INFRASTRUCTURE MASTER PLAN FOR JEFFERSON CENTER METROPOLITAN DISTRICT NO. 1 NORTH AREA

SUBMITTED TO:

City Of Arvada

SEPTEMBER 13, 2004



September 13, 2004

Jefferson Center Metropolitan District No. 1 Special District Management Services, Inc. 141 Union Blvd., Suite 150 Lakewood, CO 80228

Re:

JCMD Infrastructure Master Plan

Project No. 0638-001

Dear Chair and Board Members:

We are pleased to resubmit the Infrastructure Master Plan for the JCMD north area. This report includes our analysis of the infrastructure requirements and our recommendations to provide services to this area. This draft incorporates comments from the District's & Arvada's review of the May 13, 2004 draft.

We look forward to your review and comments and will gladly answer any questions you may have. If this draft is satisfactory we can prepare final copies for formal submittal to the City of Arvada as soon as you are ready.

Sincerely,

TST, INC. CONSULTING ENGINEERS

Eric M. Fuhrman, P.E.

David B. Lindsay, P.E.

EMF/rmg

Enclosure(s)

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Executive Summary

At the direction of the JCMD No. 1 Board of Directors, TST, Inc. Consulting Engineers has prepared this Infrastructure Master Plan for the North Area of the district. The purpose of this Master Plan is to document the necessary infrastructure improvements that will be funded by JCMD. These improvements include major infrastructure, parks, water rights acquisition, right-of-way acquisition, fire protection, and secondary infrastructure. The principal focus of this Infrastructure Master Plan is the major, or wholesale, infrastructure improvements.

In addition to the wholesale infrastructure improvements recommended in this master plan there are several other improvements and expenditures that JCMD will be able to fund. The following paragraphs explain all of the anticipated expenditures that will be funded by JCMD.

Primary Infrastructure

The focus of this Infrastructure Master Plan is the conceptual design of these improvements so no additional discussion is necessary here. Included in the master plan are cost estimates for all of the recommended improvements. Many of the recommended improvements will be phased in over time (a likely "Phase 1" scenario is included). For instance, the plan may recommend a three million gallon water tank be added to the system. The cost estimate will include the cost of a three million gallon tank but in reality that storage capacity will likely be achieved in phases as demands in the system warrant. In stead of one three million gallon tank a more likely scenario will be several smaller tanks constructed over time that will ultimately total the three million gallon master planned capacity. This phased construction will increase the ultimate cost to the district. To address this likely build out scenario and provide a construction cost contingency, we have added 30% to the combined total of the various infrastructure components recommended in the body of this master plan as an adjustment factor for the phased construction.

Water Acquisition

Using the potable water demand rates recommended by the City of Arvada, our calculations show that at build out of the service area will require approximately 4,075 acre-feet of water. Through previously executed agreements, the City has already set aside approximately 710 acre-feet for development in JCMD leaving a shortfall of 3,365 acre-feet. To make up this shortfall the JCMD Board of Directors intends to utilize a portion of the district's bonding capacity to acquire additional supplies or to participate in some manner of raw water supply project benefiting the City that would provide potable service to JCMD. The Board of Directors has included an estimated expenditure of \$10,000 per acre-foot of raw water in their financing plan to deal with the shortfall, with the actual costs to be determined at the time of purchase.

Jefferson Parkway

A separate transportation authority will undertake the design and construction of the proposed Jefferson Parkway. However, there are two components of the project JCMD will participate in. It is likely that development will begin in the JCMD service area prior to commencement of the Jefferson Parkway project. In anticipation of the need to provide right-of-way for the project the JCMD Board of Directors has included an estimated \$3.00/square foot expenditure for the purchase of right-of-way from the effected landowners within the service area, with the actual costs to be determined at the time of purchase. The Parkway is assumed to require a 300 foot wide right-of-way and will effect approximately 9,875 linear feet of district service area (approximately 68 acres). An additional expenditure for the purchase of an interchange with the

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district's proposed Foothills Boulevard has also been estimated by the Board and included in the financing plan.

Fire Station

The Arvada Fire Protection District has expressed a need to expand facilities into this area of their district as development occurs. To ensure that these facilities can keep pace with anticipated growth the JCMD Board of Directors have included expenditures for a fire station and fire fighting equipment that would be donated to the Arvada Fire Protection District.

Secondary Infrastructure

In addition to the primary infrastructure improvements detailed in this master plan, there will be a considerable amount of secondary infrastructure that will accompany development in the district's service area. Ongoing discussions with the City of Arvada have shown that JCMD will be able to support approximately \$256,000,000 in capital expenditures over the build out of the district. The JCMD Board of Directors has determined that it would be ultimately advantageous to the district to subsidize some of those improvements to keep the district competitive with similar Front Range projects.

