than total average annual groundwater recharge, either naturally or artificially.

ARTICLE 2. Extraction Allocations

Section 1. General

The Agency Coordinator shall establish an operator's extraction allocation for each extraction facility located within the boundaries of the Agency. The extraction allocation shall be the historical extraction as reported to the United Water Conservation District and/or to the Agency pursuant to Agency Ordinances No. 1.1 or as otherwise provided for in Article 6 of this ordinance. Extraction allocations shall be prorated in instances where they apply to less than a full calendar year.

Notwithstanding any provision in this ordinance, the annual allocation shall be an allocation based on 60 percent irrigation efficiency of the current crop or the historical allocation, whichever is less. The irrigation efficiency for the operator's crop shall be determined using the formula described in Paragraph B of Article 6.

This 60 percent irrigation efficiency is totally unrelated to the 80 percent efficiency described in Article 6, Paragraph B, "Annual Efficiency Extraction Allocation".

Where an operator operates more than one extraction facility, the extraction allocations for the individual facilities may be combined.

Section 2. Necessity for Extraction Allocations

No extraction facility may be operated or otherwise utilized so as to extract groundwater within the boundaries of the Agency without a valid extraction allocation issued by the Agency.

Section 3. Compliance

An operator shall comply with all provisions of this ordinance and all other Agency ordinances prior to receiving an extraction allocation.

Section 4. Violation

Any operator or other person who violates the provisions of this Article is subject to the criminal and civil sanctions set forth in the Agency's enabling act and its ordinances.

ARTICLE 3. Adjustments to Extraction Allocations

Section 1. Purpose

Adjustments to extraction allocations may be necessary to provide some flexibility, while still maintaining the goal of reaching a safe yield condition by the year 2010. Adjustments may be accomplished by a transfer or an assignment of historical extraction allocations from one operator to another.

Section 2. Types of Adjustments

- A. **Municipal and Industrial (M & I) Transfer Adjustments** - The extraction allocation of an agricultural extraction facility shall be transferred to an M & I provider at the time the M & I provider serves the property originally served by the agricultural extraction facility. However, in no case shall the transfer exceed two (2) acre-feet per acre per year or the historical extraction, whichever is less. Two (2) acre-feet per acre per year represents a reasonable use of water for M & I purposes.
- B. **Assigned Extraction Allocation Adjustments** - Operator A may assign an extraction allocation to Operator B as long as Operator B provides water to Operator A equal in amount to the full assigned extraction allocation. In order to prevent the creation of a secondary market in extraction allocations, upon the change of ownership of either property, the assigned extraction allocations revert to Operator A. The assigned extraction allocations may subsequently be re-assigned by the new owner.

Section 3. Procedures for Adjustments

Procedures for adjusting extraction allocations will be accomplished using the following procedure:

- a. It shall be necessary for the operator of the extraction facility to file a verified Application for Adjustment with the Agency Coordinator.
- b. The Application for Adjustment shall be filed no later than July 1 of any calendar year.
- c. The Agency Coordinator shall review the Application for Adjustment and report his findings and recommendations to the Board by October 1 of the same year.
- d. Adjustments of extraction allocations, pursuant to the Applications for Adjustment, shall be considered for approval by the Board after reviewing the findings and recommendations of the Agency Coordinator and, if approved, shall be effective for the remainder of the calendar year and for all subsequent calendar years until modified by a subsequent Board approved adjustment.

ARTICLE 4. Reduction of Extraction Allocations

Unless otherwise exempted, extraction allocations, adjusted or otherwise, shall be reduced in order to eliminate overdraft from the aquifer systems within the boundaries of the Agency for agricultural and M & I uses. The reductions shall be as set forth below:

1992-1994 extraction allocation = 95% of historical extraction, as adjusted.
1995-1999 extraction allocation = 90% of historical extraction, as adjusted.
2000-2004 extraction allocation = 85% of historical extraction, as adjusted.
2005-2009 extraction allocation = 80% of historical extraction, as adjusted.
After 2009 extraction allocation = 75% of historical extraction, as adjusted.

ARTICLE 5. Exemptions from Reductions

Certain types of extraction allocations are exempt from the reductions set forth in Article 4. They are set forth below:

- A. **Baseline Extraction Allocations** - as set forth in Article 6.
- B. **Annual Efficiency Extraction Allocations** - as set forth in Article 6.

ARTICLE 6. Alternative Extraction Allocations

As an alternative to historical extractions, the Agency Coordinator may establish a **Baseline**, **Conditional Baseline** or **Annual Efficiency** extraction allocation for an operator, as follows:

- A. **Baseline Extraction Allocations** - If no historical extraction exists or it has been one (1) acre-foot per acre per year or less, an operator may request that a **Baseline** extraction allocation be established by the Agency Coordinator at one (1) acre-foot per acre per year for developed acreage that relies solely on groundwater. A **Baseline** extraction allocation may also be established by the Agency Coordinator at one (1) acre-foot per acre per year for lands which are developed after the effective date of this ordinance, regardless of the source of water.

A **Conditional Baseline** extraction allocation of one (1) acre-foot per acre per year may be established for undeveloped acreage if the operator can demonstrate to the satisfaction of the Agency Coordinator that a specified acreage will be developed within the calendar year in which the **Conditional Baseline** extraction allocation is being requested.

To get a **Baseline** or **Conditional Baseline** extraction allocation, an operator must submit a detailed report to the Agency Coordinator. The report shall describe historical extractions, if any, future water requirements, type and amount of water use, crop type and acreage involved. The report shall include copies of Assessor's maps identifying the parcels where groundwater is presently being used. For the purpose of this ordinance, one (1) acre-foot per acre per year represents a reasonable use of water for a **Baseline** or **Conditional Baseline** extraction allocation.

- B. **Annual Efficiency Extraction Allocation** - If an operator can demonstrate to the Agency Coordinator that water used for agriculturally developed land is at least 80 percent overall irrigation efficient, based on evapotranspiration requirements, an **Annual Efficiency** extraction allocation shall be established for one calendar year. An 80 percent overall irrigation efficiency has been determined by the Agency to be reasonable on agricultural lands within the Agency's boundaries.

To prove that irrigation efficiency is at least 80 percent, the operator must submit a detailed report covering a minimum period of the immediately preceding calendar year. This report shall be submitted to the Agency Coordinator no later than March 31st of the following year. The report shall include a complete crop and irrigation history for the extraction facility and acreage involved. The report shall include the reference evapotranspiration (E.T.o) rates and crop factors (Kc) for the calendar year period similar to that provided by the California Irrigation Management Information System (CIMIS) as developed and modified by the California Department of Water Resources. The report will include a summary sheet that compares the water use to

the evapotranspiration requirements for each crop and the corresponding acreage covered in the calendar year.

The irrigation efficiency will include an appropriate amount of water necessary to avoid salt build-up based on the quality of irrigation water used.

