INSTITUTIONAL AND FINANCIAL RECOMMENDATIONS VOLUME I

NON-POINT, MUNICIPAL & INDUSTRIAL POINT SOURCE CONTROL

Water Quality Management Plan

LARIMER-WELD REGIONAL COUNCIL OF GOVERNMENTS
LOVELAND, COLORADO

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INSTITUTIONAL AND FINANCIAL RECOMMENDATIONS FOR CONTROL OF POLLUTANTS FROM NON-POINT SOURCES AND MUNICIPAL AND INDUSTRIAL POINT SOURCES

Prepared For

LARIMER-WELD REGIONAL
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1.0 EXECUTIVE SUMMARY

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) set the nation on a course to restore and maintain the chemical, physical and biological integrity of our waters. Section 208 of the Act provides for the preparation of wastewater management plans (208 plans), including a process for implementation of the goals of the Act. This report contains an analysis and recommendations for the institutional and financial elements of the Larimer-Weld (see Figure 1.0-A) 208 plan for control of pollutants from non-point sources and municipal and industrial point sources.[1]

Pollutant discharges are classified as point sources or non-point sources. 208 plans must develop specific procedures to control pollution from point sources sufficient to meet the goals of the law, whereas non-point sources are to be controlled "to the extent feasible."

- Municipal and Industrial Point Source Pollutants: This category includes discharges from the wastewater treatment facilities of cities, towns, special districts, industries and private individuals.

- Non-Point Source Pollutants: This category includes pollutants from the following sources:

  - feedlots (small)
  - solid waste facilities
  - urban runoff
  - septic tanks
  - residual waste
  - lagoons
  - agriculture (non-irrigated)[2]
  - construction activities

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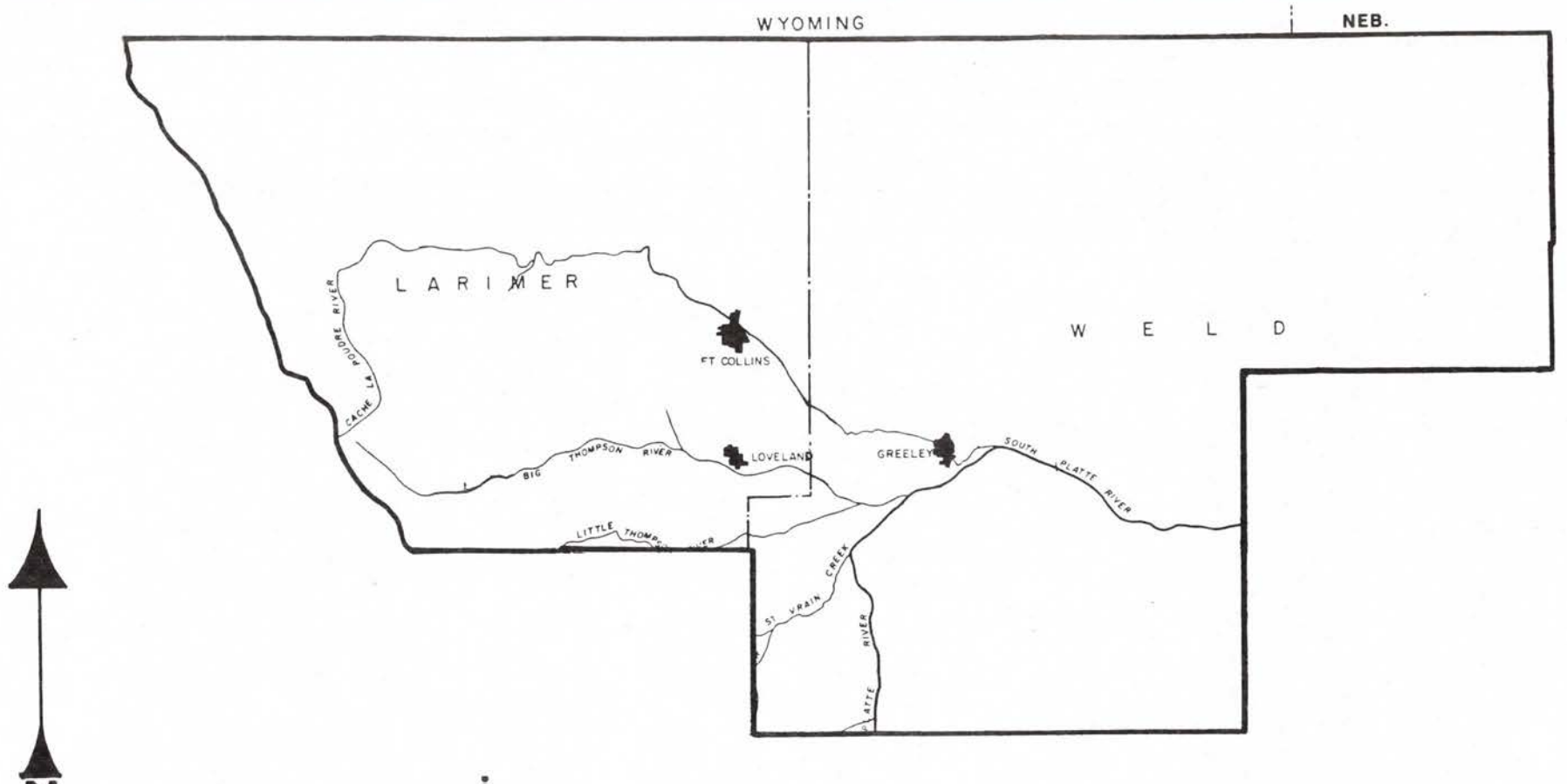
[1] A companion report, Briscoe, Maphis, Murray & Lamont, Inc., Institutional and Financial Recommendations for Control of Pollutants from Irrigated Agriculture, Larimer-Weld Council of Governments, October 1977, treats pollution from irrigated agricultural sources. The recommendations in the two reports are integrally connected, and should be considered together.

[2] 1977 Amendments to the Federal Water Pollution Control Act excepted irrigated agriculture from the point source category. This action was taken by Congress and signed by the president after completion of this study.



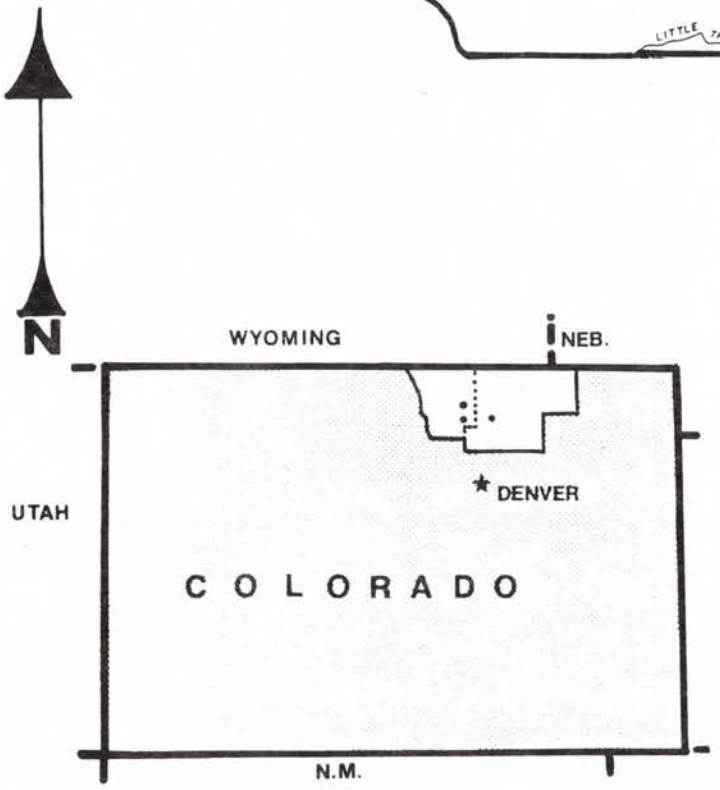


FIGURE 1.0-A

LOCATION MAP - LARIMER-WELD REGION

- silviculture
- manure disposal areas
- mine related waste
- salt water intrusion

Prior to this 208 study, little background water quality benchmark data for the region had been compiled, and there is still sparse knowledge about water quality impacts from most non-point sources of pollution. The Larimer-Weld Council of Government's 208 study is the first considered effort to address this problem.

The law grants localities the opportunity to plan and execute their own programs. Thus, it is important that local efforts are successful in planning to meet the Act's goals. It is clear from the law that the choice is between local control and responsibility, or state and federal control. In the Larimer-Weld region, the challenge is in creating a new perspective for local government.

The mandates of Pl 92-500 give broad direction to the institutional functions and structures required in the 208 plan for program implementation. Four institutional functions are necessary: continuing planning, program management, operations and regulation. In addition to the legal requirements, a number of other factors are important in determining the most appropriate institutional activities, policies, program structure, and in assigning agency responsibilities for plan implementation. These include the technical program for pollutant control and technological limitations in other current knowledge. Also important is that implementation agencies have sufficient political sensitivity, functional capabilities, and the ability to conduct the entire wastewater implementation program so as to respect the region's specific needs within a broad context that recognizes and complements other private and governmental activities.

Limitations in our knowledge about engineering solutions and their economic effects stand in the way of designing an immediate, full-scale, areawide implementation program for non-point sources. Implementation activities must begin with a program to confirm the work to date regarding effectiveness, costs and the incidence of benefits of the proposed solutions for abatement and control of pollutants from non-point sources. As conclusions are affirmed, there must be a transition to implementation of appropriate measures throughout the region, with local funding of its fair share of costs, and mandatory controls as required. Although the program of areawide implementation can be set and committed now, flexibility for adjustment based on initial study, demonstration and model implementation must be preserved.

This report contains an overall review of the water pollution problem in the Larimer-Weld region, the requirements of the law, the present state of planning and development studies, and an analysis of the agency and financial alternatives in light

of these and other local factors. The recommended implementation strategy flows from this analysis and is characterized by the following key concepts:

- Local control over the program and local responsibility for managing implementation, consistent with other demands of the area, is highly desirable.

- Existing institutional agencies in the Larimer-Weld region have sufficient powers and capabilities for the most part to perform the required tasks of the 208 program. Existing local agencies should be assigned the primary functional activities with support from existing federal and state agencies.

- Because of their broad powers, and ability to coordinate water quality programs with other governmental activities, general purpose local governments should be in charge of program implementation where possible.

- The urban service area concept which describes an area of domain for each responsible management agency is a highly appropriate means of identifying which agency is responsible for carrying out the program by specifying the geographical boundaries of that responsibility assignment.

- In view of the major role that land use decisions play in affecting water quality characteristics, both from point and non-point sources, it is absolutely mandatory that the responsible management agencies who are given the task of implementing the water quality control program must also possess powers and capabilities to directly apply land use regulations in behalf of their pursuit of a logical pollution abatement program.

- Planning and development activities should precede areawide implementation and be sufficiently complete to serve as a basin for predicting the results in water quality terms that can be expected from the application of specific implementation programs.

- All wastewater pollution control programs in the region should be coordinated. This includes those for municipal and industrial point sources, all non-point sources and irrigated agriculture. This suggests that agencies assigned tasks in the irrigated agriculture program have sufficient land use management powers (organized on the basis of urban service areas) in light of the overall program requirements of 208 implementation.

- Management agencies should delegate "operational activities" to qualified agencies, via intergovernmental and/

or private contracts, to the greatest extent possible. This will assure availability of the required implementation skills by making maximum use of existing institutional structures and service organizations.

- Initial compliance requirements should be voluntary with mandatory controls considered only after technical and economic conclusions are firm.

- Program funding and the distribution of program costs should recognize responsibilities of those who will benefit from implementation, as well as the positive incentives for efficiency that arise when the polluter is asked to help pay for pollution abatement programs. Likewise, the local area's ability to pay must be considered.

Application of these key concepts leads to a recommended set of agency assignments and procedures.

Recommendations for agency designation and assignment of functional roles is shown below on Table 1.0-A for the major pollutant categories.

TABLE 1.0-A

Larimer-Weld 208 Institutional Recommendations

Summary

INSTITUTIONAL FUNCTION	MUNICIPAL & INDUSTRIAL POINT SOURCES		NON-POINT SOURCES	
	RECOMMENDED	ALTERNATIVE	RECOMMENDED	ALTERNATIVE
PLANNING	L.W.C.O.G.	State Health Department (W.Q.C. Div.)	L.W.C.O.G.	State Health Department (W.Q.C. Div.)
MANAGEMENT	Cities Counties	Cities State Health Department (W.Q.C. Div.)	Cities Counties	Cities Counties - or - State Health Department (W.Q.C. Div.)
OPERATIONS	Cities Districts Private	Cities Districts Private	No designation at this time[2]	No designation at this time[2]
REGULATORY	State Health County Health Cities Counties	State Health County Health Cities Counties	State Health County Health Counties Cities	State Health County Health Counties Cities

[2] Operations agencies will be designated at such time the planning, research and demonstration activities are complete.

2.0 PL 92-500 AND PLANNING FOR WATER POLLUTION CONTROL

The objective of PL 92-500, the 1972 amendment to the Federal Water Pollution Control Act, is "to restore and maintain the chemical and biological integrity of the nation's waters." In support of this objective, Section 208 of the law provides for the development and implementation of areawide wastewater management plans. The purpose of these plans is to detail problems and solutions, and to define a process for elimination of the discharge of pollutants into navigable waters by 1985 and, where attainable, to meet an interim goal of protection and propagation of fish and wildlife, and recreational opportunities in and on the water by July, 1983.

Section 208 of the law specifies how the goals of the law are to be met based on the development of areawide waste treatment management plans. This section mandates how boundaries of the areawide planning regions are to be determined, specifies procedures for use by the governor in designating an agency to develop the plan, and identifies issues to be addressed in the plan. Plan elements are to include identification of needed treatment works, financial arrangements to develop the works, construction priorities, regulatory programs to implement control or treatment of all point and non-point sources of pollution, regulation programs for the location, modification and construction of all discharging facilities and procedures to assure that any industrial or commercial wastes meet applicable pretreatment requirements. In addition, it is required that the plan identify agencies necessary to carry out the plan (including financing), assess the impacts of carrying out the plan, and develop a process to identify and control to the extent feasible non-point sources of pollutants including forestry, agriculture, construction, mines, residual waste and subsurface excavations. Further, Section 208 requires annual recertification of the adopted 208 plans. Implementation controls are also written into the law and include withholding of grants for construction of publicly-owned treatment works unless there is compliance with the 208 plan and restrictions on the issuance of discharge permits.

The Act recognizes the possible need to plan somewhat differently for control of point sources as opposed to non-point sources. This is because, in the case of non-point sources, the level of knowledge may not exist to (1) sufficiently identify the problem and (2) suggest cost effective structural or nonstructural solutions. This is highlighted by the requirements for

non-point sources in Section 208 "to identify" sources and set forth procedures and methods to control "to the extent feasible." This is not the case for point source discharges from treatment plants. Specific plan requirements in the law for necessary treatment works, construction and financing acknowledges that the state of the art for development of treatment works is known. "To the extent feasible" is not an option for municipal and industrial point dischargers.

Because plans may differ initially for point and non-point sources, particular attention must be directed at how such plans will be eventually integrated.

Discharge permits, described in Section 402 of the law, are required for all dischargers of pollutants who discharge wastes into the nation's waterways. In Colorado, the State Water Quality Control Commission is charged with administering the permit program so as to achieve the goals of the Act. The Commission must promulgate guidelines to accomplish their tasks, including guidelines for issuance and the monitoring of the permits to see they are not violated. If violated, the state may impose fines. The Federal Government can also refuse to guarantee loans for homes in the area of violation when a public facility is guilty. This enforcement "incentive" has been used in the past in Colorado (Colorado Springs).

To develop the 208 plan, including institutional elements, technical measures and financial programs as required by the Act, the Governor designated the Larimer-Weld Council of Governments as the areawide planning agency for the region. The affected local governments in the region -- counties and cities -- all entered into agreements for the coordinated wastewater management planning effort to be conducted by the Larimer-Weld Council of Governments.

Accomplishment of the institutional and financial portions of the 208 plan require careful examination of who should be assigned responsibility for implementation. Such an agency or agencies would be designated the "areawide management agency(ies)." Such agency(ies) can be existing or newly created. It might be a combination of local, regional, state and/or federal agencies, or whatever is deemed necessary to achieve the goals of the plan. The authority possessed by the management agency(ies) is specified in Section 208 of the Act and the pertinent regulations. Unless the recommended institution fails to have these authorities when examined by the state and E.P.A., the designated management agencies proposed by the Larimer-Weld Council of Governments shall be accepted.

The federal rules and regulations which detail the policies and procedures for the preparation of the water quality management plans (40 CFR Parts 130 and 131) require that all agency responsibilities be defined including those of implementation,

regulation, operation and coordination of continuing planning efforts. The state and E.P.A. are the review agencies that must ultimately determine if the proposed agencies are capable.

In addition to considering the individual 208 plans, it is imperative that the state determine how it will respond if state agencies are suggested for a role. It is questionable whether a state agency can play a specific role in one designated 208 area of the state and not in another. While the law permits each 208 area to develop its own plan and program for implementation, there must be some consistency, statewide, in the role for state level agencies.

Nonstructural measures for pollution control are encouraged by the Act and the regulations thereto. This is a radical departure from previous federal efforts to control water pollution. It is an acknowledgement that treatment or capital intensive methods by themselves are inadequate for cost-effective accomplishment of the clean water goal. Alternative methods of achieving the goal must be considered. Structures alone will not accomplish the goal. Abatement through nonstructural means is a key. The fact that nonstructural approaches are necessary has major implications for the institutional agencies that will carry out the program. For example, agencies with the ability to execute land use controls are important in the eyes of the law.

Clearly, PL 92-500 is of major significance to the Larimer-Weld region. It is a big program to which the federal and state governments are firmly committed and as such, promises to impact the region in a profound way. This suggests that the local governments avail themselves of opportunities provided in Section 208 of the law to participate in the planning and program implementation. The path ultimately selected should enhance, not undermine, the regional economy and way of life. Proposed technical solutions, institutional changes and financial programs absolutely must fit the region's circumstances (as well as the clean water goals). This suggests that whenever the Act's goals can be met, preference should be given to reliance on existing institutional structures and agencies, rather than to creation of totally new entities.

The extent to which future program developments respect the region's unique requirements is directly related to the level of ongoing local involvement in planning and implementation. This points to the desirability of accepting the program's mandated responsibilities locally as far as possible. Local control is to be strongly preferred to state or federal decision making. Yet with local control comes a need for local commitment and involvement. In light of the potential impacts of the Clean Water Act, the effort required for strong local participation seems justified.

The program will be costly, regardless of the roles accepted by the local governments. Even with emphasis on nonstructural solutions, the dollars involved are staggering. To be sure, a large share will be derived from the Federal Government. But the local share will not be insignificant and will occur in terms of both direct and indirect costs. For this reason, the need for efficiency and cost effectiveness should be clearly borne in mind. In some cases, the most inexpensive alternatives may involve a breach with traditional practices. Relying on more effective land use controls to influence the location of new population to areas where wastewater treatment capacity exists is an example. If these potential solutions are not given serious consideration, the cost of implementation will surely be high.

As recognized in the Act, the state of the technology differs between point and non-point pollution control. Indeed, the Act suggests a more restrained charge in the case of non-point sources. It would seem wise to continue this attitude in the 208 implementation plans. Where further research, testing or planning is likely to improve the direction chosen by the region to meet the clean water goals, and is permitted by the Act, it would seem wise to resist premature commitment along uncertain paths. On the other hand, undue delay will exacerbate the problem of integrating point and non-point plans into a unified whole.

The 208 program is dominated by water quality issues. But this is only one of the region's many concerns. Because of this emphasis, there is a risk that broader issues could begin to be overly influenced by water quality policy. Nevertheless, the development of the 208 plan will occur. This creates the need for an acceleration of the region's thinking in other areas simply to maintain a balanced basis for its decision making. Likewise, it underlines the critical nature of local control so that regional policies in all areas are not determined by outside interests who might otherwise control water quality affairs.

The law, and specifically Section 208 of the law, offers local governments an opportunity and a challenge. It recognizes that past efforts to achieve water quality in our nation's waters have been too limited, geographically, institutionally and in consideration of solutions. Instead of individual solutions, areawide planning is called for. Instead of each political entity operating independently, institutional coordination and assignment of responsibilities is required. Finally, an integration of solutions to abate and not just treat waste water in costly treatment plants must be considered.

Local governments are asked to develop not only the planning, but also the areawide management approach necessary to accomplish the goals of the Act. Should the locally created 208 plan fail to develop an achievable program, technically, financially and

politically, they will be admitting that such approaches to federal programs cannot be achieved from the ground up. A reversion to federal and state planning from the top down would appear to be the alternative.

3.0 THE LARIMER-WELD REGION AND POLLUTION CHARACTERISTICS

The Larimer-Weld County region is an area which has historically been dependent upon agriculture and agriculture-related industries (meat packing, sugar beet processing, cattle feeding) for its economic base. Even today, land used for agricultural purposes constitutes over 1 million acres - nearly 24% of the total land area of the two counties, while urbanized areas occupy 59,500 acres, only 1.4% of the counties' 6647 square miles. There is also a large proportion of land (nearly 23%) in the two-county area that is federally controlled, including Roosevelt National Forest and Rocky Mountain National Park in western Larimer County, and the Pawnee National Grasslands in Weld County.

Within the past decade, industrial activity has been attracted to the region, locating primarily in the Ft. Collins-Greeley-Loveland urban triangle area. Eastman Kodak, Hewlett Packard and Teledyne-Water Pik are examples. These are in addition to the existing major employers in agriculture-related industry.

Higher education is also significant in the area, adding employment and student populations. The University of Northern Colorado (UNC) and Aims College in Greeley, and Colorado State University (CSU) in Ft. Collins are significant contributors to the area's work force and population. UNC and CSU together employ a total of more than 4,000 people.

Because of these economic stimulators, and the fact that the area provides a pleasant living environment, population growth has been rapid and substantial. For instance, Ft. Collins has been one of the fastest growing communities in the nation in the past seven years, surpassed only by certain communities in Florida and Arizona.

Because of the influx of technical industries and the growth in higher educational institutions, the family income level in the urban areas has increased, although rural farm incomes and small town residents' remain relatively low.

Land use in the urbanized triangle is generally of a low density residential nature. Population densities in Ft. Collins, Loveland and Greeley average 4.8 or fewer persons per acre. In the major urban areas, 82% of the land is in residential use. Additional demographic data and characteristics are presented in the Land Use Alternatives Report.[1]

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1 Toups Corp., et al., Larimer-Weld Region Land Use Alternatives, Analysis of 20-Year Growth Demands and Impacts, (LWCOG, August, 1977).

Of the nearly 228,600 people living in the two-county area in 1975, over 60% (139,700) live in the three largest cities -- Ft. Collins, Greeley and Loveland. An estimated 154,500 now live within the Ft. Collins-Greeley-Loveland triangle. Another 35,370 permanent residents live in smaller towns and communities (some incorporated and some unincorporated) throughout the two-county area. The resort communities of Estes Park and in the Big Thompson and Cache la Poudre Canyons are occupied by some permanent residents, but increase in population during the summer months. Estes Park's population increases from about 2,000 year-round residents to about 7,000 in the summer; an estimated 20,000 tourists may be in the area at times.

3.1 MUNICIPAL POINT DISCHARGERS: EXISTING FACILITIES AND WASTE CHARACTERISTICS

There are currently 30 municipal wastewater treatment facilities in the two-county area that have been granted discharge permits. An additional 13 municipal treatment facilities have not been required to have discharge permits due to the lack of any significant discharges; however, discharge permits will be required in the future. Municipal discharges include two categories: triangle area communities and outlying communities. Triangle area communities include both large and small communities in the Greeley-Loveland-Ft. Collins area. The locations of municipal dischargers are shown on Figure 3.1-A and the accompanying index.

3.1.1 The Greeley-Loveland-Ft. Collins Urban Triangle

Wastewater treatment facilities in the triangle area serve a current population of 154,500. Total equivalent population (including industrial discharges and infiltration-inflow) is 228,000. Treatment facilities in the triangle area include municipal systems in Ft. Collins, Greeley, Loveland and Windsor, plus the South Ft. Collins, Boxelder and Evans Sanitation Districts. These treatment facilities, and any unusual characteristics are briefly described below.

3.1.1.1 Ft. Collins

The Ft. Collins system currently serves a population of 65,000, and a total equivalent population of 114,000, with two treatment plants. The plants are connected by an interceptor sewer from the No. 1 plant on Highway 14 to the No. 2 plant on Drake Road. Both discharge into the Cache la Poudre River.

The Ft. Collins No. 1 plant (with a capacity of 5.0 mgd) was recently upgraded, going on-line in late 1976. The trickling filter was renovated and an activated sludge basin and new clarifiers installed. This plant is reportedly performing excellently at design flow rate.

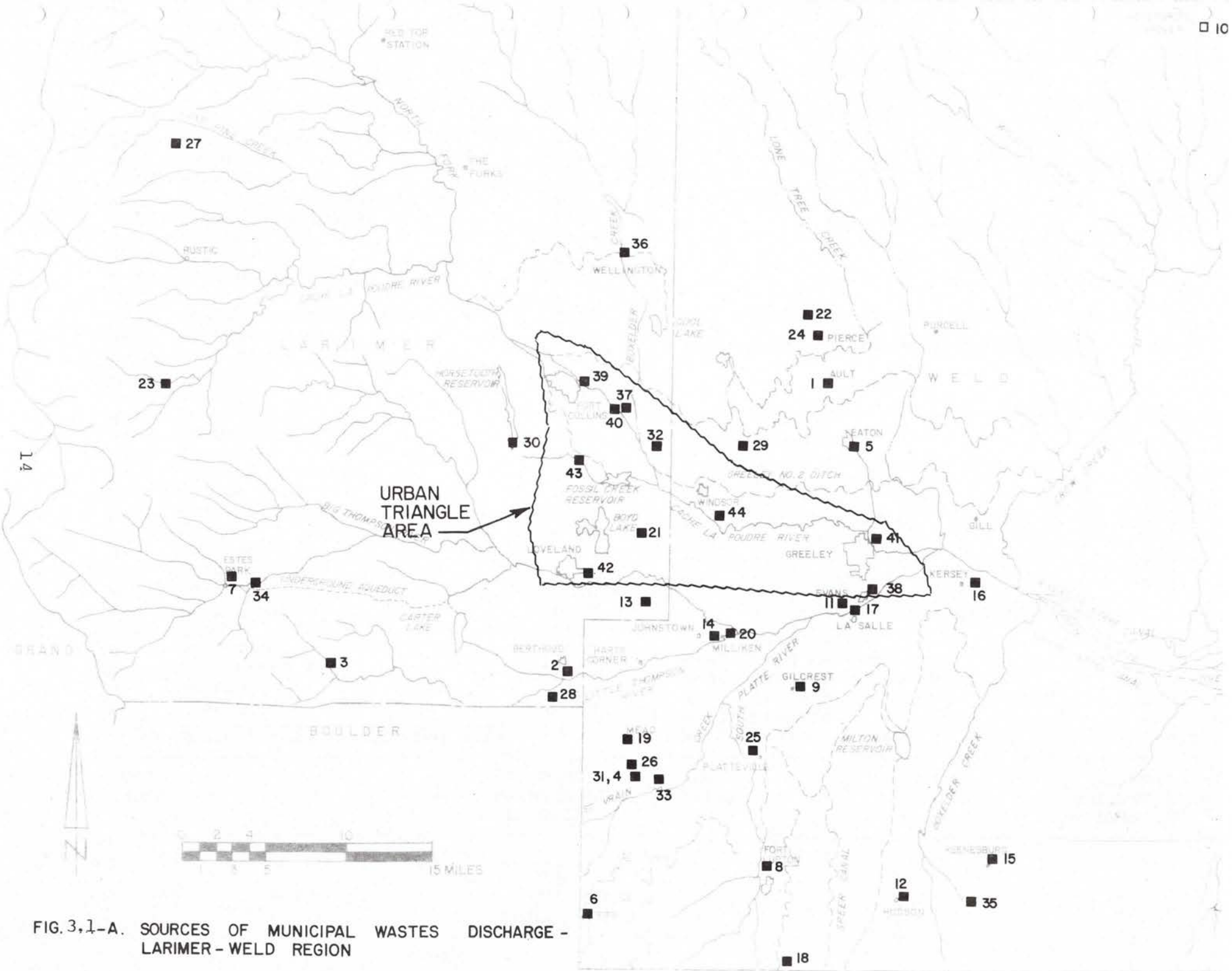

FIG. 3.1-A. SOURCES OF MUNICIPAL WASTES DISCHARGE - LARIMER - WELD REGION

FIGURE 3.1-A

Index

INDEX NO.		EXISTING AVERAGE FLOW (mgd)
	MUNICIPALITY - OUTLYING AREA	
M-1	Ault S.D.	0.09
M-2	Berthoud	0.48
M-3	Cottonwood Park	0.20
M-4	Del Camino	0.02
M-5	Eaton	0.21
M-6	Erie W.S.D.	0.13
M-7	Estes Park S.D.	0.40(a)
M-8	Fort Lupton	0.64
M-9	Gilcrest S.D.	0.04
M-10	Grover	0.025
M-11	Hill-n-Park S.D.	0.07
M-12	Hudson S.D.	0.06
M-13	Johnson's Corner	0.007
M-14	Johnstown	0.22
M-15	Keenesburg S.D.	0.05
M-16	Kersey S.D.	0.05
M-17	LaSalle	0.17
M-18	Lochbuie	-
M-19	Mead S.D.	0.035
M-20	Milliken S.D.	0.10
M-21	Mountain Range Shadows	0.01
M-22	Nunn	-
M-23	Pingree Park	0.01
M-24	Pierce	0.05
M-25	Platteville	0.14
M-26	Ramada Inn (I-25)	N/A
M-27	Red Feather/Crystal Lakes	N/A
M-28	Riverglenn	N/A
M-29	Severance	-
M-30	Spring Canyon S.D.	-
M-31	Texaco (I-25)	0.023
M-32	Timnath	-
M-33	Tri-Area S.D.	0.31
M-34	Upper Thompson S.D.	0.20(a)
M-35	Weld Central H.S.	0.01
M-36	Wellington	0.06
	MUNICIPALITY - TRIANGLE AREA	
M-37	Boxelder S.D.	0.6
M-38	Evans S.D.	0.5
M-39	Ft. Collins #1	5.0
M-40	Ft. Collins #2	5.6
M-41	Greeley	6.2
M-42	Loveland	4.0
M-43	South Ft. Collins S.D.	0.5
M-44	Windsor	0.6

N/A = Data not presently available.

(a) = Does not include seasonal flows.

The Ft. Collins No. 2 plant is actually two separate treatment facilities. The older facility is a 4.8 mgd activated sludge plant which is currently being upgraded. The new facility is a 12 mgd activated sludge plant which began operating in the Spring of 1977. The aeration basins are designed for nitrification (ammonia conversion to nitrate). If nitrification is not required, the newer facility could treat 16 mgd.

The theoretical nitrification capacity at Ft. Collins is 12 mgd. There are no dechlorination facilities.

The total secondary treatment capacity of all Ft. Collins treatment plants combined is 21.8 mgd; this is adequate to serve an equivalent population of 200,000 if infiltration/inflow problems are corrected. Ft. Collins has a severe infiltration/inflow problem, which, if not corrected, will cause the hydraulic capacity of the treatment plants to be exceeded by 1985. Current average dry weather flow into the plants is 10.6 mgd.

Ft. Collins has three major industries which discharge to the city system. Woodward Governor and Teledyne-Water Pik discharge plating wastes. Both of these facilities discharge to the Ft. Collins No. 2 plant. The Western Food Products Company, Inc., is a pickling industry which discharges its vats at the end of the season to the Ft. Collins No. 1 plant.

Current average pollutant discharges from the two Ft. Collins plants are calculated to be as follows:

BOD:	2,650 lbs/day
Suspended solids:	2,650 lbs/day
Salts:	75,000 lbs/day
Total nitrogen:	1,770 lbs/day

3.1.1.2 Greeley

Greeley's wastewater treatment facilities currently serve a population of 55,000, and a total equivalent population (including industrial dischargers and infiltration/inflow) of 62,000.

Greeley's domestic waste is currently being treated in two separate plants located on First Avenue. The North Side Plant is an activated sludge plant; the South Side Plant is a trickling filter plant. The effluents are combined prior to disinfection with chlorine. The combined treatment capacity is 6 mgd. Average dry weather flow is 6.2 mgd. Discharge is into the Cache la Poudre River.

A 201 facility study has recently been completed for Greeley. This plan calls for immediate upgrading of the First Avenue Plants and building a 4 mgd plant at the "Delta site" (junction of the Cache la Poudre River and the South Platte River). An additional 4 mgd unit is to be constructed in 1989. The plan

calls for the construction of another 8 mgd increment at the Delta site in 1995. At that time an interceptor would be constructed to permit transmission of wastewater from the Evans Sanitation District and the Hill-n-Park Sanitation District.

There are two major industries now discharging to Greeley's treatment plants -- a meat packer and a dairy. The Meadow Gold dairy discharges to Greeley's First Avenue Plant. The whey waste is believed to be the cause for settling difficulties with scum in the final clarifier.

Monfort of Colorado operates the meat processing plant for slaughtered cattle and sheep. Wastewater is treated at a separate municipally-owned and operated treatment plant which was constructed by and specifically for separate treatment of the Monfort wastes.

Current pollutant discharges from the Greeley facility are calculated to be as follows:

BOD:	1,550 lbs/day
Suspended solids:	1,550 lbs/day
Salts:	43,900 lbs/day
Total nitrogen:	1,030 lbs/day

The existing system is generally not in compliance with effluent standards.

3.1.1.3 Loveland

Treatment facilities in the City of Loveland serve a current population of 21,000, and a total equivalent population of 35,000 (including industrial equivalent population and infiltration/inflow).

Loveland's wastewater treatment plant has been recently upgraded and expanded, going on-line in the Spring of 1977. This unusual system utilizes activated sludge followed by trickling filters for biological treatment. Dechlorination facilities are also provided. The old trickling filter plant is no longer utilized.

The Loveland plant has a design capacity of 7.7 mgd and an average dry weather flow of 4.0 mgd. Capacity is adequate to serve a population of 75,000. The plant discharges into the Big Thompson River.

There is one major industrial discharger in Loveland -- Hewlett-Packard Company. Hewlett-Packard's wastewater primarily derives from metal-plating operations. Chemical pre-treatment is provided prior to discharge to the city's sewers.

Pollutant discharge from the Loveland treatment plant has been calculated to be as follows:

BOD:	1,000 lbs/day
Suspended solids:	1,000 lbs/day
Salts:	28,300 lbs/day
Total nitrogen:	670 lbs/day

The plant is normally not in compliance with effluent standards, in that it does not meet nitrification standards.

3.1.1.4 Windsor

Windsor's wastewater treatment facilities serve a total population of 2,700 and a total equivalent population (including infiltration/inflow) of 5,900.

Windsor is served by a two-cell stabilization pond system. The first cell is aerated. Wastewater is disinfected with chlorine prior to discharge to the Cache la Poudre River. The design capacity of this system is 0.6 mgd; the plant is currently serving at its capacity (6,000 equivalent population).

Kodak discharges its industrial wastewater into the Windsor treatment plant on an emergency basis. When this happens, the industrial wastewater is routed directly to the second pond, so the detention time of the first pond is not affected. The option of discharging to the municipal treatment plant was normal operation for Kodak until September, 1976, when it received an NPDES permit and began to use its own facility (described in paragraph 3.2.1.1).

The current discharge is calculated to be as follows:

BOD:	150 lbs/day
Suspended solids:	500 lbs/day
Salts:	4,500 lbs/day
Total nitrogen:	100 lbs/day

The plant is currently in compliance with effluent standards.

3.1.1.5 South Ft. Collins Sanitation District

The wastewater treatment facilities of the South Ft. Collins Sanitation District serve an area south of Ft. Collins with a population (and total equivalent population) of 2,000.

A new wastewater treatment facility to serve the South Ft. Collins Sanitation District was constructed in 1976. This is a 1.5 mgd activated sludge plant followed by multi-media filters and chlorination. The plant is adequate to serve an equivalent population of 15,000. Current average dry weather flow is 0.5 mgd. The plant discharges into the Cache la Poudre River.

Current pollutant discharge from the plant is calculated to be:

BOD:	125 lbs/day
Suspended solids:	125 lbs/day
Salts:	3,540 lbs/day
Total nitrogen:	83 lbs/day

The plant is generally in compliance with effluent standards.

3.1.1.6 Boxelder Sanitation District

The Boxelder Sanitation District serves an area east of Ft. Collins, with a population of 2,700 (with an equivalent population of 4,350).

The Boxelder treatment facility consists of a three-cell stabilization pond system which was installed in 1973. The cells are operated in series; the first two are aerated. The lagoons are followed by a rock filter (for algae removal) and chlorination. The design capacity of the plant is 0.75 mgd, adequate to serve an equivalent population of 7,500. Current average flow is 0.6 mgd. The facility discharges into the Cache la Poudre River.

The Boxelder Sanitation District serves many commercial facilities, including several restaurants and motels. These commercial establishments contribute about 40 percent of the wastewater to the treatment plant. The service area has considerable land presently zoned for commercial and industrial uses, so this trend is likely to continue.

Current effluent characteristics are calculated to be as follows:

BOD:	150 lbs/day
Suspended solids:	500 lbs/day
Salts:	4,250 lbs/day
Total nitrogen:	100 lbs/day

The facilities are currently in compliance with effluent standards.

