Staff Report

3409-3413 SOUTH DUFF AVENUE DRAINAGE REFERRAL

July 26, 2011

Background:

On June 28, 2011 in response to a rezoning request from the property owner at 3409-3413 South Duff Avenue, the City Council directed staff to report back regarding the cost estimate, the funding source, and the time frame to complete a comprehensive analysis regarding storm water runoff as it relates to the Teagarden/Southdale/Airport area.

The properties located at 3409 and 3413 have varying topography, which divides the area into two sub-watersheds. The northern area drains northerly through the property owned by Rueter Farms Inc. then east along Crystal Street. The remaining property area drains along the south boundary line of this property then east under U.S. Highway 69. The sub-watershed areas are currently planned in the CIP for FY 2013/14 to be combined to look at a more comprehensive analysis.

In 1984, a comprehensive report was completed by BP Donohue for the entire watershed. Most of the recommendations within this report appear to have been implemented. (See Attachment I) In summary, five detention basins were recommended and built on the airport grounds. Additionally, a low-flow cunette was constructed in 1985 from Jewel Drive south past Garnet Drive. In 1986/87 channel improvements were made along the middle and south branch culverts each at Emerald Drive.

In 2000, another study was conducted by Snyder and Associates with focus on prevention of the overtopping of U.S. Highway 69 and sizing of a culvert under Jewel Drive. A portion of the recommendations within this study were implemented. This study focused on the N. Branch of the watershed only (See attached Attachment II). In general, eight alternatives looked at how to accommodate flow from U.S. Highway 69/Crystal Street east and south to Jewel Drive. In 2001, a 72-inch storm sewer was installed along Crystal Street, south and east through the Schill property, and then along Opal Drive to the existing three 48-inch pipes at Jewel Drive.

Scope of the Analysis:

Feedback received by the consulting firm that serves as the Airport engineer and also has local watershed management experience, indicates that a comprehensive analysis of the entire watershed would best address the neighborhood concerns. This comprehensive approach would offer an opportunity to analyze specific complaint or problem areas in the context of regional surface water interaction. In addition, since the rezoned properties straddle the north and middle branches and the Drainage District

#59 boundary, it is believed that analysis of the impact of the subject properties is best addressed under a comprehensive review.

Cost and Time Frame Estimate:
A proposed schedule could look as outlined below:

Aug 2011 - Kickoff Meeting with Public Works staff
Sept 2011 - Data gathering/Field Data Collection
Oct 2011 - Public Meeting #1
Dec 2011 -Engineering Analysis
Jan 2012 -Draft report of findings-Public Meeting #2
Feb 2012 -Engineering Report
April 2012 -City Council Presentation

Using the outlined schedule above, the engineering evaluation is estimated to cost between $40,000 and $60,000.

Funding Options:
Staff explored the possibility of securing FAA, Drainage District, IDOT, and IDNR funding, but determined that none of these outside sources are feasible.

In reviewing the status of the Storm Water Utility Fund it was determined that an adequate fund balance is available this time to shift the planning for this project from FY 13/14 to FY 11/12. In order to advance this planning study, the $125,000 Low Point Drainage Improvements Project reflected the CIP should be amended accordingly.

It should be emphasized that the projected balance in the Storm Sewer Utility assumes federal FEMA mitigation monies will be available to accomplish other needed improvements in various neighborhoods. If these federal funds are not forthcoming, then this balance might be needed to accomplish other priority storm water improvements.

Attachment I
(3 pages)

Structural alternatives evaluated included detention storage and channel improvements. Construction cost estimates were provided for all feasible alternatives.

