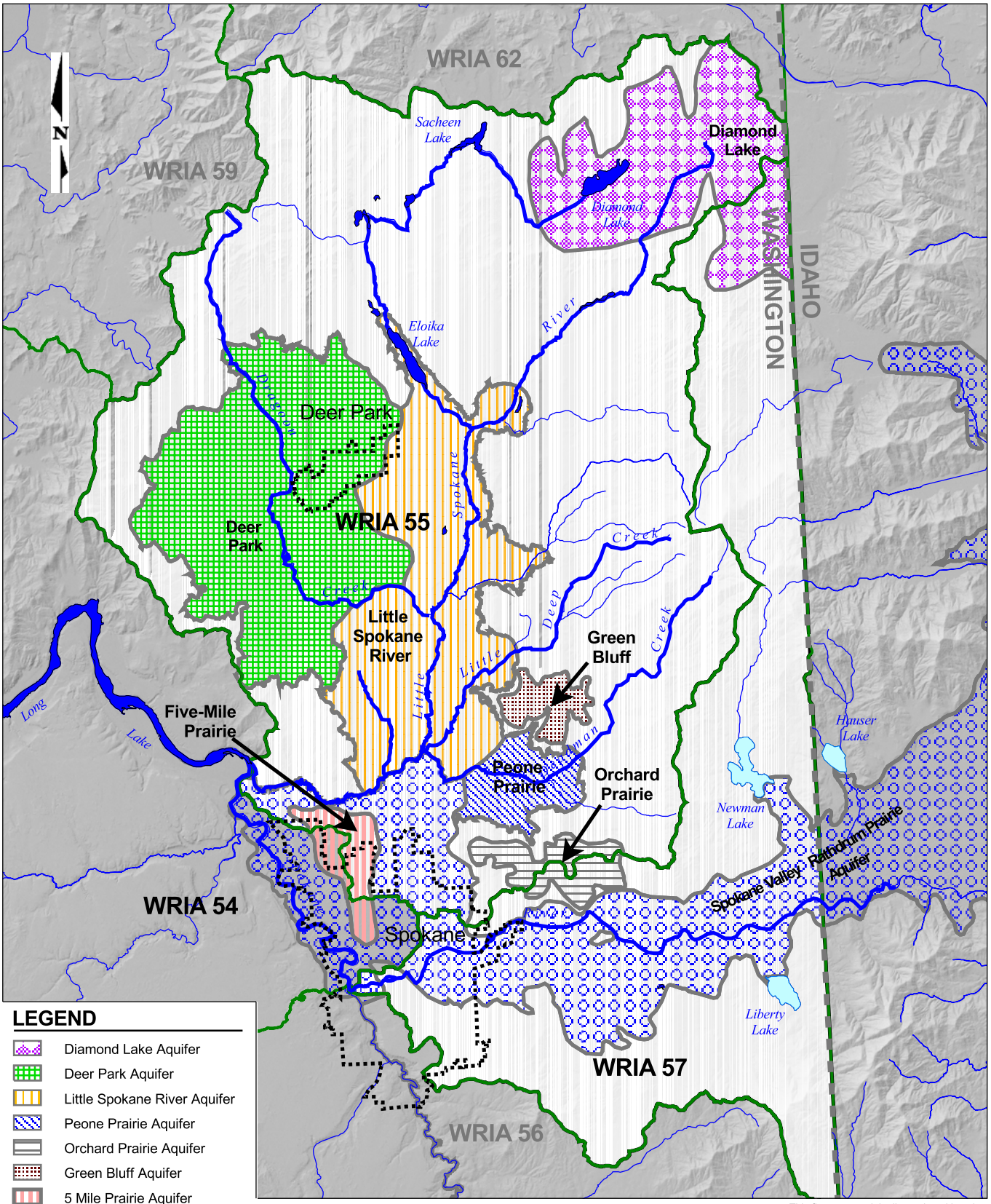


LEGEND

- Diamond Lake Aquifer
- Deer Park Aquifer
- Little Spokane River Aquifer
- Peone Prairie Aquifer
- Orchard Prairie Aquifer
- Green Bluff Aquifer
- 5 Mile Prairie Aquifer
- Spokane Valley Rathdrum Prairie Aquifer
- Lakes
- WRIA Boundaries
- Mike11 Rivers
- Model Domain
- City Limits

0 30,000

Scale 1" = 30,000 Feet

Map Projection:
Washington State Plane, NAD83,
North Zone, Feet

Source: USGS, WSDOE,
Golder Associates Inc.

This figure was originally produced in color. Reproduction in black and white may result in loss of information.