3.1.1.7 Evans Sanitation District

The Evans Sanitation District serves an area south of Greeley. Population served totals 4,500; total equivalent population is 4,800.

Evans is served by an aerated stabilization pond system which was recently upgraded. The stabilization ponds are followed by a rock filter (for algae removal) and chlorination. The design capacity of this system is 0.9 mgd, adequate to serve an equivalent population of 9,000. Average dry weather flow is 0.5 mgd. The plant discharges into the South Platte River.

The Greeley 201 Facilities Plan calls for the dischargers within the Evans Sanitation District to be served by Greeley by 1995. The plan recommends that an interceptor be constructed from Evans to the Delta site.

At the present time, the plant effluent is calculated to be as follows:

BOD:	125 lbs/day
Suspended solids:	417 lbs/day
Salts:	3,540 lbs/day
Total nitrogen:	83 lbs/day

The facility is currently in compliance with effluent standards.

3.1.2 Facilities in Outlying Areas

Outlying areas in the two-county region (i.e., towns and unincorporated areas outside the Greeley-Loveland-Ft. Collins triangle) are served by thirty-three separate wastewater treatment systems. Of the thirty-three systems, nine are municipally operated, thirteen are operated by sanitation districts, and eleven are private systems. Three other areas -- Nunn, Severance, and Timnath -- are served by individual septic systems. An estimated total of 650 persons reside in these latter three areas.

The nine municipally-operated facilities have a total design capacity of 3.599 mgd, ranging from 0.029 to 1.65 mgd, and serve a total population of 14,745 and a total equivalent population of 16,760. The thirteen district-operated facilities have a total design capacity of 3.51 mgd, ranging from 0.03 to 1.50 mgd, and serve a population of 17,725 permanent residents and a total equivalent population of at least 18,170. Two districts, Estes Park and Upper Thompson (both in the Estes area), also serve a large number of seasonal residents and tourists.

The eleven private systems have a total capacity of 0.477 mgd, ranging from 0.01 to 0.12 mgd, and serve a total equivalent population of at least 4,200. Several of these private districts serve resort areas and motels and restaurants; as a result, the population served varies seasonally.

Even though the total design capacity of these systems is in excess of the total existing flow, the distribution of population among the outlying areas results in some systems being overloaded while others have excess capacity.

Two of the municipally-operated systems are in compliance with effluent standards; three are not, and the remaining four have no surface discharge. Of the district-operated facilities, two are in compliance and five are not. Only one of the private facilities is in compliance.

Table 3.1.2-A summarizes the available data concerning the characteristics of the existing sewerage and treatment facilities in the outlying areas.

3.2 INDUSTRIAL POINT DISCHARGERS: EXISTING FACILITIES AND WASTE CHARACTERISTICS

There are three categories of industrial dischargers: those which are major dischargers directly into watercourses; those which are minor dischargers directly into watercourses; and those whose wastewater is discharged to municipal treatment plants (indirect dischargers). The locations of the industrial dischargers are shown on Figure 3.2-A and the accompnaying index.

3.2.1 Major Direct Dischargers

Included in this category are the Eastman Kodak Company near Windsor, the Great Western Sugar Company plants at Loveland, Greeley and Johnstown, and Loveland Packing Company and Public Service Company's Fort St. Vrain Power Plant near Platteville.

3.2.1.1 Eastman Kodak Company

Eastman Kodak Company (KCD), located near Windsor, processes photographic products. Domestic wastewater is discharged directly into the Windsor sewage treatment plant. KCD treats its own industrial waste. Some of the industrial wastewater is pretreated by KCD at the point of production prior to entering the main waste stream. The main waste stream, with a volume of about 1 million gallons per day (mgd), is treated in two aerated lagoons followed by sand filtration and chlorination prior to discharge to the Cache la Poudre River. Chemical feed facilities exist, mainly for pH and solids control.

EPA has not set effluent limitations for the photographic industry, per se; therefore, KCD's NPDES permit conditions are dictated by current in-stream standards.

3.2.1.2 Great Western Sugar Company

Great Western Sugar Company operates two beet sugar processing plants and one monosodium glutamate (MSG) plant in the region. The beet sugar plants are located in Loveland and Greeley, and the MSG plant in Johnstown. Great Western has recently closed a plant in Eaton and a portion of its Johnstown facility.

The wastewater treatment systems at the Greeley and Loveland plants are very similar. The flume water which is used to transport and clean the beets is settled in a conventional clarifier. The effluent is reused. The settled material is routed through ash ponds and is then mixed with condenser water. At Loveland, this mixture is treated in two aerated lagoons

TABLE 3.1.2-A

SUMMARY: CHARACTERISTICS OF SEWERAGE AND TREATMENT FACILITIES IN OUTLYING AREAS

MUNICIPAL FACILITIES	POPULATION SERVED	TOTAL EQUIVALENT POPULATION SERVED	EXISTING DESIGN CAPACITY (MGD)	AVERAGE DRY WEATHER FLOW (MGD)	POPULATION DESIGN CAPACITY (a)	EFFLUENT CHARACTERISTICS				RIVER BASIN (b)	COMPLIANCE WITH EFFLUENT STANDARDS
						BOD LBS/DAY	SUSPENDED SOLIDS LBS/DAY	SALTS LBS/DAY	TOTAL NITROGEN LBS/DAY		
Berthoud	2,500	2,500	1.65	0.48	16,500	120	120	3,400	80	BT	Yes
Eaton	2,100	2,100	0.34	0.21	3,400	53	53	1,490	35	CP	No
Fort Lupton(c)	3,300	3,800	0.29	0.64	2,900	160	533	4,530	107	P	No
Grover	120	170	0.029	0.025	290	6	6	180	4	P	NSD (e)
Johnstown (d)	1,500	2,600	0.25	0.22	2,500	55	183	1,560	37	BT	No
La Salle	1,500	1,770	0.36	0.17	3,600	43	140	1,200	28	P	NSD
Pierce	975	1,060	0.17	0.15	1,700	38	125	1,060	25	CP	NSD
Platteville	1,500	1,500	0.20	0.22	2,000	55	183	1,560	37	P	NSD
Wellington	1,250	1,250	0.31	0.06	2,100	15	15	420	10	CP	Yes
SANITATION DISTRICT FACILITIES											
Ault S.D.	950	950	0.13	0.09	1,300	23	75	640	15	CP	NSD
Erie W.S.D.	1,300	1,399	0.14	0.13	1,400	33	108	920	22	SV	No
Estes Park S.D.	1,900 (f)	1,900 (f)	0.70	0.40	7,000	100	100	2,830	67	BT	Yes
Gilcrest S.D.	500	633	0.05 (g)	0.04	500	10	33	280	7	P	NSD
Hill-n-Park S.D.	825	825	0.12	0.07	1,200						No
Hudson S.D.	600	600	0.05	0.06	500	15	50	425	10	P	No
Keenesburg S.D.	525	N/A	0.05	0.05	500	12	42	350	8	P	NSD
Kersey S.D.	1,000	N/A	0.10	0.10	1,000	12	12	350	8	P	NSD

TABLE 3.1.2-A (Continued)

	POPULATION SERVED	TOTAL EQUIVALENT POPULATION SERVED	EXISTING DESIGN CAPACITY (MGD)	AVERAGE DRY WEATHER FLOW (MGD)	POPULATION DESIGN CAPACITY (a)	EFFLUENT CHARACTERISTICS				RIVER BASIN (b)	COMPLIANCE WITH EFFLUENT STANDARDS
						BOD LBS/DAY	SUSPENDED SOLIDS LBS/DAY	SALTS LBS/DAY	TOTAL NITROGEN LBS/DAY		
SANITATION DISTRICT FACILITIES (CONT.)											
Mead S.D.	225	440	0.03	0.035	300	9	29	250	6	SV	No
Milliken S.D.	1,400	1,400	0.12	0.10	1,200	25	25	70	17	BT	Yes
Spring Canyon S.D.	400	400									
Tri-Area S.D.	3,100	3,100	0.52	0.31	5,200	78	78	2,200	52	SV	No
Upper Thompson S.D.	5,000 (f)	5,000 (f)	1.50	0.20 (h)	15,000	50	50	1,420	33	BT	
OTHER AREAS AND FACILITIES											
Cottonwood Park(est.)	2,000	2,000	0.12	0.20	1,200						
Del Camino			0.12	0.02	1,200						No
Johnson's Corner		140	0.05	0.007	500						No
Lochbuie	900	900								P	
Mountain Range Shadows	600	600	0.10	0.01	1,000						
Nunn	300	300	Individual Septic Tanks		---						
Pingree Park	50	50	0.01	0.01	100						NSD
Ramada Inn											NSD
Red Feather/ Crystal Lakes	200 (f)	200 (f)	0.01		100					CP	
Riverglenn	50	50	0.029		290						Yes
Severance	80	80	Individual Septic Tanks		---					CP	

TABLE 3.1.2-A (Continued)

	POPULATION SERVED	TOTAL EQUIVALENT POPULATION SERVED	EXISTING DESIGN CAPACITY (MGD)	AVERAGE DRY WEATHER FLOW (MGD)	POPULATION DESIGN CAPACITY (a)	EFFLUENT CHARACTERISTICS				RIVER BASIN (b)	COMPLIANCE WITH EFFLUENT STANDARDS
						BOD LBS/DAY	SUSPENDED SOLIDS LBS/DAY	SALTS LBS/DAY	TOTAL NITROGEN LBS/DAY		
OTHER AREAS AND FACILITIES (CONT.)											
Texaco I-25	Varies		0.018	0.023	180						No
Timnath	270	270	Individual Septic Tanks		---						
Weld Central H.S.		260	0.02	0.01	200						No

(a) Equivalent Population (includes industrial and commercial discharges converted to a population equivalent; using 100 gals/capita/day.

(b) BT - Big Thompson; CP - Cache la Poudre; P - South Platte; SV - St. Vrain.

(c) The Fort Lupton Canning Company, a vegetable cannery, discharges a population equivalent of 3,500. Although it only discharges during canning season, this amounts to a significant portion of the capacity of the treatment plant.

(d) The Carnation Milk Company has a powdered milk manufacturing plant in Johnstown. This plant discharges an equivalent population of 1,100 to the waste treatment plant.

(e) NSD - No Surface Discharge

(f) Increases with summer tourist load.

(g) Assuming non-discharging stabilization pond, could increase to 0.15 mgd with a discharging system.

(h) Does not include seasonal flows.

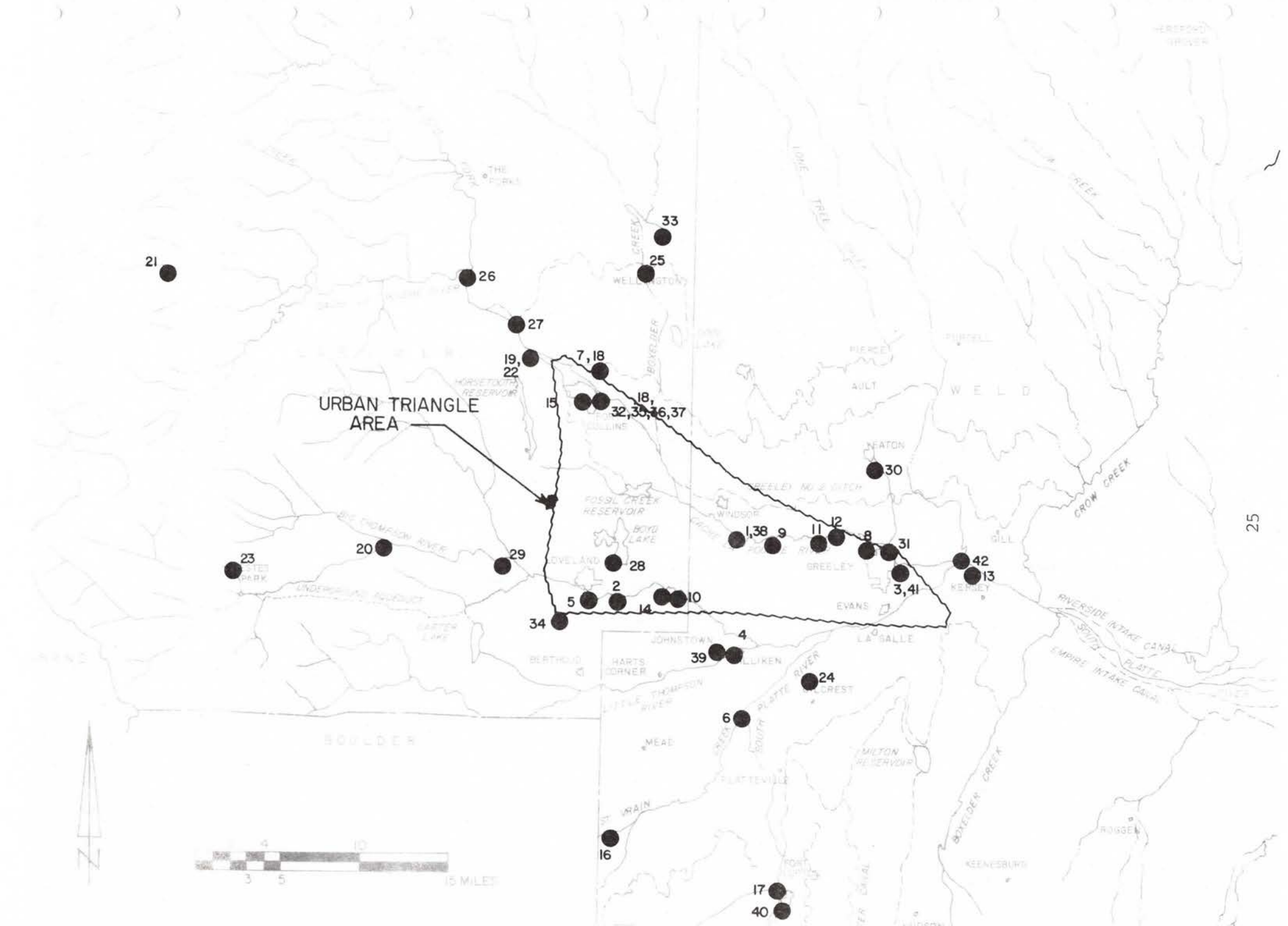

FIG. 3.2-A. SOURCES OF INDUSTRIAL WASTES DISCHARGE - LARIMER - WELD REGION

FIGURE 3.2-A

Index

INDEX NO.		EXISTING AVERAGE FLOWS
	MAJOR DIRECT INDUSTRIAL DISCHARGERS	
I- 1	Eastman Kodak Co.-KCD	1.0
I- 2	Great Western Sugar Co. - Loveland	4.3
I- 3	Great Western Sugar Co. - Greeley	2.0
I- 4	Great Western Sugar Co. - Johnstown	5.4
I- 5	Loveland Packing Co.	0.05
I- 6	Public Service Co. - Ft. St. Vrain	1.5
	MINOR DIRECT INDUSTRIAL DISCHARGERS	
I- 7	Cowan Concrete Products	(a)
I- 8	Flatiron Paving Co.-Greeley	(a)
I- 9	Flatiron Paving Co.-Windsor	(a)
I-10	Flatiron Paving Co.-Loveland	(a)
I-11	Flatiron Paving Co. - Greeley (West)	(a)
I-12	Greeley Sand & Gravel	(a)
I-13	Eldred M. Johnson	(a)
I-14	Floyd Haag Sand & Gravel	(a)
I-15	Mountain Aggregate - Ft. Collins	(a)
I-16	Mountain Aggregate - (to St. Vrain)	(a)
I-17	Norden & Son Land Leveling	(a)
I-18	Poudre Pre-Mix	(a)
I-19	Colo. Division of Wildlife - Bellvue	1.0
I-20	Colo. Division of Wildlife - North Fork	3.0
I-21	Colo. Division of Wildlife - Poudre	4.0
I-22	Colo. Division of Wildlife - Watson Lake	12.0
I-23	Colo. Division of Wildlife - Estes Park	3.0
I-24	Blacky Valencia	0
I-25	Western Fisheries Consultants	0
I-26	Ft. Collins - Poudre Canyon Water Treatment Plant (WTP)	-
I-27	Greeley-Bellvue WTP	-
I-28	Greeley-Boyd Lake WTP	-
I-29	Loveland WTP	-
I-30	Hydraulics Unlimited Mfg. Co.	0.02
I-31	Monfort Packing Co.	1.7
I-32	Lone Star Steel Co.	0.03
I-33	Terra Resources Inc.-Clarks Lake	0.009
	MAJOR INDUSTRIAL DISCHARGERS TO MUNICIPALITIES	DISCHARGE TO
I-34	Hewlett-Packard Co.	Loveland
I-35	Woodward Governor	Ft. Collin
I-36	Teledyne-Water Pic	Ft. Collin
I-37	Western Food Products Inc.	Ft. Collin
I-38	Eastman Kodak Co. (optional)	Windsor
I-39	Carnation Milk Co.	Johnstown
I-40	Ft. Lupton Canning Co.	Ft. Lupton
I-41	Meadow Gold Dairy	Greeley
I-42	Monfort of Colorado	Greeley

(a) Flows highly variable.

prior to discharge to the Big Thompson River. At Greeley, this water is sprayed on farm land or discharged to the Cache la Poudre River.

The Johnstown MSG plant does not process any beets, but uses by-products from other Great Western plants as raw material. Wastewater is treated in a series of aerated lagoons prior to discharge to the Little Thompson River.

All three of these Great Western plants meet the best practical treatment (BPT) standards required in the NPDES permits.

3.2.1.3 Loveland Packing Company

Loveland Packing Company, located in Loveland, is a slaughtering operation which cuts and packages pork and pork products, including hams, bacon, and sausages. Wastewater is now being treated in an extended aeration treatment plant which is organically overloaded. Instead of upgrading the waste treatment plant, the company plans to discharge to the Loveland municipal system.

3.2.1.4 Public Service Company - Fort St. Vrain Power Plant

This electrical generating unit is a nuclear-powered facility located on the South Platte River near Platteville. Most of its 1.5 mgd of discharged water is cooling tower blowdown. This water is not different from that used in any other fuel-fired power plant.

Each year there is an additional discharge of 8,000 to 10,000 gallons of reactor-building wastewater. This wastewater is treated by ion exchange prior to discharge. It is discharged at a rate not to exceed 10 gpm, and is mixed with cooling tower blowdown before discharged into the South Platte River. All wastewater is chlorinated. All required standards are being met.

3.2.2 Minor Direct Dischargers

Minor industrial dischargers in the region include twelve sand and gravel companies; seven fish hatcheries, five of which are owned and operated by the Colorado Division of Wildlife and two privately owned; four municipal water treatment plants -- two belonging to the City of Greeley, and the others belonging to Loveland and Ft. Collins -- and three industries which discharge only non-contact, once-through cooling water -- Lone Star Steel Company, near Ft. Collins; Monfort Packing Company, near Greeley; and Hydraulics Unlimited Manufacturing Company, near Eaton. In addition, Terra Resources, Inc., has a permit for emergency discharge for an oil well operation north of Wellington.

3.2.2.1 Sand and Gravel Companies

The water discharged from these operations is normally fairly high quality groundwater from the gravel pits. The main pollutant from these operations is suspended solids in the form of silt or sand particles.

The normal treatment method consists of a settling pond to remove suspended material. The NPDES permits limit aluminum and pH in cases where companies use alum to aid settling. None of the sand and gravel companies in the region use alum, or any other flocculant aid.

The permits also limit oil and grease. This limitation is a safeguard against an operator changing the oil in a truck or other equipment and dumping it with the discharged water.

All of the sand and gravel companies in the region are required to meet BPT standards.

3.2.2.2 Fish Hatcheries

The Division of Wildlife has NPDES permits for four of its facilities; the fifth - the Estes Park unit - has less than 20,000 pounds of production per year and does not have an NPDES permit. The owners of the private facilities have indicated that no discharge occurs, so no NPDES permits have been obtained. Flow rate from the Division of Wildlife facilities ranges from 1 to 12 mgd. Three of these facilities discharge into the Cache la Poudre; one discharges into the Big Thompson River and one into Fall River, a tributary to the Big Thompson. The normal treatment technique is to use settling ponds prior to discharge. The waste from the Watson Lake Hatchery is pumped to Watson Lake.

3.2.2.3 Water Treatment Plants

Ft. Collins and Greeley have recently upgraded the waste control facilities for their plants so discharge standards can be met. Loveland had a wastewater treatment design prepared, but control facilities have not yet been installed because bids were higher than anticipated. The Loveland plant does not currently meet discharge standards.

Wastewater from these water treatment plants carries suspended solids which are settled in holding ponds in the treatment process. Often alum is used to enhance settleability, so aluminum and pH are regulated in their discharges.

3.2.2.4 Other Dischargers

Heat is the only pollutant from the three industries discharging only cooling water. The maximum allowable discharge temperature

is 90° F (32.5° C); all of the plants meet this requirement. The largest flow rate from Lone Star Steel is 0.03 mgd, and from Hydraulics Unlimited, 0.02 mgd. Pollutants from the oil well operation include suspended solids, oil and grease, and TDS; flow rate if .009 mgd.

3.2.3 Major Industrial Dischargers to Municipal Systems

A major industrial discharger to a municipal system meets one or more of the following criteria:

- Industrial flow greater than 500,000 gpd;
- Industrial flow greater than 5% of the total flow;
- The industrial flow adversely affects the quality of discharge from the treatment facility;
- The industrial wastewater carries toxic pollutants.

Major industrial dischargers to municiapl systems include:

Hewlett-Packard Company	- Loveland
Woodward Governor	- Ft. Collins
Teledyne-Water Pik	- Ft. Collins
Western Food Products	- Ft. Collins
Monfort of Colorado	- Greeley
Meadow Gold Dairy	- Greeley
Eastman Kodak	- Windsor
Ft. Lupton Canning Co.	- Ft. Lupton
Carnation Milk Company	- Johnstown

The characteristics of these dischargers are summarized in the discussion of municipal facility characteristics in Section 3.1.1 and the notes on Table 3.1.2-A.

3.3 NON-POINT SOURCES OF POLLUTION

Non-point sources of waste materials come from a variety of activities -- non-irrigated agriculture, small feedlot operations,[2] urban runoff, silviculture practices, construction, solid waste disposal, septic tank wastes, and other uses of land that loosen soils or deposit unnatural chemical constituents on the land.

Table 3.3-A indicates the present and projected waste loads from various point and non-point sources, including waste loads from municipal and industrial sources.

As the table indicates, municipal and industrial point sources are the most significant sources of BOD loadings, and irrigated

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2 Irrigated agriculture and large feedlots are presently classified as point sources. There are indications that Congress may amend the law to reclassify irrigated agirculture as a non-point source.

agriculture is the greatest source of suspended solids, total nitrogen and total dissolved solids. Uncontrolled feedlots are major sources of BOD loadings and suspended solids.

TABLE 3.3-A
Distribution of Pollutants -- Larimer-Weld Region

Waste Source	Percent of Total Pollutant Load							
	BOD		Suspended Solids		Total Nitrogen		Total Dissolved Solids	
	1977	2000	1977	2000	1977	2000	1977	2000
Municipal	48	61	6	9	22	32	3	6
Industrial	20	15	2	2	15	15	2	2
Irrigated Agriculture	0	0	66	62	55	46	95	92
Feedlots	26	19	21	20	7	6	1	1
Urban Runoff	5	4	5	7	1	1	1	1
Miscellaneous[a]	1	1	1	1	1	1	1	1
TOTAL	100	100	100	100	100	100	100	100

[a] Includes pollutants from silviculture, construction, leachfields, and solid waste disposal.

Source: Toups Corporation, Task Report - Areawide Technical Planning Report, "Significance of Pollutant Sources in the Larimer-Weld Region," June, 1977. (Compilation of data presented in Tables 2.3-A, 2.3-B, 2.3-C and 2.3-D).

Urban runoff appears to be a relatively minor pollutant source, currently contributing only 5% of the total BOD and suspended solids loads, and less than 1% of total nitrogen and total dissolved solids loadings. However, due to large periodic contributions of a broad range of pollutants, urban runoff is a concern in the region's control program. All other non-point sources (silvicultural activities, construction, leachfields and solid waste disposal sites), contribute only 1% or less of the total pollutant load to surface waters.

3.3.1 Irrigated Agriculture

Because the characteristics of irrigated agriculture in the Larimer-Weld region are of major importance in impact on water quality, the impacts from this source are discussed in the separate report, Institutional and Financial Recommendations for Control of Pollutants from Irrigated Agriculture, Briscoe, Maphis, Murray & Lamont, Inc., October, 1977.

3.3.2 Feedlots

Most of the cattle-feeding operations in the region occur on large lots with capacities of more than 300 head. More than eighty percent (750,000) of the total production involves 250 lots. These are for the most part commercially operated. The remaining 150,000 head are located on 1000 lots, usually family operated. Eighty percent of the total cattle on feed are on feedlots equipped with wastewater/runoff control facilities. These facilities are further considered in Toups Corporation report on Concentrated Animal Feeding Operations, 1977.

Of the remaining 20% not on controlled lots, one-fourth to one-half (5 to 10% of the total) do not impact water quality, and one-half to three-fourths (10 to 15% of the total) are generally on lots with less than 300 head and can be brought into compliance with control requirements.

Of the estimated 650 uncontrolled feedlot acres estimated by the State Health Department to exist in the two-county area, 52% are within the Cache la Poudre drainage area, 26% in the South Platte, 12% in the Big Thompson and 10% in the St. Vrain drainage.

A major side effect of the feedlot operation results from the application of manure from the lots to irrigated farm land. This results in higher nitrate concentration in groundwater (although use of manure is not the sole contributing factor in raising nitrate levels).

Current mass emission rates for uncontrolled feedlots in the region are estimated to be as follows:

	Annual Average Load Per Acre (Tons)	Annual Average Load, 650 Acres (Tons)
Suspended Solids	18	11,500
Dissolved Solids	1.3	830
Ammonia	0.13	80
Total Nitrogen	0.7	450
Total Phosphorus	0.02	10
BOD	3	1,900

An estimate of the proportion of the pollutant load in the future from feedlots is shown in Table 3.3-A. Urban encroachment may offset increased feeding operations or force closing of some of the smaller uncontrolled lots.

3.3.3 Urban Runoff

Table 3.3.3-A indicates the relative magnitude of pollutants carried by urban runoff into the region's waterways. Urban runoff appears to be a minor problem in terms of the pollutants shown in the Table, but is nevertheless a concern due to periodic large contributions of a broad range of (exotic) pollutants. Urban development which increases the amount of impervious surfaces also increases the amount of runoff water, and the pollutants carried by the water to waterways. Four of the major urban drainage systems in the two-county region have been analyzed -- those of Ft. Collins, Greeley, Loveland and Estes Park. (Although Estes Park is not a large community, the facilities were reviewed because of the area's unique topography and soil characteristics.)

A feature of urban stormwater control that is of major importance and concern in the Larimer-Weld region is the extensive use of irrigation canal systems for the removal of stormwater. Although urban runoff waters provide extra water for irrigation, storage and use, the practice also results in ditch erosion, structural damage to diversion and conveyance facilities, agricultural flooding, decrease in reservoir capacity due to sedimentation, and may result in deposits of harmful chemicals and other substances on agricultural lands.

All of the three largest communities in the region utilize irrigation systems as a means of runoff disposal. Of the three, Loveland makes the greatest use of this method.

3.3.3.1 Ft. Collins

A large amount of runoff in Ft. Collins is curb collected and transported to catch basins or discharge points. Most of the urban discharge pipes flow into the Cache la Poudre and its tributary, Spring Creek. Irrigation ditches and adjoining reservoirs collect much of the remaining runoff and distribute it to agricultural lands. A small amount of wastewater is distributed to ponds and fields where it percolates into the soil and then may move to a stream or into groundwater.

TABLE 3.3.3-A

Average Annual Urban Runoff Wasteloads for
Fort Collins, Greeley, and Loveland - 1976/2000

	MUNICIPALITY					
	FORT COLLINS		GREELEY		LOVELAND	
	1976	2000	1976	2000	1976	2000
Acreage	11,700	26,600	13,134	19,000	6,000	10,900
Population Density (people/acre:	4.8	5.6	4.4	6.8	4.2	5.6
Annual Stormwater Runoff (acre-ft/year)[a]	3,900	10,100	1,800	3,560	2,075	4,140
Suspended Solids[b] (lbs/acre-year)	155	165	123	148	146	165
(tons/year)[c]	1,013	2,410	913	1,510	498	990
BOD_5 (lbs/acre-year)[b]	7.6	8.1	6.0	7.3	7.1	8.1
(tons/year)[c]	57	136	51	85	28	56
Nitrogen (lbs/acre-year)[b]	1.2	1.3	1.0	1.2	1.2	1.3
(tons/year)[c]	8.7	21	8	13	4.6	8.5

a Based on average rainfall developed from 25 years of record.
b Residential land use only.
c All land uses.

3.3.3.2 Greeley

Except in the city core, where a storm drainage system exists, most runoff in Greeley is collected and transported by curb and gutter. Most of the core area runoff discharges directly into the Cache la Poudre River; other discharge pipes flow into irrigation ditches.

3.3.3.3 Loveland

Over 80% of the urban runoff waters from Loveland discharge into irrigation systems; the remainder discharges into holding ponds, natural waterways, pastures and similar percolation areas. Lake Loveland and Silver Lake receive much of the storm runoff water. Some is delivered for irrigation, and some to the Greeley water treatment facility.

3.3.3.4 Estes Park

In Estes Park, one underground drainage system flows into the Big Thompson River above Lake Estes; the remaining system utilizes curb and gutter systems and natural percolation. The extensive use of percolation basins, holding ponds, vegetation strips and gravel units allows considerable groundwater recharge and prevents pollutants from entering major waterways. The major water quality problem in Estes Park is sediment, contributed by the flow into Lake Estes.

3.3.3.5 Other Communities

Storm drainage and urban runoff pollution problems have not been analyzed for the smaller communities in the region. Some of these communities have, however, experienced flooding and associated pollution as a result of large storms. The rapidly-growing communities such as Windsor, Evans, Fort Lupton, Dacono, Firestone and Frederick should anticipate the problem and begin to provide means to prevent or mitigate future drainage hazards.

3.3.3.6 Wasteloads

Calculations indicate that the wasteload from urban runoff which actually enters surface waterways from the three largest cities in the region range from 10% in Loveland to 50% in Greeley and 60% in Ft. Collins. The remaining wasteloads are distributed to irrigation systems. Table 3.3.3-A indicates the average annual urban runoff pollution loads for these communities in 1976 and estimates of the wasteloads for the year 2000.

The urban runoff from Estes Park to the Big Thompson has not been included in this summary. These wasteloads, although significant, are distributed to Lake Estes where suspended materials are settled and BOD assimilated.

3.3.4 Silviculture Activities

Forested areas constitute about 25% of the total land area in the region. Most of the land is under Federal ownership, although private ownership and management are considerable. Several activities within the forested areas can impair water quality, including logging, construction, grazing and recreational uses. As can be seen in Table 3.3-A, the water quality impacts from silviculture activities are minor.

3.3.4.1 Logging

The most severe water quality impairments relative to activities in forested areas are generally the result of logging operations. The most noticeable problem is increased sediment caused by construction, tree felling, skidding, road use, dust and off-road use by equipment. Other impacts related to logging activities include increasing water temperature through removal of vegetation, reducing dissolved oxygen through introduction of organic materials, and allowing such pollutants as solvents, solid wastes, and chemicals associated with heavy equipment use to reach the streams.

The largest scale logging operations in the region are within the Poudre and Red Feather Lakes Ranger Districts. Logging operations in the Estes Park District are limited to small operations, primarily to increase snowpack and provide firewood.

Because of planning and control measures promulgated by the Forest Service, discharge of sediment and other pollutants from logging work to the region's streams is kept to a low level where logging is done under Forest Service contracts. Private logging contracts do not always contain sediment and erosion control requirements. Because of the high level of timber harvest by private landowners which is not under Forest Service control, pollutants from these private operations may reduce water quality.

3.3.2.2 Silviculture-related Construction

Most of the construction activities pursued by the Forest Service in the region are related to logging activities. Recreational road construction, public facility construction, private home construction and accompanying access also contribute to construction in forested areas.

3.3.4.3 Grazing

Grazing may cause the most noticeable water quality impact in the forested areas. Four active grazing allotments are located in the Estes Park Ranger District and seven are active in the Poudre District. Extensive grazing occurs in the Red Feathers Lakes District. Most of the private lands in the Laramie River Basin are also grazed.

Watering and grazing near streams can cause deterioration of stream banks and increase sediment loads; nutrient loading can also result.

3.3.4.4 Recreation Uses

Campgrounds, picnic grounds, rest areas and trailheads in the area can affect water quality through introduction of sediment and solid wastes in the stream. Toilet facilities in these designated use areas are sealed vault facilities and are insignificant pollution sources. Eight picnic grounds, ten campgrounds, four rest areas and one trailhead are located within the national forest areas in western Larimer County.

Other sources of pollution in intense recreational use areas include fishing, bathing, utensil cleaning and fecal and liquid wastes in the streams. Intensive trail use, use of pack animals, and pack stock grazing can lead to erosion, increased sediment, and nutrient loading.

3.3.5 Construction Activities

Most of the construction in the Larimer-Weld region is associated with urban housing development. Other construction activities include power line construction, street and gutter construction, ditch work, agriculture improvements, highways, commercial buildings, and recreational development. Major construction activity is expected to continue at an increased level in the Loveland, Ft. Collins, Greeley and Windsor areas in the next 20 years.

Sediment and erosion are major problems caused by construction activity. Other impacts include pollutants from pesticides, construction chemicals, cement, lime, fertilizer, oils, paints and solvents. The presence of solid waste litter, petroleum products, garbage and sanitary facilities can also produce impacts.

Overall, impacts of construction activities upon the region's water quality are minute when compared to other non-point sources of pollution (see Table 3.3-A).

3.3.6 Leachfields and Unlined Sewage Lagoons

Many individuals and communities in the region utilize leachfields and lagoon systems for wastewater disposal. Very few of the lagoons are lined to prevent seepage.

Major problems of groundwater contamination from leachfields have been noted in La Salle, Red Feather Lakes and Severance. Less critical problems occur in areas along the Big Thompson River west of Loveland, in Namaqua Hills near Loveland, in Lochbuie, in the Carma Carr area near Erie, and around Estes Park.

3.3.7 Land Disposal of Sewage Sludge

A potential surface and subsurface water pollution problem exists due to the nature and quantity of sewage sludge disposed of in the region. To date, no serious health or pollution problems resulting from this source have been identified.

3.3.8 Solid Waste Disposal

Thirteen landfill sites in the Larimer-Weld region have been analyzed. Sites in Larimer County include the Larimer County Landfill, the Estes Park Landfill and the Wellington Landfill. Sites in Weld County include the Milliken, Nunn, Eaton, Keensburg, Prospect Valley, Fort Lupton-Brighton, Erie and Longmont Landfills and the Hudson and Berthoud Transfer Stations. Private dumps were not evaluated, nor were solid waste disposal sites in eastern Weld County visited.

3.3.8.1 Larimer County

The Larimer County solid waste disposal site receives about 80% of the wasteload of Larimer County from Loveland, Ft. Collins, La Porte and the Berthoud Transfer Station. The landfill handles about 85,000 tons of waste per year. Results of a water balance analysis indicate that the Larimer County landfill should have no percolation-caused leachate.

3.3.8.2 Estes Park

The Estes Park landfill receives nearly 12,000 tons of waste material per year from the City of Estes Park, urbanized areas, recreational sites and Rocky Mountain National Park. The site also accepts septic tank wastes. The site has operational problems due to inadequate amounts of cover material and lack of fencing to prevent waste from being blown off the site.

3.3.8.3 Wellington

The Wellington landfill handles waste from the northern rural areas of Larimer County. The site is within the flood plain of Boxelder Creek. The operation and geologic characteristics of the landfill may fail to meet federal requirements for sanitary landfills.

3.3.8.4 Milliken

The Milliken landfill accepts waste from Greeley, Evans, LaSalle, Johnstown and Milliken; this comprises most of the solid waste from Weld County. The Milliken site appears to be the best operated within Weld County. Hydro-geologic characteristics of the draw on the west end of the fill should be analyzed before the site is expanded westward.

3.3.8.5 Nunn

Nunn operates a small landfill which accepts residential wastes from town residents only. The landfill lies within the flood plain of a small drainage area on loose sandy soils. The site has an ability to impact the quality of ground and surface waters of the area; however, the size of the landfill may make it undetectable.

3.3.8.6 Eaton

The Eaton landfill receives wastes of a residential and commercial nature from the towns of Pierce, Nunn, Ault, Eaton and some other areas in central Weld County. Although operation of the site is apparently good, a detailed analysis of the site should be made to evaluate the possible water quality impacts that may exist or be instigated by the operation.

3.3.8.7 Keenesburg

The Keenesburg landfill is open two days a week only to Keenesburg water users. If operational methods are improved to provide adequate litter control, the site should continue to be acceptable.

3.3.8.8 Prospect Valley

This site accepts the small volume of wastes from Prospect Valley and the surrounding farm area.

3.3.8.9 Fort Lupton-Brighton Landfill

The Fort Lupton-Brighton landfill accepts waste from Fort Lupton, Brighton, Firestone, Frederick, Dacono, Wattenburg and the surrounding farm areas. The site is located on the alluvial soils of the South Platte River less than one mile from the river. The nature of these soils and operational procedures at the dump are believed to be the cause of well pollution near Fort Lupton. This site should be evaluated from a public health standpoint and from a water quality perspective to determine its effect on health and water quality.