Irrigation Efficiency (I.E.) will be calculated using the formula:

$$I.E. = \frac{[E.T.o. \times Kc] - E.R.}{\text{Actual Water Applied (inches)}} \times 100$$

Where:

- E.T.o. is the reference evapotranspiration measured in inches using turf grass as a standard.
- Kc is a crop factor which is a dimensionless number that relates water use by a given plant in comparison to turf grass.
- E.R. is the effective rainfall measured in inches as determined by the Agency Coordinator.

- C. **Exceptions** - The Board may grant exceptions to Sub- paragraphs A and B of Article 6 on a case-by-case basis. However, individual exceptions shall not become the norm. Where agricultural efficiency cannot be measured as set forth in Paragraph B of Article 6, then the most efficient practices of record for the type of agricultural use shall be the measurement of efficiency utilized by the Board in its deliberations.

ARTICLE 7. Credits

Credits can be obtained by operators, but are not considered as extraction allocations or adjustments to extraction allocations. Credits are not subject to any reductions as set forth in Article 4. However, at the operator's option, credits can be saved or used to avoid paying extraction surcharges. Credits shall be accounted for through the normal reporting and accounting procedure and are carried forward from year to year. Credits can be transferred, but only between commonly operated extraction facilities. The types of credits are:

- A. **Conservation credits** - An operator can obtain conservation credits by extracting less groundwater than the extraction allocation. No conservation credits will be given to an operator with an Annual Efficiency, Baseline or a Conditional Baseline extraction allocation.
- B. **Storage credits** - An operator can obtain storage credits for foreign water injected or spread and percolated in a Board approved injection/storage facility.

The Agency Coordinator will determine the amount of storage credits based upon documentation of expected losses, provided by the operator seeking the storage credit.

A written application for approval of an injection/storage facility shall include:

1. Operator of proposed project;
2. Purpose of proposed project;
3. Location, depth, casing diameter, perforated interval and other information regarding proposed injection/extraction facilities, if applicable;
4. Method of operation including source, quantity and quality of water, planned scheduling of injection/ extraction or percolation operations and proposed use of extracted water;
5. Any other information deemed necessary by the Agency Coordinator.

Following Board approval of the application, successful injection of water and reporting of results, an operator will obtain credit as determined by the Agency Coordinator.

ARTICLE 8. Extraction Surcharges and Late Penalty

Section 1. Extraction Surcharges

Extraction surcharges shall be assessed annually each time an operator exceeds their extraction allocation, as adjusted, as shown in the following table:

EXTRACTIONS EXCEED EXTRACTION ALLOCATION AS ADJUSTED BY:	EXTRACTION SURCHARGES SHOWN IN DOLLARS PER ACRE FOOT FOR EXCESS EXTRACTIONS AT EACH CORRESPONDING RANGE
0% - 5%	\$ 50.00
5% - 10%	\$100.00
10% - 15%	\$150.00
Over 15%	\$200.00

NOTE 1: Where there is no valid extraction allocation issued by the Agency Coordinator, the extraction surcharge shall be \$200.00 per acre foot for all water extracted.

NOTE 2: The extraction allocation for efficiency is the amount of water used at 80% efficiency. Extraction surcharges, if any, will be applied to the difference between the actual efficiency achieved and the water used at 80% efficiency. Consequently, an actual efficiency of seventy percent (70%) would pay extraction surcharges on the difference between the amount of water used at 70% efficiency and the amount of water that would have been used at 80% efficiency. If an efficiency of less than 60% is achieved, no efficiency allocation will be available, and the user will revert to a historical, baseline or to no allocation. Extraction surcharges would then apply to the difference between actual water used and the applicable allocation, if any. An actual efficiency of fifty-nine percent (59%), with no historical or baseline allocation, would pay surcharges on all water used.

Section 2. Payment of Extraction Surcharges

Payment of any extraction surcharges shall become due and payable by the operator on or before December 31 of the year immediately following the excess extraction. Payments may be made either in cash or by a reduction in extraction (below the operator's extraction allocation, as adjusted) for the year immediately following the year for which the extraction surcharge is assessed.

Section 3. Late Penalty

The operator shall pay a late penalty for any extraction surcharge not satisfied by the due and payable date. The late penalty shall be 1½ percent per month, or any portion thereof, of the amount of the unsatisfied extraction surcharge.

Section 4. Collection of Delinquent Extraction Surcharges and Late Penalties

The Board may order that any given extraction surcharge and/or late penalty shall be a personal obligation of the operator or shall be an assessment against the property on which the extraction facility is located.

Such assessment constitutes a lien upon the property, which lien attaches upon recordation in the office of the County Recorder. The assessment may be collected at the same time and in the same manner as ordinary ad valorem taxes are collected, and shall be subject to the same penalties and the same procedure and sale in case of delinquency as provided for such taxes. All laws applicable to the levy, collection and enforcement of ad valorem taxes shall be applicable to such assessment, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attaches thereon, prior to the date on which the first installment of such taxes would become delinquent, then the lien which would otherwise be imposed by this section shall not attach to such real property and

an assessment relating to such property shall be transferred to the unsecured roll for collection.

Section 5. Use of Extraction Surcharges and Late Penalties

Revenues generated from extraction surcharges and late penalties shall be used exclusively for authorized Agency purposes, including financial assistance to support Board approved water supply, conservation, monitoring programs and water reclamation projects that demonstrate significant reductions in overdraft.

ARTICLE 9. Appeals

Any operator aggrieved by a decision or determination made by the Agency Coordinator may appeal to the Board within 30 calendar days thereof by filing with the Agency Coordinator a written request that the Board review the decision of the Agency Coordinator. The Board shall act on the appeal within 120 days after the filing.

ARTICLE 10. Severability

If any section, part, clause or phrase in this ordinance is for any reason held invalid or unconstitutional, the remaining portion of this ordinance shall not be affected but shall remain in full force and effect.

ARTICLE 11. Penalties

Any operator or person who intentionally violates any provision of this ordinance shall be guilty of an infraction and may be required to pay a fine to the Agency of not to exceed five hundred dollars (\$500).

Any operator or person who negligently or intentionally violates any provision of this ordinance may also be liable civilly to the Agency for a sum not to exceed one thousand dollars (\$1,000) per day for each day of such violation, in addition to any other penalties that may be prescribed by law.

Upon the failure of any operator or person to comply with any provision of this ordinance, the Agency may petition the Superior Court for a temporary restraining order, preliminary or permanent injunction, or such other equitable relief as may be appropriate. The right to petition for injunctive relief is an additional right to those which may be provided elsewhere in this ordinance or otherwise allowed by law.

The agency may petition the Superior Court of the County to recover any sums due the Agency.

ARTICLE 12. Effective Date

This ordinance shall become effective on the thirty-first day after adoption.

ADOPTED this 26th day of May, 1993 by the following vote.

