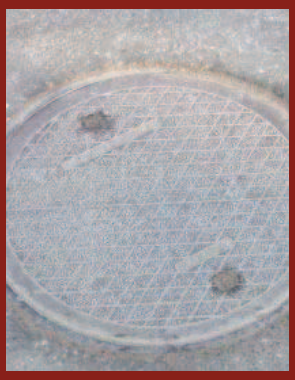
The City of Adel



Chapter 8 - Utilities Investment Plan

Prepared February 2009 by:

KIRKHAM MICHAEL

CHAPTER 8
Utilities Investment Plan

Adel operates its own potable water system and facultative lagoon sanitary sewer treatment system. The city also provide storm drainage facilities where needed. Near term system needs for maintenance and upgrade of these systems, as well as near term upgrades to accommodate annexation along U.S. Highway 6 were evaluated in the 2007 *Adel Infrastructure Study*. The executive summary of this report is provided here, for reference.

EXECUTIVE SUMMARY

This study of Adel's municipal infrastructure is being conducted to review the condition and capacity of existing water and sewer systems, identify improvements needed for continued reliable operation and compliance with applicable regulations, and to identify expansion requirements to meet forecasted growth. The study is based upon information collected from Adel staff, operating records, permit records, and field observations. Results from this study are intended to provide guidance to City leaders in order to prioritize, plan, and budget needed improvements to these systems.

Adel's population, currently estimated at about 4,000 people, has grown at around 1.5% per year for the recent past. Recent development trends in the city and in neighboring areas suggests that this growth rate may increase through the foreseeable future. Based on a review of these trends, Adel's population for the year 2030 (which is used as a design year for this analysis) will reach approximately 5,550 at a conservative estimate, higher if recent growth trends continue.

Based on these growth forecasts, the following findings are noted through the year 2030.

- Adel's existing well capacity of 1.29 million gallons per day (mgd) should be sufficient to provide the projected 2030 maximum daily flow of 1.11 mgd.
- Adel's water treatment capacity of 1.0 mgd is slightly undersized compared to the projected 2030 demand of 1.11 mgd
- Adel's water quality is generally good. Sodium content resulting from the softening process currently being utilized exceeds that recommended for persons on a sodium-restricted diet. This condition warrants consideration of a notification effort for Adel's water users.
- Adel's water treatment plant is 35 years old, has operational limitations, and exhibits signs of ongoing corrosion damage. Short-term recommendations for upgrades and repairs are estimated at $425,000.
- Adel's water treatment plant is operated by one person, while two are

recommended.

- Adel's water storage and distribution system requires upgrades to satisfactorily meet fire flows now, and to provide adequate service in the future. This includes construction of one additional storage facility, and upgrades to water mains in numerous locations. Costs to complete these improvements are preliminarily estimated at $750,000 for additional storage, and $1.1 million for main improvements (not including surface restoration costs).
- In order to extend water service to the east of Raccoon River, additional main construction costs would be incurred. Alternatives for using Xenia Rural Water System to meet part of this demand are presented in Chapter 3 of the report. We recommend that the City of Adel consider option 1) as proposed by Xenia, which is to make a connection to their system for use in emergencies, and to supplement supply from Adel's systems if/when needed. Other alternatives for Xenia service could also be considered by Council as warranted, but require additional discussion about long-term priorities.
- Adel's lagoon-based wastewater treatment system is currently meeting effluent requirements, and provides sufficient capacity to meet forecasted demand for flow rate and biological oxygen demand.
- Regulatory changes anticipated within the next 10 years will require construction of a mechanical treatment plant.
- Wastewater collection system improvements include an estimated $2.4 million in capital improvements for the following:
    - Add backup power for the smaller existing north lift station
    - Install Raccoon River crossing, lift station and trunkline along Highway 6 to service areas east of the river.