3.3.8.10 Erie

The Erie landfill site receives residential, commercial and industrial wastes from the general area around Erie, including Firestone, Frederick, Dacono and nearby farm operations. The site appears to be an excellent location and with increased operational levels, could provide long life without concern over possible water quality problems.

3.3.8.11 Longmont

The Longmont facility, located in Weld County, receives wastes from most of northern Boulder County. Adjacent to the landfill

are three septic tank disposal ponds, which are located over St. Vrain Creek; percolating water has easy access to this creek. A detailed site evaluation of this site is necessary to remove existing doubts about the landfill operational impacts on public health and water quality.

3.4 CHARACTERISTICS OF GOVERNMENT AGENCIES WITH A POTENTIAL 208 ROLE IN THE LARIMER-WELD AREA

This material is contained in a separate institutional inventory report.[3]

3.5 IMPLICATIONS OF POPULATION AND LAND USE PROJECTIONS

3.5.1 Triangle Area Communities

Five future land use alternatives were developed for the Greeley-Loveland-Ft. Collins triangle. In developing the alternatives,, for planning purposes, a total Larimer-Weld regional population estimate of 500,000 for the year 2000 was allocated to various geographic areas. Two land use alternatives, reflecting the commonalities and differences for the five alternatives, were selected for comparison -- the Historic Trends Alternative and the Recommended Land Use Alternative. The population distribution patterns in the urban triangle for both alternatives are shown on Figures 3.5.1-A and 3.5.1-B.

The Historic Trends Alternative projects future growth in Weld County as occurring primarily around existing communities, with most of the growth being attracted to the Greeley urban area, and with Windsor expected to grow at a rapid rate. These projections have been based on the policies in the Weld County Comprehensive Plan.

Larimer County, however, has not adopted a County-wide plan or a set of land use policies. Future growth in Larimer County has been portrayed in the Historic Trends Alternative as occurring in a dispersed manner, much of it outside existing incorporated areas as well as within expanded corporate boundaries of Loveland and Ft. Collins. This alternative projects a 20-mile urban strip between Loveland and Ft. Collins.

The Recommended Land Use Alternative protrays most growth as being focused into the three existing urban centers -- Loveland, Greeley and Ft. Collins. This alternative recommends limits to outward expansion beyond defined service areas and discourages development of new activity centers. Growth directions would be based upon a conscious attempt to develop a land use pattern which is environmentally sound, economically achievable, and fiscally responsible.

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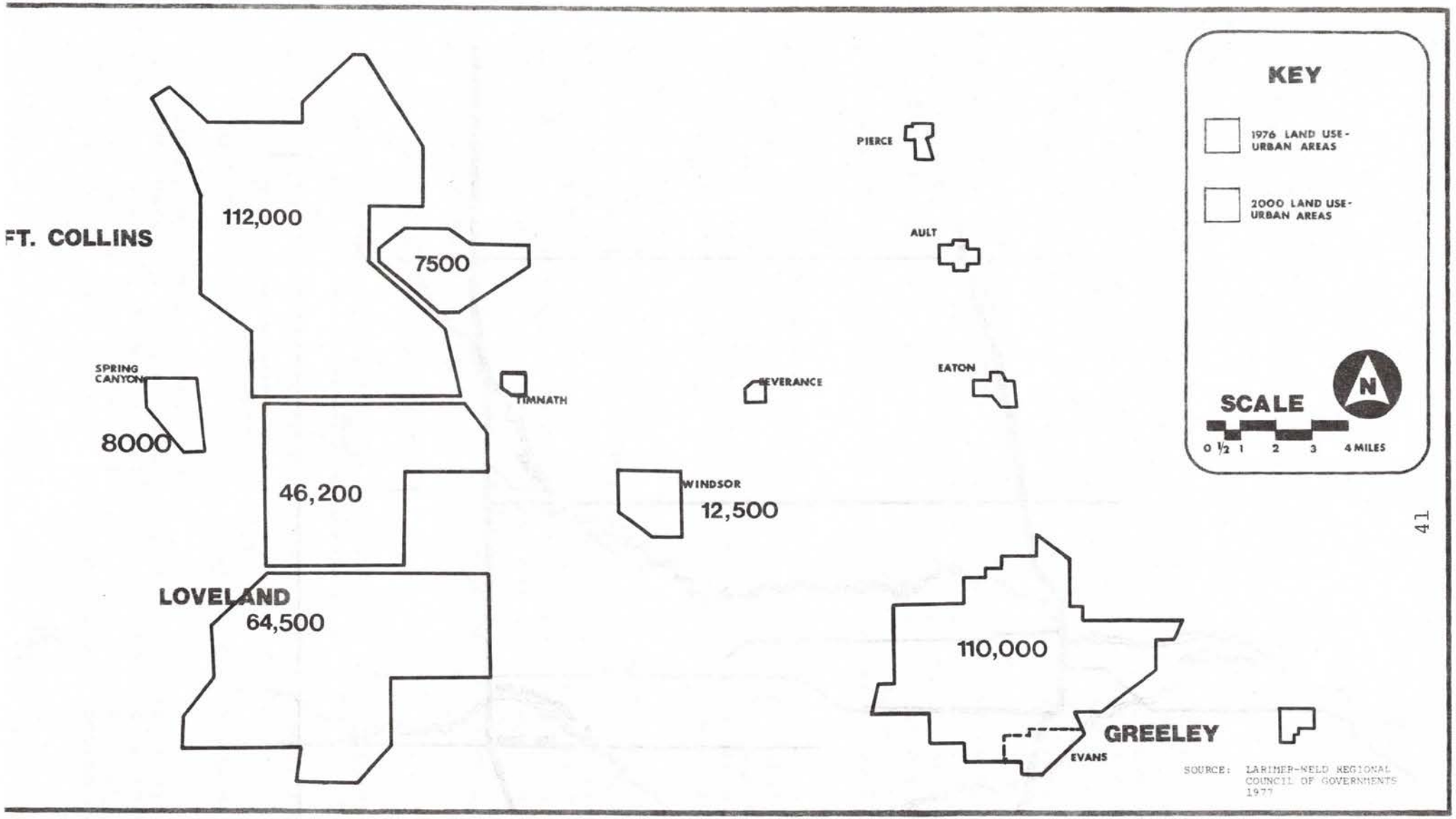
3 Briscoe, Maphis, Murray & Lamont, Inc., Institutional Inventory for 208 Functions, LWCOG, April 1977.

FIGURE 3.5.1-A



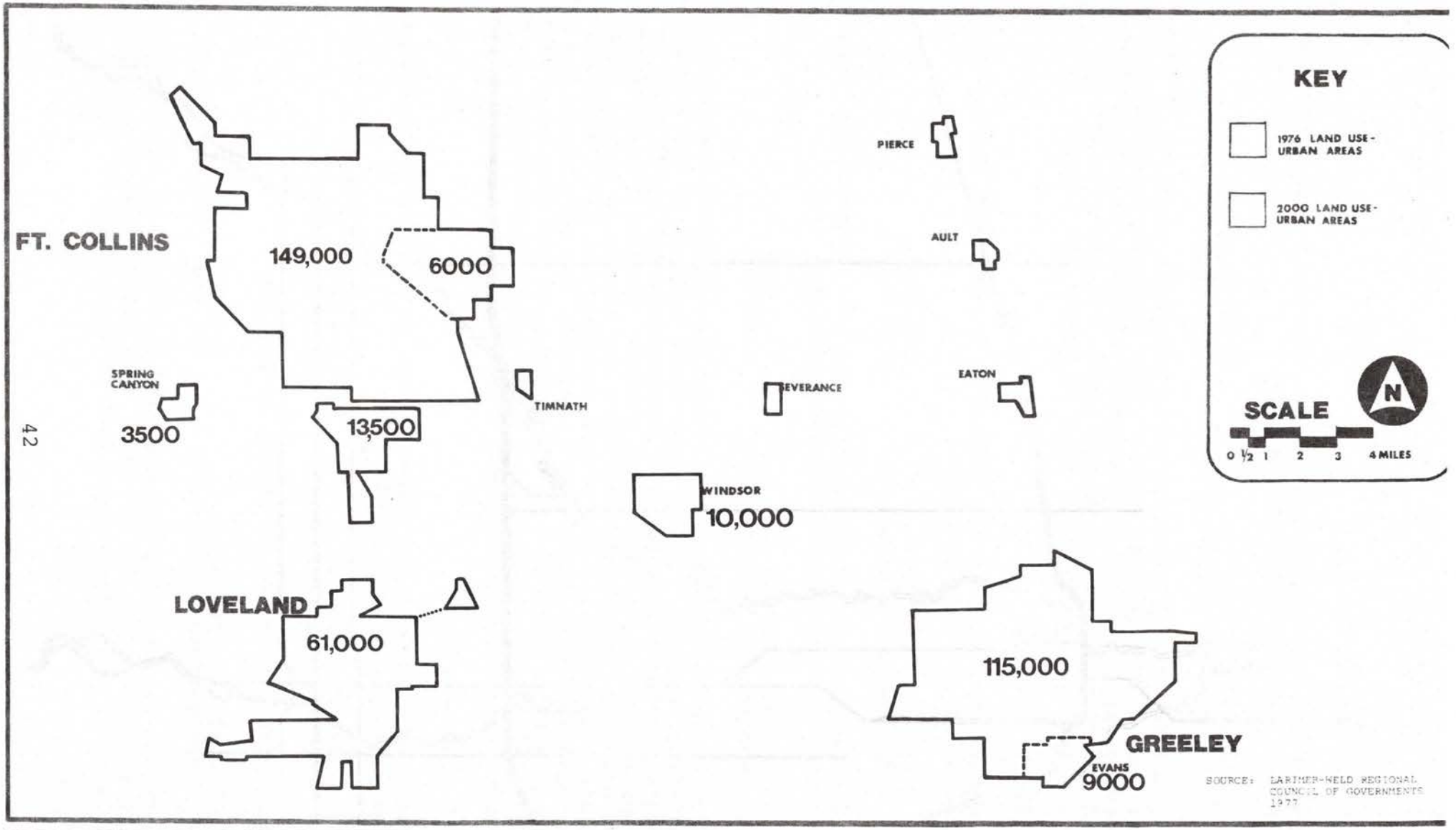
LARIMER-WELD REGIONAL COUNCIL OF GOVERNMENTS

AREAWIDE WATER QUALITY PLAN

THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH A WATER QUALITY MANAGEMENT TECHNICAL ASSISTANCE PLANNING GRANT FROM THE ENVIRONMENTAL PROTECTION AGENCY UNDER THE PROVISIONS OF SECTION 208 OF THE FEDERAL WATER POLLUTION CONTROL ACT OF 1972 (PL 92-500)

POPULATION DISTRIBUTION ALTERNATIVE (A)

FIGURE 3.5.1-B



LARIMER-WELD REGIONAL COUNCIL OF GOVERNMENTS

AREAWIDE WATER QUALITY PLAN

THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH A WATER QUALITY MANAGEMENT TECHNICAL ASSISTANCE PLANNING GRANT FROM THE ENVIRONMENTAL PROTECTION AGENCY UNDER THE PROVISIONS OF SECTION 208 OF THE FEDERAL WATER POLLUTION CONTROL ACT OF 1972 PL 92-500)

POPULATION DISTRIBUTION ALTERNATIVE (E)

3.5.1.1 Ft. Collins

The population projections for Ft. Collins for the year 2000 under the two land use alternatives are:

Historic Trends	112,000
Recommended Alternatives	149,000

Ft. Collins has an existing waste treatment capacity of 21.8 million gallons per day (mgd). This capacity is sufficient to serve a population of approximately 200,000, if infiltration and inflow problems can be corrected. If the problems are not correctable, the City will have to expand its capacity by 1985.

3.5.1.2 Greeley

Greeley population in the year 2000 is projected under the two land use alternatives to be:

Historic Trends	110,000
Recommended Alternatives	115,000

Projected wastewater flows under the two alternatives, assuming correction of infiltration/inflow problems, are:

Historic Trends	11.0 mgd
Recommended Alternatives	11.5 mgd

Greeley waste treatment facilities are currently approaching existing capacity. The Greeley-Evans area is in the process of upgrading facilities using a phasing approach which permits expansion as required to meet demand. Phasing the construction of new waste treatment facilities may result in higher total capital construction costs than constructing all facilities on a one-time construction cost. However, the phasing option allows construction to occur only as needed, and the cost of unused facilities will not be passed on to existing customers, in the event that anticipated growth does not occur.

3.5.1.3 Loveland

Under the two land use alternatives, Loveland's population in the year 2000 is projected to be:

Historic Trends	64,500
Recommended Alternative	61,000

Projected wastewater flows are as follows:

Historic Trends	6.4 mgd
Recommended Alternatives	6.1 mgd

Loveland has recently expanded and upgraded its secondary waste treatment capacity to 7.7 mgd. This capacity would be sufficient to serve a population equivalent of approximately 75,000.

3.5.1.4 Windsor

Windsor's population as projected under the two land use alternatives for the year 2000 would be:

Historic Trends	12,500
Recommended Alternatives	10,000

Projected flows in the year 2000 are estimated as follows:

Historic Trends	1.9 mgd
Recommended Alternatives	1.7 mgd

Windsor's existing plant has a capacity of 0.6 mgd. These facilities are currently at capacity as the community facilities serve Windsor, domestic wastes from the 3,200 working employees at Kodak, and emergency industrial flows from the Kodak facility. Waste treatment facilities expansion is currently needed.

3.5.1.5 South Fort Collins Sanitation District

Population in the South Fort Collins area is projected for the year 2000 as follows:

Historic Trends	47,000 [4]
Recommended Alternatives	13,500

Projected wastewater flows into the District's treatment facilities, including flows from the Spring Canyon Sanitation District, and assuming correction of infiltration/inflow problems, are:

Historic Trends	4.7 mgd
Recommended Alternatives	1.35 mgd

South Ft. Collins Sanitation District has a 1.5 mgd facility which was constructed in 1976. The District is currently extending a major trunk line to serve the Spring Canyon Sanitation District on the southwest end of Horsetooth Reservoir. This existing facility can serve an equivalent population of 15,000, and will be at capacity of 1982 if the Historic Trends alternative occurs.

3.5.1.6 Boxelder Sanitation District

Under the two land use alternatives, population in the year 2000 in the Boxelder District is projected to be:

Historic Trends	7,500
Recommended Alternatives	6,000

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4 This figure includes an estimated 17,000 population in the Spring Canyon area.

projected wastewater flows under the two alternatives are:

Historic Trends	1.0 mgd
Recommended Alternatives	0.74 mgd

Boxelder Sanitation District has a capacity of .75 mgd. This facility processes substantial flows from commercial and industrial development along U.S. Highway 14, as well as residential flows. The District's facilities would be at capacity by 1985 in the Historic Trends Alternative. Expansion of facilities to accommodate an additional capacity of .25 mgd to serve domestic and commercial flow in the area would be required. As an alternative to expansion of the Boxelder wastewater treatment plant, excess flow could be served by Fort Collins which has sufficient capacity to treat waste from the Boxelder area. Under the Recommended Alternatives, the existing Boxelder treatment plant will approximate full capacity by the year 2000.

3.5.1.7 Evans Sanitation District

Under the two land use alternatives, Evans' projected population is 9,000 for the year 2000.

Projected flow to District facilities in the year 2000 is 0.94 mgd. The existing treatment facilities have a capacity of 0.90 mgd. Current plans are to tie the Evans District's treatment facilities in with Greeley's expansion program.

3.5.1.8 Summary

The Recommended Land Use Alternative uses more of the existing secondary waste treatment capacity than does the Historic Trends Alternatives, thus requiring less additional facility construction; this alternative also minimizes the need for new interceptor sewer lines to serve scattered growth areas. Land use decisions by local governments in the two-county region will influence the degree of utilization of existing and planned treatment plants and the financial integrity of the systems.

3.5.2 Outlying Communities

Population projections for the years 1983 and 2000, existing treatment facility capacities and projected wastewater flows in 1983 and 2000 are shown for the outlying communities on Table 3.5.2.-A.

A relatively large degree of uncertainty exists in population projections for small communities. It is impossible to predict the effect of individual housing projects and whether the industry may locate in or near a small community and provide impetus for growth.

No projections have been made for individual treatment facilities which serve motels or truck centers. Expansions of such facilities are corporate decisions, beyond the scope of this investigation.

TABLE 3.5.2-A

SUMMARY OF PROJECTED POPULATION, EXISTING TREATMENT FACILITY CAPACITY AND PROJECTED WASTEWATER FLOWS IN OUTLING COMMUNITIES

	Projected Population		Existing Facility Capacity (mgd)	Projected Wastewater Flows (mgd)		Projected Year When Flow Equals Capacity
	1983	2000		1983	2000	
MUNICIPALITES						
Berthoud	4300	7000	1.65	0.43	0.70	2000+
Eaton	2900	4000	0.34	0.29	0.40	1990
Fort Lupton	5000	9000	0.29	0.85	1.50	1977
Grover	125	150	0.029	0.013	0.015	2000+
Johnstown	1600	2200	0.25	0.28	0.38	1980
La Salle	3200	4500	0.36	0.32	0.45	1988
Pierce	1500	3000	0.17	0.15	0.30	1986
Platteville	2200	3600	0.20	0.22	0.40	1981
Wellington	2300	3700	0.31	0.17	0.28	2000
SANITATION DISTRICTS						
Ault S.D.	2000	3300	0.13	0.20	0.33	1979
Erie W.S.D.	1500	1800	0.14	0.15	0.18	1980
Estes Park S.D.	2400(a)	4000(b)	0.70	NA	NA	NA
Gilcrest S.D.	700	1300	0.05(c)	0.07	0.13	1983(c)
Hill-n-Park S.D.	6500	6500	0.12	NA	0.65	1978
Hudson S.D.	1100	1500	0.05	0.11	0.15	1977

TABLE 3.5.2-A (CONT.)

	Projected Populations		Existing Facility Capacity (mgd)	Projected Wastewater Flows (mgd)		Projected Year When Flow Equals Capacity
	1983	2000		1983	2000	
SANITATION DISTRICTS (cont.)						
Keenesburg S.D.	800	1300	0.05	0.08	0.13	1977
Kersey S.D.	2100	3000	0.25	0.21	0.30	1977
Mead S.D.(d)	400	700	0.03	0.05	0.07	1977
Milliken S.D.	2000	4000	0.12	0.22	0.40	1978
Spring Canyon S.D.	2300	3500	---	0.23	0.35	2000
Tri-Area S.D.	6500	9400	0.52	0.65	0.94	1981
Upper Thompson S.D.	5000	7700	1.50	0.50 (f)	0.77	
OTHER AREAS						
Cottonwood Park			0.12			
Del Camino			0.12			
Johnson's Corner			0.05			
Lochbuie	1100	1500	0.18 (g)	0.11	0.15	2000+ (g)
Mountain Range Shadows			0.10			
Nunn (h)			(h)	NA	NA	
Pingree Park			0.01			
Ramada Inn			NA			
Red Feather/Crystal Lake	4000(e)	8800(e)	0.01	0.25	0.50	1977

TABLE 3.5.2.-A (CONT.)

	Projected Populations		Existing Facility Capacity (mgd)	Projected Wastewater Flows (mgd)		Projected Year When Flow Equals Capacity
	1983	2000		1983	2000	
OTHER AREAS (cont.)						
Riverglenn			0.029			
Severance (h)	600	800	(h)	0.03	0.08	1977
Texaco I-25			0.018			1977
Timnath (h)	500	750	(h)	0.05	0.075	
Weld Central H.S.			0.02			

FOOTNOTES:

(a) Permanent residents only; seasonal population = 6000.

(b) Permanent residents only; seasonal population = 7000.

(c) Includes institutional population and flow.

(d) Includes seasonal and tourist loads.

(e) Does not include seasonal flows.

(f) Proposed system.

(g) Areas served by individual septic tanks.

NA Data not current available.

Data for the nine municipally-operated facilities indicate that one facility -- Fort Lupton -- is already at capacity; four may reach or approach capacity in the next ten years (Johnstown, LaSalle, Pierce and Platteville); and four will not reach capacity until 1990 or beyond.

Three of the thirteen sanitation district treatment facilities are now at capacity (Hudson, Keenesburg and Mead); five will reach capacity by the early to mid-1980's (Ault, Erie, Hill-n-Park, Milliken and Tri-Area); and three - Spring Canyon, Gilcrest and Kersey, will not reach capacity until close to the year 2000. Spring Canyon flows are projected to be piped to the South Ft. Collins treatment facility. No estimate has been made for the two districts having significant tourist populations in the summer months (Estes Park and Upper Thompson).

4.0 GUIDELINES FOR INSTITUTIONAL/FINANCIAL STRUCTURES

Past efforts to achieve waste water treatment in the region have generally been uncoordinated. Individuals, industries, schools, commercial establishments, towns, cities, special districts, and counties are all in the business in various portions of the region. The range of systems runs from individual septic tanks to advance waste water treatment (AWT). Funding for public systems is derived from a wide variety of federal and state agencies with some local participation. There are privately-financed individual systems. Sources of income range from the mill levy to user charges to general revenue funds derived from a variety of sources. Some public systems charge proportionately to benefit; others charge flat rates. Some facilities are operated by trained staff and perform as designed; others are installed and then marginally maintained and operated, functioning ineffectively. Coordination and complementary planning have been rare. Each agency has essentially pursued its own course regarding facility planning, design, funding, construction and operation. Little correlation between land use planning and utility service has occurred. Only in the larger cities have utility plans and land use plans begun to complement each other. Adverse effects on the financial stability of many small systems have occurred as growth proceeded below optimistic projections.

Even so, the present system of providing waste water treatment would be acceptable if efficient, effective areawide treatment of waste water were the result. But the record does not reflect this. There are polluted streams, facilities that are over capacity, facilities that are operating under their capacity, two plants where one would be sufficient and many other problems, not the least of is the cost to the user and taxpayer for inefficient operations and systems.

The Clean Water Act attempts to rectify this ad hoc approach and to improve performance by requiring plans that will coordinate efforts, set priorities and allocate grant money on a regional basis. The Act provides for local decision makers to determine those institutions and agencies that will implement the plans. Coordination is essential between local governments as water pollution transcends political boundaries. If implementation is to be accomplished, responsibilities must be assigned and the powers to effectuate the law must be available to the responsible agency.

The institutional arrangements necessary to implement the

technical plan will be strongly influenced by the Act's legal requirements, principles of good government and financial considerations. While the legal aspects are primarily derived from the Act, the good government practices result from attitudes and accepted practices in the region as well as accepted principals of good government. The financial guidelines are based on the law and good utility management practice. In this section, each of these factors is discussed, and for each, implications for the institutional/financial implementation structures identified.

4.1 LEGAL REQUIREMENTS: PLANNING, MANAGEMENT, OPERATIONS AND REGULATION

The institutional/financial requirements of the 208 implementation program are established by legal, technical, financial and political forces. Specifics of the Clean Water Act (PL-92-500) generally outline the tasks the management system must carry out. The Act states that the minimum content of the 208 plan must contain the following elements:[1]

> "(A) the identification of treatment works necessary to meet the anticipated municipal and industrial waste treatment needs of the area over a twenty-year period, annually updated (including an analysis of alternative waste treatment systems), including any requirements for the acquisition of land for treatment purposes; the necessary waste water collection and urban storm water runoff systems; and a program to provide the necessary financial arrangements for the development of such treatment works;
>
> "(B) the establishment of construction priorities for such treatment works and time schedules for the initiation and completion of all treatment works;
>
> "(C) the establishment of a regulatory program to --
>
> "(i) implement the waste treatment management requirements of section 201(c),
>
> "(ii) regulate the location, modification, and construction of any facilities within such area which may result in any discharge in such area, and
>
> "(iii) assure that any industrial or commercial wastes discharged into any treatment works in such area meet applicable pretreatment requirements;
>
> "(D) the identification of those agencies necessary to construct, operate, and maintain all facilities required by the plan and otherwise to carry out the plan;
>
> "(E) the identification of the measures necessary to carry out the plan (including financing), the

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[1] PL-92-500, Sec. 208(b)(2)

period of time necessary carry out the plan, the costs of carrying out the plan within such time, and the economic, social, and environmental impact of carrying out the plan within such time;

"(F) a process to (i) identify, if appropriate, agriculturally and silviculturally related nonpoint sources of pollution, including runoff from manure disposal areas, and from land used for livestock and crop production, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

"(G) a process to (i) identify, if appropriate, mine-related sources of pollution including new, current and abandoned surface and underground mine runoff, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

"(H) a process to (i) identify construction activity related sources of pollution, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

"(I) a process to (i) identify, if appropriate, salt water intrusion into rivers, lakes, and estuaries resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, ground water extraction, and diversion, and (ii) set forth procedures and methods to control such intrusion to the extent feasible where such procedures and methods are otherwise a part of the waste treatment management plan;

"(J) a process to control the disposition of all residual waste generated in such area which could affect water quality; and

"(K) a process to control the disposal of pollutants on land or in subsurface excavations within such area to protect ground and surface water quality.

Consistent with the mandate of the Act, a management system to carry out the 208 plan can take many forms. Indeed, a great deal of local latitude is permitted to allow creation of a system specifically designed for the study area. However, whatever form the system may take, it should have certain basic functional elements to deal with the specific tasks required to implement the plan. The law (PL-92-500) and the federal regulations Part (131) outline the general institutional structure to plan and implement a water quality system for the Larimer-Weld region. The four functions of planning, management, operations and regulation are all specifically identified in the law or the regulations. With this authority, it is necessary to review the four functions for the Larimer-Weld region based upon (1) knowledge of the local scene, (2) external forces at work that affect program implementation, and (3) general good government practices.

4.1.1 Continuous Planning

Once the initial 208 plan is prepared and the adoption process complete ((1) Larimer-Weld Council of Governments, (2) State of Colorado, (3) Federal E.P.A.), the agency designated in the plan as the continuing planning agency will have certain responsibilities and powers.

- The approved areawide plan must be anually reviewed, evaluated, updated and recertified to the Governor.

- Any proposed changes by the management agencies that could have an effect upon water quality and the 208 plan (e.g., expansion or contraction of service area boundaries, addition or deletion of treatment facilities or changes in management areas) must be approved by the planning agency before they can become part of the 208 plan.

- A continuous water pollution control planning process of implementation will necessitate a variety of additional tasks. These include:

  - Completing the planning job for non-point sources that was done to various degrees for different categories during the initial 208 planning program.

  - Providing assistance to management agencies in carrying out their activities.

  - Monitoring, evaluating and suggesting corrective actions, if necessary, to assure that the implementation aspects of the 208 plan are being carried out.

  - Assuring that the 208 pollution abatement activities of the plan are integrated in a meaningful way with the other urban and rural activities of the County, e.g., land use, land use development controls, solid waste management, water resources and air quality.

  - Integrating the areawide 208 plan activities with neighboring 208 planning agencies.

  - Providing a liaison for information on 208-related activities and regulations between the E.P.A., state management agencies and the public.

These powers and responsibilities vested in the planning agency derive from the following provisions of PL 92-500.[2]

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[2] PL 92-500, Sec. 208(d).

- Changes to the original 208 plan may occur only when recommended by the areawide planning agency to the Governor and ultimately approved by him and the E.P.A. as a plan revision.

- Liquid waste generators may not discharge wastes without a NPDES permit, and no NPDES discharge permit may be issued to any point source discharger that is not in conformance with the 208 plan.

- Only designated management agencies and only treatment works developed as a part of the 208 plan are eligible for federal EPA construction grant assistance.

4.1.2 Management

The law sets the minimum requirements for the management agency.[3] It does not specifically distinguish between the "management" function and the "operations" function. Yet it is clear that the management agency has responsibilities beyond day-to-day utility management. In fact, it has the basic responsibility to implement the 208 plan, but may or may not directly conduct the operations function (and/or certain other of its mandated functions). For example, a qualified city might be a management agency and also perform the operations function. Yet, in a broader sense, the management agency might delegate the operations tasks to another agency, while retaining overall responsibility for the tasks' performance.

Recognizing that optimal institutional and financial arrangements may differ, we distinguish management agencies who are responsible to carry out the areawide plan for pollutant categories as designated (e.g., municipal, industrial, non-point and urban runoff) from operating agencies who are the "hands on" people actually operating the facilities and programs. To be sure, in some cases the management agency and the operational agency may be one and the same. In other cases, operational agencies cannot be management agencies because they cannot meet the requirements of the 208 law.

Section 208(c)(2) of the law specifies management agencies must be capable of at least the following:

> "(A) to carry out appropriate portions of an areawide waste treatment management plan developed under subsection (b) of this section;
>
> "(B) to manage effectively waste treatment works and related facilities serving such area in conformance with any plan required by subsection (b) of this section;

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[3] PL 92-500, Sec. 208(c)

"(C) directly or by contract, to design and construct new works, and to operate and maintain new and existing works as required by any plan developed pursuant to subsection (b) of this section;

"(D) to accept and utilize grants, or other funds from any source, for waste treatment management purposes;

"(E) to raise revenues, including the assessment of waste treatment charges;

"(F) to incur short- and long-term indebtedness;

"(G) to assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs;

"(H) to refuse to receive any wastes from any municipality or subdivision thereof, which does not comply with any provisions of an approved plan under this section applicable to such area; and

"(I) to accept for treatment industrial wastes.

In addition, management agencies must be capable of adopting and implementing systems for industrial cost recovery and user charges per Section 204(b) of the law, and to obtain and possess NPDES permits per Section 402(a).

PL 92-500 and federal regulations Part 131 require planning agency and management system responsibilities to cover the entire geographic boundaries of the designated planning area (i.e., Larimer and Weld Counties). The law and the regulations also require that management agencies possess certain mandatory powers for the geographic areas for which they are assigned responsibilities. Colorado state law limits the powers granted to local and regional agencies to specific boundaries. The requirements of Pl 92-500, together with the limited capabilities of the candidate institutions, dictate careful matching of the team of management agencies to assure full geographic coverage by entities that possess sufficient powers to carry out the required management tasks.

In addition, notices contained in the September 6, 1977, Federal Register set forth the requirement that 208 plans include indications of the designated management agencies' willingness to carry out such responsibilities.

4.1.3 Operations

The operations functions may be performed by the management agency. On the other hand, they might be separated from the management function in an institutional sense so as to be conducted by another agency that would assume the posture of an operating division of the management agency. In such a case, operations agencies could have a great deal of autonomy, As a practical matter, in terms of municipal designation, there

for example, in terms of plant operations, program implementation, or BMP activities. Yet they would always be subject to supervision, plan coordination, fiscal guidance, and 208 management control of the management agency.

As a practical matter, in terms of municipal designation, there will be few, if any, cases where cities with treatment facilities are not assigned both management and operational functions. The separation of the two functions is much more likely in the areas of agriculture or special districts where general purpose government powers do not exist.

4.1.4 Regulation

Rules and regulations published by E.P.A. in the Federal Register, Vol. 40, No. 230, November 28, 1975, Part 131, describe the details of the responsibilities of planning and management agencies. Included in the definition of management agency responsibilities is the identification of operating agencies and regulatory agencies. Details of the requirements for regulatory agencies are also contained in this section.

The regulatory functions fall into two major subcategories, the first being the administration of the 402 permit program for all point discharges.[4] This responsibility is now assigned by law to the state water quality control agency. As a practical matter, this means the state, in conjunction with its operating partner and subordinate, the county health departments will be the responsible regulatory agency (system).

The second category of regulatory activities deals with land use and land management control. While these activities may not be directly controlled by the 208 program, they will have significant impact on an area's ability to move toward the clean water goal. The law's regulations specifically require a tie between the region's water quality goals and the region's land management process.[5] This category of regulatory activities reinforces the concept that water quality activities are deeply tied to most of the other activities of local government and cannot be effectively dealt with in a vacuum. Examples of regulatory activities in this category are as follows:

- Zoning
- Flood plain zoning and regulations
- Environmental performance zoning
- Subdivision regulations
- P.U.D.'s
- Housing codes

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[4] PL 92-500, Sec. 402(a)

[5] E.P.A. Regulations, Part 131.11(N).

- Building codes
- Construction permits
- Hillside development requirements
- Runoff control and management
- Drainage controls - on site
- Grading regulations
- Soil erosion and sediment control ordinances
- Solid waste control ordinances
- Septic tank ordinances
- Taxation policies
- Public investment policies

In time, it is likely that the costs of facilities, advancement of technology and the reduction of streams' abilities to absorb expanding amounts of pollutants, will place greater and greater emphasis on utilization of land use and land management techniques to reduce pollution quantities and undesirable characteristics. Coordination of these efforts must cut across political boundaries to be effective. Drainage, for example, follows natural, not administrative, boundary lines.

4.2 ADDITIONAL REQUIREMENTS FOR SUCCESSFUL 208 AGENCIES

As noted in Section 4.1 above, the agency or agencies that will be assigned the ongoing implementation functions must meet the requirements of PL 92-500. But in addition, they should exhibit a number of other characteristics that will support implementation efforts.

Not all of the selected agencies are required to have all of the following capabilities. See Section 4.5 of this report for a discussion of the relative importance of the various capabilities and characteristics by agency function (planning, management, operations and regulation). The characteristics discussed below should be viewed as guidelines to be weighed and considered in the selection of the most appropriate institutional arrangement for the Larimer-Weld 208 implementation program. Requirements of a financial nature are discussed in Section 4.3 of the report, below.

4.2.1 Political Acceptance

The nature of this particular region -- its people, history, economy, political attitudes and settlement patterns -- dictate certain elements. For instance, if the institutions are to be potentially acceptable, they must be perceived as:

- Politically accountable to the region's citizens through the ballot box;
- Subject to control executed closest to home -- preferably by people who live in the area;
- Exhibiting a highly visible profile. The actions and deliberations must be accessable on a day-to-day basis;

- Sensitive to the region's issues and concerns,
- Capable of carrying out their decisions;
- Capable of being sensitive to the need to hold down local taxes and user fees; and
- An existing agency, new layers of government or agencies being unpopular.

4.2.2 Organizational Effectiveness

Good government or business practices require the agencies to generally have:

- Central responsibility to avoid problems of fragmentation and inefficiency, unclear responsibility assignment, coordination and conflicting goals or philosophies of directors or legislative leaders;
- Administrative resources and skills to assure the efforts and funds are spent for a high return;
- Adequate staff (or the ability to obtain and retain adequate staff) to assure the implementation and continued success of the program;
- A perpetual nature. The future of the agency should be viewed as a continuous one;
- The ability to function across political boundaries by right and/or the capability of entering into formal agreements to span political boundaries;
- The ability to delegate and/or assume responsibilities via contractual arrangements with other entities;
- The ability to deal with local situations as well as understand and deal effectively with state and federal agencies representing local interests in waste water control matters;
- Exhibit a commitment to the successful achievement of the program. Without belief in the goals, a lot of money and effort will be wasted for little gain;
- An ability to integrate water quality concerns with water resource development and use concerns;
- An ability to provide technical assistance;
- Local representation in a continued policy capacity as the program progresses; and
- The ability to consolidate systems whenever feasible.

4.2.3 Powers Implied by the Clean Water Act

The law implies several additional needs for the prospective agencies:

- Police powers to require conformance with necessary regulations to accomplish the areawide plan;
- Power to accept and/or reject waste water if a user fails to meet the plan's standards;
- Ability to assure design, construction and operation of treatment works are accomplished in accord with the plan;
- Ability to make enforceable decisions about treatment facility operation and maintenance;
- Ability to do sub-basin planning and coordination;
- Ability to integrate waste water treatment planning with land use planning at the regional level;
- Ability to continually monitor the progress of the areawide plan and update it as necessary;
- Ability to maintain facilities output and carry out permit enforcement;
- Testing, sampling and laboratory capabilities to assure facilities are performing as designed;
- Ability to coordinate waste water areawide planning with other federally-funded areawide programs such as transportation, solid waste, air pollution and land use 701 planning;
- Ability to set construction and funding priorities on a region-wide basis to assure the most effective expenditures of funds to achieve the minimum goals of the law;
- Ability to control point and non-point source pollution through regulatory control over the location or manner of development of generators; and
- Powers to regulate the location, control and construction of any discharge facilities within the area.

4.3 FINANCIAL REQUIREMENTS FOR IMPLEMENTATION AGENCIES

The agencies that will perform the 208 implementation functions of planning, management, operations and regulation will need to possess various financial resources and abilities. Several of these requirements are specifically identified, or at least implied in the language of the law and regulations thereto.

4.3.1 Requirements Implied By the Act

Section 208(b)(2) of the Act suggests a number of financial capabilities that will be required of the agencies implementing the plan. Among this section's important provisions (with respect to financial capabilities of implementing agencies) are the requirements for annual updating of a twenty-year facilities program together with the necessary financial arrangements; scheduling initiation and completion of treatment works (including financing); regulation activities per 208(b)(2)(C); measures to be used by agencies to carry out the plan (including financing); procedures and methods to control to the extent feasible various non-point pollution sources.

These legal requirements suggest the need for implementation agencies that possess considerable financial skills and abilities. Of particular importance will be:

- Ability to assess the financial effects of proposed changes in the plan;
- Ability to obtain and interpret financial information reflecting the status of the region's agencies involved in 208 plan implementation;
- Ability to coordinate and resolve conflicts in various agencies' individual financial plans as they relate to construction schedules;
- Ability to utilize a broad range of financial tools as incentives to support regulatory efforts;
- Ability to fund regulatory efforts;
- Ability to utilize a variety of revenue measures to provide funding for construction, operations and program support activities for all aspects of the plan;
- Ability to utilize financial measures and to raise funds to support efforts to control non-point sources.