AYES: Directors: Lynn Maulhardt, Tom Buford, Michael Conroy
and Sam McIntyre

NOES: Directors: None

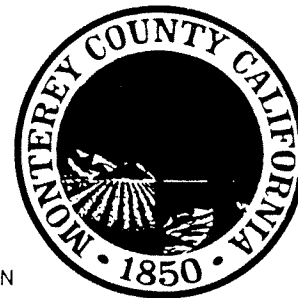
ABSENT: Directors: John K. Flynn and James Daniels


Chair, Board of Directors
Fox Canyon Groundwater Management Agency

By Karen Schoonover
Clerk of the Board

Appendix D

MONTEREY COUNTY



DEPARTMENT OF HEALTH ROBERT J. MELTON, M.D., M.P.H., Director

FAMILY AND COMMUNITY HEALTH ENVIRONMENTAL HEALTH HEALTH PROMOTION
MENTAL HEALTH ALCOHOL AND DRUG PROGRAMS EMERGENCY MEDICAL SERVICES

- 1270 NATIVIDAD ROAD, SALINAS, CALIFORNIA 93906-3198 (408) 755-4500
- 1200 AGUAJITO ROAD, MONTEREY, CALIFORNIA 93940-4898 (408) 647-7650
- 1180 BROADWAY, KING CITY, CALIFORNIA 93930 (408) 385-8360

PLEASE REPLY TO ADDRESS CHECKED

MEMORANDUM

DATE: April 4, 1996

TO: Mike Armstrong, General Manager, MCWRA

FROM: Walter Wong, Director, Division of Environmental Health

RE: North Monterey County Hydrogeologic Investigation; VOLUME II,
Draft Critical Issues Report

Below is a listing of the recommended changes to the Draft Report. Please contact me if you have any questions. Some of the issues are complex and it is likely that another Department head level meeting of the IAC will be needed.

OVERVIEW

Overall the Draft Critical Issues Report is an excellent starting point to proceed towards preventing a serious situation from becoming a true emergency. However, based on our new understanding of the chronic problems and our limited options, we are proposing an alternative approach from that originally conceived over two years ago. This alternative approach is intended to make the resulting document more practical and goal oriented. In this memo, development and implementation of interim measures is emphasized. The need for future management studies is acknowledged, but is de-emphasized until specific objectives are developed. The first half of this memo recommends several changes intended to present the decision makers with more defined goals, alternatives, timelines, and recommendations.

Part II of this memo contains recommended changes to the text of the Report.

INTRODUCTION/BACKGROUND

The Board of the PVWMA recommended in their March 13, 1996 letter that Phase II be abandoned and that instead Vol II be re-organized and retitled "Comprehensive Water Resources Management Plan." The PVWMA accurately points out that our staff/fiscal resources are limited. The monies spent to date have resulted in a well written, comprehensive technical report that is more than adequate to make planning decisions. The monies have also resulted in a Draft Vol II report that recommends 53 specific interim actions. We are recommending an additional 7 interim actions, and it can be expected that more will arise from the public hearing

process. Therefore the monies spent so far have yielded good results; accurate/detailed information and many practical ideas. In contrast, the Draft recommends 13 very general objectives to be studied in Phase II. While many of the scoping issues are purposefully general, we recommend that a **clear cost-benefit nexus** for each of the 13 objectives is developed before committing additional funds.

We do acknowledge that some specific aspects of the problem will need to be studied in more detail. However whenever agencies are faced with multiple tasks and limited budgets, priorities need to be established. We envision a more expanded/detailed "Interim Plan" than that currently proposed while de-emphasizing Phase II until more specifics can be developed. We feel that during the implementation of the Interim Plan a clearer picture will evolve on how monies can best be targeted for prioritized objectives so we can efficiently move towards the goals outlined below. In order to assure that the impetus for a long term plan does not fade away, we are recommending scoping the Phase II study according to a specific timeline to be adopted by the Board of Supervisors.

This approach also has the added advantage of allowing the Basin Management Plans (BMP) for both the PVWMA and the Salinas Valley to evolve over the next year. During this additional time, we will see how the improvement plans in the Pajaro Valley are proceeding, and we will see which alternatives are preferred in the Salinas Valley. This will provide some focus and context for prioritizing objectives in North County.

In summary, while we acknowledge and support the need for a future "Comprehensive Water Resource Management Plan" we do not have enough specific information or resources to recommend proceeding with such a large scope of work at this time. We are recommending to proceed with an expanded Interim Plan and consider the current scope of work *a draft* until we can prioritize a list of objectives. Each objective would be targeted to reducing specific problems in North County.

1. EFFECTIVENESS OF LOCAL MANAGEMENT PLANS WILL BE LIMITED

Discussion. Two significant issues have been acknowledged at a staff level but do not appear in the Draft Report. **First**, is that any management plan (whether short term or long term) will have a relatively limited impact on both water quality and quantity issues. As an example, even if we were to effectively implement all 60 interim measures it would be considered a "success" to keep water use at existing levels (200% overdraft) by the time the area builds-out. Compare this with the Salinas Valley with an 8% annual overdraft. Another example is that even if we were to raise the irrigation efficiency rate of *every* strawberry field from 70% to 85%, the groundwater will continue to be degraded by nitrates. Furthermore, even with the best computer modeling and a massive Phase II Plan, it is guestimated that only a 10-20% reduction in water use and nitrate loading could be achieved. This would still leave us with a 180% overdraft and nitrate loadings exceeding drinking water standards.

Second, it should be publicly acknowledged that the County of Monterey can not bring the area back into balance and maintain drinking water standards without assistance from local,

State and Federal agencies. It is anticipated that some type of large scale capital improvement project will be needed. It is also a given that the problems will get worse before they get better.

When Volume I was being scoped over two years ago, no one could foresee that once we reached this point (scoping Phase II) that there would be so many chronic problems and so few practical solutions. Now that these two major limitations are becoming clear, it becomes logical that the objectives of future studies shift in response. An attempt was made to develop objectives and recommendations in light of these limitations.

General Recommendations: As a result of these new realities we recommend that; 1) Sections 1.5, 3.0, and 4.0 be rewritten to incorporate these two issues, and, 2) that the emphasis be shifted away from undertaking a large scope of work, and towards implementing interim measures while concurrently refining/focusing the scope of work for future management plans.

2. INPUT FROM STATE AGENCIES RECOMMENDED

Now that this Vol II document is being finalized and we are developing an Interim Plan, it is recommended that coordination be initiated with State Agencies.

The RWQCB has ranked the Salinas Valley and North County first and third respectively as the most contaminated basins for study in their pending Watershed Management Plan. This is a major, new direction that all the Regional Boards are taking statewide. The impetus for this shift is from the Federal level. This seems to be an opportunity to work closely with the Board and possibly set an example for other watershed management programs in the Region. It should be determined if funding is available from these new State programs.