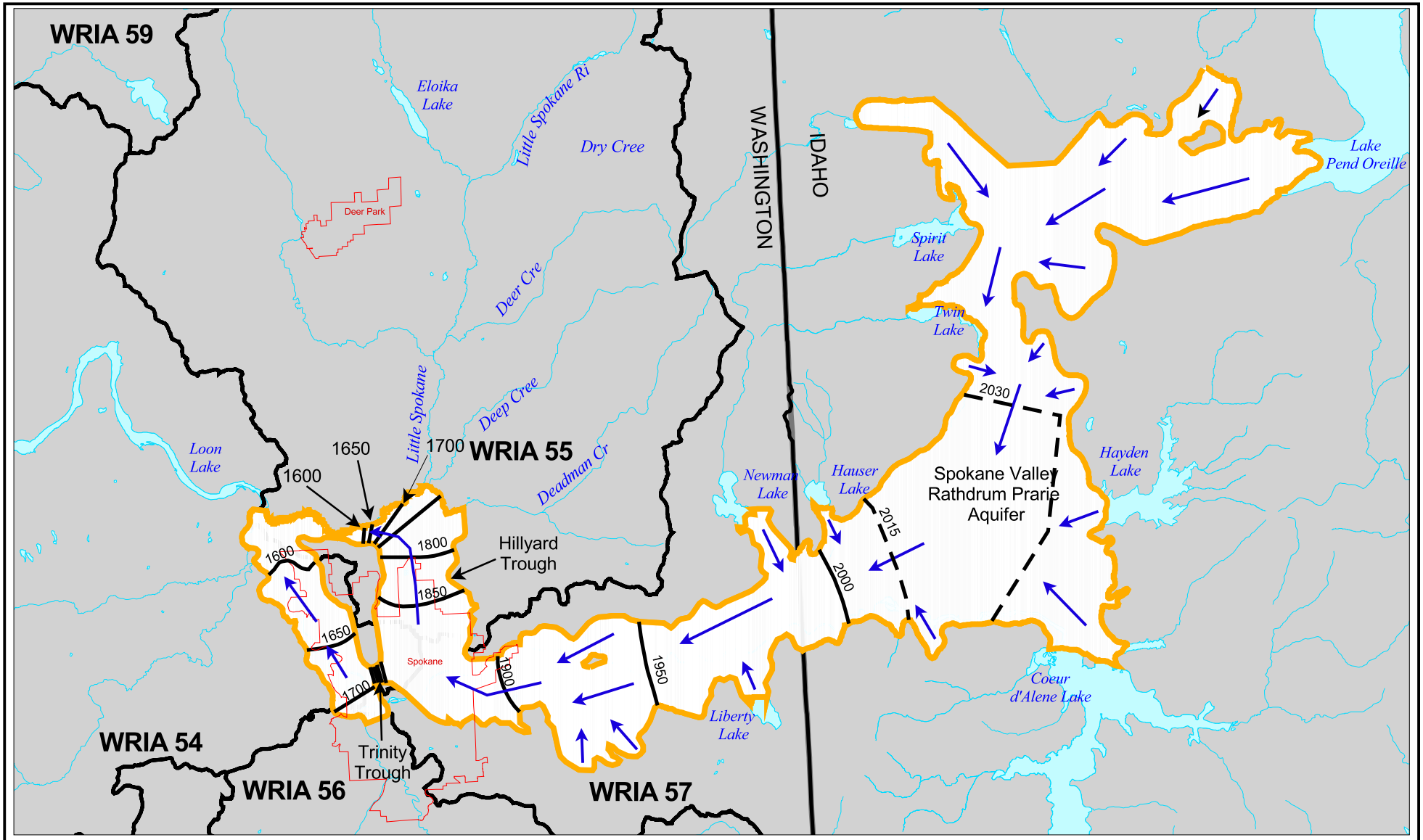
Generalized Aquifer Delineations

WRIA 55&57/WATERSHED PLANNING/WA

Drawn: SAC	Revision: BBA	Date: June 19, 2003	Figure: 5.8

01313722300_110702.apr

Golder Associates



Legend

1900 Groundwater Elevation (Ft amsl) Based on CH2MHill September 1994 Monitoring

2015 Groundwater Elevation (Ft amsl) Based on Buchanan (1999)

Groundwater Flow

City Limits

N

0 6

Scale 1" = 6 Miles

Map Projection: Washington State Plane North Zone, City of Spokane Datum (NAD83 + 16.93 ft)

Original Data Source: Washington Department of Ecology, USGS, CH2MHill (1998), Buchanan (1999).

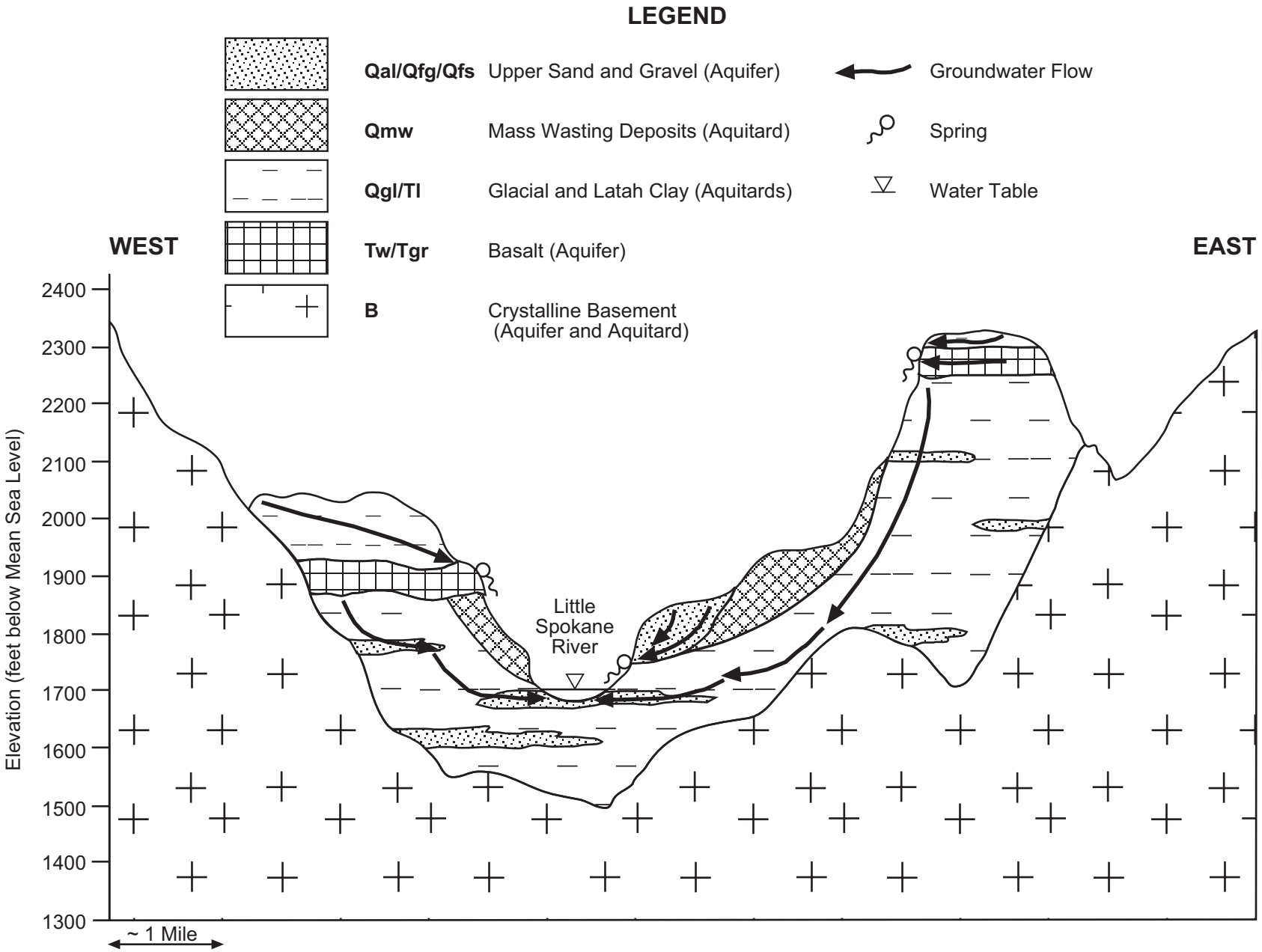
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Spokane Valley - Rathdrum Prarie Aquifer

Drawn: GKL	App'd:	Date: Oct. 31, 2001	Figure: 5.9

L:\projects\2001\0131372\gis\aprs\overview.apr 10-31-01 GKL



Reference: Adapted from Boese & Buchanan, 1996.