Section 208(c)(2) suggests further requirements. Here the focus is on the tasks specified for the management agencies. Having primary responsibility for plan implementation, these agencies will need the broadest financial skills. In addition to those noted above (excepting regulatory-related), management agencies must have authority to:

- Accept and utilize grants, or other funds from any source, for waste management purposes (208(c)(2)(D));
- Raise revenues, including the assessment of waste treatment charges (208(c)(2)(E));

- Incur short- and long-range indebtedness (208(c)(2)(F));
- Assure each participating community pays its proportionate share of treatment costs (208(c)(2)(G)).

The requirements of the Act clearly favor the designation of general purpose local governments as management agencies. They have traditionally been effective in obtaining grant funds, and more importantly, in Colorado, have by far the broadest range of options for raising revenues. Such options are typically under local control (at most requiring a vote of the electorate), involving no special state legislative action. The ability to raise debt funds suggests the agency should have alternatives available (revenue bonds, general obligation bonds, general improvement bonds, etc.), a good credit rating/strong tax base, and experience in debt financing.

Sections 204(b)(1)(A) and (B) indicate that construction grant eligibility is dependent on compliance with the user charge and industrial cost recovery regulations. These requirements suggest the need for institutional arrangements that can avoid the traditional use of ad valorem taxes for wastewater utility financing. This in turn suggests reliance on agencies that are not dependent on ad valorem taxes to repay past indebtedness.

4.3.2 Financial Requirements of Program Implementation

The Clean Water Act cites several important financial qualifications of the implementing agencies. In view of the magnitude and significance of the program, the need for highly professional financial management, and for a broad range of financial opportunities is obvious. Financial planning, decision making regarding financial alternatives, revenue system administration, debt financing, investment management, accounting and control, capital programming and annual budgeting, auditing, and other skills and experience will be required. Managing the program's financial aspects will itself be a major program. Some particularly important items should be highlighted:

- Experience with large scale, user-fee oriented, enterprise fund programs is highly desirable for the management agency;
- Institutional arrangements should strongly support other program highlights with its financial policies (fees as regulatory incentives, program beneficiary pays, etc.);
- There should be financial alternatives for the implementing agencies aside from total dependence on state and federal grants;
- Implementation of a true regional plan must not be allowed to stumble on the present myriad of local financial commitments;

. Financial responsibility to the local electorate will be the best check on program value (in relation to costs) and efficiency in implementation. Agencies with a high degree of political responsibility are indicated.

4.4 POLICY AND PROGRAM REQUIREMENTS

4.4.1 Land Use Management

Arguments have been made almost from the beginning that the Federal Water Pollution Control Act, Section 208, was really a land use management act in disguise. E.P.A. and others have argued otherwise. They go on to say that if federal land use management was necessary, it should not come through the "back door" of a pollution abatement/facility planning piece of legislation. Nobody argues, however, that land use management does play a significant part in any pollution abatement program that is designed to meet the goals of the law.

Land management decisions have direct and significant impact upon waste water treatment facilities, as well as direct and indirect impact upon many forms of non-point source pollutants. Pollutants generated from urban runoff sources are a good example of a fairly direct land use/pollutant relationship. Table 4.4.1-A shows, by example, the importance of future land uses in relation to the location of existing facilities. The table illustrates that following historic population trends creates the need for 3.2 mgd treatment capacity in the South Fort Collins area during the planning period, even through a greater amount of excess capacity exists in the Fort Collins plants. Implementing land use controls to influence location patterns would completely eliminate the need for additional plant capacity in this area through 2000.

The Larimer-Weld 208 program will need to keep constantly alert for water pollution problems that have significant land use considerations. When these situations are discovered for a specific area and/or for a specific pollutant, action will be called for. The action in most cases will be jointly between the planning agency with overall responsibility for program coordination and area wide planning, and the management agency for the specific area in question. It is the management agency that has the responsibility of implementing the 208 plan and, most importantly, has the land use powers necessary to do something about a problem if land use management related actions are required.

The Larimer-Weld 208 program is not a land use program. But it does have specific applications of land use powers in certain specific cases and as an absolute necessity if an optimum pollution program is to be achieved. General purpose local governments (cities, towns and counties) are the only local agencies with these powers. In the absence of local governments taking on this task, the State of Colorado is the only other choice available.

TABLE 4.4.1-A

WASTEWATER TREATMENT CAPACITIES
AND PROJECTED NEEDS

	Column A	Column B		Column C	
	Existing Plant	Flow in Year 2000[1] (million gallons/day mgd)		Year Secondary Treatment Capacity Exceeded or Excess Capacity by Year 2000[2]	
Community	Capacity (mgd)	Consultant's Recommended	Historic Trends	Consultant's Recommended	Historic Trends
Ft. Collins	21.80	15.00	11.20	6.8 excess[5]	10.6 excess
Loveland	7.70	6.10	6.40	1.6 excess	1.3 excess
Boxelder S.D.	0.75	1.00	.74	1985	at capacity by 2000
S. Fort Collins[6] S.D. (including Spring Canyon S.D.)	1.50	1.35	4.70	at capacity by 2000	1982
Evans S.D.[3]	0.90	.94	.94	1998	1998
Greeley[4]	6.00	11.50	11.00	at capacity by 2000	at capacity by 2000
Windsor[2]	0.60	1.70	1.90	1977	1977

1 Assumes infiltration/inflow problems are corrected for areas where applicable.

2 Straight line projections for growth assumed in determining expansion dates.

3 Facilities planning for this area includes tie-in to Greeley.

4 To be upgraded in 4 mgd increments now and in 1989 with an additional 8 mgd expansion anticipated in 1995.

5 Flows include .67 mgd domestic flow from Kodak employees.

6 Flows from Spring Canyon Service Area included.

7 South Fort Collins Sanitation District has expansion capability to 3.0 mgd. This would advance exceeded capacity date to 1991.

Source: Larimer-Weld Council of Governments, Impacts of Land Use Alternatives On Wastewater Treatment Facilities, Fort Collins, Greeley, Loveland Triangle, June, 1977.

4.4.2 The Urban Service Area Concept

In order to meet the Act's requirements and have the capability of implementing the technical plan, land use planning and control must be central concerns. Where areas of domain can be adequately defined, general purpose governments might carry out this responsibility. The alternatives are state land use control (which has been fought against at the state legislature almost annually by cities and counties) or the creation of a new functional agency at the regional level, again an idea that in this part of the country has been severaly criticized by local governments.

The purpose of creating an urban service area is to define the area of responsibility or area of domain for planning and service purposes. For these purposes, the legal division of responsibility which is determined by the city limit line is usually inappropriate. City limits are administrative boundaries with little permanence and no natural basis for their location. It is reasonable to assume that urban development and densities will locate in the vicinity of urban centers and their resultant need for urban level of services will continue to be met by cities and towns. In Colorado, the county's role traditionally has been to serve the minimal rural needs and to avoid the urban service business. Pressures to avoid tax increases, staff and new responsibilities argues for a continuation of this role. Every county which has allowed scattered urban development has been subject to increased budget, staff and service demands (from dog catchers to sheriff's patrols). Cities are also strongly opposed to counties entering the urban service business. Double taxation concerns drive this attitude.

Because there are no laws in Colorado which permit extraterritorial land use controls to cities and towns, there is a natural area of conflict which develops around every growing community. The urban center provides the basis or attraction for new growth, most of which occurs inside the city limits. However, there is always a portion of development which locates in the fringe area outside the city limits but in close proximity. This occurs for a combination of reasons; cost of land, development standards, availability of land for development or desire of the buyer for a "rural" setting. Eventually, the growth of the city envelops most of this fringe development. When it does, conflicts occur over source of continued service, development standards, debt incurred for services prior to annexation, creation of limited purpose agencies which become self perpetuating, conflicting community goals, etc. Long-range planning of physical systems and fiscal programs are difficult both in the city as well as outside the city because of shifts in tax base via annexation or land use changes. Sewer utilities require 10-20 year projections to properly size interceptor lines and treatment plants and to spread debt over a reasonable time period to bring payments within local capacities. The urban services area concept seeks to reduce these conflicts and permit long-range system planning to occur with reasonable assurance of land use support.

Delineation of an urban service area should be the mutual responsibility of the city and the county. Other factors besides sewer service must be considered in defining the area. How much land to include should be based on:

- Local desires as to the size and character of the community;
- Ability and willingness to provide or make available adequate and economical water, sewer, police and fire protection and other urban services;
- Housing needs by type, quantity and impact expected by the projected population growth;
- School needs and impact;
- Natural and manmade barriers to economical expansion of urban areas or service within urban areas;
- Eliminating or controlling further urbanization in areas where such urbanization would be hazardous because of geological, climatic or topographic conditions or to preserve natural open space areas; and
- Regional goals to preserve the agricultural economy by preserving prime agricultural land.

The size of the service area will vary with each community and in some cases, where growth is not anticipated, it may be determined on the basis of the location of existing facilities.

Once the area had been defined, the core city in the service area must develop -- and the county approve -- a comprehensive land use plan, service plans indicating location and level of service, service standards, and priorities for extension or phasing of services, and a capital improvements plan. Where other communities or districts are contained in the service area, they too must be involved in the creation and review of the plans. It is unacceptable for the core city to unilaterally develop the plans and bear the cost and burden of doing so.

It is also unacceptable for the core city to unilaterally plan, design and move toward implementation of a program that would bring financial disaster and/or service inadequacies to the customers and/or owners of an existing special district system or a small community, unless very unusual circumstances exist. It is for this reason that an area of domain determination (service area boundary) is a decision requiring considerate imput from all parties to be impacted by the decision.

In the Larimer-Weld 208 program, service area boundaries are of particular interest because of sewer and water quality related issues. The boundaries, however, must not be decided

upon from waste water reasons alone. Water, schools, police protection, etc. must be factored into the considerations if the service area concept, in its broadest terms, is to function effectively and bring least cost, total urban services to the citizens of the area in a rational fashion.

4.4.3 Pollution Control Financing

The costs of pollution control programs should generally be imposed on the parties who are in a position to change the quantity of pollutants produced. Requiring the polluter to pay for cleanup is not so much a measure that seeks equity, but more an effort to encourage the polluter to consider the most economical way to deal with the problem. Public cleanup is one approach. It costs a certain amount. If the polluter is made to pay on the basis of how much is contributed into the public system, there is an incentive to cut down the discharge (perhaps by pretreatment, conservation, or substitution of technologies) when the costs of doing so are less than the costs of public cleanup (charged to the polluter). This leads to the lowest cost system of producing and eliminating pollutants. This philosophy supports the Act's requirements for user charges and industrial cost recovery. It also suggests financing regulatory programs with fees and fines.

On the other hand, this approach should be tempered by recognizing that, as an equity matter, program beneficiaries should also be assessed some program costs. Also a factor in cost distribution is the need to respect the economic and industrial base of a region. In some cases, local resources could simply not pay for pollution cleanup without destroying the region's industry.

4.4.4 Local Control and Local Responsibility

A basic concern is to keep local elected officials in the dominating roles of the 208 program. There will be a 208 program either administered locally or at the state level. Experience with efforts to increase state controls over local land use decisions, local officials' comments and area residents' repeatedly expressed desires support this approach. The difficulty is to organize a previously ad hoc approach to providing a basic service. Whereas relationship of utility development decisions to other development decisions was sporatic and the counties essentially viewed their involvement as minimal, the 208 program dictates that there will be changes. It is believed that acceptance, understanding and more effective implementation can occur by keeping the changes within the region and structuring heretofore informal relationships, but at a level directly sensitive to internal regional concerns -- social, cultural and economic. Local governments with police powers must be used to implement the program.

4.4.5 Maximum Uses of Existing Programs and Service Structures

While local government is preferred over higher level of government,

and existing government is preferred over new government institutions, the same is true of programs and administrative agencies. Rather than create new regulatory or funding programs, it is desirable to amend or adapt existing ones to the water quality issues. For example, subdivision regulations are known and accepted, while an Environmental Impact Ordinance is new. Rather than create a new review body and regulatory controls and procedures to deal with water quality issues as affected by land development practices, it is recommended that the concerns be integrated into the currently used tools.

4.4.6 Mandatory Versus Voluntary Compliance

Such requirements already exist for point source municipal and industrial dischargers. It will be necessary to require mandatory compliance for all sources at such time as the problems are clearly stated; it is shown to be cost effective to correct them; and solutions are identified, and other polluters are taking steps to control their actions. Incentives are helpful particularly in the early stages of implementation, but past experiences at federal, state and local levels have demonstrated mandatory compliance for the few is the only alternative if the total goals are to be achieved.

4.5 IMPORTANCE OF AGENCY REQUIREMENTS BY IMPLEMENTATION FUNCTION

The various agencies that will be assigned the ongoing implementation functions will have to have varying capabilities and capacities based upon the task they are assigned. The evaluative criteria used in screening candidate agencies or in considering the formation of new agencies, are based upon a combination of requirements in the federal law and fundamental requirements for good government. See the preceding Sections 4.1 through 4.4 of this report.

The characteristics that are desirable for the various roles or agencies are contained in the following table. This is used primarily in matching agencies with management system tasks.

TABLE 4.5-A

GUIDELINES FOR AGENCY ASSESSMENT
TO PERFORM I.F. FUNCTIONS IN 208 PROGRAM

FUNCTIONAL ACTIVITIES					
PLANNING	MANAGEMENT	OPERATIONAL	REGULATORY		GUIDELINES
X	X	X	X	1.	Political accountability
X	X	X	X	2.	Political acceptability to citizens
X	X	X		3.	Locally elected responsible officials
X	X	X		4.	High visibility at local level
X	X	X		5.	Close to constituents (sensitive to day-to-day issues)
X	X	X	X	6.	Central responsibility assignment
X	X			7.	Commitment to program goals
X	X	X	X	8.	Perpetual (continuous) in nature
X	X	X	X	9.	Administrative accountability and efficiency
X	X	X	X	10.	Adequate staff or ability to obtain
X	X	X	X	11.	An existing agency
	X			12.	Capacity to do sub-area (sub-basin) planning
X				13.	Capacity to do areawide planning
X	X			14.	Ability to function in a broad range of public works and citizen service activities
X	X	X	X	15.	Ability to function across political boundaries
X	X			16.	Ability to integrate water resource use and quality concerns

TABLE 4.5-A (Continued)

FUNCTIONAL ACTIVITIES					
PLANNING	MANAGEMENT	OPERATIONAL	REGULATORY		GUIDELINES
X	X			17.	Authority to require coordination if necessary
X	X			18.	Ability to insure integration of waste water concerns into comprehensive service needs of area
X	X	X	X	19.	Possess effective coordinative capabilities with other agencies
X				20.	Ability to coordinate waste water planning with other federal programs
X	X	X	X	21.	Ability to contract with other entities
X				22.	Ability to continually monitor and update areawide plans
X	X	X		23.	Ability to assure conformance with 208 plan
X	X	X	X	24.	Ability to provide technical assistance
	X	X		25.	Ability to assure design, construction and operation of treatment works
X	X	X		26.	Ability to set construction priorities
	X	X		27.	Ability to maintain facilities output
	X	X		28.	Power to accept and/or reject wastes from any source
	X			29.	Ability to carry out the plan
	X	X		30.	Authority to acquire land for treatment
X	X	X		31.	Ability to make enforceable decisions about treatment works technical matters

TABLE 4.5-A (Continued)

FUNCTIONAL ACTIVITIES					
PLANNING	MANAGEMENT	OPERATIONAL	REGULATORY		GUIDELINES
	X	X		32.	Ability to assure pretreatment requirements
X	X			33.	Ability to function in a broad range of land use related activities
	X			34.	Ability to regulate location of pollution generators
	X	X	X	35.	Police power
			X	36.	Facility monitoring, regulation and permit enforcement
		X	X	37.	Testing, sampling and laboratory capabilities
			X	38.	Ability to assess penalties
X	X	X	X	39.	Adequate, self controlled financial capacity
X	X	X	X	40.	Ability to understand economic impacts of plan elements and changes
X	X	X		41.	Ability to set funding priorities
	X	X		42.	Ability to assure that users pay their share of costs
	X	X		43.	Authority to charge fees, tax and raise revenues
	X	X		44.	Authority to incur short- and long-range indebtedness
	X	X		45.	Ability to retire existing debts
X	X	X		46.	Authority to accept and utilize grants
	X	X		47.	Capacity to assure proportional cost sharing

TABLE 4.5-A (Continued)

FUNCTIONAL ACTIVITIES					
PLANNING	MANAGEMENT	OPERATIONAL	REGULATORY		GUIDELINES
	X	X		48.	Capable of holding down local taxes and user fees
	X	X		49.	Ability to sustain financial needs
	X	X		50.	Ability of operating agencies to bear implementation costs
X	X	X	X	51.	Ability to obtain and interpret financial information
	X			52.	Ability to coordinate and resolve conflicts between individual financial plans relative to construction schedules
			X	53.	Ability to fund regulatory efforts
X	X	X	X	54.	Ability to use a broad range of revenue measures to support the program
X	X	X	X	55.	Ability to use a broad range of financial tools as incentives to support regulatory efforts
	X	X		56.	Experience with large scale, user fee oriented enterprise fund programs
	X	X		57.	Financial responsibility to the local electorate

5.0 STRATEGY FOR IMPLEMENTING THE AREAWIDE PLAN

Development of an implementation program under the Federal Water Pollution Control Act as specified in Section 208 begins with the assessment of the existing pollution situation in a planning area. This is contained in separate technical reports and summarized in Section 3.0 above. The development of an action program in light of the physical situation in the Larimer-Weld planning area is the heart of the program. Accepting this, it is clear that the institutional structure that will serve as a framework for program implementation, financing and monitoring must be phased. Sequential actions dealing with the complex issue of pollution control are necessary. Not all physical problems are capable of immediate solution in the Larimer-Weld region.

The problem solving process recognizes the circular nature of the key elements of the program. These are problem identification in light of the requirements of the law, development of alternatives that can achieve the objective of the law estabIsihed in the framework of the local situation, and development of an institutional and financial structure that can carry out the program once it is developed. None of these elements can be developed without recognition of the other parts. Each must be played back against the other and in some cases alternatives must be chosen because of a related element that cannot function with the desired element.

This interrelated process has occurred throughout the Larimer-Weld 208 study. The plan which is being presented for public discussion and legislative decision acknowledges three basic issues of the program, i.e., (1) what are the pollution problems in our area, (2) what are the technical alternatives for dealing with those problems, and (3) what are the institutional and financial arrangements that are necessary to implement such a program. The overall plan proposed, and the underlying strategy, derives from a resolution of these basic issues.

5.1 POLLUTION PROBLEMS IN LARIMER-WELD COUNTIES

Pollutants in the Larimer-Weld area come from a large variety of sources. For purposes of this report, the pollutants will be broken into two categories, i.e., point source pollutants and non-point source pollutants. The listing of pollutants in this section by source of pollution under the subcategories of point source or non-point source is merely for the purposes of developing an overview feeling of the problem. A detailed discussion of these sources of pollutants is contained in

summary form in Section 3.0 of this report and is contained in detailed form in technical reports prepared by Toups Corporation.

5.1.1 Point Source Pollutants

- Municipal wastewater facilities
- Special district wastewater facilities
- Private wastewater facilities
- Large feedlots [1]
- Irrigated agriculture [1]

5.1.2 Non-Point Source Pollutants

- Small feedlots
- Solid waste facilities
- Urban runoff
- Septic tanks
- Residual waste
- Lagoons
- Agriculture non-irrigated
- Construction
- Silviculture
- Manure disposal areas
- Mine related waste
- Salt water intrusion

5.2 PROPOSED TECHNICAL SOLUTIONS

The problem definition and proposed solutions for the municipal and industrial point sources have been clearly articulated as a result of the 208 study. Who the dischargers are, the capacity of their systems, when they will have to upgrade their system to meet the state discharge requirements, the relation to the water quality standards and stream classifications, the hydrology of the region and alternative treatment methods for achieving the goals of the law are all weighed as part of the technical report.

The problem definition for the various non-point sources is much softer. Background data on the magnitude of the problems and their effect on the region's streams are just now being accumulated. There was little or no history before the 208 study began.

This suggests that the areawide plan is ready for implementation for municipal and industrial point source dischargers but, not yet

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[1] Institutional and Financial Recommendations for these Point Sources are Contained in, Briscoe, Maphis, Murray & Lamont, Inc., Institutional and Financial Recommendations for Control of Pollutants from Irrigated Agriculture, LWCOG, October, 1977.

ready in the case of irrigated agriculture [2] or for non-point sources. Additional monitoring and analysis for specific information is needed. Nonetheless, efforts can be taken to avoid compounding problems using various regulatory tools and sound engineering practices that will prohibit or reduce runoff from non-point sources into drainage ditches or streams.

Integration of the point and non-point efforts will be possible when the problem identification and solutions are at a similar level of accomplishment.

The technical analysis being conducted under the 208 Water Quality Management Planning Program has highlighted the complexity of developing a rational, technical strategy for achieving 1983 water quality goals. A synthesis of the analysis and conclusions published under various 208 technical documents can be found in a report entitled· "Alternative Technical Strategies for Achieving National Water Quality Goals." (Larimer-Weld Regional Council of Governments, January 1978).

Technical studies to date have indicated that different criteria must be met to achieve and/or maintain water quality goals in the mountain areas of the region vs. the plains areas. In the latter case, it has been concluded that limiting factors to achieving a high quality fishery which involves the protection and propagation of sensitive fish species and other aqautic biota are adequate flow and suitable stream bed characteristics. Such requirements appear to be met in the high mountain streams of the region.

Four alternative technical strategies have been developed which address the various criteria which must be met to achieve the objectives of the Clean Water Act. The strategies are illustrated in summary from on Table 5.2-A. Although each of the strategies is different in scope, a common thread which runs through each of them is the point and non-point source water quality control requirements. The fundamental differences between the strategies is the extent to which non-water quality actions are taken in the plains areas of the region to insure an adequate habitat for the protection and propagation of aquatic biota. Strategy 1 provides for an advanced level of waste treatment based on load allocation modelling. These theoretical results indicate requirements for reduced ammonia levels with advanced waste treatment. However, no non-water quality actions are included. Lacking these, even with a high quality effluent, it is believed that conditions for year-round propagation and protection of desirable sport fish species cannot be achieved due to the prevailing water supply practices and their effects on the fish habitat. Thus, no recreational benefits are achieved.

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[2] Ibid.

MAJOR FEATURES AND ASSOCIATED COSTS OF

TABLE 5.2-A ALTERNATIVE TECHNICAL IMPLEMENTATION STRATEGIES

	PROGRAM COMPONENT - COST (x $1000) (a)									
	POINT SOURCE						DREDGING			
	M & I (b)	Feedlots (b)	Agri. (b)	Urban Runoff (b)	Fish Stocking (c)	Stream Engrg. (b)	Initial (d)	Thereafter (d)	Flow Aug. (e)	TOTAL
Strategy I(f)										
Cap. Cost	29,945(g)	300(h)	100,000(i)	4,263(k)						134,508
Annual O & M	3,825	-	3,000(j)	340						7,165
Equiv. Annual	6,383	22	13,000	606						20,011
Strategy II(l)										
Cap. Cost	26,255(g)	300	100,000	4,263	167(m)	220(n)	118(o)	118(p)	19,305	150,746
Annual O & M	3,601	-	3,000	340	-	-	62(q)	37(r)	-	7,040
Equiv. Annual	5,807	22	13,000	606	9	17	47	23	1,307	20,838
Strategy III(s)										
Cap. Cost	11,704	300	100,000	4,263	0	68(t)				116,335
Annual O & M	3,279	-	3,000	340	40(m)	-				6,659
Equiv. Annual	4,220	22	13,000	606	35	6				17,889
Strategy IV (u)										
Cap. Cost	11,704	300	100,000	4,263	-	-				116,267
Annual O & M	3,279	-	3,000	340	-	-				6,619
Equiv. Annual	4,220	22	13,000	606	-	-				17,848

Source: Toups Corporation, March, 1978.

TABLE (CONTINUED)

(a) Costs in terms of January, 1977, dollars.
(b) Assumes 7% interest, amortized over 20 years.
(c) Assumes 7% interest, amortized over 50 years.
(d) Assumes 7% interest, amortized over 10 years.
(e) Assumes unit cost of C-BT share = $1,300; Quota = 60%; flow augmentation implemented in Big Thompson River (15 cfs) and Cache la Poudre River (15 cfs) from May through September; 7% interest amortized over 50 years.
(f) Meet existing water quality standards - No flow augmentation. Advanced treatment required at Fort Collins Nos. 1 and 2, Boxelder S.D., Windsor, Eastman Kodak Co., Greeley Delta, and Loveland. Tertiary treatment required at Greeley First Avenue and Great Western, Loveland.
(g) Assumes plants requiring tertiary or advanced waste treatment upgrade immediately, unless such facilities are staged according to future need for additional capacity (Greeley Delta).
(h) Staged over five years.
(i) Capitol cost at an estimated average participation of 70%. Cost at 100% participation would be $140 million.
(j) Includes 50% participation in irrigation scheduling ($12/acre x 500,000 x 1/2). Miscellaneous O & M expenses are minimal and most BMP's reduce overall O & M costs. Energy costs of sprinklers are offset by reduced labor requirements and therefore not included.
(k) Control measures for urban runoff are oriented toward source control, non-structural control options, and structural options incorporated into an overall system of drainage/flood control. Construction assumed in 1980.
(l) Provide flow augmentation. Advanced treatment required at Greeley Delta. Tertiary treatment required at Fort Collins Nos. 1 and 2, Boxelder S.D., Windsor, Eastman Kodak Co., Greeley First Avenue, Loveland, and Great Western, Loveland.
(m) Based on $110 per surface acre stocked.
(n) Based on one man-year professional design time plus $500 - $2,000 per river mile for construction; includes cost of fish screens estimated to be $1,000 per ditch.
(o) Purchase of mini-dredge.
(p) New mini-dredge to be purchased in 1988.

TABLE (CONTINUED)

(q) Includes annual insurance premium of $3,000; assumes dredge operated continuously during the year; does not include cost of transporting, launching, or retrieving dredge; $62,000 for first four years to initially expose channel substrate in the Big Thompson and Cache la Poudre Rivers downstream from canyon mouths, and in reach of the St. Vrain River within the two-county area; $37,000 per year thereafter for channel maintenance.

(r) Assumes mini-dredge operated for seven months out of each year.

(s) Protection of existing water uses - secondary treatment - some fish stocking in selected plains river reaches.

(t) Based on 7 months of professional design time plus $500 - $2,000 per river mile for construction, includes cost of fish screens, estimated to be $1,000 per ditch.

(u) Protection of existing water uses - secondary treatment - no fish stocking in plains river reaches.

Under Strategy 2, stream fish stocking, stream engineering design and construction, dredging and flow augmentation are included for various stream segments of the plains area to sustain sports fishery conditions. While each of these criteria appear to be achievable from a technical standpoint, their implementation depends upon social, political, and economic acceptability and would require policy decisions and funding on the part of state and federal agencies. Additionally, legal problems may arise from the standpoint of Colorado Water Law in determining a means by which to augment flow for fisheries purposes.

Strategy 3 depicts a water pollution control program that would require specific actions to be taken to control major sources of pollution, in addition to stream stocking in certain stream segments of the region. Areas where fish stocking appears to be feasible from the standpoint of development of an expendible fishery and enhancement of recreational capabilities around urban centers would be the upper portions of the lower Poudre River, Big Thompson River, and the St. Vrain River.

Strategy 4 involves water quality control requirements as indicated in Strategy 3 with no consideration for enhancement of physical conditions for a fishery in the plains area of the region.

Municipal and industrial point source control requirements indicated on the table are designed to protect the quality of aquatic habitat currently existing in the plains area of the region; i.e., no further degradation. Nonpoint source control requirements are intended to enhance the instream water quality by application of Best Management Practices. At the existing level of technology and data, it is not clear what the relationship is between nonpoint source pollution control requirements and the achievement of a high quality fishery in the plains area of the region. However, technical studies have confirmed that municipal and industrial point source control requirements higher than secondary treatment will not significantly enhance conditions for high quality sport fishery (i.e., trout and bass, etc.). The physical habitat must also be substantially improved.

The pollution control strategy for urban runoff and irrigated agriculture indicated on the table also account for other desirable water quality objectives; i.e., protection of public water supply and protection of crops. Best Management Practices for nonpoint source pollution control attempt to recognize non-water quality benefits as well; i.e., energy savings, labor savings, water conservation, crop protection. Cost effectiveness of each BMP would be determined on a case by case basis and consider all benefits which may be accrued.

5.3 INSTITUTIONAL AND FINANCIAL CONSIDERATIONS ASSOCIATED WITH IMPLEMENTING THE ALTERNATIVE TECHNICAL PLANS

Program components contained in some or all of the technical alternatives under consideration raise important financial and institutional questions. For example, one of the alternatives contains the program component entitled, "Flow Augmentation." The concept of flow augmentation is included as a necessary element to achieve the goal of year-round fisheries that can self-propagate in the Cache la Poudre and the Big Thompson Rivers. This concept incorporates the purchase of over 10,000 acre/feet of water at a capital cost of over $19 million for release at a regulated rate to keep from 15-20 cubic feet per second of water available in the stream at critical times. There are significant cultural, legal and economic questions associated with this concept and no answers are clear at this stage. One possibility to achieve flow augmentation would be to dry up approximately 5,000 acres of irrigated farmland and use the water from that irrigated area to augment low flows in the stream. This assumes the water is for sale and the price is reasonable. Another possibility would be to convert present row irrigation farms to spray irrigation and accumulate water savings from the present users for flow augmentation. An additional concept would be that of trans-mountain diversions, either via the Big Thompson Project or some other project to acquire western slope water which could be brought to the eastern slope for flow augmentation purposes.

In addition to problems associated with acquiring the water, there are a myriad of problems related to who would acquire the water. It appears that flow augmentation activities in the reaches of the streams in Larimer-Weld Counties would also have beneficial applications for streams out of the region. Benefactors from this program would cover a geographical region larger than the Larimer-Weld area. Since it is recognized that one of the basic conflicts associated with the 208 program is that at some time in the future program beneficiaries are likely to be asked to pay part or all of the cost of achieving benefits, it will be necessary to assess who all the beneficiaries are of such a program. Since it appears from initial investigations that this is a program with implications far beyond the local boundaries, some state or federal agency would have to play a central role in the program.

The practical facts of the matter are that flow augmentation concepts in the streams of the Larimer-Weld region to achieve the fishable-swimable goal of the law seem, if not unrealistic, at least beyond the reach of a local 208 agency to achieve. If flow augmentation can be demonstrated at some future date to be cost-effective and cost-beneficial as a means of achieving the fishable-swimable goals of the federal law, it seems likely that that program should be developed at the state or federal level.

Another principal feature of the four alternative technical plans, and one that will have the most program impact on the local area, is that of capital costs required to upgrade the municipal and industrial facilities to meet the requirements of the law. Strategies 1 and 2 both contemplate upgrading wastewater treatment facilities to the level of advanced waste treatment (A.W.T.). Strategies 3 and 4 have a capital cost requirement initially of slightly less than $15 million to develop treatment facilities to the secondary treatment level to accommodate growth to the year 2000. As we disaggregate these capital cost numbers for individual agencies, the financial impact on some communities and/or industries may be significant.

Three other program components contained in two of the plan alternatives deal primarily with fish life support activities. These present problems of who should pay, who are the beneficiaries, and how should the institutional control be developed? These categories are more or less interrelated and are shown on Table 5.2-A as stream fish stocking, stream engineering design and construction, and dredging; they all include initial and continuing costs. These three categories have initial capital costs of about $.5 million and require some continuing activity on a year-to-year basis.

5.4 RECOMMENDED STRATEGY FOR PROGRAM IMPLEMENTATION

An overall review of the nature of the pollution problem in the Larimer-Weld region, the requirements of the law, the present state of planning and development studies, and the key program components of the technical and institutional/financial alternatives now under consideration suggest an overall program strategy. This strategy is characterized by the key concepts contained in the following paragraphs of this section.

5.4.1 Local Control and Local Responsibility

The water quality control program is complex and implementation of this program will become intertwined with other forms of urban services being delivered by local agencies. Also, the local financial impact of this program, even with substantial federal funding assistance, is a very major one. For these reasons, it follows that to the greatest extent possible, local control over the program and local responsibility for managing its implementation in a rational fashion, consistent with the other demands of the area, is highly desirable.

5.4.2 Maximum Use of Existing Institutional Structure

The concept of using to the greatest extent possible existing institutional structures to carry out various functions of the water quality program is sound when viewed in the light of the alternatives. These call for new and innovative institutional forms that will present the possibility of new and unpredictable experiences for the people of the area and will require the maturing

period that all new organizations must go through before they can effectively carry out the tasks at hand. It appears rational that since the existing institutional agencies in the Larimer-Weld area have sufficient powers and capabilities for the most part to carry out the required tasks of the 208 program that they represent the logical institutional choice.

5.4.3 General Purpose Local Governments in Charge of Program Where Possible

There are two basic reasons why general purpose local governments are the preferred alternative for carrying out the water quality program in the Larimer-Weld area. The first is because the water quality program cannot be implemented in a vacuum. It must be coordinated with all other urban service activities of the area. Since for the most part these services are being delivered by general purpose local governments, they present a far superior choice for implementing the program than would another special service agency with only water quality control activities on their mind, thus creating the need for coordination between water quality activities and all the other urban service activities that relate to water quality. The second major reason that general purpose local governments should be in charge of the program is that institutionally they possess by far the best set of powers and capabilities for delivering the task at hand. This is particularly true in the case of non-point source pollutants, whose generation and characteristics are intimately related to decisions of how land is developed and used.

5.4.4 Urban Service Area Concept -- Area of Domain (U.S.A.)

The U.S.A. concept which describes an area of domain for responsible management agencies for, in this case, the water quality control program is a perfect means of identifying which agency is responsible for carrying out the program and finding the geographical boundaries of that responsibility assignment. The U.S.A. concept simply says that some agencies should be made responsible for delivering all forms of urban services to citizens of an area in a rational and effective manner and that this basic responsibility should be assigned the general purpose local governments of the area. For example, the comprehensive planning area of a city ordinarily describes the growth and development activities that will be occurring in and around the community for a 20-year period. The U.S.A. concept implies that if a community is planning to provide services in this area of all kinds, either now or in the reasonable planning future, that it should be assigned planning and management functions to the greatest extent possible within that geographical area. All areas in the county outside the urban service area boundaries of the cities are left under county domain with provisions for services in those areas under county control. Whether it be via special districts or private agencies for the actual delivery of the service, the county remains in the controlling position.

5.4.5 Land Use Management

Land use management concepts are significant for both point source control and non-point source control.

The Larimer-Weld 208 technical studies have shown that land use decisions in the Larimer-Weld area made by those agencies that have land use powers, namely general purpose local governments, cities, towns and counties, have major impact on not only point source controls for water quality activities, but also to a major degree have influence over non-point source pollutant characteristics. It seems obvious that with the major role that land use decisions play in affecting water quality characteristics, both from point and non-point source, that it is absolutely mandatory that the responsible management agencies who are given the task of implementing the water quality control program must also possess powers and capabilities to directly apply land use regulations in behalf of their pursuit of a logical pollution abatement program.

5.4.6 Complete the Planning before Implementation

This concept simply suggests that until the planning and development is done on most or all forms of pollutants, and in particular for those which have a major interrelationship with others, that the planning job should be done so that the results of implementation activities can be predicted and cost effectiveness of alternatives be assessed in light of the overall program. Caution should be exhibited in jumping aggressively into implementation activities for any phase of water quality control programs until the planning task is sufficiently complete to serve as a basis for predicting the results in water quality terms that can be expected from the application of implementation programs.

5.4.7 All Pollution Abatement Programs Should be Coordinated

This includes those for municipal and industrial point sources, non-point sources, and irrigated agriculture. We have assessed the full spectrum of pollution forms in basically the three categories mentioned above. Nevertheless, for both technical and institutional reasons identified in this program, it should be clear that that separation and categorization for study purposes was only for the convenience of the exercise and that the program itself can be viewed as a single overall coordinated program with pollution sources viewed in their overall context and abatement activities carried out only in terms of impacts on the overall program. As we near the end of the study process, the program needs once again to be viewed as a single program and not three or four separate programs.

5.4.8 Management Agency and Operation Agencies "Pass-Through" Concept

Arguments were presented above that general purpose local governments should be basically in charge of the program. Yet, even using the urban service area concept, the geographic boundaries of that possibility are constrained. Also there is the desire to make maximum use of existing institutional structures and service organizations. The pass-through concept is utilized to deal with these problems. For the most part this will involve wastewater treatment facilities that are now owned and operated by special districts and/or industries who will be assigned the operations agency tasks in the 208 institutional structure with some general purpose local government being the management agency exercising some form of overview as to operations activities. The pass-through concept suggests that to the greatest extent practical, that the legal tasks of the management agency will be passed through to the operations agency via an intergovernmental contract. Some of the management agency responsibilities will be necessarily kept by the agency itself, but each specific situation will dictate the terms of the pass-through contract. The intent is to provide as little disruption as is possible and at the same time achieve the objective of the law and the requirements of Section 208.

5.4.9 Voluntary Compliance Efforts Versus Mandatory Compliance for Irrigated Agriculture and Non-Point Source Pollutants

Studies done in the Larimer-Weld area on both irrigated agriculture and non-point source pollutants suggest that both these programs lend themselves to an initial effort that is voluntary in nature as contrasted to immediately moving to a mandatory compliance program. The state of the art in dealing with both these categories of pollutants is such that while the continuing developmental planning, research and demonstration activities are ongoing, voluntary compliance activities, accompanied by gradual implementation of programs that appear viable first in a planning setting and later in a demonstration and full implementation setting, is a rational approach to a complex program that must evolve gradually from its present state to a more advanced state where mandatory compliance and mandatory program implementation could be seriously considered.