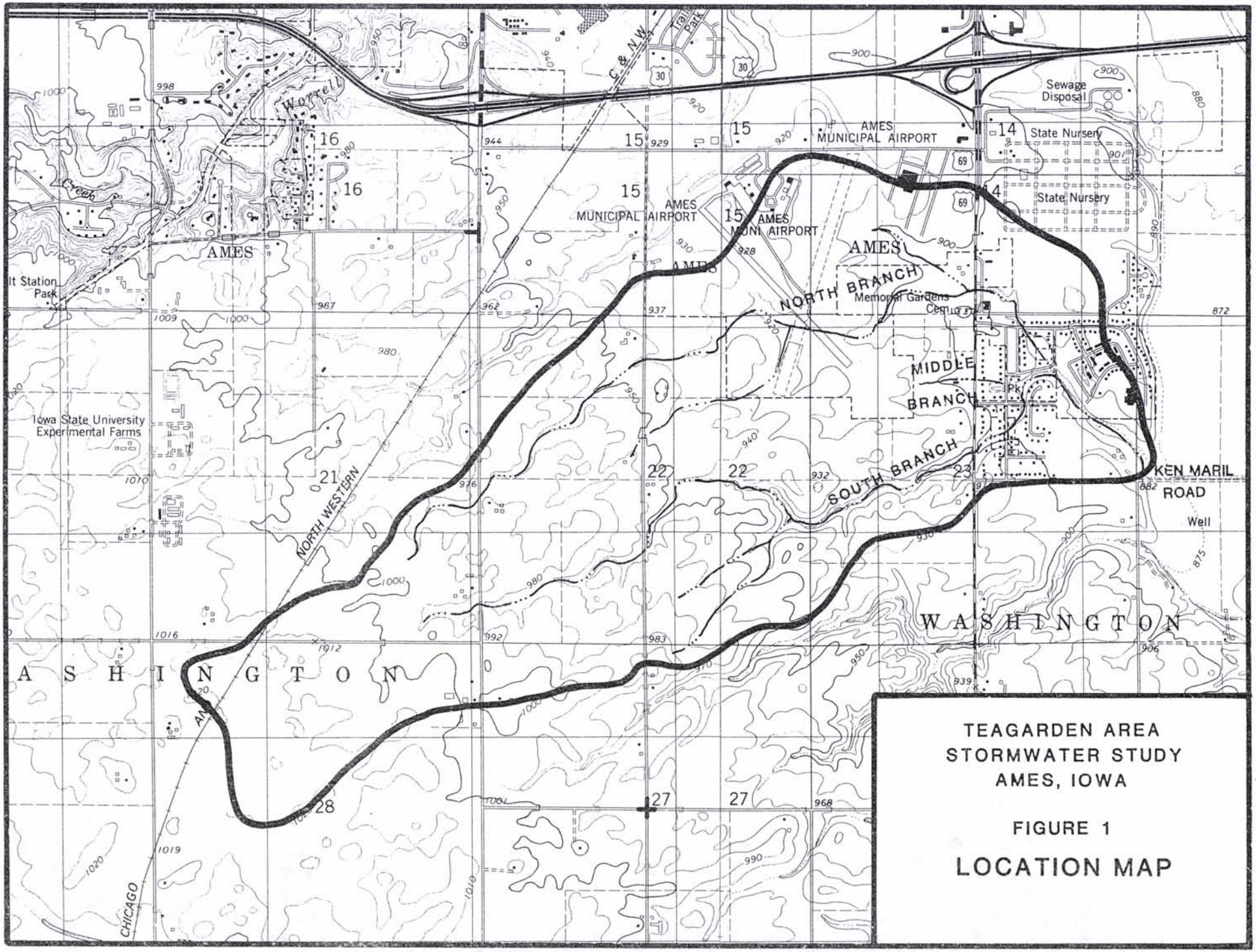
Recommendations

To alleviate the drainage and flooding problems within the Teagarden area, channel and culvert improvements and five floodwater detention basins are recommended. The following recommendations are made with regard to the drainage and flooding problems and according to the following construction schedule: √ = completed