FIGURE **5-10a**

CONCEPTUAL HYDROGEOLOGY FOR WRIA 55

SPOKANE COUNTY/LEVEL I ASSESSMENT/WA

PROJECT NO. 013 1372_1700 DRAWING NO. 94724 DATE 09/18/01 DRAWN BY JSR

Golder Associates

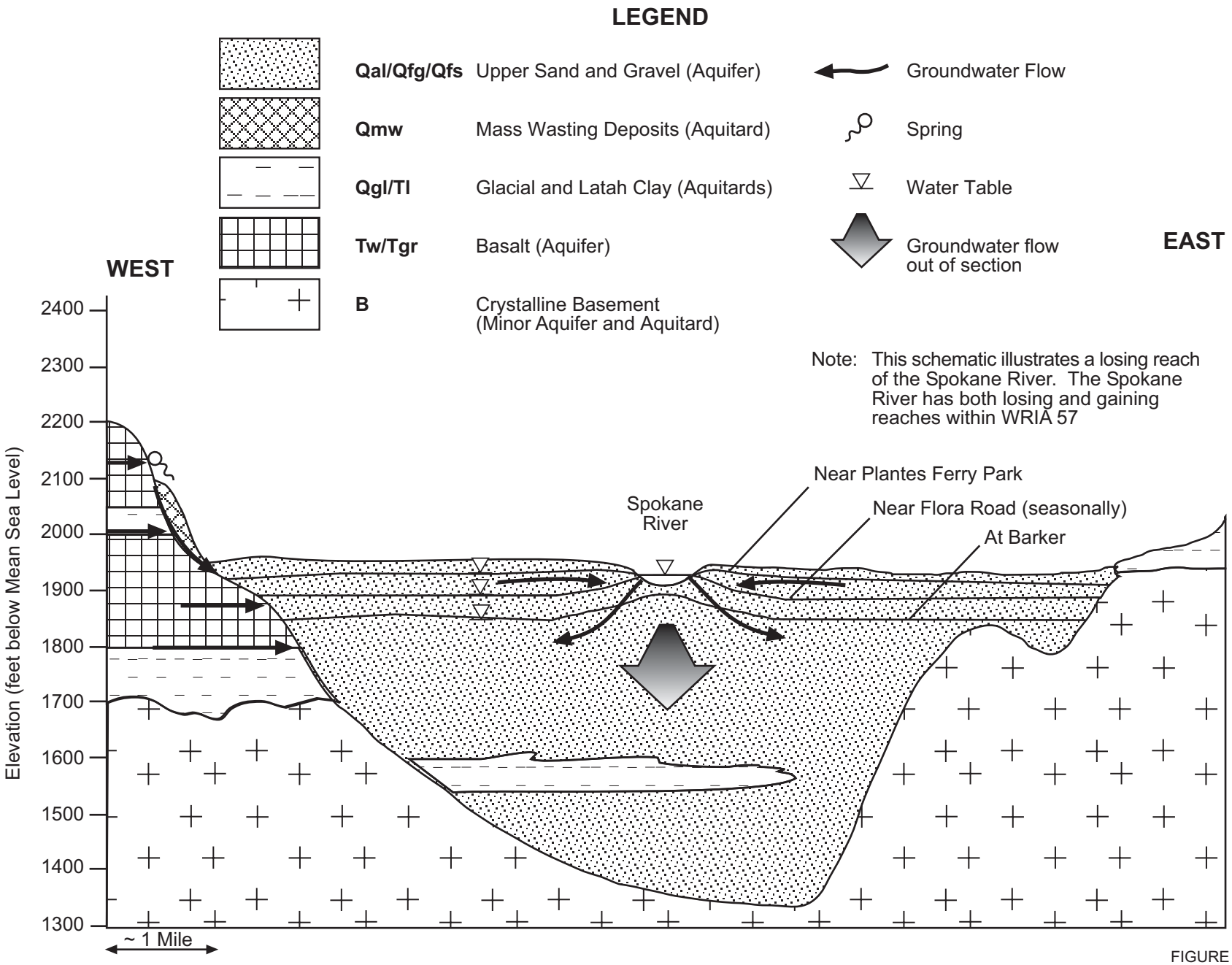


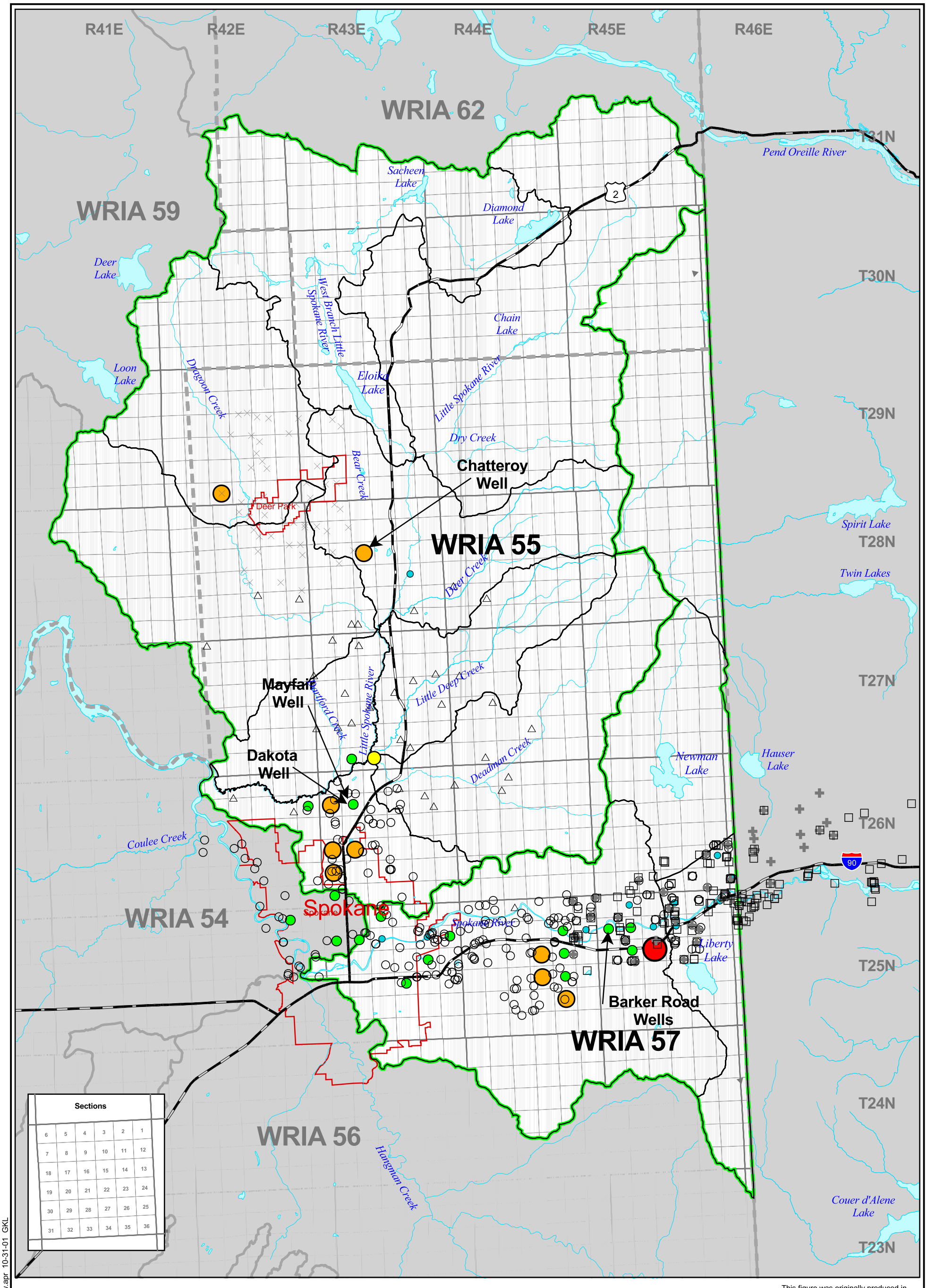
FIGURE **5-10b**

CONCEPTUAL HYDROGEOLOGY FOR WRIA 57

SPOKANE COUNTY/LEVEL I ASSESSMENT/WA

PROJECT NO. 013 1372_1700 DRAWING NO. 94725 DATE 11/8/01 DRAWN BY JSR

Golder Associates



Legend

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Groundwater Monitoring Points