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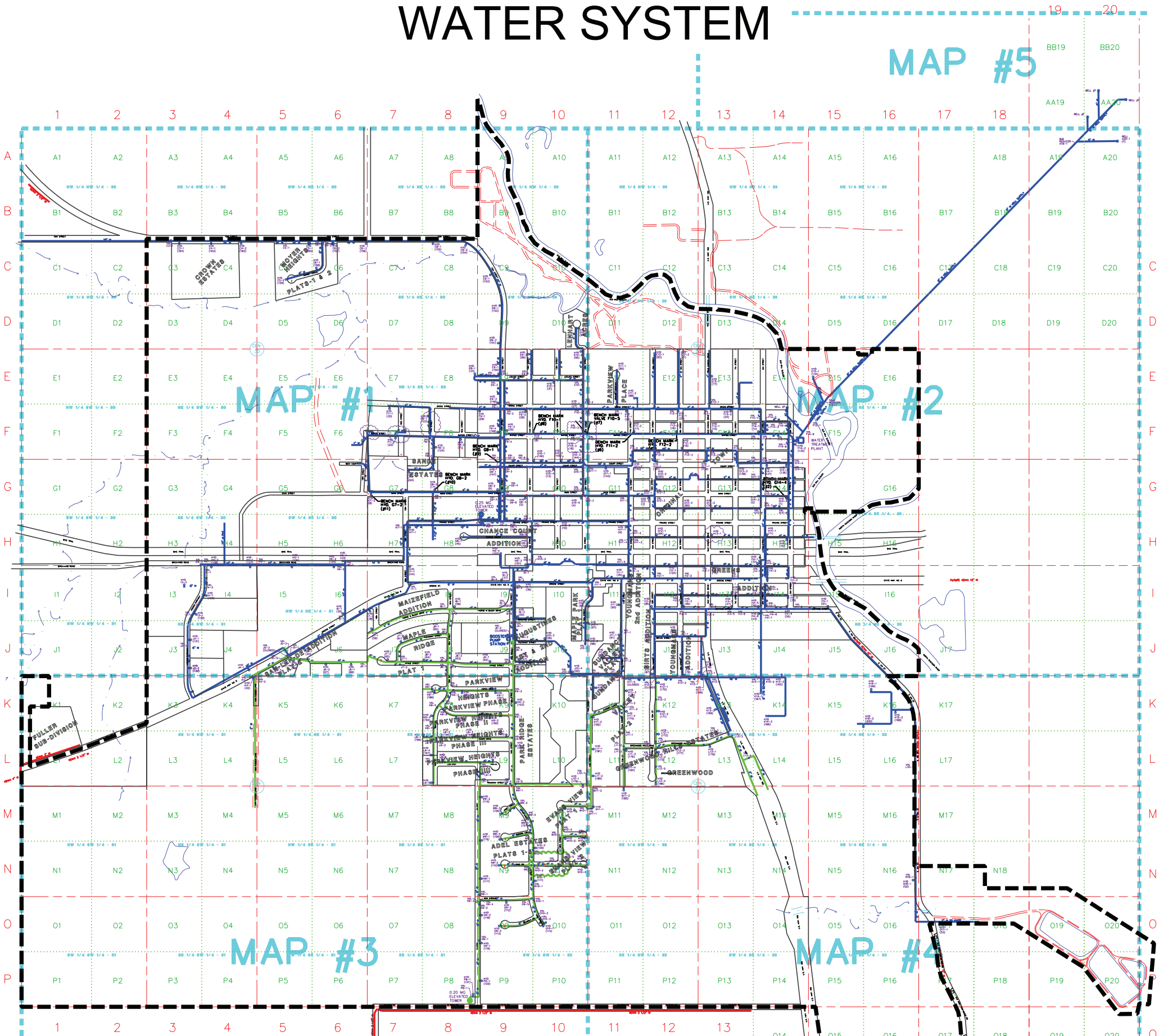
CITY OF ADEL, IOWA
WATER SYSTEM

CAUTION:

UTILITY LOCATIONS SHOWN HAVE BEEN PLOTTED FROM EXISTING MAPS AND RECORD DRAWINGS AND ARE APPROXIMATE IN NATURE. ACTUAL LOCATIONS SHOULD BE FIELD LOCATED PRIOR TO CONSTRUCTION.



BENCH MARKS:

(BM #2) G14-4 HYD.	ARROW ON HYDRANT AT SOUTHWEST CORNER OF NORTH 5TH ST. AND MAIN ST.	ELEV.=890.34
(BM #5) F12-2 HYD.	TOP OF NORTH CAP BOLT ON HYDRANT AT NORTHWEST CORNER OF NORTH 9TH ST. AND RAPIDS ST.	ELEV.=890.18
(BM #6) F11-2 HYD.	TOP OF NORTH CAP BOLT ON HYDRANT AT NORTHEAST CORNER OF NORTH 11TH ST. AND RAPIDS ST.	ELEV.=903.21
(BM #7) F10-5 VALVE	NORTH RIM OF WATER VALVE AT 10 FT. NORTH OF CENTER OF RAPIDS ST. AND 20 FT. EAST OF CENTER OF NORTH 12TH ST.	ELEV.=911.36
(BM #8) F10-1 HYD.	TOP OF NORTH CAP BOLT ON HYDRANT AT N.E. CORNER OF 14TH ST. AND RAPIDS ST.	ELEV.=922.83
(BM #9) G1-1 HYD.	SOUTHWEST BOLT ON HYDRANT AT NORTHWEST CORNER OF NORTH 15TH ST. AND COURT ST.	ELEV.=930.06
(BM #10) G8-2 HYD.	ARROW ON HYDRANT ON NORTH SIDE OF MAIN ST. AT ADDRESS OF 1630 MAIN ST.	ELEV.=927.57
(BM #11) G7-2 HYD.	ARROW ON HYDRANT ON NORTHEAST CORNER OF NORTH 19TH ST. AND MAIN ST.	ELEV.=927.10