Year		Cost
1984-85	°Low-flow cunette, subdrain and subdrain collector pipe from Jewell Drive to below Garnet Drive.	$253,200.00 √
1985-86	°Construction of a floodwater detention basin (Site 1) located on the north branch east of the airport terminal.	$136,000.00* √
1985-86	°Construction of a floodwater detention basin (Site 2) on the north branch east of South Riverside Drive.	$865,000.00* √
1985-86	°Construction of a floodwater detention basin (Site 4) on the south branch west of Runway 1-19.	$509,000.00* √
1985-86	°Construction of a floodwater detention basin (Site 5) on the south branch east of Runway 1-19.	$365,000.00* √
1986-87	°Channel improvement on the north branch from U.S. Highway 69 to Jewell Drive. Channel bank protection on the south branch from U.S. Highway 69 to below Garden Road and at south branch mouth. Middle branch culvert improvements at Emerald Drive.	$106,300.00 √
1994-2003	°Construction of a floodwater detention basin (Site 3) located on the north branch east of the runway intersection.	$523,000.00* √
1994-2003	°Replacement of the existing culvert at U.S. Highway 69 on the north branch with twin 6-foot horizontal by 5-foot vertical box culverts.	$199,000.00**

*Construction costs may qualify for Federal Aviation Administration funding in conjunction with the Ames airport expansion and development.

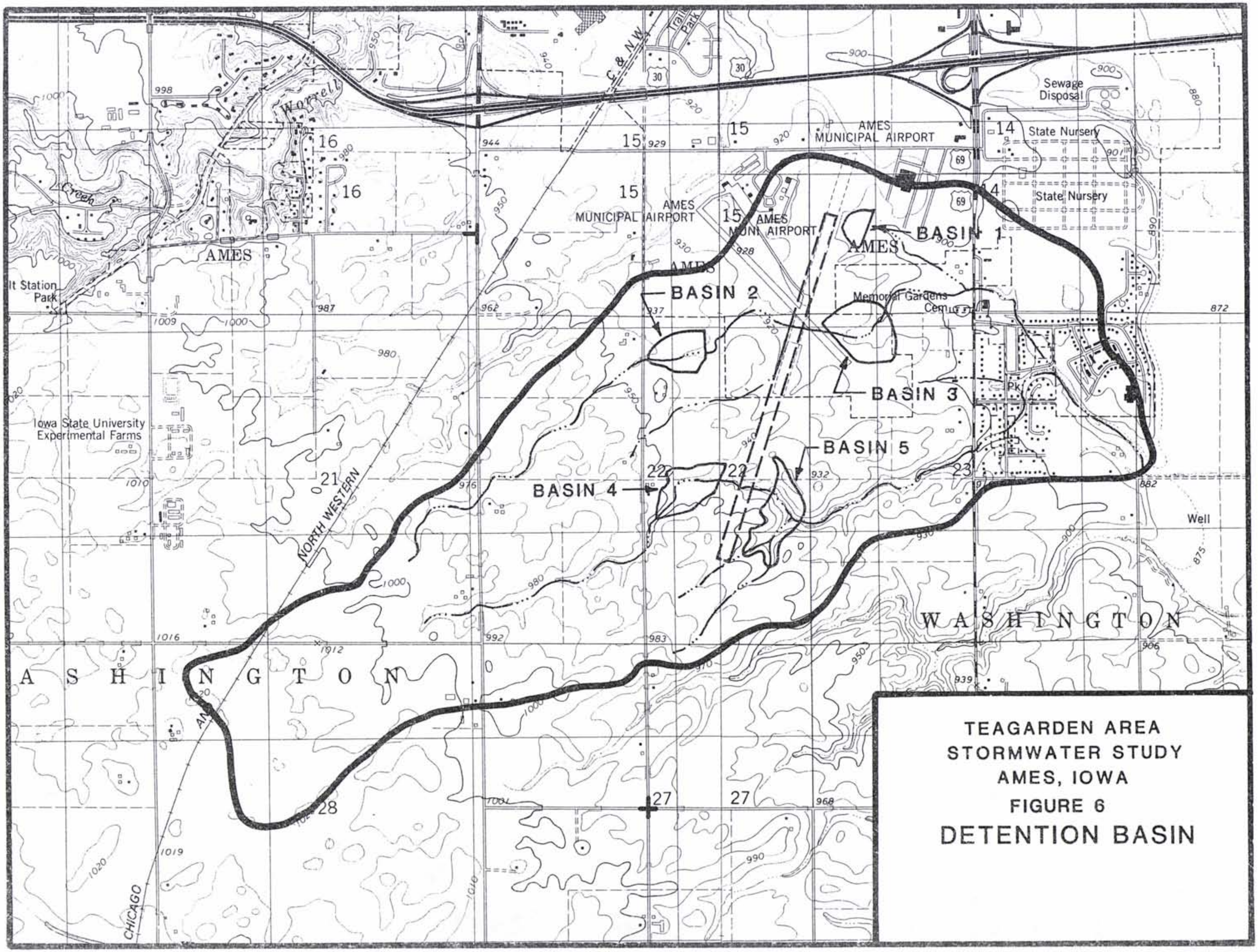
**Construction of culvert improvement to be coordinated with U.S. Highway 69 improvements and may qualify for Iowa Department of Transportation funding.