Snapshot in Time: Symbol	Date (Source)
×	1991 - 1992 (EMCON, 1992)
□	2000 - 2001 (USGS, ongoing)
✚	Oct, 1996 (CH2MHill, 2000)
○	Sep, 1994 & Apr, 1995 (CH2MHill, 1998)
△	Apr-Jun, 1996 (Boese & Buchanan, 1996)

Extended Record (Years):
- <1
- 1-10
- 10-20
- 20-50
- >50

N

0 4

Scale 1" = 4 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology, Spokane County, Emcon (1992), Boese & Buchanan (1996), CH2MHIll (2000)

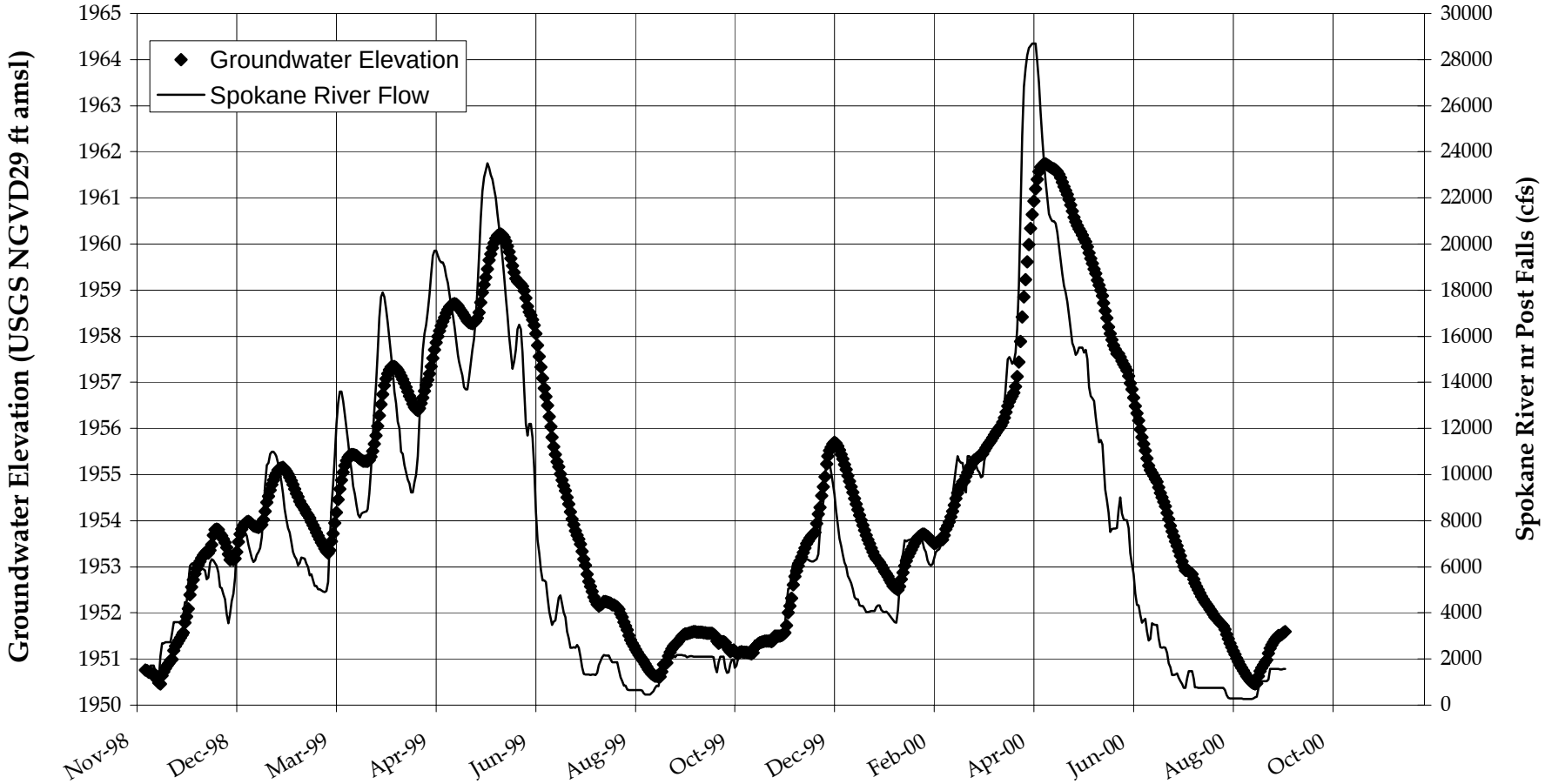
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Ground Water Monitoring Points