5.4.10 Fiscal Concept - He Who Benefits Versus He Who Pollutes

The fiscal concept of "He who benefits should pay" applies as well to water quality control activities as it does to other forms of urban service delivery programs. This concept suggests that there should be some form of equitable distribution of program costs and that the foundation for that distribution is some form of measurement of who and to what extent individuals or groups of individuals are benefitted by the program. On the other hand, the concept that the polluter should pay brings to bear some positive motivational factors that develop when an agency or

private party perceives that when he is causing a pollution problem, he will be asked to pay to abate that problem. In that process, pollutant generators are motivated to take steps under their own control to reduce the amount of pollutants generated so that their required payments of abatement activities will be reduced. They may reduce their polluting activities by process alterations or abate the pollution problem in other ways. The ingenuity of people and industries is rewarded when pollution abatement improvement activities are conceived or when generation activities are altered.

In some cases, we will find that those who benefit are a different group than those who pollute. The financial program must endeavor to balance the cost burden to preserve both equity and the positive motivational factors.

6.0 ALTERNATIVE AGENCIES FOR I/F FUNCTIONS AND RECOMMENDED ROLES

6.1 INVENTORY OF AGENCIES FOR I/F FUNCTIONS[1]

The following pages summarize federal, state, regional and local institutions that might play some role in 208 implementation in the Larimer-Weld region. For each, a recommended role in the program is identified. These recommendations form the basis for the proposed 208 institutional structure summarized by 208 function in Section 6.2 and discussed in detail in Section 7.0.

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[1] Briscoe, Maphis, Murray & Lamont, Inc., Institutional Inventory for 208 Functions, Larimer-Weld Council of Governments, April 1977.

KEY FEDERAL AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
1.	DEPARTMENT OF AGRICULTURE FARMERS HOME ADMINISTRATION	The FmHA participates with farmers and local organizations in rural areas and communities under 10,000 in population. It was established to provide loans and grants for farms, businesses and industry, community facilities and housing.	Major activities include making loans for waste and waste disposal systems, making grants for comprehensive water and sewer system planning and making real estate loans.	Funding source - supportive role, presently outside the 208 program but should be brought within the areawide plan priority system or accept that the regional and national goals of 92-500 may be subverted by FmHA funding.
2.	DEPARTMENT OF COMMERCE -- ECONOMIC DEVELOPMENT ADMINISTRATION 4 CORNERS REGIONAL COMMISSION	The Commission is one of seven regional commissions designated by the Secretary of Commerce for the purpose of economic development. The Commission is made up of Governors of Colorado, Arizona, New Mexico and Utah and a member appointed by the President.	Major activities include technical assistance for planning, investigations, training programs, supplemental grants and demonstration projects.	Funding source - supportive role, like FmHA presently outside the 208 program and needs to be integrated into the program whenever waste water abatement or treatment projects are considered.
3.	DEPARTMENT OF DEFENSE - CORPS OF ENGINEERS	The Corps is involved with construction of facilities which provide flood control, water resources and (cont.)	Through the civil works program, the Corps provides planning, design, construction, operation and maintenance of works and contracts for available surplus (cont.)	Supportive role - funding, construction and technical support to the areawide program.

KEY FEDERAL AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
	Department of Defense - Corps of Engineers (cont.)	quality, generate power and regulate rivers.	water. The Corps issues permits for dams and dikes and dredging and filling, provides planning assistance to states and other entities and designates flood hazard areas.	
4.	ENVIRONMENTAL PROTECTION AGENCY	The EPA was created in 1970 to provide coordinated action related to the environment. The EPA is involved with the control of water pollution and coordinates its activities with state and local governments, private groups, individuals and educational institutions.	Major activities as provided in the Federal Water Pollution Control Act (PS 92-500) include research, coordination and evaluation of state water quality standards, issuance of permits, enforcement of violations, publication of regulations for point source water control, evaluation of areawide plans, and providing grants to local entities.	Direct role - program approval and technical and funding support. Ultimate regulatory powers.
5.	DEPARTMENT OF HEALTH, EDUCATION AND WELFARE	The National Environmental Policy Act and the Public Health Service Act direct the Department to conduct research, provide grants and establish drinking water standards.	The Department is involved in consultation with other Federal agencies on health aspects of water and waste disposal systems for environmental impact statements, cooperation on EPA studies on pollutants, establishment of drinking water standards for interstate carriers, and provision of tech- (cont.)	Supportive role - technical assistance and minor funding potential

KEY FEDERAL AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
	Department of Health, Education and Welfare (cont.)		nical assistance relative to water recreation sanitation, and provision of grants for disease prevention.	
6.	DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT	HUD provides loans and grants and administers programs relative to housing and urban development.	The Department provides grants for water and sewer facilities, provides loans for public facilities, provides grants for land acquisition, administers the national flood insurance program, makes planning grants, administers FHA programs and provides technical assistance.	Supportive role - major source of land planning and management study funds. Minor technical assistance potential.
7.	BUREAU OF RECLAMATION	The Bureau is primarily involved with the planning, construction and operation of water facilities for the storage, diversion and development of water resouces in the Western States. Reclamation projects provide water for the following: municipal and industrial water supply, hydroelectric power generation and transmission, water quality improvement and flood control.	Major activities include research, development of plans for the regulation and use of water resources, design and construction of projects, operation of projects which are not transferred to local organizations, review of operation of locally controlled facilities, control over the sale and transmission of power from Bureau projects and review of environmental impact statements.	Direct role potential on the water resource side of the issue. Technical, construction and funding potential.

KEY FEDERAL AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
8.	U.S. GEOLOGICAL SURVEY	The USGS was established to perform surveys, investigations and research related to topography, geology and mineral resources and to classify land for its mineral and water resources.	The USGS is involved with preparation of maps, study of geological structure, measurement of water quality and supply, technical assistance to Federal agencies, and examination of Federal land to determine sites for water resource development.	Supportive role for technical assistance.

KEY STATE AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
1.	COLORADO WATER CONSERVATION BOARD	The Board is involved primarily with water supply, interstate compacts, conservation, flood control and water resource planning. The Board has a Denver office and two field offices.	Activities include administration of the CWCB water project construction fund, water planning, designation of flood hazard areas, participation in federal reclamation and flood control projects and appropriation of minimum stream flows.	Support role as a technical and policy advisor for water resource development and management as it relates to waste water management.
2.	DIVISION OF WATER RESOURCES	The Division, headed by the State Engineer, administers surface water and underground water (not found in designated basins) according to court decrees. The Division is also charged with the planning, management and regulation of water usage. The Division has a Denver office and seven division offices.	Major activities include administration of surface and underground water, approval of dams, review water right applications, collection of water supply data, and performance of technical investigations. The Division also reviews proposals for the Mined Land Reclamation Board, and reviews water supply plans for land development for counties.	Direct and support role as a technical and policy advisor for water resource development, use and management. The potential direct role would be to provide staff for monitoring plant operation if a river basin approach is taken for state involvement in the 208 program. If flow augmentation occurrs, they are a potential management agency.
3.	GROUND WATER COMMISSION	The Commission, under the authority of the State Engineer, is responsible for the administration of the ground waters of the (cont.)	Major activities include the definition of ground water basins, administration of these waters, assistance in the organization of ground water management districts, (cont.)	Support role as ground water is affected by the 208 program. Primary policy advisor role.

KEY STATE AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
	Ground Water Commission (cont.)	State found in designated ground water basins. The Commission consists of 12 members.	supervision of water use, issuance of permits and prescribing withdrawal limits for waters where there is no district.	
4.	COLORADO GEOLOGICAL SURVEY - GROUND WATER SECTION	The Section, which consists of one individual, is involved with geologic investigations.	The Section assists State agencies relative to ground water, investigates ground water supply, and studies point source pollution to ground water.	Support role of a technical nature.
5.	BOARD OF HEALTH	The Board is responsible for setting state-wide health rules and regulations. Local health agencies enforce these rules and regulations within their jurisdictions.	The Board enforces public water supply sanitary standards for facilities such as swimming pools and public baths, establishes regulations for individual sewage disposal systems and establishes regulations for solid waste disposal sites.	Direct role as the prime regulatory agency.
6.	WATER QUALITY CONTROL COMMISSION	The Commission, composed of an 11-member board, is involved with planning and policy making relative to water quality.	The Commission promulgates water quality standards, issues control regulations, promulgates waste discharge permit regulations, reviews sewage treatment plant proposals, reviews applications for underground discharges, reviews (cont.)	Direct role in the 208 program by setting water quality control standards and stream classifications. The WQCC is the agency charged by the Governor with the state water quality control agency for purposes of PL 92-500 and is (cont.)

KEY STATE AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
	Water Quality Control Commission (cont.)		local government regulations for individual sewage disposal systems, and allocates construction grants for sewage treatment plants.	charged with carrying out the Act.
6.	WATER QUALITY CONTROL DIVISION	The Division, which is divided into ten geographic districts, is involved in planning, administration and enforcement relative to State and Federal pollution control legislation.	Major activities include administration and enforcement of water quality control programs adopted by the Commission, issuance of discharge permits to municipalities and industries, promotion of development of wastewater facilities, processing and administration of grants, provision of technical assistance, data collection, monitoring discharges, inspection of treatment works, enforcement and planning.	Direct role as the administrative arm of the WQCC. Acts as regulator, fund source and technical advisor. Potential role as a planning and management agency if local government declines involvement or if flow augmentation occurs.
7.	DIVISION OF LOCAL GOVERNMENT	The Division primarily conducts research, provides technical assistance and administers grants.	Major activities include research, technical assistance, administration of sewage construction grants, predesign planning grants and emergency water and sewer construction grants, review of local government revenue increases over set limits and collection of information.	Support role of a technical nature to operational agencies and funding assistance. Funding is not subject to 208 program priorities, but should be if regional and PL 92-500 goals are not to be circumvented.

KEY STATE AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
8.	DIVISION OF PLANNING	The Division is engaged in research, technical assistance and administration of grants.	The Division prepares population data, administers 701 funds and the 1041 program, provides technical assistance and performs studies.	Support role to the Areawide Planning Agency on population and land use management subjects. Potential for direct role for non-point pollution control via 1041 program.
9.	OFFICE OF RURAL DEVELOPMENT	The Office conducts planning and research and coordinates activities of other divisions in the department relative to rural affairs.	The Office provides technical assistance to local governments, serves as a clearinghouse for rural development, participates in Four Corners Regional Commission programs, and is involved with preparation of the State Economic Development Plan.	Support role to Areawide Planning Agency.
10.	LAND USE COMMISSION	The Commission, located in the Office of the Governor, provides technical assistance and is involved in land use. Staff is in the process of being transferred to the Department of Local Affairs.	The LUC has emergency powers to become involved in land use matters, provides assistance to local governments, monitors subdivision development, participates in the 1041 program and mediates land use problems.	Potential for a support role to the 208 planning and management agencies. Major developments and control over land management practices deemed of statewide concern could be subject to LUC actions in support of the 208 program under the 1041 program.

KEY STATE AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	ROLE IN THE PROGRAM
11.	STATE 208 COORDINATOR, DEPARTMENT OF LOCAL AFFAIRS	Handles 208 program coordination for state on non-technical matters.	Program coordination and interrelationships of all designated 208 areas and state non-designated area programs. Provides staff review of 208 program for primarily non-technical portion of plan.	Support role in assuring integration of Larimer-Weld 208 with other 208 activities throughout the State - technical and policy guidance and assistance.
12.	DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WILDLIFE	The Division is involved with wildlife and their habitat. It is concerned with water quantity in the minimum stream flow program as well as water quality.	. Acquire land and water resources. . Construct and operate needed facilities. . Enter into agreements. . Review State agency activities affecting streams, except irrigation projects. . Develop systems to fulfill responsibilities under H.B. 1041 and Stream Preservation Act of 1973 (Senate Bill 97). . Enforce State game and fish laws. . Conduct research on the environment and diseases of fish, game and other wildlife. . Aid in public access to fishing areas and production of fish. . Measure lakes and streams for water volume and make determinations as to necessary minimum flow.	Potential direct role to handle stream/fish augmentation under technical plans as a management agency.

KEY LOCAL AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	POWERS	ROLE IN THE PROGRAM
1.	MUNICIPALITIES	Municipalities are involved in land use decisions, raise revenues and provide water and sewer services.	The powers of statutory cities are controlled by State legislation; home rule municipalities are governed by charter. Cities may regulate the use of land through police powers, construct and operate water and sewage treatment facilities, require connection to central systems and levy taxes. Municipalities may cooperate with other local entities by using intergovernmental agreements.	Direct role as management and operational agencies. Also regulatory role in dealing with land use patterns and land management responsiblities. Funding as part of their functional roles.
2.	COUNTIES	Counties are primarily involved in unincorporated areas and have a role of provision of water and sewer services, land use planning, regulation of solid waste disposal sites, and raising revenues.	Counties make land use decisions through the police power, construct and operate water and sewage facilities, require sewer connections, raise revenues and issue bonds. Counties may utilize intergovernmental agreements to cooperate with other local entities.	Direct role as a management agency and a regulatory agency dealing with control over creation of new incorporations and districts, land use patterns and land use management responsibilities. Direct potential for funding aspects of the 208 program.
3.	COUNTY HEALTH DEPARTMENTS	County Boards of Health function in a policy making and review role. Their decisions are generally autonomous from County Commissioners and are responsible to the State (cont.)	Through both State and County powers, these agencies review sewage treatment facility plans, review permits for individual sewage plants, monitor streams, enforce violation of water pollution laws, inspect water supplies and inspect septic systems.	Direct role as a regulatory agency and support as a monitoring agent for operational agencies.

KEY LOCAL AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	POWERS	ROLE IN THE PROGRAM
	County Health Departments (cont.)	Health Departments. County Health Departments perform staff functions.		
4.	COUNCILS OF GOVERNMENT	Regional institution that has no independent political or financial powers. Functions as a regional planning and coordinating agency under direction of local elected officials who are the governing board.	C.O.G.s have only those powers delegated to them by specific acts of the cooperating local governments that have formed the C.O.G. It is not a form of government.	Direct role as the areawide planning agency.

KEY SPECIAL DISTRICTS INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	DISTRICT	FUNCTIONS	MAJOR POWERS	ROLE IN THE PROGRAM
1.	WATER CONSERVANCY	These Districts, formed by local petition, are involved with construction of water facilities and water quality. They work with the Bureau of Reclamation on reclamation projects.	Water conservancy districts can make special assessments to property according to benefit and levy an ad valorem property tax. They may also appropriate, purchase and sell water rights, water works and property, construct and operate facilities, fix rates and issue bonds.	Support role for water resource input into the program. Technical and policy advisory capacity on water related planning. Potential direct role if flow augmentation is required.
2.	WATER AND SANITATION	Formed by local petition, these Districts provide water and sewer service.	Powers include: acquire and dispose water rights, property and facilities, operate and maintain facilities, borrow money, issue bonds, fix rates and levy taxes.	Direct role as operation agencies for treatment systems.
3.	METROPOLITAN DISTRICTS	These Districts are formed by local petition to provide two or more services including wastewater treatment.	Major powers include: construct and maintain works, make and enforce regulations, fix rates, borrow money and issue bonds.	Potential role as an operational agency in an urban service area which would assume responsiblities based on consolidation of the private, district and municipal systems.
4.	METROPOLITAN SEWAGE DISPOSAL	These Districts are organized by cities and approved by the State. These Districts are involved in sewage treatment systems.	Major powers include the operation and purchase of sewage disposal systems, levy ad valorem taxes, borrow money, issue bonds, fix rates and prescribe and enforce rules and regulations.	Potential role as an operational agency in an urban service area based on consolidation of the private, district and municipal systems.

OTHER AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

	AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	POTENTIAL ROLE IN THE PROGRAM
1.	COLORADO STATE UNIVERSITY * EXTENSION SERVICE * STATE EXPERIMENT STATION	Technical research and development. Experimentation and demonstration activities.	Water quality related projects and activities.	Supportive research and technical assistance role.
2.	REGIONAL SERVICE AUTHORITIES	RSAs may be established through local initiative in any two or more counties to perform any number of specified services. RSAs may levy ad valorem taxes, service charges and fees, establish special taxing districts, perform planning, construct and maintain facilities and review local government plans.	RSAs may provide water and sewer services, urban drainage and flood control, transportation, solid waste, parks and recreation, libraries, fire protection, housing, hospitals, gas and electric services and management services.	Potential direct functional role as the Areawide Management and Operational Agency for wastewater treatment consolidating all private, district and municipal systems into one system.
3.	INDUSTRIAL SYSTEMS AND CONSULTANTS	Private operations for profit.	Varied.	. Direct role as a functional operational agency where they provide their own treatment facility. . Another role for private industry is to have consultants provide operational and maintenance support to run, by (cont.)

OTHER AGENCIES INVOLVED IN THE 208 MUNICIPAL AND INDUSTRIAL WATER POLLUTION CONTROL PROGRAM

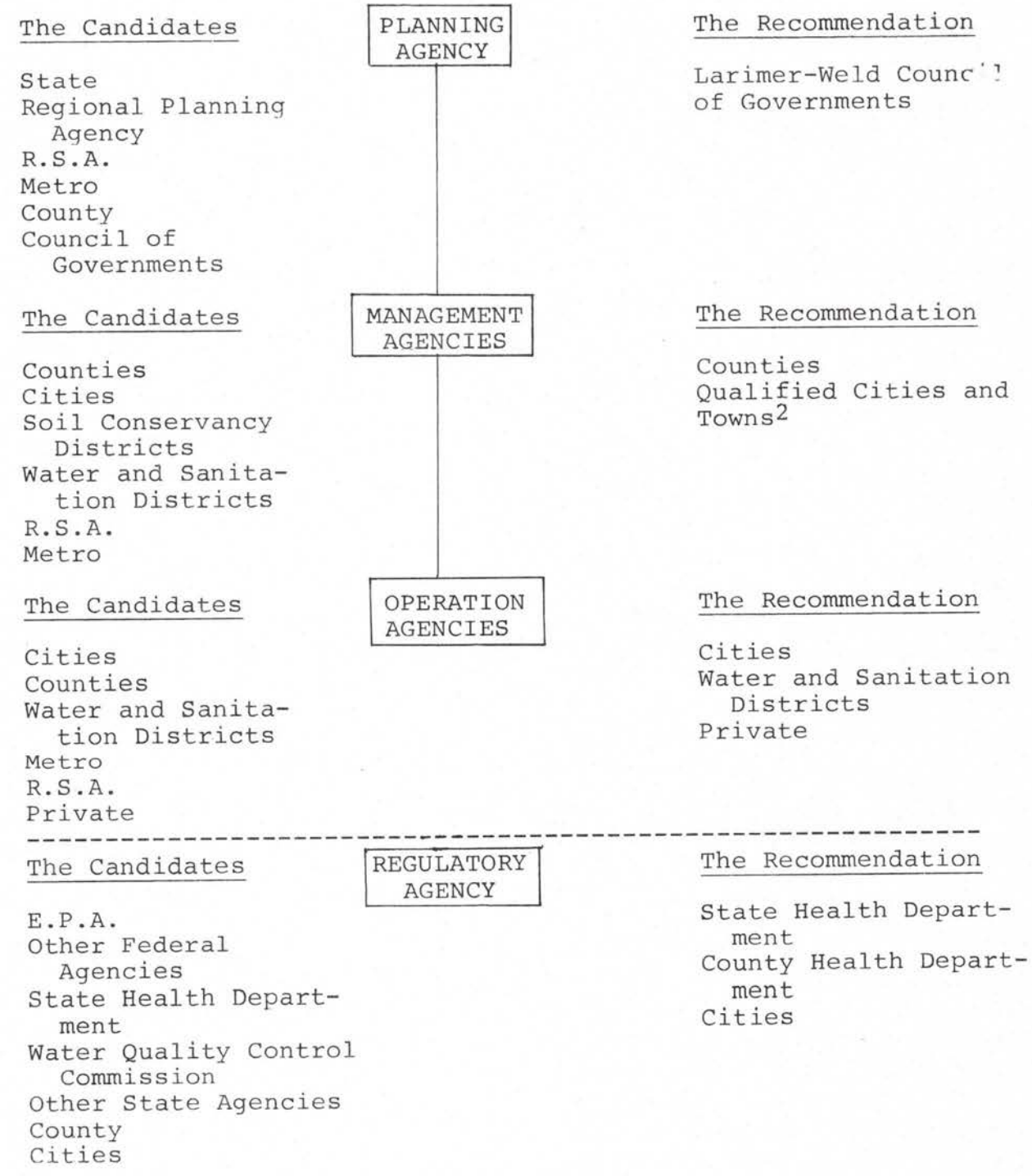
AGENCY	FUNCTIONS	PROGRAM ACTIVITIES	POTENTIAL ROLE IN THE PROGRAM
Industrial Systems and Consultants (cont.)			contract, private, district or municipal systems. . A third role is technical support in planning, design, funding and construction of facilities.

6.2 RECOMMENDED PLANNING, MANAGEMENT OPERATIONS AND REGULATORY AGENCIES

Figure 6.2-A summarizes the recommendations for agencies most suitable for fulfilling the 208 functional requirements in the Larimer-Weld region. These recommendations, together with other proposals, are explained in detail in Sections 7.1 through 7.4 below.

TABLE 6.2-A

WATER QUALITY ORGANIZATIONAL CHART
FOR RECOMMENDED LARIMER-WELD 208 PLAN FOR
MUNICIPAL AND INSTITUTIONAL DISCHARGERS



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2 A qualified community is one that has sufficient planning, regulatory controls and staff to carry out the efforts that will permit them to manage point and non-point sources of pollution and wishes to be their own management agency.

7.0 PROPOSED INSTITUTIONAL STRUCTURES AND FINANCIAL PLAN

The recommended institutional and financial structure for the Larimer-Weld 208 program consists of three distinct categories of tasks. An optimum institutional structure will be recommended for each category. Eventually, the whole program must be integrated into a single unit that functions as a whole and provides program overview.

These three categories of tasks exist because of a very different kind of pollution problem associated with each of three pollutant types, and because the status of the 208 plan development activities are at very different points for each type. The three pollutant categories are:

. Municipal and Industrial Point Source Pollutants: This category includes discharges from the wastewater treatment facilities of cities, towns, special districts, industries and private individuals.

. Non-Point Source Pollutants: This category includes pollutants from the following sources:

- feedlots (small)
- solid waste facilities
- urban runoff
- septic tanks
- residual waste
- lagoons
- agriculture (non-irrigated)
- construction activities
- silviculture
- manure disposal areas
- mine related waste
- salt water intrusion

. Irrigated Agriculture and Large Feedlots

The institutional and financial recommendations for the irrigated agriculture category are contained in a separate report. Recommendations for the first two groups of pollutants are

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[1] Briscoe, Maphis, Murray & Lamont, Inc., Institutional and Financial Recommendations for Control of Pollutants from Irrigated Agriculture, Larimer-Weld Council of Governments, October 1977.

explained in the following sections of this report. Note that two proposals are made, though the "Recommended Alternative" is felt to be the optimal structure.

7.1 SUMMARY OF PROPOSED ALTERNATIVE INSTITUTIONAL STRUCTURES

Table 7.1-A, at the end of this section, illustrates the proposed agency assignments for each major implementation function. The recommended proposal is felt to be the superior institutional structure. The alternative, based on limited local government involvement, is offered with the qualification that it is a second choice.

7.1.1 Recommended Alternative

7.1.1.1 Municipal and Industrial Point Sources

- Designate the Larimer-Weld Council of Governments as the continuing planning agency.
- Adopt the urban service area concept as the basis for assigning areas of domain for management agencies.
- Designate all "qualified" towns and cities[2] as management agencies for not only their city limits but also their urban service area boundaries.
- Designate Larimer County and Weld County as the management agencies for all areas outside of the urban service areas in each county plus the entire service area and/or city limits of small towns and cities that are unable to handle management agency responsibilities.
- Designate all existing owners and operators of public wastewater facilities as operating agencies and develop appropriate intergovernmental contracts between them and the responsible management agency for their area.[2]
- Designate all industrial, commercial and other private owners and operators of wastewater treatment facilities as operating agencies. Each operating agency is to enter into an appropriate agreement with the management agency of their area to carry out the provisions of the 208 plan and the law.[3]

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[2] A qualified community is one that has sufficient planning, regulatory controls and staff to carry out the efforts that will permit them to manage point and non-point sources of pollution and wishes to be their own management agency.

[3] Refer to Section 7.2 of this report for a discussion of the division of responsibilities between the management and operating agencies.

. Designate the State Health Department and the appropriate County Health Department as the regulatory agency. Responsibilities between the two parties are to be spelled out in an intergovernmental agreement.

. Appoint a policy advisory committee and a technical advisory committee to assist the planning agency in effective 208 plan implementation.

. Initially, the planning agency staff should not exceed three skilled, effective people. The scope of the program will determine future size.[4]

. Planning agency funding should come initially from 75-25 split of federal and local sources. Local dollars should come from all citizens of both counties.

. There are special aspects of the technical plan which, if adopted, would create a need for powers and responsibilities probably beyond the local governments' capabilities. These components of the plan are (1) fish stocking, (2) stream engineering, and (3) dredging. One possible structure to deal with just these aspects of the plan is:

  - Planning Agency: State Health Department via Water Quality Control Division.

  - Management and Operations Agency: Department of Natural Resources via the Division of Water Resources and the Division of Wildlife with review assistance from the Wildlife Commission.

  - Regulatory Agency: State Health Department.

  - Staffing and Funding provided as required from federal and state agencies.

7.1.1.2 Non-Point Sources

. Designate Larimer-Weld Council of Governments as the continuing planning agency. Assign it the responsibility for developing a planning, research and demonstration program for all non-point source pollutants that completes the planning job begun in the initial 208 program and determines what should be done about various non-point pollutants. The continuing planning work should be done with the involvement of assigned management agencies who

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[4] It is apparent that there is much planning work to be done. This recommendation for a limited staff recognizes the need to set priorities in light of available resources.

may ultimately be the implementors of the program, and appropriate state agencies who have special skills and experiences for specific non-point pollutants.

. Adopt the service area concept as the basis for assigning areas of domain for management agencies.

. Designate all "qualified" towns and cities as management agencies for not only their city limits, but also their urban service area. Program responsibilities should focus on continuation of existing activities aimed at control of non-point pollution sources (street cleaning, salt control, etc.), without expansion or broadening of control activities.

. Designate Larimer County and Weld County as the Management Agencies for all areas outside of the urban service areas and/or city limits of small towns and for cities that are unable to handle management agency responsibility. Program activities should focus on continuation of existing non-point pollution control measures without expansion or broadening at this time.

. Designate no operations agency at this time.

. Designate the State Health Department and appropriate County Health Department as the regulatory agency, with the primary task of assistance to the planning agency in areas of monitoring and testing, and to provide data to use in program formulation.

. Appoint a technical advisory committee and a policy advisory committee to advise the planning agency during continuing planning and program formulation period.

. Initially the planning agency staff should not exceed three skilled, effective people.

. Continued planning, research and demonstration work should be done under planning agency direction via contracts with the following parties:

  - Management Agencies
  - I.P.A. Agreements
  - State and/or Federal Agencies
  - Consultants
  - Other special agencies who possess skills to assess a specific non-point pollutant problem.

. Funding for both planning agency staff and support activities, plus costs of contract activities to actually do the planning, research and demonstration, as required, should be from Federal and/or State Agencies.

. Recommendations should be formulated by the planning agency during the continued planning phase to guide implementation activities for the future. Technical, financial and institutional aspects are to all be addressed.

Appendix A identifies the specific public and private entities that would be assigned management agency and operations agency status under the recommended proposals (both point and non-point sources) contained in this Section 7.1.1.

7.1.2 Limited Local Involvement Alternative (Assumes Larimer-Weld COG and Counties are not Involved in a Significant Way)

7.1.2.1 Municipal and Industrial Point Sources

. Designate State Health Department (Water Quality Control Division) as the continuing planning agency.

. Adopt the urban service area concept as the basis for assigning areas of domain for management agencies.

. Designate all "qualified" towns and cities as management agencies for not only their city limits but also their urban service area boundaries.

. Designate the State Health Department (Water Quality Control Division) as the management agency for all areas outside of the urban service areas in each county, plus the entire service area and/or city limits of small towns and for cities that are unable to handle management agency responsibilities.

. Designate all existing owners and operators of public wastewater treatment facilities as operating agencies and develop appropriate intergovernmental contracts between them and the responsible management agency for their area.[5]

. Designate all industrial, commercial and other private owners and operators of wastewater treatment facilities as operating agencies. Each operating agency is to enter into an appropriate agreement with the management agency of their area to carry out the provisions of the 208 plan and the law.[5]

. Designate the State Health Department and the appropriate County Health Department as the regulatory agency. Responsibilities between the two parties are to be spelled out in an intergovernmental contract.

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[5] Refer to Section 7.2.1 of this report for a discussion of the division of responsibilities between the management and operating agencies.

. Appoint a policy advisory committee which includes strong local government representatives and a technical advisory committee to assist the planning agency in effective 208 plan implementation.

. Planning agency staff should be as required to carry out requirements of the 208 plan.

. Planning agency funding should come initially from a 75-25 split of federal and state sources. Eventually federal funding will cease and the state share will expand.

. Special Designation: If flow augmentation and the supporting components of (1) fish stocking, (2) stream engineering and (3) dredging are to remain as a part of the technical plan, the following institutional and financial structure is recommended for the four categories of activities:

- Planning Agency: State Health Department via Water Quality Control Division.
- Management and Operations Agency: Department of Natural Resources via the Division of Water Resources and the Division of Wildlife, with overview assistance from the Wildlife Commission.
- Regulatory Agency: State Health Department
- Staffing and funding provided as required from Federal and State agencies.

7.1.2.2 Non-point Sources

. Designate the State Health Department (Water Quality Control Division) as the continuing planning agency. Assign them the responsibility of developing a planning, research and demonstration program for all non-point source pollutants that completes the planning job begun in the initial 208 program and determines what should be done about various non-point pollutants. The continuing planning work should be done with the involvement of assigned management agencies who may ultimately be the implementors of the programs, and appropriate state agencies who have special skills and experience for specific non-point pollutants.

. Adopt the service area concept as the basis for assigning areas of domain for management agencies.

. Designate all "qualified" towns and cities as management agencies for not only their city limits, but also their urban service area boundaries. Assign no responsibility for program implementation at this time.

. Designate Larimer County and Weld County as the management agencies for all areas outside of the urban service areas

in each county, plus the entire service area and/or city limits of small towns and for cities that are unable to handle management agency responsibilities. Assign no responsibility for implementation at this time.

. Designate no operation agency at this time.

. Designate the State Health Department and appropriate County Health Departments as the regulatory agency, with the primary task of assistance to the planning agency in areas of monitoring and testing to provide data to use in program formulation.

. Appoint a technical advisory committee and a policy advisory committee to advise the planning agency during continuing planning and program formulation period.

. Planning agency staff should be as required to carry out planning, research and demonstration task.

. Continued planning, research and demonstration work should be done under planning agency direction. Actual project planning work should be done by planning agency staff or via contracts with the following parties:

  - Management agencies
  - I.P.A. Agreements
  - State and/or Federal agencies
  - Consultants
  - Other special agencies who possess skills to assess a specific non-point pollutant problem.

. Funding for both planning agency staff and support activities plus costs of contract activities to actually do planning, research and demonstration, as required, should be by Federal and/or State agencies.

. Recommendations should be formulated by the planning agency during the continued planning phase to guide the implementation activities for the future. Technical, financial and institutional aspects are to all be assessed.

TABLE 7.1-A

Larimer-Weld 208 Institutional Recommendations

Summary

	MUNICIPAL & INDUSTRIAL POINT SOURCES		NON-POINT SOURCES	
INSTITUTIONAL FUNCTION	PREFERRED	ALTERNATIVE	PREFERRED	ALTERNATIVE
PLANNING	L.W.C.O.G.	State Health Department (W.Q.C. Div.)	L.W.C.O.G.	State Health Department (W.Q.C. Div.)
MANAGEMENT	Cities Counties	Cities State Health Department (W.Q.C. Div.)	Cities Counties	Cities Counties - or - State Health Department (W.Q.C. Div.)
OPERATIONS	Cities Districts Private	Cities Districts Private	No designation at this time*	No designation at this time*
REGULATORY	State Health County Health Cities Counties	State Health County Health Cities Counties	State Health County Health Counties Cities	State Health County Health Counties Cities

* Operations agencies will be designated at such time the planning, research and demonstration activities are complete.

7.2 MANAGEMENT-OPERATIONS AGENCY RELATIONSHIPS

7.2.1 The "Pass Through" Concept

The relationships between management agencies and operating agencies is a complex, but significantly important one. Management agencies are responsible for the accomplishment of the assigned portions of the 208 plan, including operations functions. However, operating agencies (if not the same agency as the management agency as in Greeley's, Ft. Collins' and Loveland's case) may actually perform most of the tasks required of the management agency via an intergovernmental contract.

The reason that the distinction is so key in the Larimer-Weld region is that management agencies must have land use powers to meet the objectives of the law and to meet the pollution abatement tasks that are assigned. Operations agencies do not need to possess land use powers so long as the responsible management agency for their area has that capacity. This distinction sets up the framework for an institutional structure that utilizes special districts, industrial and private waste water treatment systems in an effective way, while not requiring them to perform a land use management role, or other general purpose government type of task, for which they possess inadequate powers.

Under this concept, sanitation districts such as those in and around Estes Park and Ft. Collins, would be assigned operations agency status. They would enter into an intergovernmental agreement with the management agency of their area (i.e., in the case of the recommended alternative, this would be the Town of Estes Park and/or Larimer County for the Estes Park area, and the City of Ft. Collins and/or Larimer County for the Ft. Collins area) to describe the details of the relationship. It is expected that the intergovernmental contract would have the following key elements:

. Operating agencies would:

- Possess in their own name a NPDES permit and be responsible for conforming with its requirements.

- Be eligible for Federal grants and loans to construct wastewater facilities called for in the 208 plan.

- Establish their own schedule of rates and charges, subject to Federal requirements for user fee structures and, industrial cost recovery requirements.

- Have complete control over operations and maintenance activities for district facilities.

. Management agencies would:

- Have review and approval responsibilities over any facility expansion proposal not shown in the approved 208 plan.

- Make recommendations to the planning agency regarding priorities for grant priorities within the management agency boundaries.

- Be responsible for land use management decisions within the management agency boundaries.

- Implement non-point source abatement activities called for in the 208 plan.

- Assume responsibility for overall pollution abatement activities within the management agency boundaries for the assigned elements contained in the 208 plan, subject to the provisions of the contract with the operations agency.

- Cooperate with the operations agency in every way possible to carry out the provisions of the 208 plan.

- Function in a regulatory or restraining way over the operating agencies in their area only, when a clearly demonstrated water pollution concern exists or is emminent, that would be detrimental to the area's pollution abatement program as described in the 208 plan.

7.2.2 Boundaries and Boundary Changes

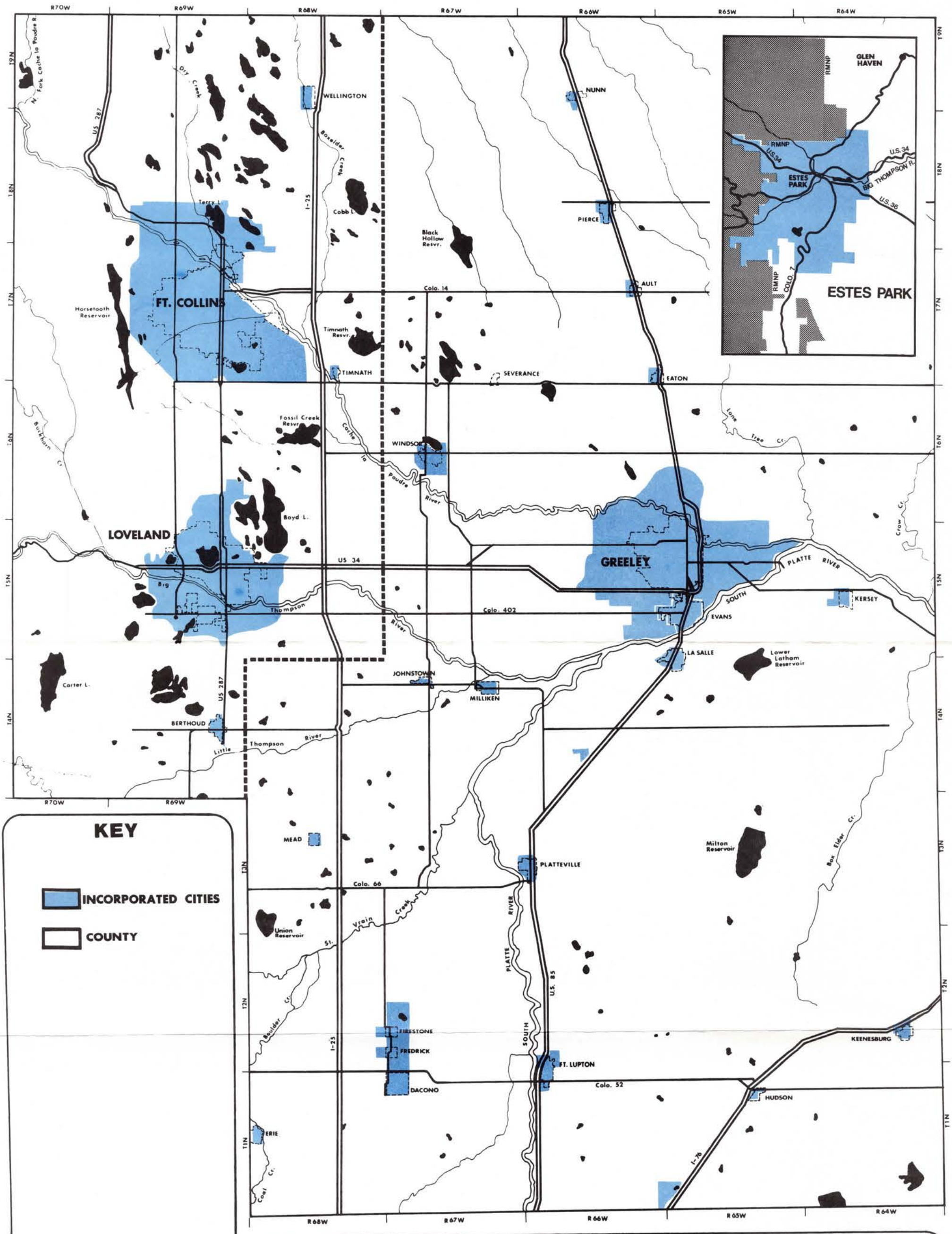
Recommended management agency boundaries are shown on Figure 7.2.1-A. For each city or town, these boundaries represent either (1) urban service area boundaries, (2) boundaries of a sewer district encompassing and servicing the town, or (3) town limits. The two counties are the responsible management agency in all other areas.