TEAGARDEN AREA
STORMWATER STUDY
AMES, IOWA

FIGURE 1

LOCATION MAP



TEAGARDEN AREA
STORMWATER STUDY
AMES, IOWA
FIGURE 6
DETENTION BASIN

Attachment II
(4 pages)

TABLE 4-3
ENGINEER'S PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COSTS

TEAGARDEN STORM WATER STUDY
SUMMARY OF ALTERNATIVE COSTS*
CITY OF AMES, IOWA
July 1999

√= completed

Alternative	Estimated Project Cost
Alternative #1 - 3-48" RCP at ACI Parking Lot, 72" RCP at driveway, and 60" RCP under U.S. 69	$249,136
Alternative #2 - 3-48" RCP at ACI Parking Lot, remove driveway culvert, improve open ditch, and 54" RCP at U.S. 69	$262,534
Alternative #3 - 7'x5' RCB from U.S. 69 through ACI Parking Lot	$514,533
Alternative #4 - 6'x5' RCB from U.S. 69 through Jewel Dr.	$641,884
Alternative #5 - Detention pond upstream of U.S. 69	$1,299,328
Alternative #6 - Detention pond upstream of U.S. 69 and 72" RCP at driveway	$397,383
Alternative #7 - Detention pond upstream of U.S. 69, 72" RCP at driveway, and 3-48" RCP at ACI	$571,205
Alternative #8 - Detention pond upstream of U.S. 69 and 72" RCP storm sewer from U.S. 69 through ACI Parking Lot * See attached aerial of alignment along Opal Drive	$581,066 √

* Detailed cost estimates for each alternative are found in Appendix A

Note: all construction costs are based on 1999 prices.