Drawn: ATB	App'd:	Date: Oct. 31, 2001	Figure: 5.11

L:\projects\2001\0131372\gis\aprs\overview.apr 10-31-01 GKL



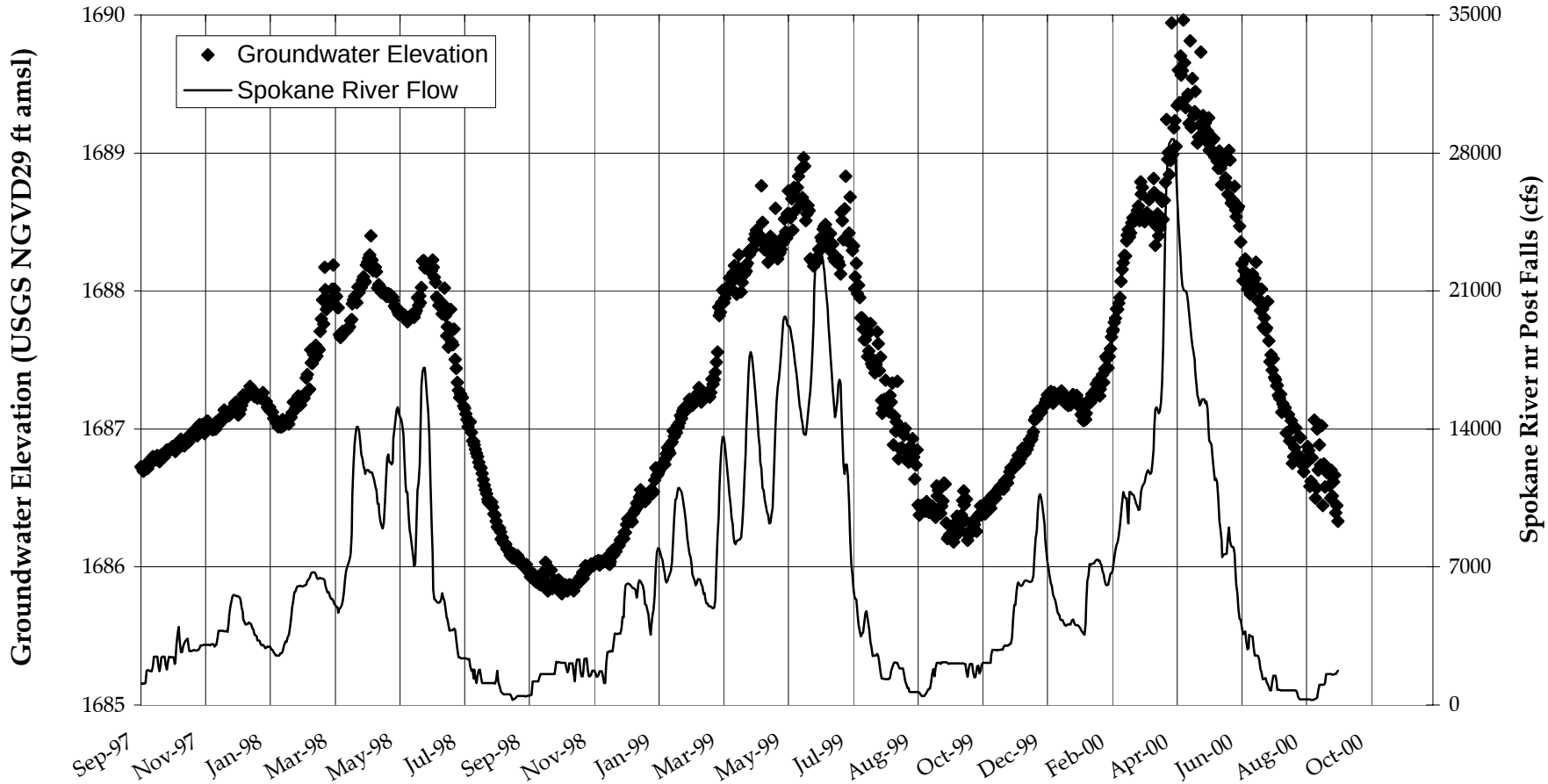
Data Source: Spokane County
Date Type : Daily averages from transducer data
Station Name: Barker Road North, Barker North
Station ID: 5507H01