A basic recommendation of this study is that, for all pollutant categories, qualified cities and towns be designated as management agencies for their respective urban service areas.

In order to define its urban service area properly, a community should look at more than where it is capable of providing sewer service. A comprehensive planning effort based on identified community goals and the desired future character of the community should dictate the service area. This requires background studies in physical conditions, goal setting, existing development, existing services and their capacities, financial capacities, population and employment projections, and land use planning. Reality may limit desired goals and constrict a community's otherwise grandiose ideas of growth.

FIGURE 7.2.2-A

Recommended Management Agency Boundaries



KEY

- INCORPORATED CITIES
- COUNTY

JANUARY 1978

SCALE

0 ½ 1 2 3 4 5 MILES

FIG. 7.2.2-A

MANAGEMENT AGENCY BOUNDARIES

LARIMER-WELD REGIONAL COUNCIL OF GOVERNMENTS

AREAWIDE WATER QUALITY PLAN

THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH A WATER QUALITY MANAGEMENT TECHNICAL ASSISTANCE PLANNING GRANT FROM THE ENVIRONMENTAL PROTECTION AGENCY UNDER THE PROVISIONS OF SECTION 208 OF THE FEDERAL WATER POLLUTION CONTROL ACT OF 1972 (PL. 92-500)

The physical services such as water and sewer service should not dictate the growth patterns or development of a community. They influence what can occur, but are a service facility. The goals and character of the community should be determined (with the utilities as one consideration) and used to define what and where services will be needed.

Only a few communities in the Larimer-Weld County area have conducted the necessary background studies to identify their urban service area boundaries. Loveland and Greeley have completed such studies and gone through the community review process leading to adoption of the service areas. Windsor, Fort Collins, and Estes Park are in the process of conducting studies which will enable them to identify their desired service areas, but have not yet completed the process. Therefore, the management areas or areas of dominion for the cities and towns are (1) their defined service areas (Greeley and Loveland); or (2) city limits rounded off to take in areas essentially surrounded; or (3) the 1985 service areas of the districts which encompass towns.

As each community chooses to conduct the necessary background studies to determine its desired service area for all services, it may wish to enlarge or contract its urban service area boundaries as shown in the 208 plan. This is a local decision. But without this effort, extension of sewer utility service cannot be considered outside the service area as shown. In order to be the management agency for their service area, communities must demonstrate abilities to be responsible in those areas by preplanning and committing themselves to place a full range of services and support in the area.

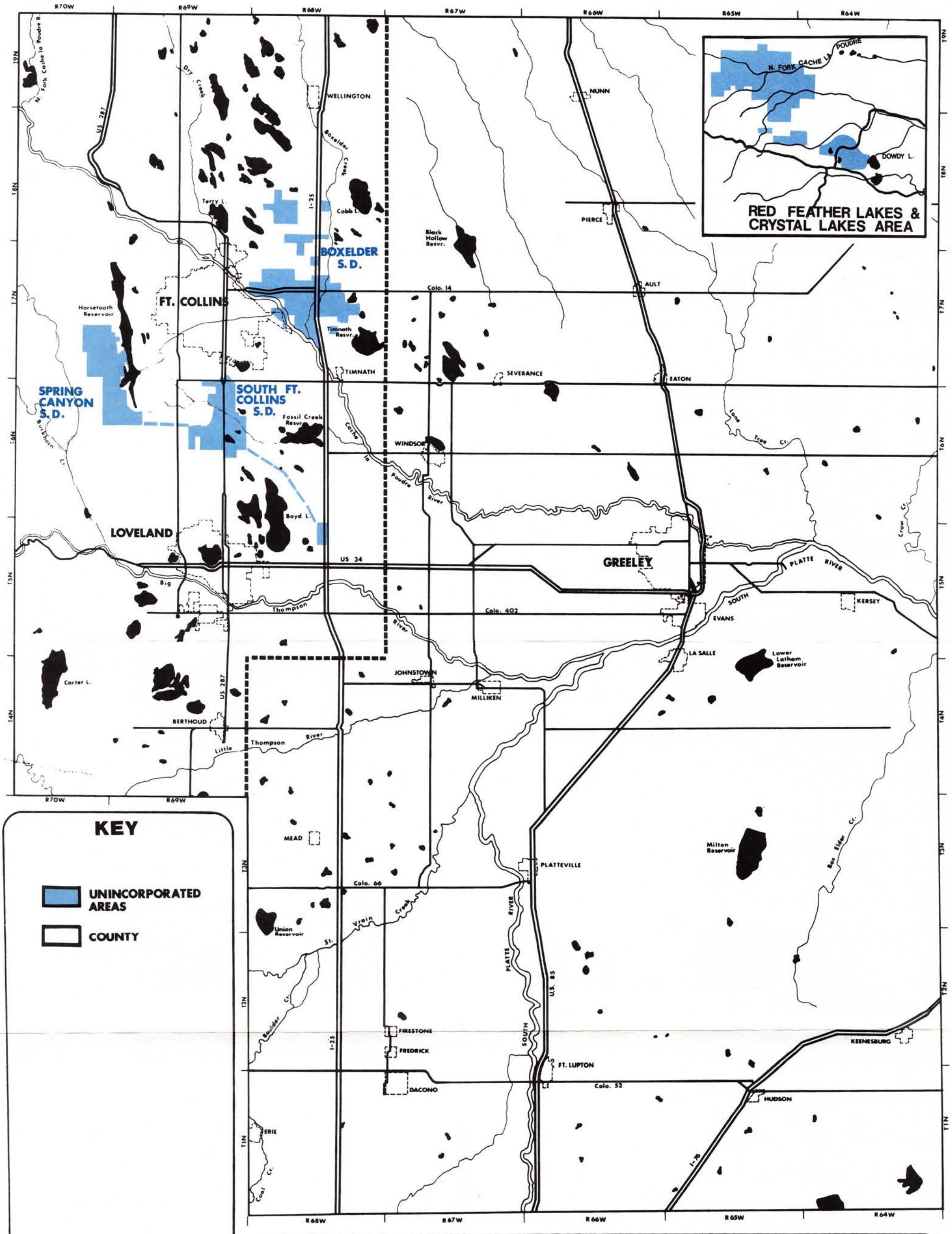
Recommended operations agency boundaries are shown on Figure 7.2.2-B.

Service areas for sanitation districts are defined by their district service areas. The existing functioning districts will be operation agencies subordinate to the county for management purposes. The districts, like the cities, have definite areas of service beyond which service cannot be extended and which cannot be changed unless approved. The 208 management and planning agencies must approve any requests for such changes in service area.

Because non-point source pollution control powers and land use decision powers are not held by districts, they cannot act as management agencies. It must be a general purpose government. However, where districts exist in unincorporated areas, it is logical for the counties to pass through to the districts certain tasks while the county retains the ultimate responsibility. If they have ultimate responsibility, they must retain the control. So the districts as operations agencies perform their tasks under the purview of the county as the management agency. Paper districts (districts which have no facilities that are operational) would not be designated. The provision of services, operation of the

FIGURE 7.2.2-B

Recommended Operations Agency Boundaries



THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH A WATER QUALITY MANAGEMENT TECHNICAL ASSISTANCE PLANNING GRANT FROM THE ENVIRONMENTAL PROTECTION AGENCY UNDER THE PROVISIONS OF SECTION 208 OF THE FEDERAL WATER POLLUTION CONTROL ACT OF 1972 (PL 92-500)

facilities, administration and maintenance are pass-through actions executed by the districts. On the other hand, expansion of the service areas or facilities, land use decisions, and non-point control are primarily concerns of the management agency. In order to discharge their management responsibilities in these areas, the counties will have to consider the availability of other services and the budgetary implications of any proposed expansion of the operating agencies' service areas. The counties are thus in the same role as the cities in considering the total development implications of enlarging service areas. They, too, will be responsible for providing some of the necessary services if an area of development is permitted to expand.

Thus, changes in boundaries of a management agency or in the boundaries of any operational agency outside an urban service area (e.g., a sanitation district in the county) must follow the 208 plan amendment process. This requires a recommendation from the management agency and approval by the planning agency. 208 plan amendments must be considered annually and submitted to the state and the EPA for their ratification.

The burden of justifying the boundaries and ascertaining what they should be should originate with the management agencies. In the case of the counties, the initial request may come from the operation agencies. Extension of utility service areas outside the service areas shown on Figures 7.2.2-A and B will not be permitted until the boundary is officially amended under the 208 process. Thus, the services areas for all operational agencies are fixed by the 208 plan, identifying where sewer utilities expansions may occur and where there will be no service until there is a plan amendment complementary to the goals of the 208 plan and the respective comprehensive plans of each county. This requirement for districts is in addition to, not in lieu of, the state required court review process for expanding special districts. Both procedures will be necessary for district expansion to occur beyond the approved service area.

7.3 DETAILED DESCRIPTION OF INSTITUTIONAL STRUCTURE AND TASKS: RECOMMENDED ALTERNATIVE

7.3.1 Municipal and Industrial Point Sources

7.3.1.1 Designate the Larimer-Weld Council of Governments as the Continuing Planning Agency

The designation of the Larimer-Weld Council of Governments as the continuing planning agency occurred after screening all of the possible candidates for this assignment. It was decided upon primarily because of two factors: (1) the desire to keep as strong as possible local involvement in the planning process, and (2) the requirement that the agency be large enough in terms of geographical purview to have an areawide perspective for water quality problems. The Larimer-Weld Council of Governments is an obvious candidate for the assignment because of its structure, make-up and its areawide planning purview.

7.3.1.2 Adopt the Urban Service Area Concept as the Basin Assigning Areas of Domain for Management Agencies

Adoption of the urban service area concept as the basis for assignment of management agency responsibilities to specific areas of domain is discussed in some detail in section 4.4.2 of this report. It is essential to achieve the objective of keeping general purpose local governments in charge of this program to the greatest extent possible.

7.3.1.3 Designate all "Qualified" Towns and Cities as Management Agencies for not only their City Limits but also their Urban Service Area Boundaries

The designation of all qualified towns and cities as management agencies for either their city limits or their service area boundaries is discussed in detail in section 4.4.2 above. The reasoning behind this recommendation is also dominated by the desire to have general purpose local governments in charge of the program wherever possible.

7.3.1.4 Designate Larimer County and Weld County as the Management Agencies for all Areas Outside of the Urban Service Areas in each County plus the Entire Service Area and/or City Limits of Small Towns and Cities that are Unable to Handle Management Agency Responsibilities.

The designation of Larimer and Weld Counties as management agencies for all areas outside of service areas or city limits of towns and cities in the counties is a part of the urban service area concept and is explained in detail in section 4.4.2 of this report. The recommendation is dominated by the desire to place general purpose local governments in charge of the program wherever possible.

7.3.1.5 Designate all Existing Owners and Operators of Wastewater Treatment Facilities as Operating Agencies and Develop Appropriate Intergovernmental Contracts between them and the Responsible Management Agency for their Area

This recommendation recognizes the need to assign appropriate roles to all agencies currently in the wastewater treatment business and to clarify the relationship that these operators will have with the management agency of their area who will have some overview responsibilities over them.

In the case of major municipalities who are both the management agency and the operating agency, this requirement for an intergovernmental agreement will be inappropriate. However, in the case where the operating agency is other than the management agency, such as a sanitation district, this requirement will necessitate the formalizing of relationships between the sanitation district as an operating agency and the general

purpose local government, who is the management agency for their area. This agreement should take the form of an intergovernmental contract and it should spell out clearly the requirements and responsibilities of each party in carrying out the requirements of the 208 plan. See Section 7.2 above.

It is the intention of this requirement that the management agency will pass through in the intergovernmental contract between themselves and the operating agency (sanitation district) virtually all of the tasks that are associated with carrying out the 208 plan. For example, contained in this intergovernmental contract will be such key features as the sanitation district maintaining its NPDES permit in its own name. The operating agency will be responsible to develop and implement the user's fee and industrial cost recovery requirements of the law, and to the extent possible, all of the powers and responsibilities that now rest with the sanitation district will be left with them as their responsibilities to carry out. Some overview and coordination tasks will be, from necessity, left with the management agency, but those will be clearly spelled out in the intergovernmental agreement to eliminate confusion about responsibilities and authority. For example, all grant applications must be the responsibility of the management agency.

7.3.1.6 Designate all Industrial, Commercial and Other Private Owners and Operators of Wastewater Treatment Facilities as Operating Agencies. Each Operating Agency is to Enter into an Appropriate Agreement with the Management Agency of their Area to Carry out the Provisions of the 208 Plan and the Law

Industrial, commercial and private owners and operators of wastewater treatment facilities will enter into a contractual relationship with the management agency who has management agency purview for those areas to describe the task of each party. The contract will function much in the same way as the intergovernmental contract between management agencies and operating agencies of public wastewater treatment facilities. That is, to the extent practical, operating agencies will continue to be assigned as much as is possible of the actual action requirements of owning and operating wastewater treatment facilities that existed in the past. There will be, however, overview requirements that are necessary for the management agency to carry out its responsibilities.

It is planned that the industrial, commercial or private operator will continue to possess his own discharge permit and will be legally responsible for meeting the provisions contained therein, and will be directly subject to any sanctions that result from non-compliance. Modifications and alterations to the permit possessed by private groups would be subject to overview responsibilities by the management agency to assure the proposed alterations were consistent with the overall 208 plan and provide for a rational means for staying in conformance with the goals of the law.

7.3.1.7 Designate the State Health Department and the Appropriate County Health Department as the Regulatory Agency. Responsibilities between the Two Parties are to be Spelled out in an Intergovernmental Agreement.

The designation of the State Health Department and its operating partner and subordinate, the County Health Department, for each County, as the regulatory agency is similar to that of our other institutional recommendations. It is planned that these two parties, the State and County Health Departments, would enter into an intergovernmental working agreement that describes the tasks that each is to perform and the interrelationship between the two with emphasis on the concept of assigning as many responsibilities as possible to the local Health Department to provide regulatory control at the lowest possible level.

7.3.1.8 Appoint a Policy Advisory Committee and a Technical Advisory Committee to Assist the Planning Agency in Effective 208 Plan Implementation

The policy advisory committee and the technical advisory committee contained in this recommendation are a key part of the continuing efforts to implement the 208 plan. Membership on these two committees should be dominated by people from local agencies within the Larimer-Weld area, specifically to include the counties, the cities, special districts who are operating agencies and other involved and interested agencies and persons who can contribute to the overall program of policy and technical advice to the planning agency in its task of carrying out the 208 plan.

7.3.1.9 Initially the Planning Agency Staff should not Exceed Three Skilled, Effective People. The Scope of the Program will Determine Future Size.

The concept of limiting the full-time permanent staff of the planning agency is merely one that suggests that the principal role of the planning agency is one of overview, coordination, and program direction. Specific tasks other than the overview and coordination role that are required of the planning agency will be done to the great extent by contracts with other parties or short-term consulting relationships that are assigned a short-term specific task to carry out. In view of the many planning tasks initially required, priorities will have to be set in light of available resources.

7.3.1.10 Planning Agency Funding Should Come Initially from 75-25 Split of Federal and Local Sources. Eventually Federal Funding May Cease and Local Share Expand. Local Dollars Would Come from all Citizens of both Counties

This recommendation recognizes that the planning agency funding which is proposed by the Federal EPA to continue for one more

year on a 75-25 federal-local split basis will sooner or later come to an end and will require funding sources other than the Federal government. While it is hoped that the Federal government or the State government will continue to provide funding support for the program, it is believed that the value of the program to local agencies is sufficient to warrant local funding in part or in total at some time in the future, in exchange for keeping local control over the program.

The other concept suggested here is that whatever the local share of the funding requirements for the planning agency may be as the years go by, a proper base for developing local support is one that comes broadly from across the two counties, presumably from some form of ad valorem levy imposed at the county level.

7.3.1.11 Special Designation. If Flow Augmentation and the Supporting Components of (1) Fish Stocking, (2) Stream Engineering, and (3) Dredging are to Remain as a Part of the Technical Plan, the Following Institutional and Financial Structure is Recommended Exclusively for the Four Categories of Activities. Refer to Section 7.1.1.1 above.

The concept proposed in this special designation of institutional responsibilities is for the complex activities of flow augmentation and the supporting components of fish stocking, stream engineering and dredging are activities that do not lend themselves to assignment of responsibility to local agencies. It is believed that if this concept of flow augmentation is necessary to achieve the fishable/swimable goals of the law (and there is serious question about the practicality of this concept), then the need and requirement to implement such a program is clearly one that goes beyond the Larimer-Weld area and would need to be dealt with on a state-wide basis. It is assumed that if flow augmentation is required for conformance with the law in the Larimer-Weld area, then it would clearly be a requirement for many other designated and non-designated planning areas of the state. As such, the problem would need to be confronted on a much larger scale than the Larimer-Weld 208 program is capable of dealing with.

The recommended designation of state agencies to carry out this task is difficult because few, if any, of the state agencies really possess the powers and the capabilities to really do what is required. When the specific tasks that would fall to each agency that has a portion of the institutional structure for this program are considered, and the financial, political and sociological problems associated with the carrying out of such tasks evaluated, it appears that for this stage of the development of a State water quality control program for Colorado, flow augmentation concepts with the supporting fish enhancement activities that go with the program are probably not a viable concept.

7.3.2 Non-Point Sources

7.3.2.1 Designate Larimer-Weld Council of Governments as the Continuing Planning Agency and Assign them the Responsibility of Developing a Planning, Research and Demonstration Program for all Non-Point Source Pollutants that Completes the Planning Job Begun in the Initial 208 Program and Determines what Should be Done about Various Non-Point Pollutants.

The designation of the Larimer-Weld Council of Governments as the continuing planning agency for this non-point source task is consistent with the recommendation of the Larimer-Weld Council of Governments as the planning agency for the other two principal tasks in the Larimer-Weld area, i.e., the municipal and industrial point source program and the program for pollution abatement in the irrigated agriculture area.

The task at hand for the continuing planning agency in the arena of non-point source pollutants is one of completing the planning job that was done to various degrees for differing categories of non-point sources throughout the initial Larimer-Weld 208 planning program. The detailed discussion of the status of planning studies on each category of non-point source pollutants is contained in the technical report on this subject.[6] The bottom line of this assessment is that for virtually all classifications of non-point source pollutants, the planning, research and demonstration job is not yet sufficiently complete to warrant an aggressive implementation program on the part of management and operations agencies. Therefore, implementation of the programs associated with pollution abatement from non-point source pollutant categories is inappropriate at this time.

Although it is clear that some forms of non-point source pollutants are better understood and the planning activities have proceeded further than for other forms, it is generally true that this category of pollutants as a whole requires further planning and development activities before full implementation programs are put into place. Selected actions are immediately implementable, such as grading controls, subdivision development controls to ameleorate runoff while a plat is under construction, and a reevaluation of the extensiveness of spreading of sand and gravel for roads and streets in winter. The task for the planning agency is to identify those recognized and generally-accepted procedures that can be readily implemented by the management agencies, while at the same time developing a program to deal comprehensively with this source of pollution.

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[6] Toups Corporation, Non-Point Source Pollution Control, Larimer-Weld Council of Governments, September 1977.

7.3.2.2 Adopt the Service Area Concept as the Basis for Assigning Areas of Domain for Management Agencies

Adoption of the urban service area concept as the basis for assignment of management agency responsibilities to specific areas of domain is discussed in some detail in Section 4.4.2 of this report. It is essential to the concept of keeping general purpose local governments in charge of this program to the greatest extent possible.

7.3.2.3 Designate all Qualified Towns and Cities as Management Agencies for not only their City Limits, but also their Urban Service Area Boundaries. Program Responsibilities should Focus on Continuation of Existing Activities Aimed at Control of Non-Point Pollution Sources (Street Cleaning, Salt Controls, Etc.), Without Expansion or Broadening of Control Activities

Qualified towns and cities are being designated in this program as management agencies at this stage of program development not because it is an appropriate time for program implementation, but because it is likely that they will fall heir to the implementation tasks when the planning program is completed. Thus, it seems appropriate for these agencies to be on-board and deeply involved with the completion of the planning tasks as a preface to preparation for implementation of non-point source pollution abatement programs when and if they come, following completion of the planning and cost-effective studies. Present control activities such as street cleaning, salt control in de-icing should continue without expansion.

7.3.2.4 Designate Larimer County and Weld County as the Management Agencies for all Areas Outside of the Urban Service Areas in each County plus the Entire Service Area and/or City Limits of Small Towns and Cities that are unable to Handle Management Agency Responsibilities. Assign no Responsibility for Implementation at this Time.

The designation of Larimer-Weld Counties as management agencies at this time follows the same reasoning as the designation of cities and towns in terms of being a significant participant in the continuing planning activities for non-point source programs but being assigned no implementation responsibilities until the planning program is completed.

7.3.2.5 Designate no Operation Agency at this Time

The designation of an operation agency for new tasks at this time serves no purpose and is inappropriate until all the planning work has been completed. Present control activities should be continued. These will generally be the responsibilities of management agencies. See Section 7.3.2.3.

7.3.2.6 Designate the State Health Department and Appropriate County Health Departments as the Regulatory Agency with the Primary Task of Assistance to the Planning Agency in Areas of Monitoring and Testing to Provide Data to use in Program Formulation.

The designation of the State Health Department and the appropriate County Health Departments as the regulatory agencies for this program is with the fact in mind that we are still in the planning and development phases of the program and the regulatory tasks during those aspects are primarily that of assisting with the planning and development program and not those of a regulatory agency that will follow once the implementation phase of the program is put in place. So in this somewhat different regulatory role, the two Health Department agencies will in effect serve as a participant in the planning process more than their typical role of a policeman.

7.3.2.7 Appoint a Technical Advisory Committee and a Policy Advisory Committee to Advise the Planning Agency during Continuing Planning and Program Formulation Period

The appointment of a technical advisory committee and a policy advisory committee performs a very important function as we proceed with the continued planning phases of the non-point source pollution abatement program. These committees will play significant advisory roles to the planning agencies as this program evolves and will be asked to give advice not only in the area of continued planning, but also with the thought in mind that the program must be implemented at some date in the future and financial and institutional considerations should be interjected into the planning process as well as technical considerations.

7.3.2.8 Initially the Planning Agency Staff Should not Exceed Three Skilled, Effective People

The limitation of the planning agency staff to no more than three skilled and effective people follows the concept of utilizing small professional staff on a continuing basis and completing special and short term tasks by the utilization of contractual relationships with various parties.

7.3.2.9 Continued Planning, Research and Demonstration Work should be Done Under Planning Agency Direction via Contacts with the Following Parties: Management Agencies, I.P.A. Agreements, State and/or Federal Agencies, Consultants, and other Special Agencies who Possess Skills to Assess a Specific Non-Point Pollution Problem.

This recommendation interacts with the earlier recommendations of a limited planning staff and it involves the concept of specific planning, research and demonstration tasks being performed via

contractual relationships with key agencies or groups that have special skills under the direction of the planning agency, but via a consulting, contractual arrangement with either public or private agencies to carry out these tasks.

7.3.2.10 Funding for both Planning Agency Staff and Support Activities Plus Costs of Contract Activities to actually do Planning, Research and Demonstration, as Required, should be from Federal and/or State Agencies

It is assumed that since the planning activities of the non-point source program are incomplete that funding by the external agency that created the law and the program is still appropriate as we complete the problem definition and implementaion development stages of the Larimer-Weld 208 program.

7.3.2.11 Recommendations Should be Formulated by the Planning Agency during the Continued Planning Phase to Guide Implementation Activities for the Future. Technical, Financial and Institutional Aspects are to all be Assessed.

The final task of the planning agency during the continuing planning period will be that of developing a detailed work program and implementation strategy to carry out the results of their planning activities.

7.4 DETAILED DESCRIPTION OF INSTITUTIONAL STRUCTURE AND TASKS: LIMITED LOCAL INVOLVEMENT ALTERNATIVE

7.4.1 Municipal and Industrial Point Sources

7.4.1.1 Designate State Health Department (Water Quality Control Division) as the Continuing Planning Agency

The designation of the State Health Department's Water Quality Control Division as the continuing planning agency is made only because of the assumption that it is possible that the counties and the C.O.G. in the Larimer-Weld area may choose not to become involved in the continuing aspects of the 208 program. The Water Quality Control Division is certainly not a perfect agency to be assigned the responsibility of water quality planning at the local level, but in the absence of acceptance of that responsibility by some local agency, they appear to be the best of a series of possible candidates to carry out the task in a meaningful way.

7.4.1.2 Adopt the Urban Service Area Concept as the Basis for Assigning Areas of Domain for Management Agencies

The urban service area concept as a basis for assigning areas of domain for management agencies is still appropriate under the limited local government involvement concept because of the assumption that towns and cities would remain involved with the

program even though the county and the C.O.G. have limited or no involvement. Therefore, this concept of urban service areas which is discussed in detail in section 4.4.2 of this report continues to be appropriate and would guide the assignment of areas of domain for management agency.

7.4.1.3 Designate all "Qualified" Towns and Cities as Management Agencies for not only their City Limits but also their Urban Service Area Boundaries.

Qualified towns and cities who would be designated management agency responsibilities for their area of domain under the service area concept and would continue to apply under this alternative exactly as the concept applied under the Recommended Alternatives.

7.4.1.4 Designate the State Health Department (Water Quality Control Division) as the Management Agency for all Areas Outside the Urban Service Areas in each County Plus the Entire Service Area and/or City Limits of Small Towns and for Cities that are Unable to Handle Management Agency Responsibilities.

The designation of the State Health Department (Water Quality Control Division) as the management agency for all of the areas outside of urban service areas in each county is a designation that is made with some reluctance. It should be understood that this task of management agency for, in effect, the rural areas of the county is a task for which there is really no state agency that is fully qualified. Some of the state agencies such as the Water Quality Control Division, have sufficient technical skills to carry out the task, but are clearly inadequate in their capabilities to deal with the land use and land management related aspects of the program. When one turns to state agencies who have the capabilities of the land use and land management activities, it is clear that those agencies have little or no technical capabilities to carry out the management agency task. So from this dilemma we selected the best of the series of bad alternatives and that appears to be the Water Quality Control Division of the State Health Department. They conceivably could carry out the task if they are provided with support and assistance in as many ways as possible by local officials. It should be clear that this recommendation is made with a great deal of reluctance because of the recognition of the limitations associated with assigning a state agency a task of carrying out a program that is really designed for local agencies.

7.4.1.5 Designate all Existing Owners and Operators of Wastewater Treatment Facilities as Operating Agencies and Develop Appropriate Intergovernmental Contracts Between them and the Responsible Management Agency for their Area

This recommendation recognizes the need to assign appropriate roles to all agencies currently in the wastewater treatment business

and to clarify the relationship that these operators will have with the management agency of their area who will have some overview responsibilities over them.

In the case of major municipalities who are both the management agency and the operating agency, this requirement for an intergovernmental agreement will be inappropriate. However, in the case where the operating agency is other than the management agency, such as a sanitation district, this requirement will necessitate formalizing of relationships between the sanitation district as an operating agency and the general purpose local government, who is the management agency for their area. This agreement should take the form of an intergovernmental contract and it should spell out clearly the requirements and responsibilities of each party in carrying out the requirements of the 208 plan. Refer to Section 7.3 above.

It is the intention of this requirements that the management agency will pass through in the intergovernmental contract between themselves and the operating agency (sanitation district), virtually all of the tasks that are associated with carrying out the 208 plan. For example, contained in this intergovernmental contract will be such key features as the sanitation district maintaining its NPDES permit in its own name, the sanitation district will be made eligible to apply for an receive federal grants for expansion of facilities when appropriate, the operating agency will be responsible to develop and implement the user's fee and industrial cost recovery requirements of the law, and to the extent possible, all of the powers and responsibilities that now rest with the sanitation district will be left with them as their responsibilities to carry out. Some overview and coordination tasks will be, from necessity, left with the management agency, but those will be clearly spelled out in the intergovernmental agreement to eliminate confusion about responsibilities and authority.

7.4.1.6 Designate all Industrial, Commercial and Other Private Owners and Operators of Wastewater Treatment Facilities as Operating Agencies. Each Operating Agency is to Enter into an Appropriate Agreement with the Management Agency of their Area to Carry out the Provisions of the 208 Plan and the Law.

Industrial, commercial and private owners and operators of wastewater treatment facilities will enter into a contractual relationship with the appropriate management agency to describe the tasks of each party. The contract will function much in the same way as the intergovernmental contract between management agencies and operating agencies of public wastewater treatment facilities. That is, to the extent practical, operating agencies will continue to be assigned as much as is possible of the total requirements of owning and operating wastewater treatment facilities that existed in the past. There will be, however, some overview requirements that are necessary for the management agency to carry out its responsibilities.

It is planned that the industrial, commercial or other private operators will continue to possess their own discharge permit and will be legally responsible for meeting the provisions contained therein, and will be directly subject to any sanctions that result from non-compliance. Modifications and alterations to the permit possessed by private groups would be subject to overview responsibilities by the management agency to assure the proposed alterations were consitent with the overall 208 plan and provided for a rational means for staying in conformance with the goals of the law.

7.4.1.7 Designate the State Health Department and the Appropriate County Health Department as the Regulatory Agency. Responsibilities Between the Two Parties are to be Spelled out in Intergovernmental Agreement.

The designation of the State Health Department and its operating partner and subordinate, the County Health Department, for each County as the regulatory agency is similar to that of our other institutional recommendations. It is planned that these two parties, the State and County Health Departments, would enter into an intergovernmental working agreement that described the tasks that each was to perform and the interrelationship that was to develop between the two with emphasis on the concept of assigning as many responsibilities as possible to the local Health Department to provide regulatory control at the lowest possible level.

7.4.1.8 Appoint a Policy Advisory Committee which Includes Strong Local Government Representation and a Technical Advisory Committee to Assist the Planning Agency in Effective 208 Plan Implementation.

The policy advisory committee and the technical advisory committee contained in this recommendation are a key part of the continuing efforts to implement the 208 plan. Membership of these two committees would be dominated by people from local agencies within the Larimer-Weld area, specifically to include the counties, the cities, special districts who are operating agencies and other involved and interested agencies and persons who can contribute to the overall program of policy and technical advice to the planning agency in its task of carrying out the 208 plan.

7.4.1.9 Planning Agency Staff should be as Required to Carry out Requirements of 208 Plan.

No particular planning agency staffing recommendation is made for this alternative because of the fact that the Water Quality Control Division has so many other tasks that it is involved with that it is assumed they would mix staff personnel to carry out the Larimer-Weld 208 planning agency requirements and therefore it is not possible for us to make a recommendation at this stage about what their staff requirements should be.

7.4.1.10 Planning Agency Funding should come Initially from a 75-25 Split of Federal and State Sources. Eventually Federal Funding will Cease and State Share will Expand. Local Dollars to Pay Costs Expended by State in Two-County Area Should Come from all Citizens of Both Counties

This recommendation recognizes that the planning agency funding which is proposed by the Federal EPA to continue for one more year on a 75-25 federal-local split basis will sooner or later come to an end. This will create requirement for funding sources other than the Federal government. While it is hoped that the Federal government or the State government will continue to provide funding support for the program, it is believed that the value of the program to local agencies is sufficient to warrant local funding in part or in total at some time in the future.

The other concept suggested here is that whatever the local share of the funding requirements for the planning agency may be as the years go by, that the proper base for developing local support is one that comes broadly from across the two counties, presumably from some form of ad valorem levy imposed at the county level.

7.4.1.11 Special Designation: If Flow Augmentation and the Supporting Components of (1) Fish Stocking, (2) Stream Engineering, and (3) Dredging are to Remain as a Part of the Technical Plan, the Following Institutional and Financial Structure is Recommended Exclusively for the Four Categories of Activities. Refer to Section 7.1.2.1 above.

The concept proposed in this special designation of institutional responsibilities for the complex activities of flow augmentation and the supporting components of fish stocking, stream engineering and dredging are activities that do not lend themselves to assignment of responsibility to local agencies. It is believed that if this concept of flow augmentation is necessary to achieve the fishable/swimable goals of the law, and there is serious question about the practicality of this concept, then the need and requirement to implement such a program is clearly one that goes beyond the Larimer-Weld area and should need to be dealt with on a state-wide basis. It is assumed that if flow augmentation is required for conformance with the law in the Larimer-Weld area, that it would clearly be a requirement for many other designated and non-designated planning areas of the State. As such, the problem would need to be confronted on a much larger scale than the Larimer-Weld 208 program is capable of dealing with.

The recommended designation of state agencies to carry out this task is difficult because few, if any, of the state agencies really possess the powers and the capabilities to do what is required in terms of the specific tasks that would fall to each agency that has a portion of the institutional structure for this program. Evaluation of the financial, political and socio-

logical problems associated with the carrying out of the task suggest that for this stage of the development of a state water quality control program for Colorado, flow augmentation concepts with the supporting fish enhancement activities that go with the program are probably not a viable concept.

7.4.2 Non-Point Sources

7.4.2.1 Designate the State Health Department (Water Quality Control Division) as the continuing planning agency. Assign them the Responsibility of Developing a Planning, Research and Demonstration Program for all Non-Point Source Pollutants that Completes the Planning Job begun in the Initial 208 Program and Determines what should be done about Various Non-Point Pollutants.

The designation of the State Health Department (Water Quality Control Division) as a continuing planning agency to continue the incomplete planning task for non-point source pollutants raises the same kind of institutional appropriateness questions that occurred under a designation of this same agency as a planning agency for municipal-industrial point source activities. The substance of that discussion which is referenced to this recommendation was that even though there were some problems with the assignment of this agency to this local government task that they were the best of the marginal alternatives available when the local council of governments planning agency is dropped from consideration.

7.4.2.2 Adopt the Service Area Concept as the Basis for Assigning Areas of Domain for Management Agencies.

Adoption of the urban service area concept as the basis for assignment of management agency responsibilities to specific areas of domain is discussed in detail in section 4.4.2 of this report. It is essential to the concept of keeping general purpose local governments in charge of this program to the greatest extent possible.

7.4.2.3 Designate all "Qualified" Towns and Cities as Management Agencies for not only their City Limits, but also their Urban Service Area Boundaries. Assign no Responsibility for Program Implementation at this Time.

Qualified towns and cities are being designated in this program as management agencies at this stage of program development not because it is an appropriate time for program implementation, but because it is likely that they will fall heir to the implementation tasks when the planning program is completed. Thus, it seems appropriate for these agencies to be on-board and deeply involved with the completion of the planning tasks as a preface to preparation for implementation of non-point source pollution abatement programs when and if they come, following completion of the planning and cost-effective studies.

7.4.2.4 Designate Larimer County and Weld County as the Management Agencies for all Areas Outside of the Urban Service Areas in each County plus the Entire Service Area and/or City Limits of Small Towns and for Cities that are Unable to Handle Management Agency Responsibilities. Assign no Responsibility for Implementation at this Time.

The designation of Larimer-Weld Counties as management agencies at this time follows the same reasoning as the designation of cities and towns in terms of being a significant participant in the continuing planning activities for non-point source programs but being assigned no implementation responsibilities until the planning program is completed.

7.4.2.5 Designate no Operation Agency at this Time.

The designation of an operation agency at this time serves no purpose and is inappropriate until all the planning work has been completed.

7.4.2.6 Designate the State Health Department and Appropriate County Health Departments as the Regulatory Agency with the Primary Task of Assistance to the Planning Agency in Areas of Monitoring and Testing to Provide Data to use in Program Formulation.

The designation of the State Health Department and the appropriate County Health Department as the regulatory agencies for this program is with the fact in mind that we are still in the planning and development phases of the program and the regulatory tasks during those aspects are primarily that of assisting with the planning and development program and not those of a regulatory agency that will follow once the implementation phase of the program is put in place. So in this somewhat different regulatory role, the two Health Department agencies will in effect serve as a participant in the planning process more than their typical role of a policeman.

7.4.2.7 Appoint a Technical Advisory Committee and a Policy Advisory Committee to Advise the Planning Agency during Continuing Planning and Program Formulation Period.

The technical advisory and policy advisory committees will play a very important role in guiding the activities of the planning agency through the continuing planning period of the non-point source program. It is intended that the membership on these two committees be dominated by local agencies and participants to assure a strong flavor of local input into the completion of the planning exercise and as a guiding force to develop direction for implementation that responds to the needs of the local areas.