The possibility of adjudication by the SWRCB was brought up briefly in the Draft. Since the area will be in chronic overdraft for some years and nitrate loadings will continue to worsen the drinking water quality, it is recommended that input be sought from the SWRCB to determine under what circumstances they would pursue an investigation to possibly adjudicate the basin. In addition, the SWRCB oversees the RWQCBs and they may know of possible funding sources for Management Plans or capitol improvement projects.

Therefore it is recommended that letters be prepared, possibly from the Chair of the Board, to these agencies. Some suggested items in the letters could be; 1) expressing an interest in working with them in their Watershed Management Plans, 2) requesting input on our current Interim Plan, 3) requesting information on possible new funding resources, and 4) assess the potential for possible adjudication proceedings.

3. RECOMMENDED CHANGES TO INTERIM PLAN: SECTION 3

A. **Replacement of Guiding Principles with Management Limitations.** On page 13, parag. 4, the Draft states that two principals guide the recommendations; first, the problem is not an emergency, and second, that implementing multiple programs could

be problematic. As described in item 1 above, the two limiting factors should now be guiding the development of interim measures. **Recommendation-** Replace the existing text with text similar to item 1 above.

- B. Addition of General Goal for No Net Increase in Water Use.** On page 13, the Final version should contain the pro-active goal (to be adopted by the Board) that states:

The net water demand in each subarea shall remain constant from 1995 figures via the implementation of the Interim Plan."

- C. Section 3.3 Addition of Two New Interim Management Strategies for Subdivisions.**

If residential development is to continue while the area is in chronic overdraft, two types of mitigations will be needed to justify the new water use. This is due to two inconsistencies that arise for every subdivision that is approved. *First*, subdivisions create more permanent structures that do not have a long term water supply, and so the population at risk increases. *Second*, the new use worsens the chronic overdraft for the existing users. Both impacts are inconsistent with policies in the area plans and the subdivision ordinance. In order to mitigate these two issues, mitigations will be needed for each and every subdivision. In addition, findings, evidence, and conditions of approval will be needed to make the projects consistent with County law.

Recommendation: The following two new interim management measures should be added to this section requiring that the following two conditions should become standard conditions of approval;

1. New Measure. *That a fee of \$2000+ per new lot be assessed which will go towards a Management Plan, studies and/or improvements designed to bring the area into balance.* The fees may rise in the future based on the projected funding needs to bring the area into balance. Fees may be higher or lower in each subarea depending on the severity of the problem and the specific corrective measures needed. Also see funding issues below.

2. New Measure. *That each new subdivision be required to offset 100% of the new water use resulting from the approval of the project.*

The following text is highly recommended to implement this requirement: *Locate, size, and construct drainage retention basins intended to recharge 100% of the average annual runoff generated in the project boundaries or the equivalent gross water use of the project whichever is less. Conversion of pre-existing detention facilities to retention/recharge facilities shall be studied and implemented where feasible.*

D. Interim Strategies Reorganized and Customized for 5 Hydrogeologic Subareas. After incorporating the public's suggestions, and after incorporating the recommended changes in the second half of this memo, the 60+ interim measures should be:

1. Consolidated in one location in the Final Report (perhaps as an appendix), in a format that can be adopted as a package by the Board,
2. Reorganized in 5 different groupings according to the unique issues facing the five different subareas (i.e. the number of measures will be different in the Granite Ridge area vs Pajaro; almost all of the measures will be applicable in the Highlands). Many measures will be repeated in each grouping.

E. Additional Interim Measures for Discussion.

- Section 3.3; Consider rezoning 1 unit/acre properties to 2.5 unit/ac ?
- Develop policies to prevent uncontrolled transfer of credits towards new subdivisions from agricultural land?

4. NEW SECTION 3.10 NEEDED TO ADDRESS EXISTING B-8 ZONE

Although it is touched upon, neither the Volume I report or this Draft have really addressed the issue of the existing B-8 zoning. The IAC has yet to give the consultant clear direction/recommendations on whether to lift, modify, continue, or expand the existing B-8 zoning. At a minimum, discussion should be included as to the differences/similarities of the new subarea to the existing B-8 zone. Perhaps discussion by the IAC should take place to address the questions we have so far;

- A. Does the new data validate or refute the reasoning for the B-8 zoning?
- B. Is lifting the B-8 justified since the area is underlaid by bedrock, experiences water quality and quantity problems, and is calculated to be at equilibrium?
- C. Will special requirements, procedures, or pump tests be recommended for individual wells? Wells for subdivisions?
- D. Should subdivisions be allowed only if they decrease water use at a 2:1 ratio in the immediate vicinity or same subarea?

5. RECOMMENDED CHANGES TO DRAFT WATER PLAN: SECTION 4

A. New Goals/Objectives for Future Water Resources Management Plan. Below are new goals and objectives in rough outline format for consideration. Ideally the IAC would be allowed to meet to discuss the feasibility and refinement of the recommendations.

Goal. Bring the Pajaro and Springfield Terrace subareas back into balance via the implementation of the PVWMA BMP importation project.

- Obj.** Provide pro-rated funding for any needed pipeline infrastructure feasibility study in the Monterey County portion of the BMP
- Obj.** Support Board resolutions to all agencies/jurisdictions as necessary to facilitate the construction of the pipeline project per the PVWMA BMP.
- Obj.** Identify easements necessary to install pipeline and begin process of obtaining easements for PVWMA.
- Obj.** *Applicable objectives to be prioritized within next year*

Goal. By the year 2005, decrease net water use and nitrate loadings in the Highlands North and South subareas by 25% (?) from 1995 levels via implementation of a County Water Resources Management Plan.

Obj. Aggressively pursue integrated management funding sources from State/Federal funding sources that are indirectly tied to water quality/quantity options such as; wetlands restoration, Elkhorn Slough Management Plan, Federal watershed protection management (non-point source) strategies. Funding from private water purveyors to protect their watersheds may also be an option.

Obj. *Applicable objectives to be prioritized within next year*

Goal. Develop and maintain a capitol improvement fund for a 25% (?) County match for State/Federal funds for construction of projects prioritized by the BOS.

Additional Recommended Objectives:

- Obj.** Complete a field survey to identify existing wells immediately adjacent to creeks, wetlands, and the slough. Large wells adjacent to the slough could then be prioritized as to which could be abandoned first.
- Obj.** Identify the groundwater recharge areas of the 10 (?) largest water purveyors in the area. Work with State/Federal agencies for funding for "watershed protection" and/or "wetland restoration" projects. Through wetlands restoration and recharge impoundments funded by subdivisions, create "groundwater recharge/well-head protection zones" up-gradient from large domestic well fields.
- Obj.** While the 10 (?) largest water purveyors in the area are establishing the groundwater recharge protection zones, develop specific criteria requiring new subdivisions to connect to the systems. Notify existing smaller water systems that connection to the protected water systems will be required once nitrate levels in their wells reach the drinking water standard. Since these policies will benefit them directly, funding from private water purveyors to protect their watersheds should be sought. Purveyors may be willing to complete feasibility studies.