FIGURE 5.12:
Barker Road North Well
(Barker North)
11/1998-9/2000

Spokane Co. / Level 1 Assess / WA

Golder Associates

013-1372.1700 October 14, 2001



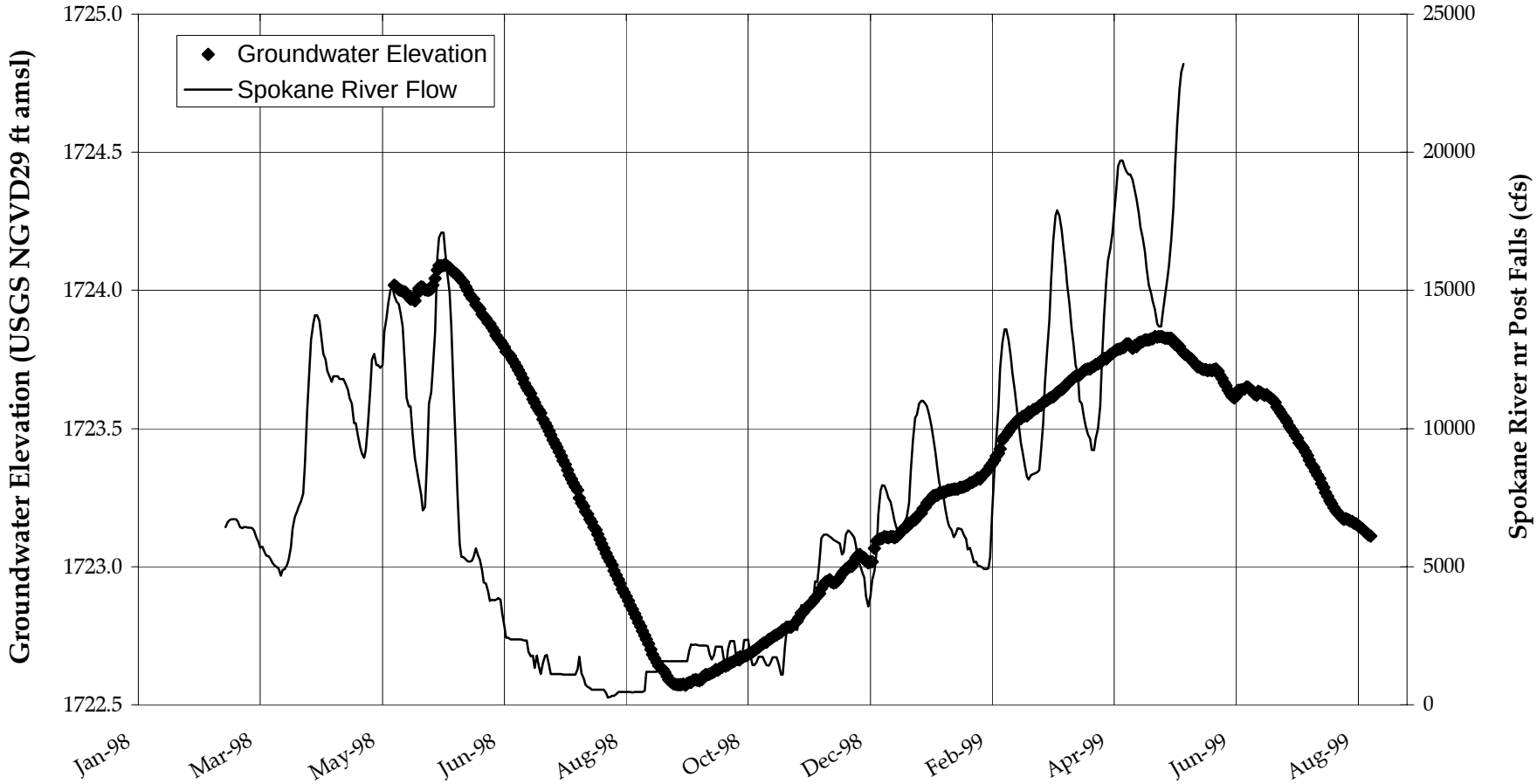
Data Source: Ecology
Date Type : Daily Averages
Station Name: Mayfair Well, Whitworth Water District Test Well
Station ID: 6308F02
Note: completed in the upper sands & gravels of N Hillyard Trough

FIGURE 5.13:
Mayfair Well
9/1997-9/2000

Spokane Co / Level 1 Assess / WA

Golder Associates

013-1372.1700 October 14, 2001



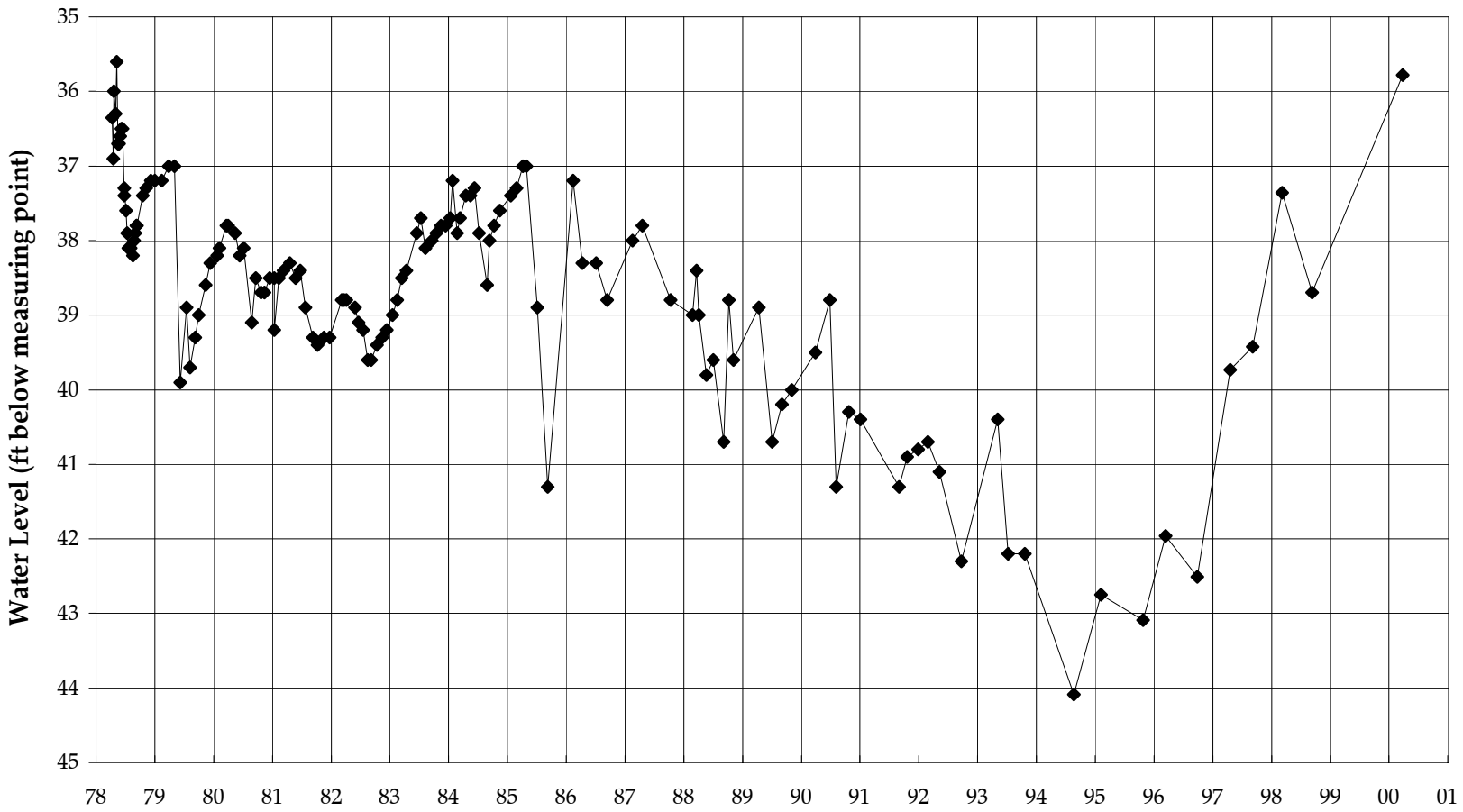
Data Source: Ecology
Date Type : Daily Averages
Station Name: Dakota Well, Spokane County Water District #3
Station ID: 6308B04
Note: completed in the lower sands & gravels of N Hillyard Trough