7.4.2.8 Planning Agency Staff Should be as Required to Carry Out Planning, Research and Demonstration Task.

The planning agency staff to carry out the continued planning requirements of this program will be left up to a determination by the planning agency itself because of the likelihood that the planning agency will be mixing these continued planning activities with their other tasks and it is inappropriate for external staffing recommendations in that setting.

7.4.2.9 Continued Planning, Research and Demonstration Work Should be Done under Planning Agency Direction. Actual Project Planning Work to be done by Planning Agency Staff or via Contracts with the Following Parties: Management Agencies, I.P.A. Agreements, State and/or Federal Agencies, Consultants or Other Special Agencies who Possess Necessary Skills.

This recommendation interacts with the earlier recommendation of a limited planning staff and it involves the concept of specific planning, research and demonstration tasks being performed via contractual relationships with key agencies or groups that have special skills under the direction of the planning agency, but via a consulting, contractual arrangement with either public or private agencies to carry out these tasks.

7.4.2.10 Funding for both Planning Agency Staff and Support Activities plus Costs of Contract Activities to Actually do Planning, Research and Demonstration, as Required, Should be by Federal and/or State Agencies.

It is assumed that since the planning activities of the non-point source program are incomplete that funding by the external agency that created the law and the program is still appropriate as we complete theproblem definition and implementation development stages of the Larimer-Weld 208 program.

7.4.2.11 Recommendations should be Formulated by the Planning Agency during the Continued Planning Phase to Guide Implementation Activities for the Future. Technical, Financial and Institutional Aspects are to all be Assessed.

The final task of the planning agency during the continuing planning period will be that of developing a detailed work program and implementation strategy to carry out the results of their planning activities.

7.5 FINANCIAL ANALYSIS AND RECOMMENDATIONS

The general financial requirements for performance of the planning, management, operations and regulatory activities in 208

implementation are discussed above in Sections 4.1 through 4.4. These needed financial capabilities played an important role in the choices made for agencies that can best carry out the 208 plan. The following sections focus on further identification of the specific needs for financial planning, management and funding for the suggested implementation agencies, and suggested approaches for handling financial problems that will be faced during the implementation of this plan.

7.5.1 General Financial Requirements by Agency Function

A range of financial planning and management activities will be essential for successful plan implementation. Although the requirements for funding capital and operating costs may first come to mind, many other activities are important as well. For instance, it will be necessary to construct long-range financial plans; to generate and evaluate financial information regarding the costs and impacts of technical alternatives; to administer large-scale billing systems; to accomplish debt financing; to conduct investment programs; and to administer accounting, budgeting and capital programming systems. In this Section 7.5.1, the importance of these activities are discussed for the various agencies being suggested for 208 roles. Funding requirements are addressed in the following Section 7.5.2. The ability of recommended agencies to meet financial requirements is assessed in Section 7.5.3.

7.5.1.1 Planning Agencies

The tasks of the continuous planning agency primarily involve overview, coordination and program direction. Specific tasks other than these that are required of the planning agency will be done via contracts with other parties, and perhaps with short-term consulting relationships. Initially, the planning agency staff should not need to exceed three skilled, effective people. This staff should suffice for all aspects of the program, including both point and non-point sources.

The financial requirements implicit in these tasks are concentrated in the areas of financing planning and analysis, and securing adequate funding for the support of the planning activities, as opposed to administration of a large-scale financial system and funding major capital improvements. Initially, it is recommended that planning agency funding come primarily from federal sources, with no more than a 25% share from the state and/or local community. Ultimately, it appears that there will have to be greater reliance on state and local sources. This, together with the fact that neither the recommended nor alternative planning agency (Larimer-Weld Council of Governments and State Health Department, Water Quality Division, respectively) has discretionary funding capabilities, suggests that it is essential that the designated agency be proficient in obtaining intergovernmental funds.

Agency skills in financial planning and analysis will also be important. Annual updating of the plan, overviewing other agency activities, and providing coordination require proficiency in understanding the cost and revenue implications of the various plans and activities of all other agencies. It will be necessary to understand, and act on, the areawide financial implications of a number of sub-area activities.

Budgeting and accounting activities will be small scale and straightforward. These should not be major concerns.

7.5.1.2 Management Agencies

The management agencies have the basic responsibility for 208 plan implementation, though they may or may not directly perform each and every function this implies. The overall needs for management agency financial capabilities of course depend on the extent to which it delegates tasks to other agencies.

Section 208(c)(2) of the law identified several specific requirements. These, along with certain requirements implied by the Act, are noted in detail in Section 4.3 above. Basically, these requirements represent the entire spectrum of financial planning, management, analysis and administration, as well as extensive funding capabilities. Whether or not the management agency delegates various of its responsibilities, it will continue to need a high level of professional financial competence.

This is one reason that general purpose local governments, cities and counties, are designated as the preferred choices for management agency responsibilities. These organizations presently possess the necessary financial skills in the greatest degree in the Larimer-Weld region. To be sure, certain of the smaller municipalities may need to upgrade their skills; but the basic powers granted by charter or state law are available.

On the other hand, the alternative recommendation involving the State Health Department raises a problem with availability of financial powers and experience in financial administration of major programs. The Water Quality Division of the State Health Department is basically a coordinating, promoting, regulatory body. It does not have either broad powers or experience in large-scale program implementation. For this reason, it would be necessary to extensively delegate implementation activities, especially those of a financial nature. This could be counterproductive to efforts aimed toward maximum regional coordination.

7.5.1.3 Operations Agencies

All operations functions may be performed by management agencies. On the other hand, the designation of owners and operators of existing public and private wastewater treatment facilities as operations agencies utilizes an important existing resource,

without foregoing the broader land use and financial powers that are vested in the management agencies. This concept allows a further degree of agency specialization, specified by contract, and generally will relieve the management agency of certain implementation tasks.

There are no predetermined financial capabilities required of the operations agencies. Rather, the existing capabilities and skills will determine the tasks that can be delegated by contract. In general, it is expected that operating agencies would at least be able to establish/administer their own schedule of rates and charges within federal requirements for user fee structures and industrial cost recovery. Additionally, there would be a requirement for financial capabilities attendent to system operations and maintenance activities.

These are minimum desirable capabilities. The need for, and use of such skills, or possibly additional skills, will depend on the management agency structure and its desires to delegate tasks and assume a supervisory posture. This will be spelled out in the contract between these two bodies.

7.5.1.4 Regulatory Agencies

The regulatory functions fall into two major categories. First, there is administration of the 402 permit program for all point discharges. Secondly, there are regulatory activities relating to land use and land management control. The planning and management agencies will effect many of the regulatory measures of the second type in the normal course of planning and program implementation. For this reason, regulatory agency designation is recommended for the State Health Department (with present responsibility for the 402 permit program), in conjunction with its operating partner and subordinate, the County Health Departments.

Regulatory agency financial requirements relate primarily to funding staff needs for administration and enforcement of regulatory efforts. These are essentially the same requirements that presently exist and are being met by the State Health Department.

Regulatory efforts that will be conducted by other agencies (primarily management) raise financial requirements relating to obtaining funding for development, administration and enforcement of various land use controls, plus utilizing taxation/user charge measures which provide appropriate incentives for voluntary abatement activities by polluters.

7.5.2 Major Funding Requirements

The technical analysis conducted by the engineering consultant has identified capital and operating costs associated with four alternative implementation strategies. Refer to Section 5.2 above for a brief description of these strategies and aggregate costs for the two-county region (Table 5.2-A).

The largest cost requirement, appearing in all four strategies, is that estimated for best management practices to control pollutants from irrigated agriculture. Funding of these costs, and local impacts, are discussed in a separate report.[7]

Another major cost item is that for stream flow augmentation, stream alterations, and fish stocking. These costs primarily affect Strategy 2, for which a total capital cost exceeding $ 19 million is shown on Table 5.2-A. Such costs represent an effort to create stream conditions for year-round propogation and protection of desirable sport fish species. In Section 5.3 above, it was noted that flow augmentation raises numerous political, legal and economic questions for which there are no answers at this time. However, it does appear that financing for such a program cannot be assigned as a local responsibility. This is because the scope and distribution of the benefits (here we are ignoring the question of whether or not benefits would or would not exceed costs) extends beyond the local population. Stream flow would be augmented in the lower reaches of the region's watercourses, both in and outside the State of Colorado. Likewise, the benefits from sport fishing, and water recreation will accrue to many persons outside the two-county region. This suggests the program should be primarily funded from state and federal sources.

The other major cost item relates to the construction and operation of treatment facilities. Totals and subtotals by discharger and by basin are shown in Tables 7.5.2-A, B, C, and D. Table 7.5.2-A shows costs for Strategy 1. Total capital costs would be nearly $30 million throughout the planning period. Average O & M costs, including existing costs would be approximately $3.8 million per year. Although some of these costs can be discounted to reflect their occurance at a point in the future, inflation will very likely raise all these costs to a future level where postponement creates no advantage in reduced "present value" cost. That is, although some of the $26 million may not be spent immediately, Strategy 1 does create a $26 million funding liability right now.

Table 7.5.2-B shows costs for Strategy 2. Total capital requirements are about $26 million, O & M more than $3.6 million annually, including existing. Table 7.5.2-C shows treatment costs for Strategies 3 and 4. These are the same with almost $12 million in capital and annual O & M at $3.2 million. Table 7.5.2-D details costs by discharger in the outlying areas. These are the same for each of the four strategies, and are included in the totals shown on the preceding three tables.

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[7] Briscoe, Maphis, Murray & Lamont, Inc., Institutional and Financial Recommendations for Control of Pollutants from Irrigated Agriculture, Larimer-Weld Council of Governments, October 19771

TABLE 7.5.2-A PROJECTED COSTS - WASTEWATER TREATMENT FACILITIES IMPROVEMENTS

Strategy 1

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (c)	AVG. O&M COST ($1000/Yr.) (d)	PRESENT WORTH ($1000) CAP. REC. (c)	PRESENT WORTH ($1000) O&M (d)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/Yr.)
CACHE LA POUDRE RIVER								
Ft.Collins #1(e)	6.0	6.0	1,900	377	1,900	3,998	5,898	557
Ft.Collins #2(e)	7.2	9.0	1,400	518	1,400	5,487	6,887	650
Boxelder S.D.(e)	0.75	1.0	673	90	673	954	1,627	154
S.Ft.Collins S.D.(f)	1.0	1.4	-	110	-	1,165	1,165	110
Windsor (e)	1.2	1.7	1,220	74	1,220	789	2,009	190
Eastman Kodak Co.(e)	0.9	1.0	4,306	110	4,306	1,169	5,475	517
Greeley-1st Ave.(g)	6.0	(h)	2,400	425	2,400	4,506	6,906	652
Greeley-Delta(e)(i)	4.5	11.5	9,576	570	7,000	6,037	13,037	1,231
OUTLYING AREA (f)	1.22	2.06	1,472	128	1,247	1,527	2,774	262
Subtotal	28.77	33.66	22,947	2,402	20,146	25,632	45,778	4,323
BIG THOMPSON RIVER								
Loveland (e)	5.3	6.1	2,320	505	2,320	5,346	7,666	724
Great Western-Loveland (g)	4.3	4.3	1,050	109	1,050	1,155	2,205	208
Johnstown (f)	0.31	0.38	105	16	105	170	275	26
Milliken S.D.(f)	0.34	0.40	410	28	410	297	707	67
OUTLYING AREA (f)	1.88	2.87	316	549	316	5,816	6,132	579
Subtotal	12.13	14.05	4,201	1,207	4,201	12,784	16,985	1,604

Source: Toups Corporation, March, 1978

TABLE 7.5.2-A (CONTINUED)

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (c)	AVG. O&M COST ($1000/Yr.) (d)	PRESENT WORTH ($1000) CAP. REC. (c)	PRESENT WORTH ($1000) O&M (d)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/Yr.)
ST. VRAIN RIVER								
OUTLYING AREA (f)	.99	1.2	795	54	713	705	1,418	133
SOUTH PLATTE RIVER								
OUTLYING AREA (f)	2.48	3.88	2,002	162	1,725	1,711	3,436	323
TOTAL-Larimer-Weld	44.37	52.79	29,945	3,825	26,785	40,832	67,617	6,383

(a) Costs in terms of January, 1977, dollars. Annual interest rate 7%.
(b) Secondary treatment, tertiary treatment, or advanced treatment as appropriate to meet ammonia receiving water standard.
(c) Immediate construction of tertiary or advanced treatment facilities assumed, except when construction phased (Greeley-Delta).
(d) Secondary O & M costs from 1978 budgets. For Greeley and Ft. Collins, total annual budget apportioned between facilities. Tertiary and advanced treatment costs from National Commission on Water Quality.
(e) Advanced treatment, 1.5 mg/l ammonia effluent concentration.
(f) Secondary treatment.
(g) Tertiary treatment, 3.0 mg/l ammonia effluent concentration.
(h) Greeley-1st Ave. plant to be abandoned prior to 2000.
(i) Although service area is in Cache la Poudre basin, discharge is to South Platte River.

Source: Toups Corporation, March, 1978

TABLE 7.5.2-B PROJECTED COSTS - WASTEWATER TREATMENT FACILITIES IMPROVEMENTS

Strategy 2

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (c)	AVG. O&M COST ($1000/Yr.) (d)	PRESENT WORTH ($1000) CAP. REC. (c)	PRESENT WORTH ($1000) O&M (d)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/Yr.)
CACHE LA POUDRE RIVER								
Ft.Collins #1(e)	6.0	6.0	1,200	338	1,200	3,578	4,778	451
Ft.Collins #2(e)	7.2	9.0	-	450	-	4,767	4,767	450
Boxelder S.D.(e)	0.75	1.0	423	84	423	884	1,307	123
S.Ft.Collins S.D.(f)	1.0	1.4	-	110	-	1,165	1,165	110
Windsor (e)	1.2	1.7	880	65	880	689	1,569	148
Eastman Kodak Co.(e)	0.9	1.0	4,026	49	4,026	519	4,545	429
Greeley-1st Ave.(e)	6.0	(g)	2,400	425	2,400	4,506	6,906	652
Greeley-Delta(h)(i)	4.5	11.5	9,576	570	7,000	6,037	13,037	1,231
OUTLYING AREA (f)	1.22	2.06	1,472	128	1,247	1,527	2,774	262
Subtotal	28.77	33.66	19,977	2,219	17,176	23,672	40,848	3,856
BIG THOMPSON RIVER								
Loveland (e)	5.3	6.1	1,600	464	1,600	4,916	6,516	615
Great Western - Loveland(e)	4.3	4.3	1,050	109	1,050	1,155	2,205	208
Johnstown (f)	0.31	0.38	105	16	105	170	275	26
Milliken S.D.(f)	0.34	0.40	410	28	410	297	707	67
OUTLYING AREA (f)	1.88	2.87	316	549	316	5,816	6,132	579
Subtotal	12.13	14.05	3,481	1,166	3,481	12,354	15,835	1,495

Source: Toups Corporation, March, 1978

TABLE 7.5.2-B (CONTINUED)

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (c)	AVG. O&M COST ($1000/ Yr.) (d)	PRESENT WORTH ($1000) CAP. REC. (c)	PRESENT WORTH ($1000) O&M (d)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/ Yr.)
ST. VRAIN RIVER								
OUTLYING AREA (f)	.99	1.2	795	54	713	705	1,418	133
SOUTH PLATTE RIVER								
OUTLYING AREA(f)	2.48	3.88	2,002	162	1,725	1,711	3,436	323
TOTAL-Larimer-Weld	44.37	52.79	26,255	3,601	23,095	38,442	61,537	5,807

(a) Costs in terms of January, 1977, dollars. Annual interest rate 7%.
(b) Secondary treatment, tertiary treatment or advanced treatment, as applicable to meet ammonia receiving water standard. 15 cfs augmented flow in plains reaches of both Cache la Poudre and Big Thompson Rivers to maintain in-stream flows for fishery.
(c) Immediate construction of tertiary and advanced treatment facilities assumed, except when construction phased (Greeley-Delta). Includes treatment, disinfection, and sludge treatment.
(d) Secondary O & M costs from 1978 budgets. For Greeley and Ft. Collins, total annual budget apportioned between facilities. Tertiary and advanced treatment costs from National Commission on Water Quality.
(e) Tertiary treatment, 3.0 mg/l ammonia effluent concentration.
(f) Secondary treatment.
(g) Greeley-1st Ave. plant to be abandoned prior to 2000.
(h) Advanced treatment, 1.5 mg/l ammonia effluent concentration.
(i) Although service area is in Cache la Poudre basin discharge is to South Platte River.

Source: Toups Corporation, March, 1978

TABLE 7.5.2-C PROJECTED COSTS - WASTEWATER TREATMENT FACILITIES IMPROVEMENTS

Strategies 3 and 4

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (b)	AVG. O&M COST ($1000/ Yr.)(c)	PRESENT WORTH ($1000) CAP. REC. (b)	PRESENT WORTH ($1000) O&M (c)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/ Yr.)
CACHE LA POUDRE RIVER								
Ft.Collins #1(d)	6.0	6.0	-	300	-	3,178	3,178	300
Ft.Collins #2(d)	7.2	9.0	-	450	-	4,767	4,767	450
Boxelder S.D.(d)	0.75	1.0	74	74	43	784	827	78
So.Ft.Collins S.D.(d)	1.0	1.4	-	110	-	1,165	1,165	110
Windsor (d)	1.2	1.7	330	49	330	519	849	80
Eastman Kodak Co.(d)	0.9	1.0	-	40	-	424	424	40
Greeley-1st Ave.(d)	6.0	(e)	1,000	380	1,000	4,026	5,026	474
Greeley-Delta (d)(f)	4.5	11.5	5,200(g)	450	3,800	4,767	8,567	809
OUTLYING AREA (d)	1.22	2.06	1,472	128	1,247	1,527	2,774	262
Subtotal	28.77	33.66	8,076	1,981	6,420	21,157	27,577	2,603
BIG THOMPSON RIVER								
Loveland (d)	5.3	6.1	-	414	-	4,386	4,386	414
Great Western-Loveland (d)	4.3	4.3	-	75	-	795	795	75
Johnstown	0.31	0.38	105	16	105	170	275	26
Milliken S.D.	0.34	0.40	410	28	410	297	707	67
OUTLYING AREA (d)	1.88	2.87	316	549	316	5,816	6,132	579
Subtotal	12.13	14.05	831	1,082	831	11,464	12,295	1,161

Source: Toups Corporation, March, 1978

TABLE 7.5.2-C (CONTINUED)

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (b)	AVG. O&M COST ($1000/ Yr.) (c)	PRESENT WORTH ($1000) CAP. REC. (b)	PRESENT WORTH ($1000) O&M (c)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/ Yr.)
ST. VRAIN RIVER								
OUTLYING AREA (d)	.99	1.2	795	54	713	705	1,418	133
SOUTH PLATTE RIVER								
OUTLYING AREA (d)	2.48	3.88	2,002	162	1,725	1,711	3,436	323
TOTAL-Larimer-Weld	44.37	52.79	11,704	3,279	9,689	35,037	44,726	4,220

(a) Costs in terms of January, 1977, dollars. Annual interest rate 7%.
(b) Immediate construction of facilities assumed, except when construction phased (Greeley-Delta, Boxelder S.D.). Includes biological treatment, disinfection and sludge treatment.
(c) Secondary O & M costs from 1978 budgets. For Greeley and Ft. Collins, total annual budget apportioned between facilities.
(d) Secondary treatment.
(e) Greeley-1st Ave. plant to be abandoned prior to 2000.
(f) Although service area is in Cache la Poudre basin discharge is to South Platte River.
(g) Includes initial 4 mgd increment, 4mgd expansion in 1989, 8 mgd expansion in 1995, and initial interceptor.

Source: Toups Corporation, March, 1978

TABLE 7.5.2-D PROJECTED COSTS - WASTEWATER TREATMENT FACILITIES IMPROVEMENTS - OUTLYING AREAS

All Strategies

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (b)	AVG. O&M COST ($1000/ Yr.)(c)	PRESENT WORTH ($1000) CAP. REC. (b)	PRESENT WORTH ($1000) O&M (c)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/ Yr.)
CACHE LA POUDRE								
Ault	.28	.33	280	18	201	196	397	38
Eaton	.37	.4	160	27	66	189	255	24
Pierce	.18	.3	40	12	37	127	164	16
Red Feather	.25	.5	406	22	379	495	874	82
Severance	.04	.08	246	4	246	42	288	27
Timnath	.04	.075	340	10	318	106	424	40
Wellington	.06	.37	-	35	-	372	372	35
Subtotal	1.22	2.06	1,472	128	1,247	1,527	2,774	262
BIG THOMPSON								
Berthoud	.5	.7	-	83	-	879	879	83
Johnson's Corner	.02	.05	40	7	40	74	114	11
Estes Park S.D.	.61	.82	276	149	276	1,579	1,855	175
Upper Thompson S.D.	.75	1.3	-	310	-	3,284	3,284	310
Subtotal	1.88	2.87	316	549	316	5,816	6,132	579

Source: Toups Corporation, March, 1978

TABLE 7.5.2-D (CONTINUED)

WASTEWATER DISCHARGE	FLOW (mgd) 1977-2000 AVG.	FLOW (mgd) 2000	CAP. COST ($1000) (b)	AVG. O&M COST ($1000/ Yr.) (c)	PRESENT WORTH ($1000) CAP. REC. (b)	PRESENT WORTH ($1000) O&M (c)	PRESENT WORTH ($1000) TOTAL	EQUIV. ANN. COST ($1000/ Yr.)
ST. VRAIN								
Erie	.16	.18	150	11	150	117	267	25
Texaco I-25	.025	.025	75	7	75	74	149	14
Tri-Area	.75	.94	450	28	368	429	797	75
Mead	.05	.07	120	8	120	85	205	19
Subtotal	.985	1.19	795	54	713	705	1,418	133
SOUTH PLATTE								
Fort Lupton	.8	1.5	510	36	502	382	884	83
Gilcrest	.1	.13	80	9	53	95	148	14
Hill-n-Park	.35	.65	390	27	272	288	560	53
Hudson	.1	.15	160	10	160	106	266	25
Keenesburg	.09	.13	140	1	140	11	151	14
Kersey	.25	.30	400	29	354	304	658	62
LaSalle	.40	.45	.90	19	43	201	244	23
Lochbuie	.08	.15	140	8	131	85	216	20
Platteville	.30	.40	91	16	69	165	234	22
Weld Central H.S.	.01	.02	1	7	1	74	75	7
Subtotal	2.48	3.88	2,002	162	1,725	1,711	3,436	323
TOTAL OUTLYING AREAS	6.57	10.00	4,585	893	4,001	9,759	13,760	1,297

(a) Costs in terms of January, 1977, dollars. Annual interest rate 7%.
(b) Phased construction per Interim Report No. 6, Municipal and Industrial Point Source Analysis.
(c) O & M Costs from 1978 budgets.

Source: Toups Corporation, March, 1978

Note that the greatest dollar burden for new treatment costs, in all four strategies, falls on Greeley. Combining the requirements of its 1st Avenue and proposed Delta plants, capital costs range from over $13 million for Strategy 1, to $12½ million for Strategy 2, to almost $9 million for Strategies 3 and 4. New O & M costs follow the same pattern.

Also within the triangle area, Windsor would incur $3/4 million in capital costs for Strategies 3 and 4, and some $1.3 million according to Strategies 1 and 2. Although this cost is less than that required of Greeley, it may be equally burdensome in view of Windsor's smaller population base and service area.

In the outlying areas, Table 7.5.2-D shows total capital requirements of nearly $5 million and O & M of $1 million annually for all four strategies. This problem is addressed in a series of special reports[8] developed as part of this 208 study.

Costs for private systems focus on Eastman Kodak Co. and Great Western in Loveland, and are 0.6 million and 1.2 million in capital respectively in Strategies 1 and 2; nothing in Strategies 3 and 4.

The final major cost element shown on Table 5.2-A is for control of pollutants from urban runoff. These costs include both structural (storage/treatment) and non-structural items (street sweeping), and are focused on Fort Collins, Greeley and Loveland in this triangle area. They are broken out in Table 7.5.2-E, and are the same for all four strategies.

7.5.3 Analysis of Agency Financial Capabilities

The financial powers and capabilities required by the various agencies are outlined in general in the two preceeding sections. This section focuses on the abilities of the specific agencies that are being assigned roles to meet these requirements, as well as remedial actions that appear necessary.

7.5.3.1 Planning Agencies

The Larimer-Weld Council of Governments is recommended as the planning agency in the areawide 208 program. The Larimer-Weld Council of Governments has no statutory financial powers. Its powers derive from agreement among its governmental members, as defined in its "Articles of Association," and, at most, are limited to those powers lawfully authorized to each of the cooperating or contracting units. Financial powers contained in the Articles of Assocation of the Larimer-Weld Council of Governments

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[8] See, for example, Briscoe, Maphis, Murray & Lamont, Inc., Toups Corporation, Technical Planning Report, Wastewater Treatment Works, Fort Lupton, Colorado, Larimer-Weld Council of Governments, May 1977.

TABLE 7.5.2-E

Urban Runoff Costs

	Annualized Non-Structural (Street Sweeping)	Structural (Storage/Treatment)	
		Cap.	Annual O/M
Fort Collins	$ 0.18	$ 1.767	0.04
Greeley	0.14	1.276	0.03
Loveland	0.16	0.687	0.02
TOTAL	$ 0.38	$ 3.730	0.09

include budgeting; the power "to contract or otherwise participate in and to accept grants, funds, gifts, or services from any Federal, state or local government," and from private and civic sources; and auditing its financial affairs. The Larimer-Weld Council of Governments 1977 budget was $685,303 in total, with the local share of $142,682 split evenly between the two counties.

These capabilities suggest the Larimer-Weld Council of Governments can adequately meet the planning agency financial requirements outlined above in Section 7.5.1.1. Perhaps the area of weakness is the lack of an assured ongoing source of funding Council of Government activities. The budget is adopted annually with local funding determined at such time. However, as initial funding is expected to be largely non-local, it is a fact that no local agency whatsoever would have control over these sources. Moreover, as local funds are passed-through from the counties, who have powers of taxation, the council of government is no worse off than any other local agency (e.g., county sheriff) where legislative action is required for the annual appropriation of funds.

The State Health Department, Water Quality Division, is the alternative designated planning agency. It has a number of shortcomings relative to Larimer-Weld Council of Governments, and a particularly important financial weakness. Although this agency could accept federal grants, and obtain state funding from the State Legislature, it is not clear how it would involve the local communities in the Larimer-Weld region in funding 208 continuous planning activities. On the other hand, by virtue of its status as a local creation, the Larimer-Weld Council of Governments annually obtains some amount of local funding for its various (planning) activities.

7.5.3.2 Management Agencies

Appendix A of this report contains a list of recommended management agency assignments. In all cases, they are either one of the two counties, or a city felt to be capable of performing the management agency role.

Individual financial analyses and recommendations have been prepared for a number of the smaller towns.[9] In addition, for those not included in the above group, a Utility Management Handbook[10] has been prepared which addresses key wastewater utility policies (among other management concerns) relating to analyzing utility costs, sources of capital funds, source of operating funds and a number of other areas of financial manage-

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[9] Ibid.

[10] Briscoe, Maphis, Murray & Lamont, Inc., Utility Management Handbook, Institutional, Financial and Management Procedures, Larimer-Weld Council of Governments, April 1977.

ment. Although it is clear that the general purpose local governments (counties and towns) possess adequate powers to conduct the management agency role, some remedial actions may be required to compensate for lack of experience, lack of skilled staff, and in some cases, weak funding capabilities (in an economic/political, rather than legal sense). It is the purpose of the special studies and Utility Management Handbook to provide guidance in these areas.

Because of their size and scale of operation, the management tasks of the two counties and of Fort Collins, Greeley and Loveland and will be most demanding in terms of financial performance.

Appendix C contains a detailed discussion of county responsibilities as management agencies. It is not the intent to engage either county in the business of utility operation. Wherever urban concentrations exist, and thus wastewater utilities, it is intended that the counties will "pass-through" operational and management responsibilities to towns for their service areas which may include unincorporated areas. Special districts, private parties or unincorporated communities may also receive pass-through "action" tasks. The responsibility for 208 wastewater planning, compliance and integration of all aspects -- point and non-point -- and integration with other development, land use and regional programs and goals remains with the management agency. The "pass-through" will include basic funding responsibilities, as well as those financial aspects of utility operation (billing, investing, payment of employees and vendors, repayment of bondholders, operational budgeting, accounting, etc.). For the most part, these tasks are presently being performed satisfactorily at the existing level of treatment and operation. Changes needed are generally within existing powers and capabilities.

Based on the pass-through concept, the counties will be left with management overview and support tasks, such as, assisting operating agencies in seeking grants, providing technical financial advice and planning assistance. These activities are included in the estimated staff requirements identified in Appendix C amounting to an annual total of $39,000 for each county.

Both counties are in sound financial condition, with growing tax bases, moderate mill levies, and unused capability to levy highly productive sales taxes. Both counties' mill levies for 1977 are down from 1976 (1.912 mill decrease to 18.508 mills. in Larimer County; 4.69 mill drop to 21.13 mills in Weld County). Both counties are legally capable of adopting (by referendum) as much as 2¢ in county-wide sales tax. Such a levy would raise, each year, almost $10 million in Larimer and more than $7 million in Weld County. Note that the counties would probably have to share these funds with their cities and towns. Neither county has any significant long-term liabilities (outstanding bonded indebtedness or pension fund deficiencies). On the whole, both

counties are quite capable of funding their management responsibilities as delineated in Appendix C.

The cities of Fort Collins, Greeley and Loveland have the greatest need for a broad range of financial capabilities, as well as, potentially, the greatest need for raising local funds for both capital and operating costs. These three cities are all presently in the wastewater utility management and operations business so most of the basic financial skills for the management function presently exist. Additionally, general powers are broad, especially for Fort Collins and Greeley which are home rule municipalities.

All three cities operate their sewer business as independent, self-supporting utility enterprise funds. At the present level of operation, all three cities' sewer funds are solvent and generating positive cash flows.

Fort Collins has recently spent upward of $10 million for plant expansion. In spite of this major outlay, its indebtedness is small at $3 million; its capital structure is strong at approximately 4 parts equity to 1 part debt; the system is generating $200,000 to $300,000 of annual operating income and about twice that amount in cash flow before debt service; and its rates, though higher than Greeley or Loveland, are moderate at $14.70 per quarter for inside single-family service. The Fort Collins system services roughly 15,000 customers in various categories. These factors indicate that Fort Collins' ability to fund the treatment plant capital and operating costs under any of the four technical strategies is adequate.

The Greeley system serves some 12,500 customers with a variety of taps. The sewer fund in indebted some $5½ million at the present time. There is approximately an equal amount of equity financing in the capital structure. Plant improvements have totaled almost $1.8 million since 1974. The system is presently generating sufficient positive cash flow to comfortably cover the $3½ million annual debt service requirement, though there is not a large excess that could support additional debt. Utility rates have recently been raised, but are still moderate at $11.70/quarter for inside single-family tap. This increase will improve the utility's financial position in 1978. All in all, Greeley's sewer fund is in sound financial condition for purposes of operating its current level of secondary treatment.

Greeley's ability to fund the treatment plant improvements associated with the four alternative technical strategies also appears adequate assuming 75% of capital costs are contributed by the Federal government. Although Greeley's sewer fund has not been generating a large surplus, its 12,500 users will produce an added $200,000 to $300,000 with the present rate increase. This would support $2 million to $3 million in local debt. Together with income from tap fees or PIFs, and federal assistance, Greeley can finance its needed improvements. Even so, Greeley's rates continue to be quite moderate. Compare them with Fort Collins'

$14.70/quarter for the inside single-family tap. Future rate hikes may be necessary to cover the higher costs associated with treatment plant improvements.

Loveland's sewer system serves in excess of 8,000 customers in various tap classes. The system is debt-free and operating with moderate rate charges ($9.50/quarter for inside single-family). Rates were increased in 1977. The previous inside single-family rate was $6.00/quarter. At the new rate level, the system is operating with a positive cash flow. Improvements costing some $3½ mil. have recently been completed, without incurring any debt in the process. On the whole, the system is on a sound financial footing in view of the prospective requirements of any of the four technical strategies under consideration. This is particularly true under the assumption that 75% of capital costs would be federally funded.

There is an alternative proposal designating the State Health Department, Water Quality Division as the management agency in place of the counties as recommended. This would make it absolutely necessary that most operations and financial requirements be of a pass-through nature. In such a case, the State Health Department could probably perform satisfactorily in a financial sense, even though it lacks the breadth of powers of the two counties.

7.5.3.3 Operations Agencies

Appendix A contains a listing of recommended operations agencies for the Larimer-Weld region. These are agencies presently operating systems in the area. As noted in Section 7.5.1.3 above, operations agencies will be delegated those financial tasks which they are capable of handling. This means that the basic financial responsibility rests with the management agencies.

7.5.3.4 Regulatory Agencies

The State Health Department, in conjunction with the county units, will be the regulatory agencies. Financial requirements are both moderate (Section 7.5.1.4) and much along the lines of present activities. There should be no problems here beyond obtaining sufficient appropriations from each governing legislative body to fund the required staff effort.

7.6 RECOMMENDATIONS FOR STATE REORGANIZATION FOR WATER QUALITY AFFAIRS

Consistent with structuring local government to implement the 208 plan, there is a similar need at the state level. Based on observation and experiences gained during the 208 study, a refinement of activities at the state level could enhance working relationships, effectiveness and responsiveness to regional and local needs during the implementation stage. As with any plan,

once the plan is adopted, the work must begin -- the plan is simply the direction, not the end. More significant involvement for local agencies with the state effort to implement and secure maximum benefit from the Water Pollution Control Act is what is sought.

Ideally, a complete examination of how the state should be organized to deal with the entire question of water should occur. At the present time, state involvement is fragmented. However, the question of whether or not a Department of Water Resources and Quality, organized along functional lines, with divisions dealing with resource development, flood control, pollution, management and planning is warranted is beyond the scope of this study.

The Water Quality Control Commission (WQCC) is the state body charged with the key responsibilities in dealing with water quality, and accomplishment of the water pollution law. The task, as they are presently administering it, is impossible. The Commission cannot function efficiently as policy makers and administrators at the same time. The level of expertise required, time, support staff and responsibilities is beyond any single commission's capabilities. Each meeting, the Commission is asked to set policy, as well as to review specific discharge applications from cities, districts, individuals and industries.

It is recommended that the Commission continue as a policy setting, overview agency for the entire water quality issue. Suggested primary responsibilities include:

- Set policy to administer the law,
- Coordinate and approve regional 208 plans updates, and
- Monitor implementation of plans and actions.

In addition, they would continue to:

- Classify state streams,
- Define waste treatment requirements and criteria,
- Be responsible for reviewing wastewater plants discharging more than 2,000 gpd,
- Establish water quality standards,
- Promulgate control regulations, and
- Establish water discharge permit regulations.

However, in addressing these latter issues, the Commission would be assisted with the establishment of a decentralized structure of River Basin agencies. Each of the state's major river basins -- Platte, Arkansas, Rio Grande, Colorado and White -- would be designated as a River Basin Agency under the WQCC. The boards of such agencies would be composed of residents of the basin with specified expertise, a representative of the WQCC and Water Conservation Board.

The primary prupose of the Basin Agency is to act as an administrative arm for the WQCC in the basin and to provide liaison between state actions and local concerns. Specifically, they would:

- Coordinate planning - basinwide;
- Set priorities for funding within the basin's 208 areas;
- Review of individual construction requests from within the basin;
- Review discharge requests for conformance with adopted 208 plans;
- Review stream classifications within the basin;
- Provide financial distribution control over all water quality funds flowing into the basin (all state and federal programs must follow the priority system, not just EPA funds);
- Review enforcement of water quality standards;
- Monitor progress of 208 programs in the basin;
- Review updating of the 208 plans; and
- Support enforcement responsibilities.

In the execution of these responsibilities, the Basin Agency would conduct public hearings where local residents could express their concerns or support for proposed basin or state actions affecting water quality. Funding could occur by way of pass-through funds from the State, a fraction of a percent from each project funded in the region, and possibly from local funds from utilities in the basin.