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- Obj. Develop a list of specific problems,
Develop a prioritized list of objectives targeted for specific problems,
Develop a prioritized list of feasibility studies to be completed,
Develop a prioritized list of capitol improvement projects for BOS consideration.

Goal. *Ensure potable water is available for all users requiring potable water??*
HOW?

6. NEW SECTION 4.3 RECOMMENDED TO OUTLINE FUNDING OPTIONS

Funding is typically a limiting factor when approving plans, studies, and capitol improvement projects. Currently funds for Vol I and II have been collected via Ordinance 3496 which requires a \$1000 fee for every new lot created and every building permit issued. Currently Ord 3496 only allows monies to be collected and spent on the preparation of Phase I and Phase II studies. Under its current form, monies may not be able to be spent on feasibility studies or capitol improvement projects. As discussed above, we are recommending that the fees be raised to \$2000+/-unit and targeted for specified interim measures or feasibility studies. This seems easily justifiable since we will be allowing development to proceed while knowing that a long term supply does not exist at this time. In addition, it is our understanding that fees are not collected on industrial/commercial projects, nor pro-rated for new high-intensity water uses (i.e. greenhouse operations, cooling facilities).

If the approach recommended in this memo is adopted, it appears that Ord 3496 would need to be amended to allow for increased fees, and for more flexible use of funds.

Volume II is not the ideal document in which to discuss all the funding options, however we are recommending the potential funding needs of the following components be acknowledged in enough detail so that the Board can provide direction to staff on funding strategies. These are also issues that could be discussed further by the IAC.

1. Funding for Interim Plan,
2. Funding for feasibility studies,
3. Funding for 25% (?) matching funds,
4. Funding for preparation of Phase II,
5. Funding for implementation of Phase II.

In this new section it is recommended that a new interim measure be adopted. The text could read; *Subject to Board approval, modify Ord 3496 to require \$1000 for existing lots of record, \$2000+ for new lots, and prorated fees for commercial/industrial uses. Allow funds to be used for capital improvements, feasibility studies, and/or studies recommended as part of an adopted Interim Plan.*

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7. VOLUME I ADEQUATE FOR DECISION MAKING

Recommendation. It should be clearly presented in the final version (Sections 1.2, 3.0 and 4.0) that Volume I was intended to provide a technical/detailed foundation upon which developers and law-makers could base technically defensible decisions. Volume I satisfied that intention. Therefore the Report should make clear that recommendations for future studies should not be interpreted to mean that the conclusions of Volume I are not valid or that legislative actions can not be taken at this time.

In a related issue, the majority of page 26 is dedicated to addressing the current Coastal regulations that deal with buildout figures. Years ago, that 50% build-out figure was arbitrarily chosen to define safe-yield. The argument at that time was that we did not have enough technical information to define safe-yield in terms of acre-feet. Volume I now gives us a defensible and technically accurate definition of safe-yield. Therefore, this 50% build-out language is now obsolete. Language was developed as part of the Draft North County Land Use Plan (Coastal) 1993 to replace the 50% language but has not been formally adopted. It is recommended that this be acknowledged and that the discussion for down-zoning now be based upon a technical definition of safe-yield.

8. INPUT FROM PRIVATE WATER PURVEYORS RECOMMENDED

In item 5 of this memo the idea to possibly develop groundwater recharge protection zones for large water purveyors was suggested. In the last few years, larger, well run water companies have been increasingly aware of the importance of long term planning and recharge protection zones. Input should be sought as early as possible from these purveyors to determine if they have any plans of their own and/or are willing to actively participate in the County's strategies. Either direct funding and/or volunteering of their staff for infrastructure feasibility studies could be sought. Now that we are developing an Interim Plan, it is recommended that coordination be initiated with the purveyors to help us determine if the idea of recharge protection zones are viable. It would also be appropriate to assess their current plans for replacement wells and to assess whether plans identify contingency measures should water quality no longer meet drinking water standards

9. RECOMMENDATIONS ON PACKAGE TO BOARD

It is recommended that a list of possible Board actions be developed and agreed upon as soon as possible. This will help focus our efforts in finalizing the Interim Plan, developing alternatives, and determining the areas staff should request additional direction from the Board. This issue is particularly important and again we would like the opportunity for the IAC to review this.

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Based on how this process is evolving, it appears that the Board report may contain up to seven different components:

- A. Acceptance of Volume II as modified,
- B. Adoption of the Interim Plan and associated Ordinances (Note that approximately 20 of the 60 total interim measures may require a specific Board action).
- C. Provide staff direction on the Draft Scope of Work for Phase II,
- D. Provide staff direction on funding strategies for future studies and/or projects,
- E. Direct staff and County Counsel to develop findings/evidence/conditions to allow some level of continued residential development without a long term water supply,
- F. Letters from Chair to PVWMA, SWRCB, RWQCB, and large water purveyors,
- G. Direct staff to report back to the Board in 1 year regarding:
 - The implementation status and effectiveness of the Interim Plan,
 - Recommended modifications to the Interim Plan,
 - Present a draft Scope of Work for Phase II based on a prioritized list of alternatives

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PART II- SPECIFIC COMMENTS

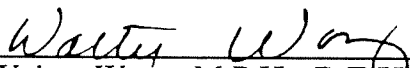
Below is a listing of recommended specific changes. There are some minor corrections needed that can be best handled with a simple phone call to the consultant.

1. **Section 1.1 General.** The report should state that the Volumes are available for public review in various offices and County libraries. In addition a simple diagram or timeline showing the steps needed for Vol I, II, and the development, completion and implementation of Volumes II and III would be very helpful to the public.
2. **Table 1-1.** Sustainable Yield should be defined, perhaps as an additional footnote.
3. **Paragraph 1, Page 4.** It is recommended that the last line of this parag be explained in layman's terms. The impacts between subareas is important to understand.
4. **Page 14, add new numberings.** The nine items on this page should be numbered 3.1, 3.2, etc, to match the format of the section.
5. **Page 29, Mngmnt. strategies.** Interim strategies 3 and 6 a serve the same purpose and should be combined.
6. **Page 31, Additional "Element of the Issue" Needed (Area-wide).** Text should be added to state that regardless of whether a water supply project is built to supply irrigation water to the Pajaro/Springfield Terrace areas, that nitrate loading will still continue and will continue to worsen the impacts on the drinking water supplies.
7. **Page 33, Additional Strategy.** 1) that connection to an existing water system be required instead of drilling a new well when feasible. (the Division of Environmental Health has this as a policy however, emphasis is needed)
8. **Page 38, seawater intrusion item 2.** All well applications are routed to the MCWRA and the PVWMA for review and comment on construction design. This process could be mandated to review for infiltration issues.
9. **Page 44, Obstacles #1.** The Coastal Commission and AMBAG have completed various reports which identify water quality parameters under study in the North County Area. One purpose of some of this work was to identify agency responsibilities and potential overlap of information collection activity. I have included an attachment with the cover pages and table of contents for a few related reports for your review.
10. **Section 3.9 GENERAL.** Overall this section (and many other bullets throughout the document) needs some effort spent on giving examples on how data collection can be translated into implementable objectives targeted at reducing specific problems in the area. This is partially done in the second to last bullet on page 45, re; modeling/nitrates.