The following page shows a summary of costs associated with the expenditures described above.

SUMMARY OF JCMD INFRASTRUCTURE EXPENDITURES

PRIMARY INFRASTRUCTURE		
WATER		\$23,687,539
SEWER		\$5,937,800
DRAINAGE		\$2,541,652
TRANSPORTATION		\$43,227,632
RECREATION		\$7,546,164
PHASED CONSTRUCTION ADJ	USTMENT	\$24,882,236
	SUBTOTAL	\$107,823,023
3,365 Acre-Foot WATER ACQUISITION		
*	SUBTOTAL	\$33,650,000
JEFFERSON PARKWAY		
68 ACRE ROW ACQUISITION		\$8,886,240
FOOTHILLS BLVD. INTERCHAN	IGE	\$6,000,000
	SUBTOTAL	\$14,886,240
FIRE STATION		
STATION		\$2,500,000
EQUIPMENT		\$3,000,000
	SUBTOTAL	\$5,500,000
SECONDARY INFRASTRUCTURE		
RESIDENTIAL DISTRICTS		\$47,700,000
JCMD No. 1		\$46,500,000
	SUBTOTAL	\$94,200,000
		massageneessa ka
TOTAL DISTRICT FUNDED IMPROVE	MENTS	\$256,059,263

1.0

Introduction

1.1 Scope and Purpose

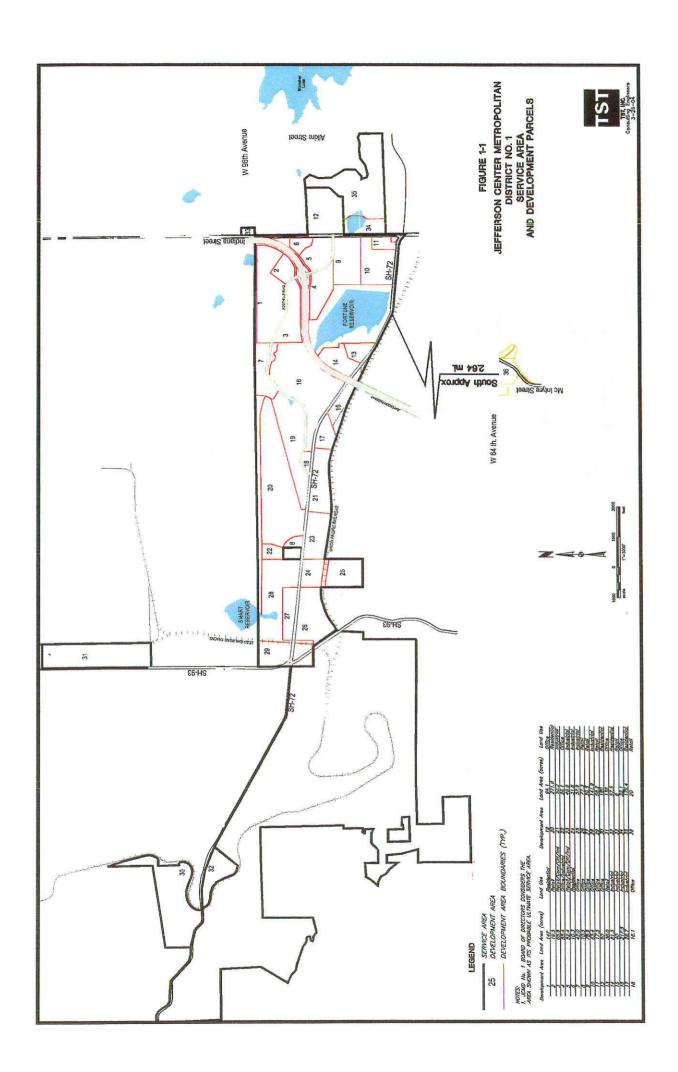
This report presents the results of an Infrastructure Master Plan (Master Plan) for the Jefferson Center Metropolitan District No. 1 (JCMD) North Area. This Master Plan was prepared to assist JCMD to serve the property owners within North Area and to identify future infrastructure needs as the area develops. It will facilitate the efficient planning and development of the water, sanitary sewer, storm drainage, transportation, and telecommunication/dry utility systems within the area. As this is a Master Plan, certain assumptions were made concerning the development of the property in JCMD. Information was obtained from developments that are currently in process, but it should be noted that this information will change as plans are finalized. Updates to this Master Plan will be needed as plans for the development of the area are finalized and changes to the overall concept necessitate an update. As this Master Plan is to be used to only identify future infrastructure needs, specific construction plans will need to be submitted for review and approved by the City of Arvada. This includes any future updates to this Master Plan.