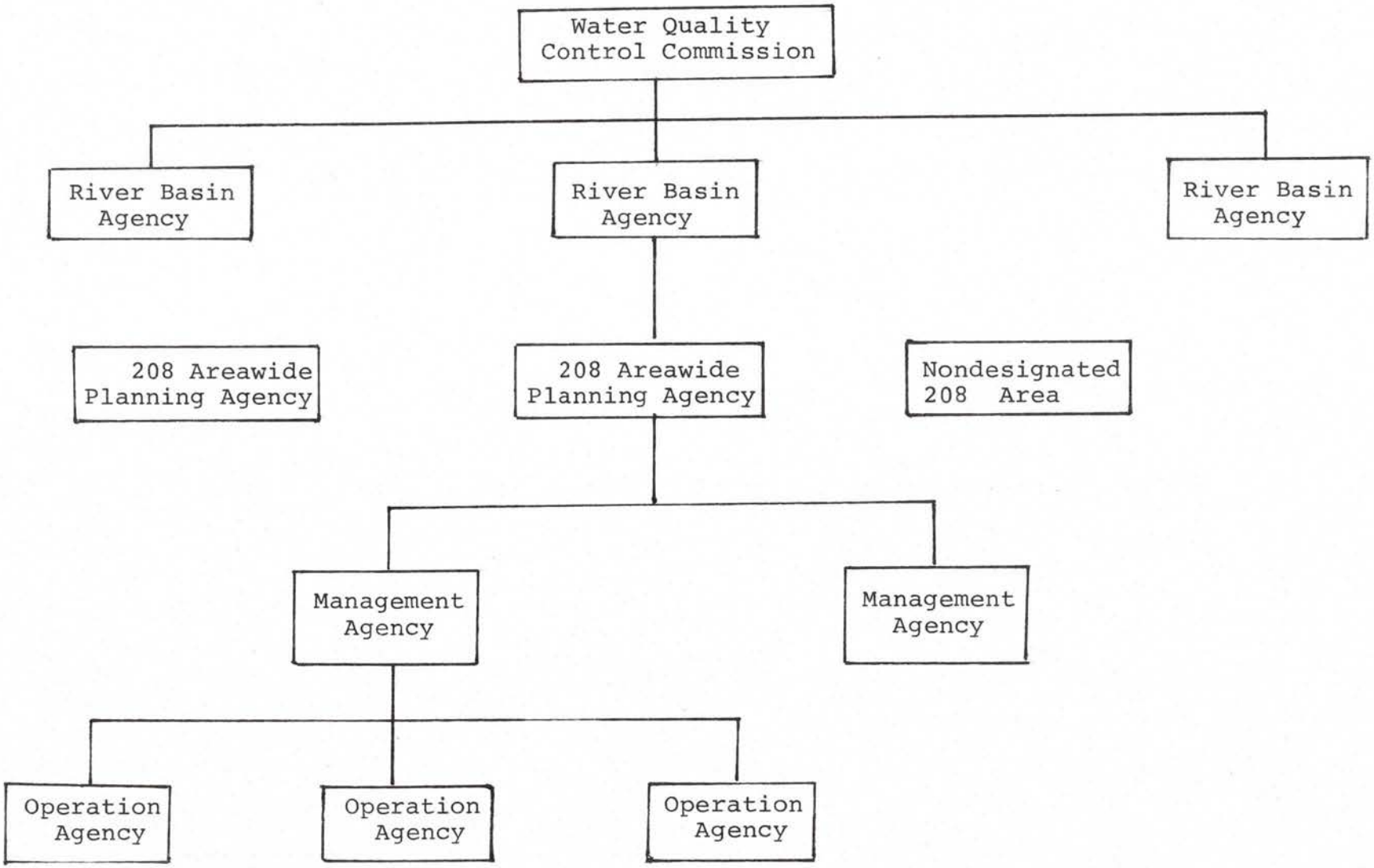
Responsibility for overview of progress toward the clean water goal in the basin and funding would give the agency the power to assure effectiveness. Local government representatives would be directly involved with the program at the state level and residents could participate without having to travel to Denver.

Appeals and review of River Basin Agency's actions would be possible to the WQCC. However, the WQCC would be free to concentrate on policy matters but with regional input from the River Basin Agency.

Table 7.6-A illustrates the suggested organization.

TABLE 7.6-A

Water Quality Control Commission Organization



APPENDIX A

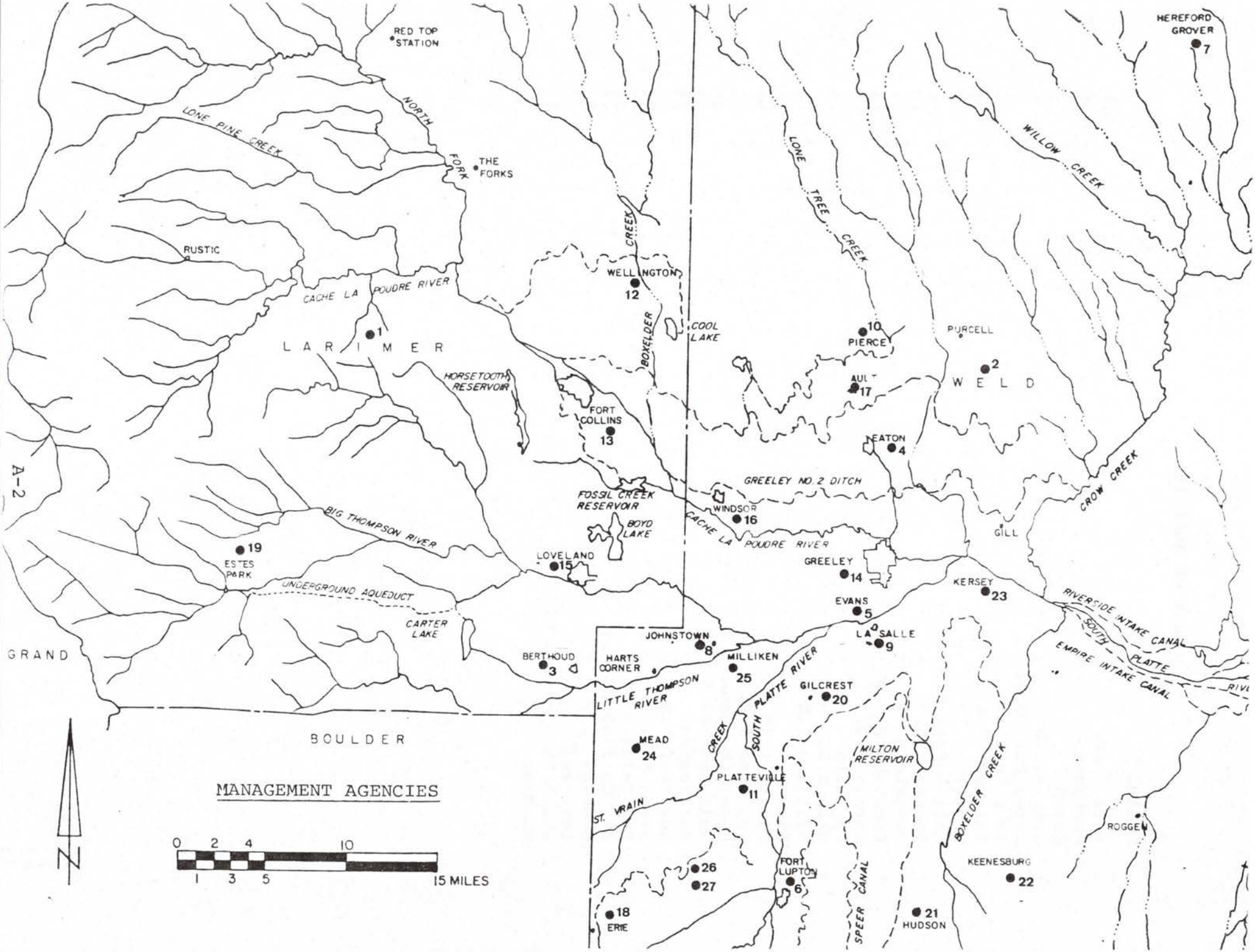
DESIGNATED MANAGEMENT AND OPERATIONS AGENCIES -- LARIMER-WELD REGION

MANAGEMENT AGENCIES

Counties

Municipalities with Systems

Municipalities Served by Districts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NORTH FORK
THE FORKS
RUSTIC
CACHE LA POUDRE RIVER
LARIMER
HORSETOOTH RESERVOIR
WELLINGTON
12
BOXELDER CREEK
COOL LAKE
LONE TREE CREEK
WILLOW CREEK
HEREFORD GROVER
7
PIERCE
10
PURCELL
2
WELD
AULT
17
FORT COLLINS
13
EATON
4
GREELEY NO. 2 DITCH
CROW CREEK
FOSSIL CREEK RESERVOIR
BOYD LAKE
WINDSOR
16
CACHE LA POUDRE RIVER
GILL
BIG THOMPSON RIVER
19
ESTES PARK
LOVELAND
15
GREELEY
14
KERSEY
23
UNDERGROUND AQUEDUCT
CARTER LAKE
EVANS
5
RIVERSIDE INTAKE CANAL
SOUTH PLATTE
EMPIRE INTAKE CANAL
LA SALLE
9
JOHNSTOWN
8
GRAND
BERTHOUD
3
HARTS CORNER
MILLIKEN
25
LITTLE THOMPSON RIVER
SOUTH PLATTE RIVER
GILCREST
20
BOULDER
MEAD
24
MILTON RESERVOIR
PLATTEVILLE
11
ST. VRAIN
BOXELDER CREEK
ROGGEN
KEENESBURG
22
26
27
FORT LUPTON
6
SPEER CANAL
18
ERIE
21
HUDSON
MANAGEMENT AGENCIES
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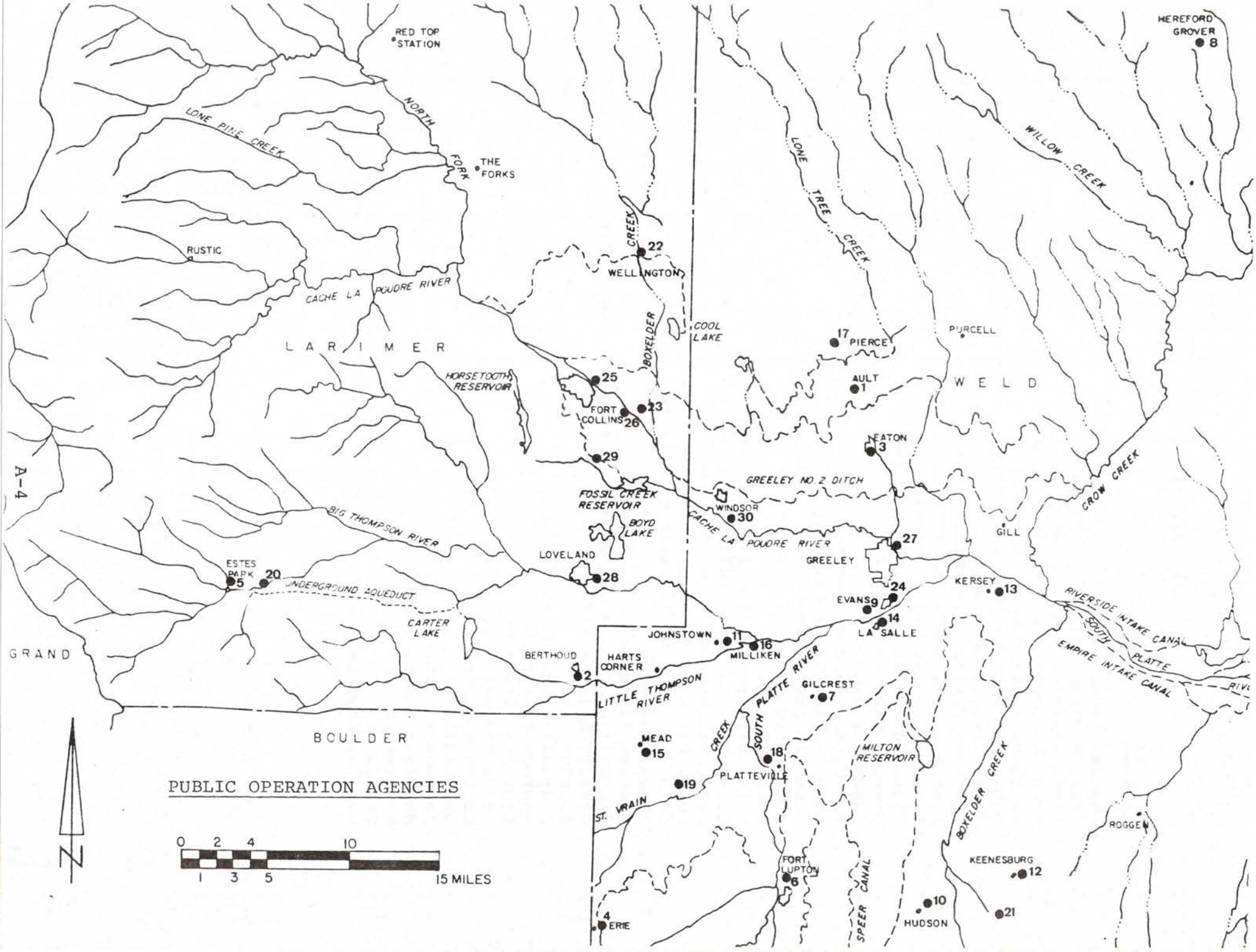
15 MILES
A-2

OPERATION AGENCIES

Public

Ault S.D.	1
Berthoud	2
Eaton	3
Erie W.S.D.	4
Estes Park S.D.	5
Fort Lupton	6
Gilcrest S.D.	7
Grover	8
Hill-n-Park S.D.	9
Hudson S.D.	10
Johnstown	11
Keenesburg S.D.	12
Kersey S.D.	13
La Salle	14
Mead S.D.	15
Milliken S.D.	16
Pierce	17
Platteville	18
Tri-Area S.D.	19
Upper Thompson S.D.	20
Weld Central H.S.	21
Wellington	22
Boxelder S.D.	23
Evans S.D.	24
Ft. Collins #1	25
Ft. Collins #2	26
Greeley	27
Loveland	28
South Ft. Collins S.D.	29
Windsor	30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LONE PINE CREEK
THE FORKS
RUSTIC
CACHE LA POUDRE RIVER
LARIMER
HORSETOOTH RESERVOIR
FORT COLLINS
WELLINGTON
BOXELDER CREEK
COOL LAKE
LONE TREE CREEK
WILLOW CREEK
HEREFORD
GROVER
PIERCE
PURCELL
AULT
WELD
EATON
GREELEY NO. 2 DITCH
CROW CREEK
FOSSIL CREEK RESERVOIR
BOYD LAKE
LOVELAND
WINDSOR
CACHE LA POUDRE RIVER
GREELEY
GILL
BIG THOMPSON RIVER
ESTES PARK
UNDERGROUND AQUEDUCT
CARTER LAKE
KERSEY
EVANS
LA SALLE
RIVERSIDE INTAKE CANAL
SOUTH PLATTE EMPIRE INTAKE CANAL
JOHNSTOWN
MILLIKEN
BERTHOUD
HARTS CORNER
LITTLE THOMPSON RIVER
GILCREST
SOUTH PLATTE RIVER
GRAND
BOULDER
MEAD
PLATTEVILLE
MILTON RESERVOIR
BOXELDER CREEK
ST. VRAIN
ROGGEN
KEENESBURG
FORT LUPTON
SPEER CANAL
HUDSON
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A-4
PUBLIC OPERATION AGENCIES
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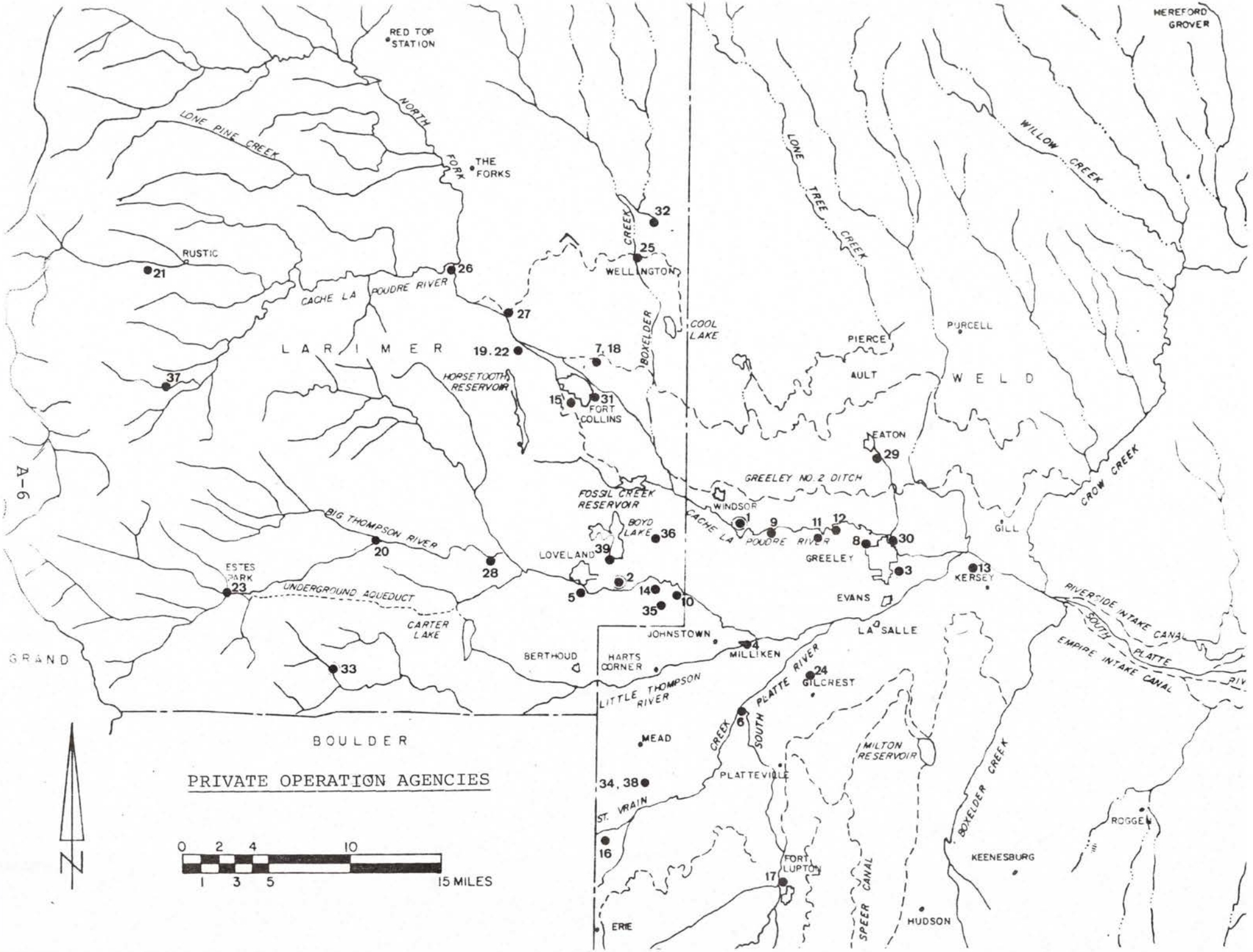
N

OPERATION AGENCIES

Private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HORSETOOTH RESERVOIR
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BOXELDER CREEK
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WELLINGTON
COOL LAKE
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FORT COLLINS
LONE TREE CREEK
WILLOW CREEK
HEREFORD
GROVER
PIERCE
PURCELL
AULT
WELD
EATON
29
GREELEY NO. 2 DITCH
CROW CREEK
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FOSSIL CREEK RESERVOIR
WINDSOR
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8
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GILL
BIG THOMPSON RIVER
BOYD LAKE
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LOVELAND
39
28
GREELEY
3
13
KERSEY
ESTES PARK
23
UNDERGROUND AQUEDUCT
2
14
5
35
10
EVANS
RIVERSIDE INTAKE CANAL
SOUTH PLATTE
EMPIRE INTAKE CANAL
CARTER LAKE
JOHNSTOWN
LA SALLE
GRAND
BERTHOUD
HARTS CORNER
4
MILLIKEN
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GILCREST
33
LITTLE THOMPSON RIVER
SOUTH PLATTE RIVER
CREEK
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MEAD
MILTON RESERVOIR
BOULDER
PRIVATE OPERATION AGENCIES
PLATTEVILLE
34, 38
ST. VRAIN
BOXELDER CREEK
ROGGEN
16
FORT LUPTON
17
KEENESBURG
SPEER CANAL
ERIE
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THE 208 PLAN AMENDMENT PROCESS

Federal law requires that 208 plans be updated annually and recertified through the same process that the original 208 plan utilized. That process includes, in addition to staff, advisory committees, involved agencies and citizen input, the following three formal steps:

1. Approval and certification by the governing board of the planning agency (i.e., probably Larimer-Weld C.O.G.).
2. Approval and certification by the State of Colorado. The Governor makes the decision after receiving recommendations from the Water Quality Control Commission on technical aspects of the plan and from his staff and advisory committees on other policy aspects of each 208 plan.
3. The Federal Government through its regional E.P.A. Office decides upon final plan approval after receiving the recommendation from the Governor.

This process must be repeated on an annual basis to stay in conformance with the renewal law.

The Area-wide Continuing Planning Agency has the responsibility of seeing that the process is initiated in a timely fashion at the regional level. What ever effort is required in both drafting the revisions for consideration by the local decision making bodies, staying involved with the review and approval process, and to assure clear understanding of what is being proposed is the planning agency's responsibility.

The planning agency is not only responsible to see that the logistics of annual plan update are performed, but they are also responsible to coordinate and approve,if appropriate,any plan modifications requested by the management agencies in the planning region. Amendments or modifications may result from changing regional values or new opportunities. Plan

modification requests may come from other sources that would require planning agency action but they would first have to be reviewed by the management agency responsible for the specific geographic area identified in the institutional portion of the 208 plan. The planning agency would coordinate between management areas while each management agency would be responsible for coordination and weighing of impacts within their own management area.

As a guide to understanding how the plan amendment process would work, a multi-phased sequence of events is outlined in the following pages as a suggested framework for the first year's plan recertification process. Modifications to the procedure are obviously possible. The system should remain flexible until all of the "bugs" can be worked out. The annual update process will be more difficult in the first few years, while some pieces of the overall 208 program are being gradually fit into place as a part of the plan. This includes many plan elements that are not now in the implementation portion of the plan because planning activities are still incomplete (e.g., the agricultural or non-point urban pollution activities). In later years the plan modification process will become a bit more mechanical. The planning agency should always expect the process to attract a lot of attention because of the issues of (1) setting priorities for funding among the region's many agencies, and (2) because of plan amendment requirements before any new discharge permit can be approved may focus attention on regional issues.

Plan amendment considerations may also be driven by considerations from the regulatory agency. As the program begins to evolve and mature, the need to tighten regulatory requirements in response to mandatory implementation aspects of the law could well dictate plan modifications to force compliance.

The ultimate point of the plan modification process is:

208 plan update is an annual process that is the responsibility of the planning agency. Whether the specific need for plan modification comes

from a management agency, the regulatory agency, the plan itself, changes in federal law, legal action, citizens groups, etc., the planning agency will be required to deal with these issues in a rational and timely fashion and see that the recertification process is ultimately consummated.

To guide the first year's plan review and updating process, the following sequence of events is suggested:

1. At a point in time not later than the end of the 6th month of the current plan year, the planning agency should notify in writing all management and regulatory agencies that the plan review and recertification process has begun. The notification letter (a sample letter is illustrated on the following page) should raise any issues or plan modification needs that the planning agency is aware of and ask each agency, as appropriate, to consider such issues along with any issues they choose to raise from their own point of view. Precisely what is open to modification should be identified (e.g., service area boundaries discharge permits, funding priorities, implementation techniques, land use plan, technical aspects, regulatory concerns, etc.). The plan will be documented in report form, all of which is subject to reevaluation on key issues and updates made possible because of new data availability or changes in the law should be finished by the planning agency and the management agencies.

   The planning agency should include in its notification, particularly to the management agencies, a summary report of the status of the current year's facility priority and grant funding requests to the State/E.P.A. as an indication of how the year's funding requests have progressed and, therefore, any considerations appropriate that might guide next year's funding priority and grant request list.

EXHIBIT 1

(Planning Agency Letterhead)

NOTIFICATION OF BEGINNING OF
ANNUAL PLAN AMENDMENT PROCESS

Addressed to:

(1) All Management Agencies
(2) Regulatory Agencies
(3) Other Concerned Agencies and Groups

Please be advised that the Larimer-Weld 208 plan amendment and recertification process is now underway.

The enclosed plan amendment calendar describes the key events and time deadlines of the process. Your particular attention is called to the deadline for submittal of plan amendment requests. This year that deadline is _____, 1979.

We will be in further personal contact with all management and regulatory agencies to assure full coordination of plan amendment requests.

Further notifications will be sent out when the final dates for advisory committee review and formal plan adoption public hearings are set.

Please contact this office if further information is needed on any aspect of the plan amendment process.

Respectfully,

208 Planning Agency Director
Larimer-Weld Council of Governments

Enclosure

2. At a point in time not later than the end of the 8th month of the current plan year, the management agencies shall submit to the planning agency their requests for next year's plan modifications along with their funding requests and priority lists for all agencies within their M.A. boundaries.

   Each M.A. will have the responsibility of seeing to it that the operating agencies within their M.A. boundaries are given ample opportunity to develop requests for their own faility planning. The M.A. will then have the task of coordinating the operating agency requests within their boundaries along with the needs of the M.A. itself, reviewing the requests and explaining to the operating agencies the recommendations they will make to the planning agency. A composite package that represents all of the concerns of the M.A., funding priorities and recommendations for plan modifications should be submitted to the planning agency for review and consideration.

3. At a point in time not later than the end of the 8th month of the current plan year, the regulatory agency shall submit to the planning agency its requests for plan modifications for the coming year.

   Their requests should be based upon the regulatory experiences of the past year and their perception of the regulatory and general program needs for the upcoming year.

4. At a point in time not later than the 10th month of the current plan year, the planning agency shall complete its staff and advisory committee review of all plan amendment requests including grant and priority listings and, make written recommendations, in suitable form to meet plan amendment requirements, to the planning agencies' governing boards. Prior to this submittal, joint meetings with the management agencies should be held to achieve understanding,if not consensus.

5. At a point in time not later than the 11th month of the current plan year, the planning agency governing board shall hold a public hearing to consider all plan amendment requests and considerations.
6. At a point in time not later than the end of the 12th month of the current plan year, the planning agency governing board shall adopt and recertify a 208 plan for the next year and submit it to the State for review and adoption.

TABLE 1

208 PLAN AMENDMENT PROCESS - KEY EVENTS

ACTIVITY	THE 12-MONTH PLAN AMENDMENT CALENDAR											
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Mont 12
Written notification to begin plan amendment process						X						
Management agencies submit to plan agency plan modification requests							X	X				
Regulatory agencies submit plan amendment considerations							X	X				
Other interested agencies and persons submit plan amendment considerations							X	X				
Planning agency staff and advisory committee review of all requests								X	X	X		
Public hearing on proposed revised plan											X	
Planning agency board (L.W.C.O.G. board) adopts updated plan												X

APPENDIX C

COUNTY RESPONSIBILITIES AS MANAGEMENT AGENCIES

2.0 PROPOSED 208 MANAGEMENT ASSIGNMENTS FOR LARIMER AND WELD COUNTIES

The proposed Larimer-Weld 208 Institutional Plan states that general purpose local governments (cities, towns and counties) are the best agencies for designation as 208 management agencies. If this concept is endorsed, the county would be designated as the official 208 Management Agency for most of the unincorporated areas. Because counties are not normally involved with utility management, this has raised questions of precisely what functions and responsibilities would be expected of the counties.

The overall job of 208 management throughout the two counties will involve both cities and the two county governments. All "qualified"[1] towns and cities within the two counties would be designated for 208 Management Agency (M.A.) responsibilities for not only their city limits area, but if they choose, also for the unincorporated area that they believe is within the limits of their urban service area.

The counties would be designated for 208 Management Agency (M.A.) responsibilities for all areas outside the urban service area boundaries of the qualified towns and cities, plus the full service area of unqualified towns and cities.

Thus, the counties would have three basic areas of 208 management responsibility:

1. All unincorporated areas of the county that are outside the urban service area boundaries of qualified cities.

2. Inside the city limits of all unqualified towns and cities. Intergovernmental contracts would be developed to define the responsibility mix between the parties.

3. The county would enter into intergovernmental contracts with each qualified city or town to share

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[1] A qualified community is one that has sufficient planning, regulatory controls and staff to carry out efforts that will permit them to manage point and non-point sources of pollution and wishes to be their own management agency.

responsibilities within the urban service area boundaries, but outside of city limits.

By state stature, counties may become operational agencies via the creation of a countywide sanitation district. However, it is strongly recommended that the counties of Larimer and Weld not become involved in the "urban service" business unless it is necessary to correct an existing problem. The counties should resort to providing such service only as a last resort and then only as an interim administrative step. The actual operation should be assumed by some other agency as soon as possible.

2.1 COUNTY RESPONSIBILITY IN UNINCORPORATED AREAS

The county would possess the full legal standing as the management agency for all dischargers and operating agencies in unincorporated areas, whether they may be (1) special districts, (2) private parties, or (3) unincorporated communities. The counicy could pass to these parties as much of the M.A. responsibility as the county judges they can legally, financially, technically and administratively handle in carrying out the 208 plan. This pass-through of M.A. tasks would come in the form of intergovernmental contracts when public agencies are involved, and as standard contracts where private parties are dischargers. The M.A. would retain the responsibility and, therefore, need to exercise control powers.

The function of an Operational Agency would, in most cases, be directly assigned to the discharger. In other words, the discharger would run its own treatment facility as long as it stayed in conformance with the law and the 208 plan. The discharger would be subject, however, to M.A. overview and support to assume conformance with the law and to assure conformance with the contractual arrangement between the two parties. Management overview and support would include providing:

- Assistance in seeking grants where the M.A. deemed the request in keeping with the county plan and the 208 program intent;
- Stability of land use and land use controls in compliance with the adopted land use plan which will be part of the 208 plan;
- Implementation of land use management through regulations affecting grading, drainage, septic tanks, solid waste, erosion, subdivison, and building construction to control or eliminate non-point pollution;
- Technical advice for legal, financial, engineering or planning as available and as requested; and
- Coordination of plans between different operational agencies or other management agency area plans (e.g., a district and the service area of a qualified city).

2.2 COUNTY RESPONSIBILITIES INSIDE THE LIMITS OF UNQUALIFIED MUNICIPALITIES

For all dischargers and operating agencies within this category, the county would be assigned M.A. responsibility. Cities, towns or special districts operating treatment facilities within this category would be subject to M.A. direction just as that provided by the county in unincorporated areas (see 2.1 above).

Unqualified cities and towns are eligible to become redesignated as qualified communities (and therefore to be designated as their own M.A.) by demonstrating their ability to perform the functions required in the 208 plan for point and non-point source regulation within their area of responsibility. This redesignation process can occur by the community seeking approval from the county and upon final approval (and 208 plan amendment) from the Larimer-Weld 208 Planning Agency (COG).

Unless communities in this category receive their own M.A. designation, they will be subject to M.A. control by the county. This will be carried out by execution of an intergovernmental contract between the community and/or a special district serving the community, and the county as the M.A. This contract can pass through, to the Operating Agency and/or the community being served, as much of the M.A. responsibility as is deemed appropriate in carrying out the 208 plan. Operating Agency functions will be directly assigned to the community's facility operator in most cases. However, non-point source control will have to remain with the county as the non-general purpose governments cannot execute control over these sources.

The level of county support can vary. For those communities without treatment facilities, the county could provide staff guidance and support in a number of ways such as: the steps to achieve a central treatment facility; how to select and oversee the work of a consultant; where to locate funding support; and the nature and amount of comprehensive planning the community should execute before treatment facility planning should occur. The county might provide over-the-shoulder direction, or if funds were obtainable through a state or federal program or the community itself, the county staff might actually execute some of the work. The determination of what is appropriate in the way of treatment facilities would have to reflect the larger questions of the 208 plan; for example, should a new discharger be created in the area, or should the growth be channelled elsewhere or tied into another system? The county would act as advisor to the Areawide Planning Agency (COG) as to the appropriate direction on such questions as amending the 208 plan. No new system could be created without it being in compliance with the 208 plan.

For those communities with treatment facilities, the county could make available the same advisory services. But, in addition, if the community is in violation of its discharge permit, or expects to be in the future, the county could provide further guidance on the proper steps to correct the situation.

Each county may wish to avoid developing advisory capabilities on their own staff and choose to fund such technical support at the COG which then may serve both counties. This should reduce the total committment of the two counties. It is a function that is desirable to provide either at the county or COG level if the ability of unqualified communities to achieve the goals of the clean water act are to be assured.

2.3 COUNTY RESPONSIBILITIES INSIDE THE SERVICE AREA BOUNDARIES OF QUALIFIED MUNICIPALITIES

Management agency responsibility in these areas would be assigned to the qualified community. However, because land use and land management-related powers in the portion of the service area outside the city boundaries are not possessed by the city, but rather by the county, a working relationship between the two governments must be developed.

The plan would require the city and county to agree upon land use, public facility requirements, capital facility development phasing and other areas of urban service delivery concerns. Community development in these areas must occur in a planned, sequential fashion in order that point source and non-point source pollutants generated in the area could be efficiently managed. The achievement of the goals of the 208 plan and the federal law, as well as the financial integrity of the local systems, are dependent on this. Intergovernmental agreements would be developed to document and define this city/county relationship.

The specific responsibilities in this area of joint government concern begin with the city. It would be the city's task to define the service area and the basis for its delineation; develop the land use plan for the area; design the wastewater system to serve the land use and associated population; develop phasing for serving the area; and create a capital improvement program for priority and funding purposes.[2] These plans and programs must be developed with the concurrence and support of the county. However, the county, unless requested to and willing, would not have to participate in developing the plans; they could remain in a review and critique posture.

If the district(s) is also serving in the urban service area, the county would have a role as coordinator between the city and district to see a joint resolution of areas of conflict

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[2] It is recognized that the defining of an urban service area is not totally based on sewer service. Many other factors must be considered, including the wishes of the public. It is not proposed that the service area be defined for or on the basis of sewer service alone.

occurs. The county is the one with the regulatory powers governing the unincorporated areas; therefore, both the city and district must rely on the county. This provides leverage for reasonable resolution of conflict. The county must then support the operating agencies with its regulatory decisions.

If a city has opted to have an area beyond its city limits included as part of its service area, it is assuming certain responsibilities. It should not ask for review and county support over development in that unincorporated area without being willing to develop land use plans, service plans and phasing plans for servicing the area. If it fails to make the necessary studies and efforts in this direction in a reasonable period of time (to be specified), the county as the M.A. should indicate that the city's service area is to coincide with the city limits for the 208 plan purposes.

2.4 GENERAL COUNTY RESPONSIBILITIES

In addition to the detailed tasks in each of the geographical areas, the county would have general tasks relating to 208 and their normal functions.

1. The county as the M.A. would represent the collective interests of the area with the Areawide Planning Agency in such matters as funding, priority setting, 208 plan amendments and any issues resulting from state or federal wastewater related actions that affect their constituents.

2. Once the 208 plan is adopted, the counties will have an obligation to the existing permittees to support the implementation of the areawide wastewater plan with land use decisions and decisions on the creation of any new discharge permits. Achievement of the 208 goals with the minimum cost to area users will be dependent on being able to forecast revenues and to know that any growth that does take place will help to amortize the investment in treatment systems. Creation of new systems where there is already excess capacity can only have a detrimental affect on local communities' abilities to meet their financial commitments. The county, under the state's Special District Control Act 31-1-201, is the only entity which can prevent this by discouraging the creation of new districts or incorporations of new cities unless there is a clear need that cannot be met by the existing systems.

3. Once the 208 plan is agreed to, the counties should reevaluate the existing land use plans and zoning in the county. While wastewater treatment is only

one service, it is critical to the growth of the area. If the 208 plan and the county zoning and land use plans are not in accord, one or the other should be amended to bring them into agreement. They must be mutually supportive.

3.0 STAFFING AND BUDGET REQUIREMENTS

Staffing levels to carry out the functions required of the county under this program are difficult to predict until three factors become more clear. One is how much help can be expected from the Planning Agency (COG) in setting up the initial set of intergovernmental contracts? Secondly, how many of the small towns and cities will initially seek their own M.A. status and therefore change the counties' degree of involvement? Lastly, what technical services or advice is the county presently providing for smaller communities and do the counties prefer to have the county or the COG provide local assistance in the future?

The best estimate, at this date, of staff requirements to carry out this task if the counties choose not to pass the responsibility for technical advice to the COG, would be that each county have the following additional staff made available for at least a two-year period to get the program fully operational:

1 - Experienced Utility Program Manager -- full time
1 - City and Regional Planner -- half time
1 - Secretary/Technician -- half time

If the COG becomes responsible for the technical advice, the utility program manager position at the county may not be necessary. This basic responsibility could be assigned to each county's planning department, with staff reporting to the director of the planning department. It is also assumed that the half-time requirements for two of the staff people could be achieved by integrating this program into work activities now going on within each planning department or with new activities as they develop. Expenditures for staff may be used as the matching share for federal funds. This would leverage the local funds.

Staffing requirements after the initial two-year period, when all the intergovernmental agreements are being initially developed, tested and modified, could possibly be reduced. However, there remain so many unknowns about certain aspects of the program, particularly urban runoff and non-point source activities, that staff reduction decisions cannot be made before the program begins.

The concept of fulfilling this total staff requirement by use of consultants was considered. This approach is not recommended at this stage because of the nature of the task; the need for coordinated action, versus the independent approach of each community doing their own approach. Liason with other levels of

government and their agencies will also be critical, requiring direct local government involvement.

Budget

New funding requirements on an annual basis to finance staffing of each county's programs would appear to be:

Utility Program Manager	$18M
Planner (half-time)	7M
Secretary/Technician	4M
Fringe benefits and miscellaneous expenses	10M
ANNUAL TOTAL	$39M/Year

4.0 SOURCES OF FUNDING

Sources of funds to finance this program by each county could come from many places. The best opportunities would seem to be from one or a combination of the following:

1. Direct grants to the M.A. by the EPA or state from 208 program funds;

2. EPA or state funds granted to the Planning Agency (COG) for 208 planning, in part, passed through to the M.A.;

3. County general funds;

4. County-created sewer district with special ad valorem levy on all properties within each sub-district service area;

5. Surcharge on user fee structure of sewer systems within county M.A. responsibility to be passed through to the county (provided for in intergovernmental contracts between agency and county); and

6. Fees from private dischargers.

Each county would reach its own decision on program funding of its M.A. The Areawide Planning Agency (COG) could provide technical assistance as appropriate and desired by the counties.