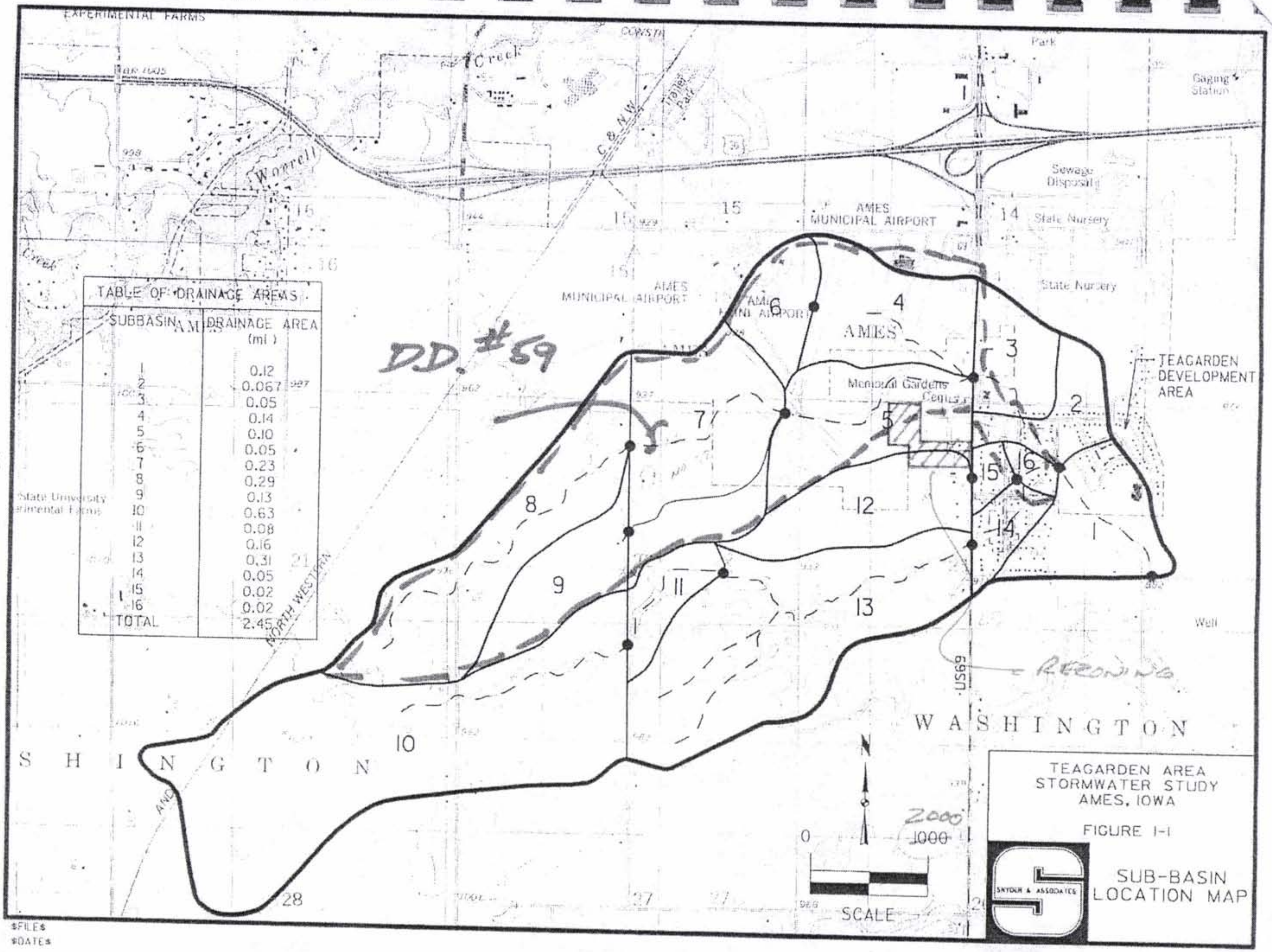