Development areas and land uses considered in the Master Plan include property already within the District boundaries, areas anticipated to be included in JCMD, and areas outside of the JCMD that will receive service. In addition to estimating the ultimate infrastructure needs for the entire ultimate service area the Master Plan identifies a likely first phase of infrastructure improvements for the North Area. Once adopted by JCMD the Master Plan can then be used to update the current District Service Plan to facilitate the expected growth and development in the North Area.

1.2 Project Location and Description

The JCMD North Area is located in the northwest corner of the City of Arvada. This area is generally bounded on the north by the US Department of Energy's Rocky Flats facility, on the east by the Church Ditch, on the south by the Union Pacific Railroad, and on the west by SH 93. There is a considerable amount of property within the District boundary located west of SH 93 but over 90% of that has been sold off as open space and is not expected to develop.

Finally, it was determined that the development areas would need to be reduced to sub-areas for purposes of evaluating water and wastewater demands. These sub-areas were delineated along different land use categories and along property boundaries. They are used extensively in later sections of this Master Plan and are shown in Figure 1-1.



This Master Plan recognized four types property within the ultimate JCMD North Service Area:

- 1. Property currently within the JCMD boundary, some of which has been included to the District subsequent to it's formation.
- 2. Property that near to or adjacent to the current JCMD boundary that is anticipated to be included to the District in the future.
- 3. Property not currently or anticipated to be included in JCMD but which will contract with JCMD to receive service. These are expected to be residential developments that are not included in JCMD under the terms of the IGA between the District the City of Arvada.
- 4. Property which could include into the District but which was not considered in the evaluation or sizing of facilities.

The areas described above are shown in Figure 1-2.

The land uses presented in the Master Plan were provided by the District and include currently proposed land uses on the Vauxmont property (obtained March 29, 2004) and Cimarron property (obtained March 24, 2004). As these land uses have not been approved by the City, they are subject to revision. These land uses have been shown on the exhibit in Map Pocket 1, at the back of this report, entitled "INFRASTRUCTURE MASTER PLAN DEVELOPED LAND USE MAP". The open space areas west of SH 93 were intentionally omitted from the map but open space proposed within the development areas was identified.

1.3 Previous Studies

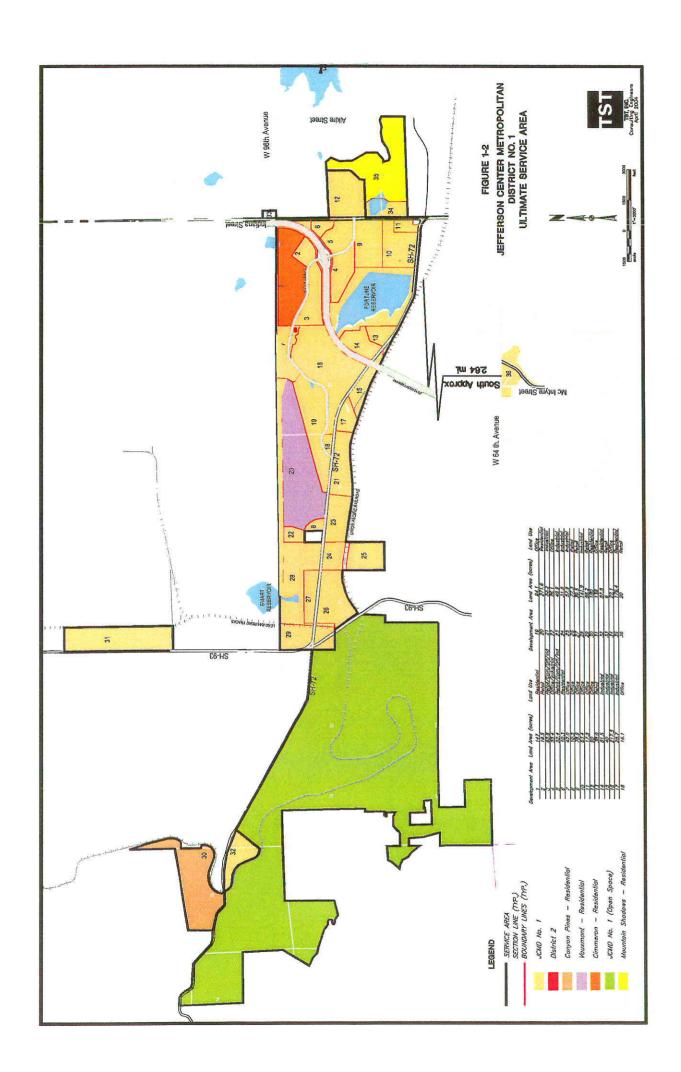
As provided and described by JCMD, the following reference documents relative to the preparation of this Master Plan are as follows:

Clear Creek/Upper Coal Creek Facility Plan (Camp Dresser and McKee Inc, Oct., 1991). This report updated the facility plan for the Metro Wastewater Reclamation District and the City of Arvada to include the Jefferson Center Development, which the JCMD was formed to provide utility service to. This report was used by the Denver Regional Council of Governments to determine appropriate areas for inclusion within the Clean Water Plan.