FIGURE 5.14:
Dakota Well
5/1998-8/1999

Spokane Co / Level 1 Assess / WA

Golder Associates

013-1372.1700 October 14, 2001



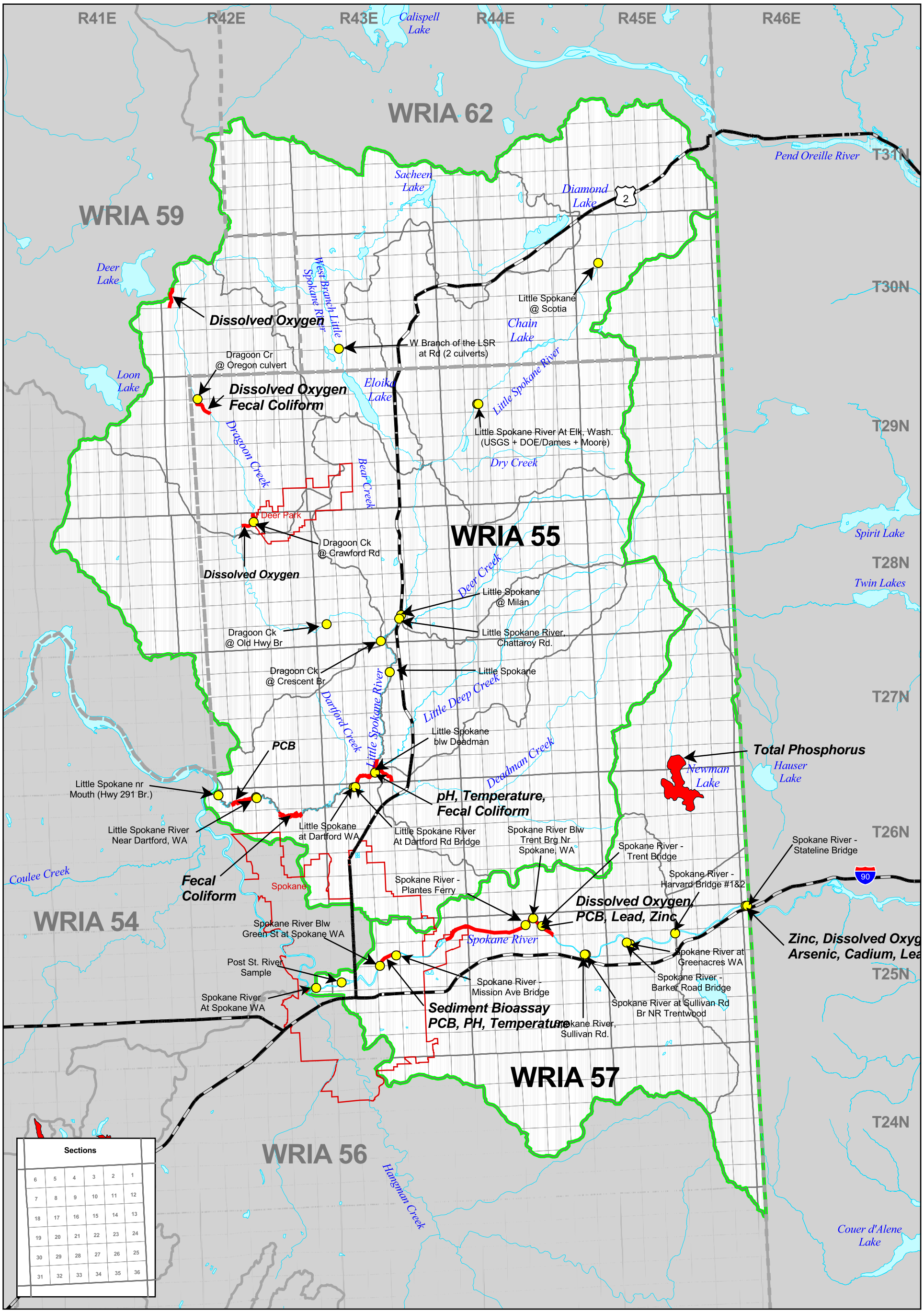
Da□a Source: Ecology
Date Type : Quartlery manual data
Station Name: Chatteroy Observation Well
Station ID: 8316D01

FIGURE 5.15:
Chatteroy Observation Well
4/1978 - 3/2000

Spokane Co / Level 1 Assess / WA

Golder Associates

013-1372.1700 October 14, 2001



Legend

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams
- Listed Water Bodies
- Water Quality Monitoring Stations

Note: "Called-out" Pollutants may ony apply to sub-section of indicated reach. Water quality stations are detailed in appendicies.

N

0 4

Scale 1" = 4 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

The figure was originally produced in color. Reproduction in black and white may result in loss of information

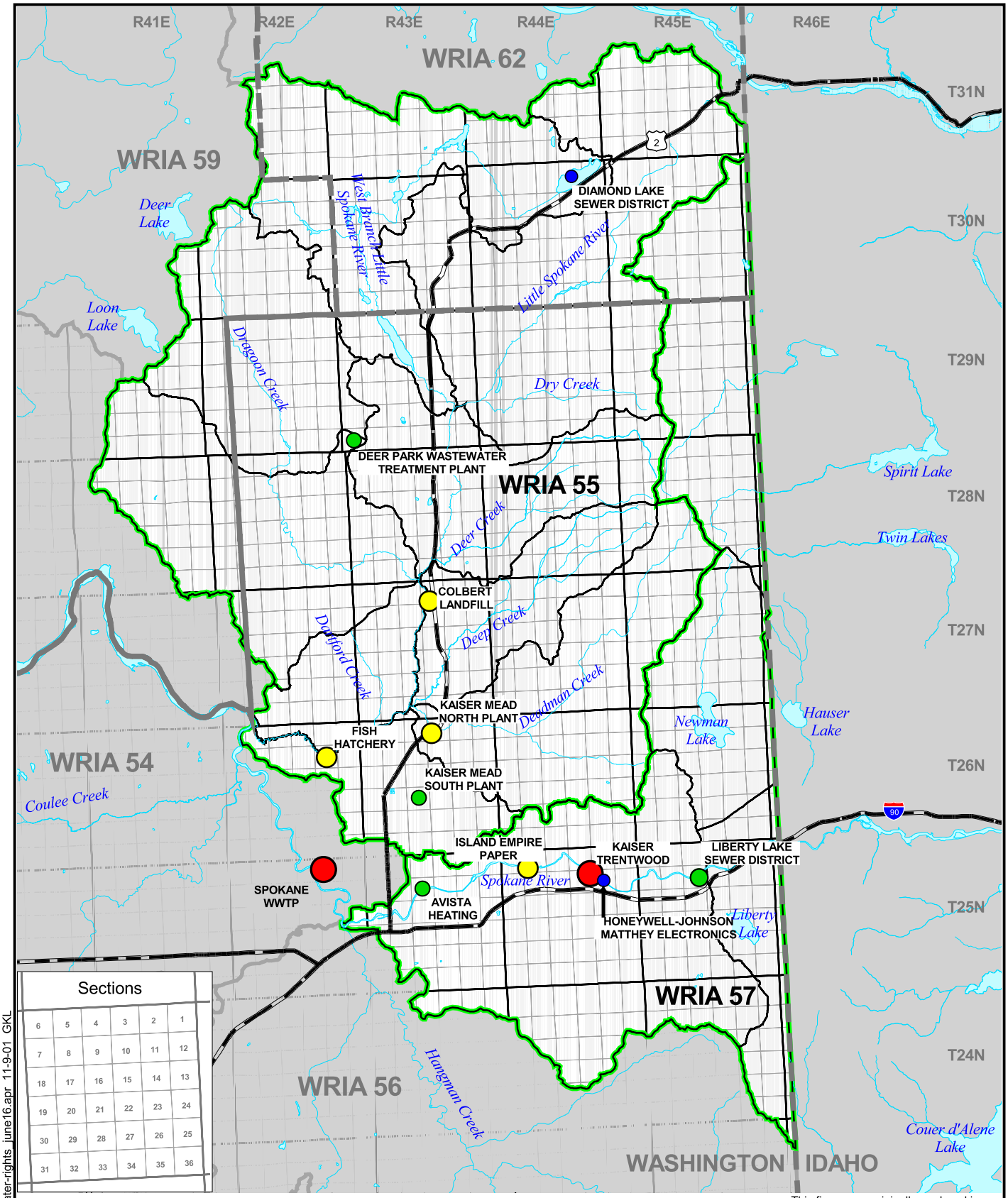
Original Data Source: Washington Department of Ecology