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11. **Section 3/4, General.** There are a large number of specific regulations currently on the books. A practical suggestion would be to attempt to emphasize in this section that it is easier to coordinate and enforce the existing regulations rather than develop new generalized regulations. For each new proposed regulation it should first be determined whether an existing regulation already applies or could be modified for this Plan.

Thank you for the opportunity to comment and we look forward to supporting the final version. We believe that with the approach and changes recommended above, the final document will be a practical document that will help the County in its first steps towards correcting the situation.


Walter Wong, M.P.H., R.E.H.S.
Director of Environmental Health

cc: Mary Anne Dennis, Chief, Health Resources Branch
Robert Slimmon Jr., Director, P&BI
Steve Maki, P&BI
Al Mulholland, Project Coordinator, MCWRA
Matt Zidar, Principal Hydrologist, MCWRA
Charlie McNiesh, PVWMA
Chris Clark, FUGRO
Martin Feeny, FUGRO

WWmd/NOCOH2O6.MEM



PAJARO VALLEY WATER MANAGEMENT AGENCY

145 WESTRIDGE DRIVE
WATSONVILLE, CA 95076
(408) 722-9292
FAX (408) 722-3139

March 13, 1996

Mr. Arvid Myhre
Board of Directors, Chairman
Monterey County Water Resources Agency
P. O. Box 930
Salinas, California 93902

Subject: North Monterey County Hydrogeologic Study

Dear Mr. Myhre:

The Pajaro Valley Water Management Agency (PVWMA) Board of Directors has reviewed the Public Review Draft of Volume II of the North Monterey County Hydrogeologic Study. We find that this report does a creditable job of (i) identifying and describing the main water resources issues of the North County study area, (ii) distinguishing manageable issues from intractable issues, and (iii) identifying which entity or entities have ultimate responsibility for which issue. With these findings as background, we offer the following comments.

1. We recommend that the final draft of Volume II be reorganized and retitled as the "Comprehensive Water Resources Management Plan" for the North County area. Further regional study or planning will not help much in solving the manageable issues; it would seem more profitable to invest our limited, collective resources directly in solutions. Likewise, further regional study or planning will not help much with the more intractable issues; solutions lie in policy level decisions to be made by the Supervisors, our two Boards, or the other governing bodies with jurisdiction.

2. We suggest initiating a more formal process of dialogue between our two agency staffs regarding shared water resources management in the North County area. This dialogue should include the widest possible range of topics, including boundary adjustment, revenue collection and funding, water supply planning, conservation and fertilizer management programs, data collection, and revision of our existing Memorandum of Agreement. The process of staff dialogue would lead ultimately, of course, to decision-making by our two Boards.

3. We recommend moving forward immediately with a joint effort to consider possible solutions for reducing seawater infiltration from Elkhorn Slough, which is estimated to cause as much as 75% of the overall North County intrusion problem under current conditions. Action on Elkhorn Slough makes sense because of the magnitude of the infiltration problem and because a physical solution appears reasonably attainable.

Mr. Arvid Myhre
March 13, 1996
Page 2

4. We recommend against pursuing large-scale supplemental water supply service for the Highlands area at the present time. Our reasoning is as follows:

- providing supplemental *residential* water would not solve the ground water overdraft problem (since agricultural demand is much greater than residential demand),
- providing supplemental *irrigation* water would not address the nitrate issue (since residential use would still be dependent on ground water),
- the cost of constructing and operating either type of distribution system would be prohibitively high (as explained in the North County report),
- implementation of water supply projects in the Pajaro and Salinas Valleys will indirectly provide some level of benefit to the Highlands (as recovering ground water levels in the valley areas will cause net ground water flow into the Highlands), and
- there appear to be less costly solutions to the nitrate problem (e.g. providing bottled water).

5. We note that the North County report underscores the need for water supply solutions in both the Pajaro and Salinas basins. Indeed, one of the report's principal recommendations is that your Board and the County Board of Supervisors support implementation of our Basin Management Plan. Constructing the necessary facilities will be costly and difficult, but our local community appears committed to our approach. Your continued support and assistance will be important in helping maintain this commitment.

We appreciate the opportunity to participate in the public review process for this important North County study. Please advise either me or our staff if we can provide clarification or further information.

Sincerely,



Ed Kelly
Chairman, Board of Directors

cc: Tom Perkins, Supervisor, Monterey County
Chris Clark, Fugro West, Inc.

MONTEREY COUNTY



AGRICULTURAL COMMISSIONER

(408) 759-7325 - 1428 ABBOTT STREET - SALINAS, CALIFORNIA 93901
FAX: (408) 422-5003

RICHARD W. NUTTER

AGRICULTURAL COMMISSIONER
ADMINISTRATOR OF WEIGHTS & MEASURES

March 26, 1996

Gene Taylor, Senior Hydrologist
Monterey County Water Resources Agency
PO Box 930
Salinas, CA 93902-0930

Reference North Monterey County Hydrogeologic Investigation -- Phase I, Vol. II, Critical Issues
Report and Interim Management Plan

Dear Mr. Taylor:

In response to your February 16, 1996, letter and attached draft report, I want to comment on the following areas:

- ⇒ Page 15, 3.1, Statement of the Issue (Bullet 1): The statement "Considerable acreage is brought into cultivation each year, mostly in the Highlands, and mostly for strawberries" is not true. Most new strawberry acreage is not in the Highlands. Increased acreage occurs in vegetable growing areas as growers trade acreage with strawberry producers to take advantage of recently fumigated ground.
- ⇒ Page 16, Obstacles (Bullet 2): I do not understand the meaning of "The Agricultural Commissioner's office does not consider this new cultivation to be a significant part of the market." Please clarify the sentence.
- ⇒ Page 17, Towards a Comprehensive Water Resource Management Plan (Bullet 1): "Working with the Agricultural Commissioner's office, the IAC should develop a policy regarding new cultivation." The development of any policy regarding agricultural products should include a broad representation of the agricultural community.
- ⇒ Page 20, Obstacles (Bullet 3): "Methyl bromide fumigants may be banned in the near future. This may curtail strawberry cultivation." The prohibition of methyl bromide will not curtail strawberry cultivation. It could have the opposite effect. Without the fumigant, growers are forced to move to new planting locations every year of two because the build up of soil born organisms have detrimental effects on strawberry plants.