JCMD No. 1 Service Plan (Jefferson Center Associates, June, 1989.) This document sets forth the authorities and responsibilities of JCMD.

Intergovernmental Agreement between the City of Arvada and JCMD No. 1 (June, 1989). This document sets forth the relationship regarding facilities and services between the District and the City. This document was included in the JCMD No. 1 Service Plan.

Subdivider's Agreement between the City of Arvada, JCMD No. 1 and JCA. Like the Intergovernmental Agreement between the City of Arvada and JCMD No. 1, this document also sets forth the relationship regarding facilities and services between the District and the City.



1.4 Mapping and Surveying

Digital USGS quadrangle mapping and topography were utilized for this study. Four quadrangle maps were combined to form a single topographic map region. These four included:

- 1. El Dorado Springs, 1965, Photo revised 1971, Photo inspected 1975
- 2. Ralston Buttes, 1965, Photo revised 1971, Photo inspected 1976
- 3. Golden, 1965, Photo revised 1971
- 4. Louisville, 1965, Photo revised 1971

All USGS mapping was completed on National Geodetic Vertical Datum of 1929 benchmarks and consisted of 40' interval contours for the Eldorado Springs and Ralston Buttes maps and 10' contours for the Golden and Louisville maps. Additional surveying was completed as required by TST, Inc. Consulting Engineers.

1.5 Description of Facilities and Improvements

The diagrams contained in this Master Plan show the conceptual layouts of the ultimate infrastructure and a likely first phase. It is important to note that these layouts are conceptual only, and that modifications to the type, configuration, and location of improvements will be necessary as development proceeds. All facilities will be designed in such a way as to assure that the facility and service standards will be compatible with those of the City of Arvada's (Arvada) current design standards.

Construction of all planned facilities and improvements will be scheduled to allow for proper sizing and phasing to keep pace with the need for service. All descriptions of the specific facilities and improvements to be constructed, and their related costs, are estimates only and are subject to modification as engineering, development plans, economics, Arvada's requirements, and construction scheduling may require.

- **1.5.1 Water System:** The potable water system will deliver water that meets Primary and Secondary Drinking Water Standards, and will be designed and installed to conform to the current standards and recommendations of the American Water Works Association, the Insurance Services Office, the Colorado Department of Health, and Arvada
- **1.5.2 Wastewater System:** The wastewater system will transport wastewater to Metro Wastewater Reclamation District's regional treatment facility. The collection system will be designed and installed to conform to the current standards and recommendations of the Colorado Department of Health, Arvada, and Metro Wastewater Reclamation District.
- **1.5.3 Storm Drainage:** All major storm drainage facilities will be designed for the 100-yr storm event. All storm drainage designs will conform to the standards and recommendations of the City of Arvada, the Urban Storm Drainage and Flood Control District, and the Basin Master Plans that were prepared by TST, Inc. on behalf of JCMD subsequent to this Infrastructure Master Plan.
- **1.5.4 Transportation:** Public streets will be designed and installed to conform to the standards and recommendations of the American Association of State Highway and Transportation Officials (AASHTO), the Colorado Department of Transportation, and Arvada.

- **1.5.5** Recreation: The recreation facilities and trails shall meet those requirements as set forth by the JCMD board and the City of Arvada. Internal trail systems shall be coordinated with any regional system in the open spaces to the west.
- **1.5.6 Dry Utilities:** The individual entities will design and expand their infrastructure as necessary to provide service to the area. Current locations of facilities have been determined as of the date of this Master Plan.

1.6 Buildout Projection

To facilitate comparisons between this Master Plan and previously prepared technical and planning documents and to compare ultimate infrastructure needs with typical design life of facilities a buildout projection was prepared. After several iterations and input from the JCMD Board, Table 1-1 was created. Economic and demographic information was considered to balance optimistic projections and an average 10% annual growth rate was selected. This average would reflect periods of intense development offset by periods of lower, though steady, growth. The nature of the proposed land uses in the District (primarily commercial, industrial, office) tend not to grow at steady rates, as might be expected with residential development. These proposed land uses tend to cycle through periods punctuated by large increases in developed area. As with any type of projection relating to growth it should be noted that there are a number of critical variables that could effect the long term estimates but that are more likely to impact short term projections.

The buildout projection presented in this report is the same as that used to develop the financial plans for the district. It may vary from that presented by individual developers as they are considering their individual development, while the buildout projection in this report is attempting to factor in the entire district.

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