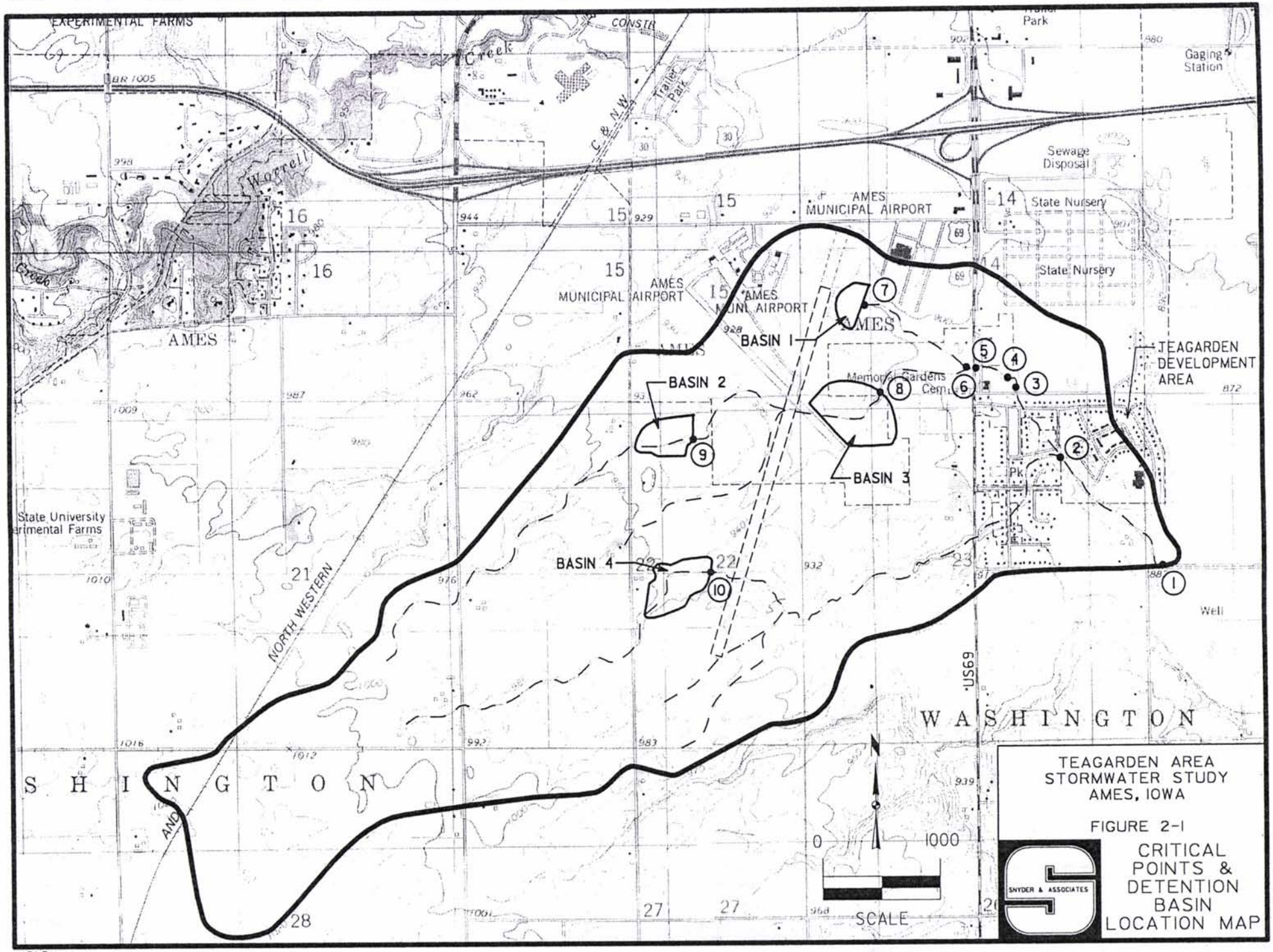