Pages 20 and 33, Management Strategies: Page 20 (Number 1) "Encourage crops which are less water demanding -- Ag Commissioner" and Page 33 (Number 2) "Establish on-farm nutrient management programs integrated with . . . -- Ag Commissioner" These responsibilities are better suited to the programs provided by the UC Cooperative Extension.

Sincerely,

Richard W. Nutter
Agricultural Commissioner

cc: Sonya Hammond
c:\wra0326\3\26\96

MAR 28 1996

WATER RESOURCES
AGENCY

Public Information Meeting

March 20 – North Monterey County High School

March 21 – Hall District School

Monterey County Water Resources Agency

North Monterey County Hydrogeologic Study

A Discussion of Critical Issues

The purpose of this meeting is to present information regarding the water situation in North Monterey County. For years it has been known that the ground water supply is not sufficient to meet current and future demand. It is also of concern that water supplies are diminishing in quality, with nitrate loading and seawater intrusion. This recent study was prepared to give citizens an understanding of what the problems are and what can be done about them. Martin Feeney and Chris Clark of Fugro West will present the findings of the study.

Overview of the Area's Ground Water Conditions

The issues:

- **Overuse of the area's ground water supply**
- **New agricultural cultivation**
- **Residential water demand**
- **Water Quality – Nitrates**
- **Seawater Intrusion and Infiltration**
- **Granite Ridge**
- **Watershed Erosion**
- **Agency Coordination**

North Monterey County
Hydrogeologic Study
Public Meeting (March 20 & 21)

QUESTIONNAIRE

Please give us your opinion on the issues discussed tonight

1. What do you think about the problem of ground water supplies?

I think the county should take some action

2. What do you think the County should do to reduce this problem?

I think agriculture should be metered so they wouldn't waste the water as they do now.

3. What do you think about controlling demand through regulation?

yes — I think regulation is inevitable in order to control water usage.

4. What should be done about water quality?

If the water quality drops to low-drinking water will have to be purchased

5. Additional Comments.

THANK YOU--PLEASE HAND IN OR MAIL TO:

Monterey County Water Resource Agency
Box 930
Salinas CA 93902
Attention: Al Mullholland

7130 Monique Ave.
Salinas, Ca. 93907
March 28th, 1996

MONTEREY COUNTY WATER RESOURCE AGENCY

RE: North County Study

- (1) The writer, a longterm taxpayer and resident of the study area, has experience in management, operation, development and maintenance of large and small watersystems in North County. The present study, more detailed than previous ones, defines the water supply as limited, a fact pretty well understood by most residents. It is also agreed that in certain pockets of the area even small supplies are difficult or impossible to obtain.
- (2) County policy should encourage retention of agriculture in the valleys and flat areas. Increased restrictions and fees etc., over the years on residential development have increased pressure to develop agriculture on hillsides. The negative effects are evident after every rainstorm. The County should enforce existing rules more stringently. On the other hand, continuing and expanding agricultural activity indicates that water supplies are more abundant than was previously believed.

Regarding residential development, County policy should more aggressively promote inter-connecting neighboring systems, improve quality, increase storage where necessary, and metering thereby achieving a balance between the extremely poor and the more abundant areas. The County has a role to play as an Arbitrator in local water disputes. Present procedures have the perhaps unintended, effect of discouraging cooperation between neighbors.

- (3) The non-subdividing rule in the North County Moratorium area has resulted in no improvement to any existing water system in that area. Some minor systems (3 - 5 connections) due to internal disagreements have split up and drilled individual wells at approximately \$15,000 each, instead of sharing costs. Rules restricting demand do not provide for improvement of existing substandard conditions, they rather tend to perpetuate them.

I could not advocate rules that do not treat all owners equally under the law.

- (4) In pockets where quality is poor or worse, use all regulatory power to bring quality up to reasonable standards. Also see under item 2.

MONTEREY COUNTY WATER RESOURCE AGENCY

- (5) When we came to this area over 30 years ago it was understood that there were many small and individual water systems, some in very poor shape. Living in the 20th Century the expectation was that we would get together and over time bring the water systems up to standard. Unfortunately that has not happened. Past and present policy has resulted only in marginal improvements. The status quo is not acceptable.

The Monterey County Water Resource Agency being charged with the responsibility to manage the water resource must formulate policy and assure compliance to improve quality and quantity of the water supply.

Short term: Integrate the various systems, provide treatment, and increase storage where necessary, with an emphasis on efficiency.

Long term: Historic population increase figures show no signs of abating. Agriculture in the valleys and flat areas makes sense. Residential development in the Prunedale hills (with an up to standard water system) would make sense.

If the future should prove the assumed overdraft calculations correct, prudent management practices would dictate that planning must include capturing some of the annual overflow of runoff into the ocean.

Sig Matt
S. Matt

North Monterey County
Hydrogeologic Study
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1. What do you think about the problem of ground water supplies?

BASICALLY THE PROBLEM IS EASILY IDENTIFIED. THERE IS A SEVERE OVERDRAFT SITUATION BECAUSE OF LIMITED SUPPLY.

2. What do you think the County should do to reduce this problem?

A COST EFFECTIVE SUPPLY IS NEEDED FOR THE AREA. IDEALLY THAT WOULD HAPPEN WITH A MASTER DISTRIBUTION SYSTEM, WHICH IS EXTREMELY UNLIKELY IF THE COUNTY COULD COME UP WITH SOME REASONABLE SOLUTION AND OPTIONS THAT THE RESIDENTS COULD CHOOSE FROM AND PROVIDE SOME FUNDS FOR THE PROJECT TO BE PAID BACK BY RESIDENTS WITH INTEREST.

3. What do you think about controlling demand through regulation?

SO FAR IT HAS NOT WORKED AND FEEL THAT THE RESIDENTS WOULD BE HAPPIER IF AN ADEQUATE SUPPLY COULD BE PROVIDED TO RESIDENTS.

4. What should be done about water quality?

WATER QUALITY SHOULD BE MONITORED BY THE COUNTY AND PEOPLE KEPT INFORMED ABOUT HAZARDS IN DRINKING WATER AND ADVISED IF THEIR WATER SUPPLY DOES NOT MEET MINIMUM STANDARD AND WHAT ^{ALL} THEIR OPTIONS ARE.

5. Additional Comments.

WE ARE IN THE GRANITE RIDGE AREA AND HAVE DRILLED 4 WELLS OVER THE PAST 16 YEARS THAT DID NOT PRODUCE ENOUGH WATER TO KEEP HOOKED UP ~~THE~~ TO THE SYSTEM. WE FEEL THAT THE SOLUTION IS TO GET WATER FROM OUTSIDE OUR AREA. WE ARE HAVING TO HAUL WATER INTO OUR SYSTEM AND DON'T FEEL THAT WE CAN EVEN WAIT ANOTHER YEAR TO FIND A SOLUTION TO OUR WATER PROBLEM.