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CITY OF ADEL, IOWA
SANITARY SEWER SYSTEM

CAUTION:

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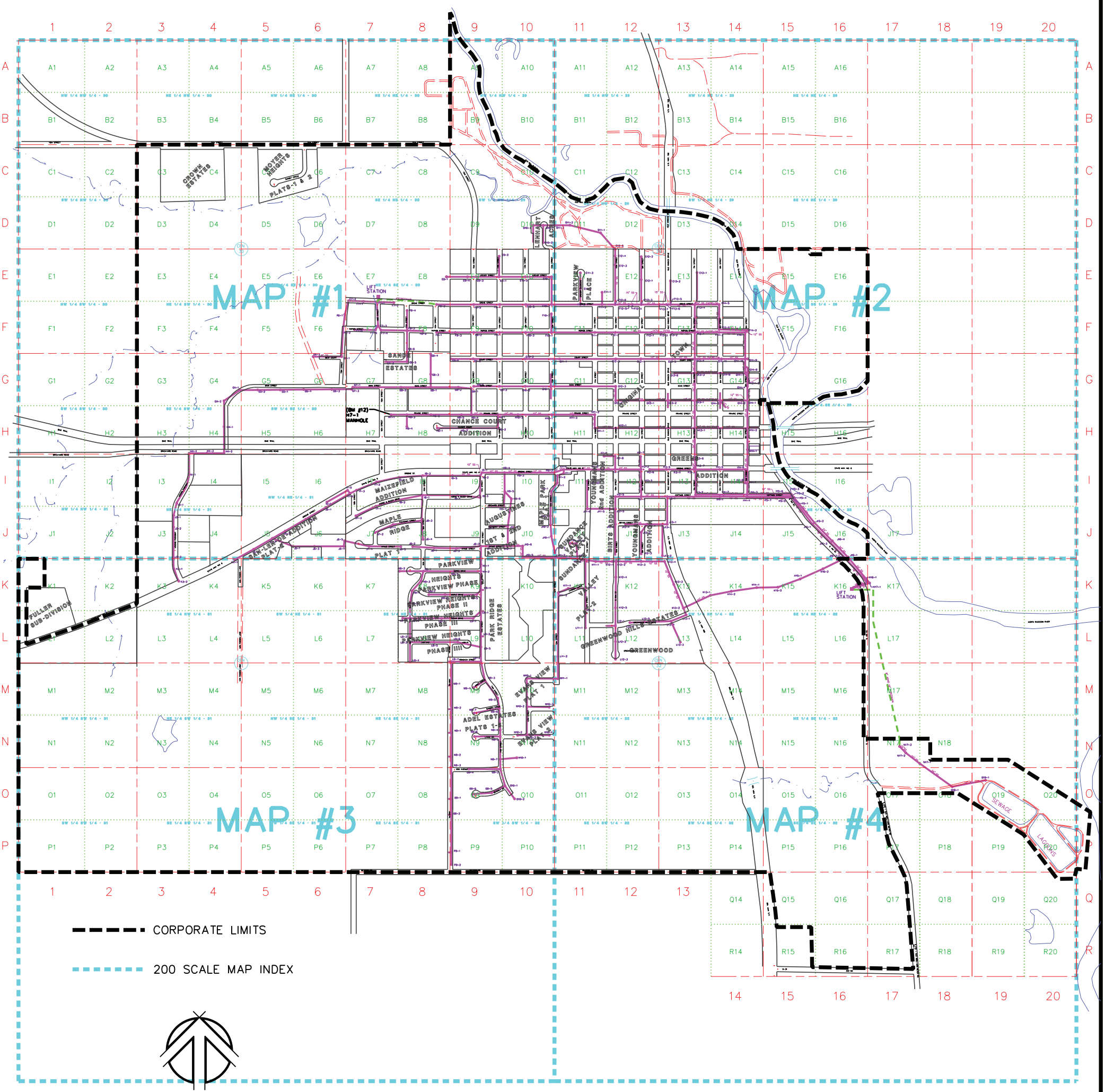
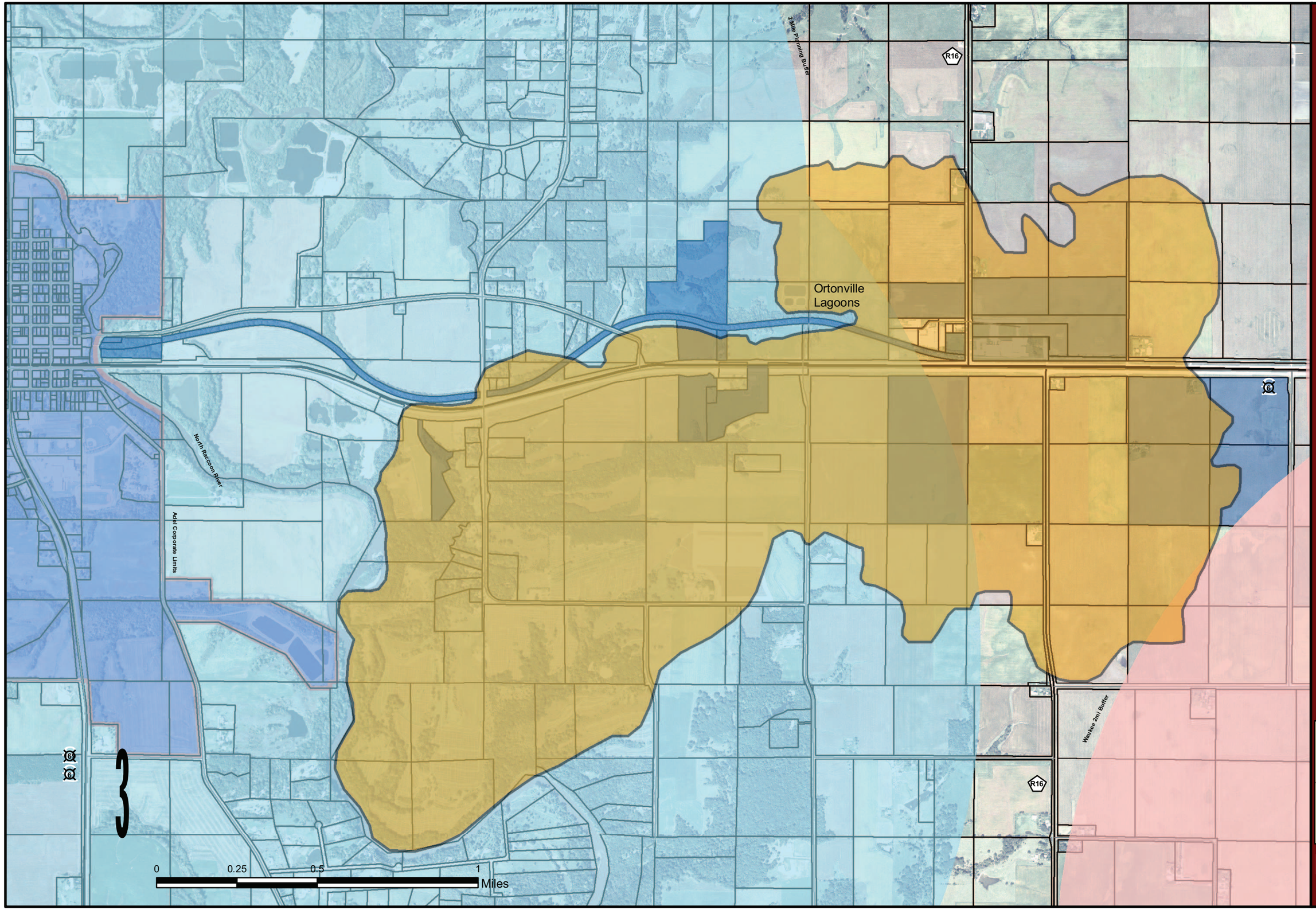


SCALE: 1" = 400'
PHOTO DATE: SPRING 2006
DRAWING DATE: SPRING 2007

BENCH MARKS:

(BM #12) M7-1 MANHOLE — NORTH RIM OF MANHOLE AT 12 FT. NORTH OF CENTER OF PRAIRIE ST. AND 30 FT. EAST OF CENTER OF NORTH 18TH ST. ELEV.= 926.24



Adel Highway 6 Corridor
Proposed Sewer Service Boundary

A • D • E • L
I • O • W • A

Legend

- Pump Station Drainage
- AnnexParcels
- Waukee 2mi Buffer
- Adel 2mi Buffer

KIRKHAM MICHAEL

Figure 14