TABLE OF DRAINAGE AREAS

SUBBASIN	DRAINAGE AREA (mi)
1	0.12
2	0.067
3	0.05
4	0.14
5	0.10
6	0.05
7	0.23
8	0.29
9	0.13
10	0.63
11	0.08
12	0.16
13	0.31
14	0.05
15	0.02
16	0.02
TOTAL	2.45


EXPERIMENTAL FARMS
Creek
CONSTR
BR 1005
C & N.W.
Trailer Park
Park
Gaging Station
Sewage Disposal
Worrell
AMES MUNICIPAL AIRPORT
State Nursery
AMES
BASIN 1
BASIN 2
BASIN 3
BASIN 4
TEAGARDEN DEVELOPMENT AREA
Memorial Gardens Cem
Pk
State University Experimental Farms
NORTH WESTERN
US69
Well
W A S H I N G T O N
S H I N G T O N
0
1000
SCALE
TEAGARDEN AREA STORMWATER STUDY
AMES, IOWA
FIGURE 2-1
SNYDER & ASSOCIATES
CRITICAL POINTS & DETENTION BASIN LOCATION MAP

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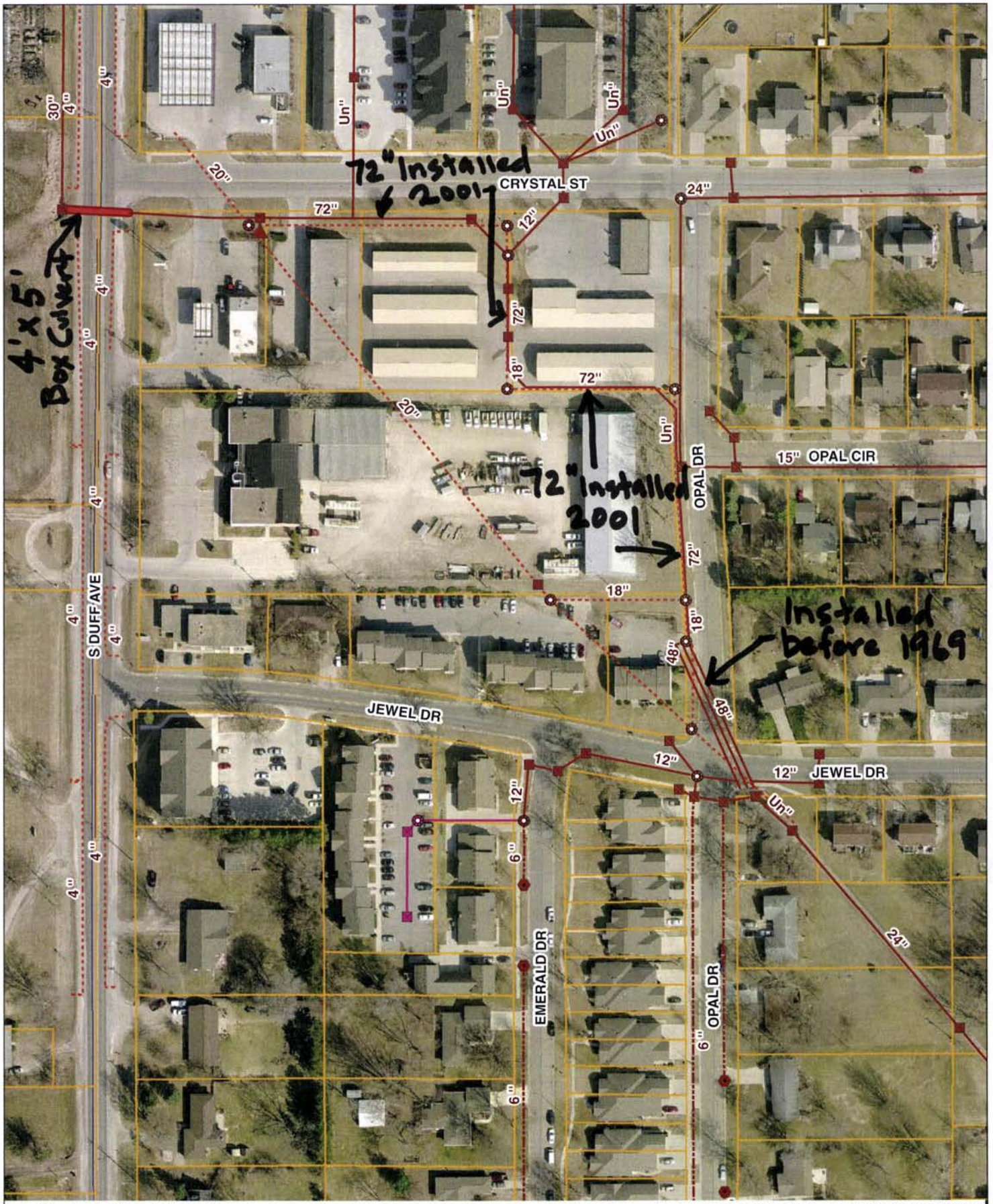

CITY OF AMES IOWA

NORTH

Scale: 1 in = 150 ft

Date: 7/21/2011