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Attention: Al Mullholland

Mervyn Selvidge
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WIL 422-8500
HM 663-5576

1. Overdrafting of the North Monterey County Groundwater basin has been a problem for decades and resolution of the problems will not come overnight. The FUGRO report and its authors have clearly stated that agricultural water demand is the most significant water user in North Monterey County (85%). Residential use, on the other hand, is responsible for only 15% of the water demand. As Chris Clark from FUGRO stated in his public presentation on March 20, 1996, the County should maintain a proper perspective when looking to these two water users for a solution to the problem.
2. Agricultural. Expansion of agricultural uses should be prohibited. Existing agricultural operations should be required to implement water conservation measures. Additionally, agricultural operations occurring on slopes exceeding 10% should be required to construct water and eroded soil capturing ponds to reduce erosion and percolate tail water. Consideration should also be given to imposing a mandatory minimum annual fallow ground requirement.

Residential. The County should create water districts or County service areas to ensure adequate potable water is available for all domestic water needs. For example, the county may operate one or more wells in the Highlands area to provide domestic water supply to users in the Granite Ridge area. By establishing one or more County service areas in the North County area, the County would be able to levy assessments on each property owner (agricultural and residential) to provide funds sufficient to construct and maintain a water distribution system.

3. Regulation is clearly the easiest means to exercise immediate control over water demand in North Monterey County. Reduction in water use should be required in proportion to the existing demand for that specific land use. In other words, residential development should not be sacrificed for the sake of continued agricultural uses, and vice versa. Additionally, future water users should not be prohibited from utilizing their "fair share" of the available water supply.

Up to this point, all of the County water projects have focused on the Salinas and Pajaro Valley water basins. The Water Resources Agency needs to refocus its efforts to develop a new water supply for this long neglected area of the County.

4. See Item 1 above.
5. Until a water distribution system is developed to serve the residential users, and existing and future agricultural water uses are also capable of being monitored, the County will not be able to identify or regulate water supply and demand in North Monterey County. The County must address these two monitoring issues because simply closing the door on all future water uses is an unacceptable solution for any period of time.

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The water is here & is sufficient with responsible use

1. What do you think about the problem of ground water supplies?

Continued reclaiming & purification of non-potable water + controlled landscaping and review of agri-fertilizations "chemicals used" this type solution is almost more serious re: water & food consumption

2. What do you think the County should do to reduce this problem?

Consider ionization as part of water systems where needed

Consider collection of precipitation

3. What do you think about controlling demand through regulation? allow some form of residential grey water use for landscaping

with great care so as not to get the cart before the horse

It is difficult to conceive that we can go to the moon but can't develop simple filtration & reclaiming

4. What should be done about water quality?

Planning & research should include what has been done & what can be done by technology

5. Additional Comments.

Depeis is a valid concern
Consider incentives to develop or home owners for experimenting with water savings & quality controls systems

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1. What do you think about the problem of ground water supplies?

Water supply for this area is already 30 years late.

2. What do you think the County should do to reduce this problem?

Increase water supply. Increase control over poorly managed systems, encourage combining smaller systems.

3. What do you think about controlling demand through regulation?

It is controlled through zoning now.

4. What should be done about water quality?

Better and more enforcement.

5. Additional Comments.

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1. What do you think about the problem of ground water supplies?

New - non ground water sources must be developed either water purchased & piped in or salt water desalination. Sewer Systems must be built and gray water used for agriculture

2. What do you think the County should do to reduce this problem?

Place a complete moratorium on new development both agricultural and residential. The area has reached its sustainable population

3. What do you think about controlling demand through regulation?

The existing regulations are adequate but not enforced equally. The Board of Supervisors should not interfere with existing law i.e. approve residential development by special handling

4. What should be done about water quality?

Tertiary treated water should become the primary source for use. Freshwater is not mandatory to grow plants

5. Additional Comments.

The Board of Supervisors must stop allowing unmitigated development. Currently there are 6,000 units either planned or approved in East, North & West Salinas. The City of Salinas must also stop approving development

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1. What do you think about the problem of ground water supplies?

It cannot be ignored, it will not go away.
Therefore, we must all work together to
find a solution, and perhaps make some
sacrifices along the way.

2. What do you think the County should do to reduce this problem?

- Work with agriculture to make them more efficient.
- Limit building & agriculture
- Consider importing from San Luis Reservoir

3. What do you think about controlling demand through regulation?

May be necessary until a "fix" is found.
Again, some sacrifices may be in order.

4. What should be done about water quality?

Keep it clean, regional sewage treatment in
some areas

5. Additional Comments.

Contingency plan should be in place to import
water to Granite Ridge areas for summer
use and storage for fire protection.

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1. What do you think about the problem of ground water supplies?

It is a time to study what is there. As a 34 year resident of Prunedale I do know that during that period some Areas of Prunedale had to go deeper with well drilling than others to hit good ~~deeper~~'s areas of water.

2. What do you think the County should do to reduce this problem?

I can't really say, I don't really know. I would say conservation education, modernising older plumbing. Restrict further growth

3. What do you think about controlling demand through regulation?

That is always the hard road to go. Potentially it may have to be done. But I believe other ~~are~~ methods should be tried. One is to really regulate growth.

4. What should be done about water quality?

Water systems such Ro. Borromeo Subd. has to have a private lab to sample water once a month for quality. This is mandated on our size of system. 35 to 37 Hook ups Their are to many single or small systems to probably enforce this.

5. Additional Comments.

Boyer

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1. What do you think about the problem of ground water supplies?

The county officials must wake up & take strong measures to insure our water supply.

2. What do you think the County should do to reduce this problem?

*Place a total restriction on all buildings
Place meters on large agricultural users.
Test nitrate loading more frequently*

3. What do you think about controlling demand through regulation?

*Allow only low water use crops in future
Definitely for agricultural use*

4. What should be done about water quality?

Stronger measures to prevent nitrate-loading

5. Additional Comments.

What took you so long!

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1. What do you think about the problem of ground water supplies?

It is serious. The plethora of agencies involved in
slippery sector. zoning is inadequate. Inspection for
offenses is non-existent.

2. What do you think the County should do to reduce this problem?

Create Get a Committee of citizens who are knowledgeable
about zoning, Coastal Commission zoning + restriction and
get busy soon

3. What do you think about controlling demand through regulation?

That is the only
way anything is going to be done!

4. What should be done about water quality?

Educating the public as to
the value of the resource, from 1st grades through
high school students

5. Additional Comments.

Excellent meeting
What is relationship in land use designation, ves-a-ves
Coastal Commission + Water Resource Agency.
Mary Ann Marton
PO Box 407
Aromas, CA 95004-0407

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