Golder Associates

303(d) Impaired and Threatened Waterbodies

Drawn: GKL	App'd:	Date: Oct. 31, 2001	Figure: 6.1

L:\projects\2001\0131372\gis\Aprs\overview.apr 10-31-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Annual Discharge (AF/yr)

- 0 - 100
- 100 -1,000
- 1,000 - 10,000
- > 10,000

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

This figure was originally produced in color. Reproduction in black and white may result in loss of information.

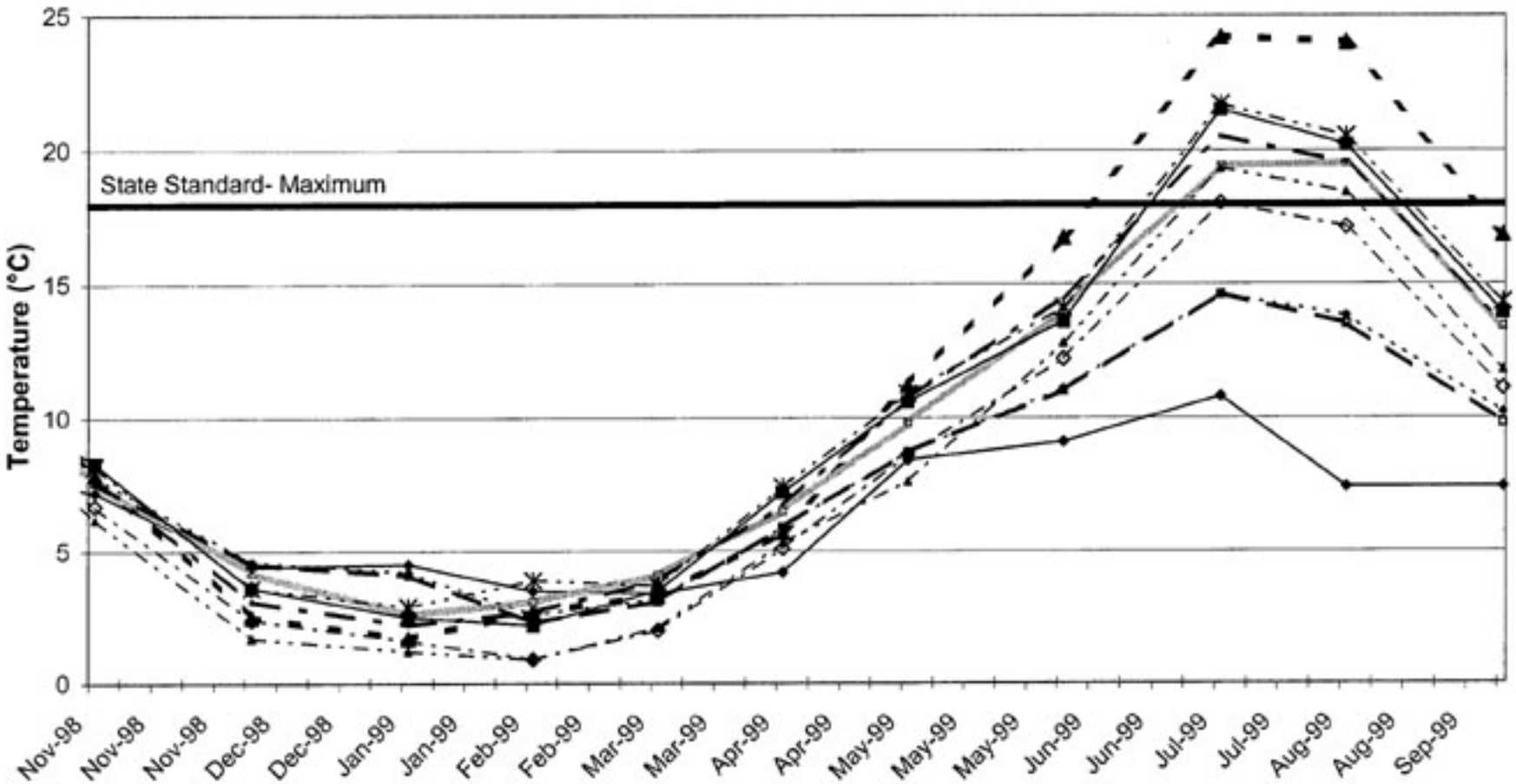
Data Source: Spokane County

Golder Associates

Annual Wastewater Disposal

Drawn: GKL	App'd:	Date: Nov 9, 2001	Figure: **6.2**

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



Legend

LSR-3 — RM 47.0 — RM 37.5
RM 31.8 — RM 23.1 — RM 19.2
RM 13.0 — RM 10.3 — RM 3.9
RM 1.1

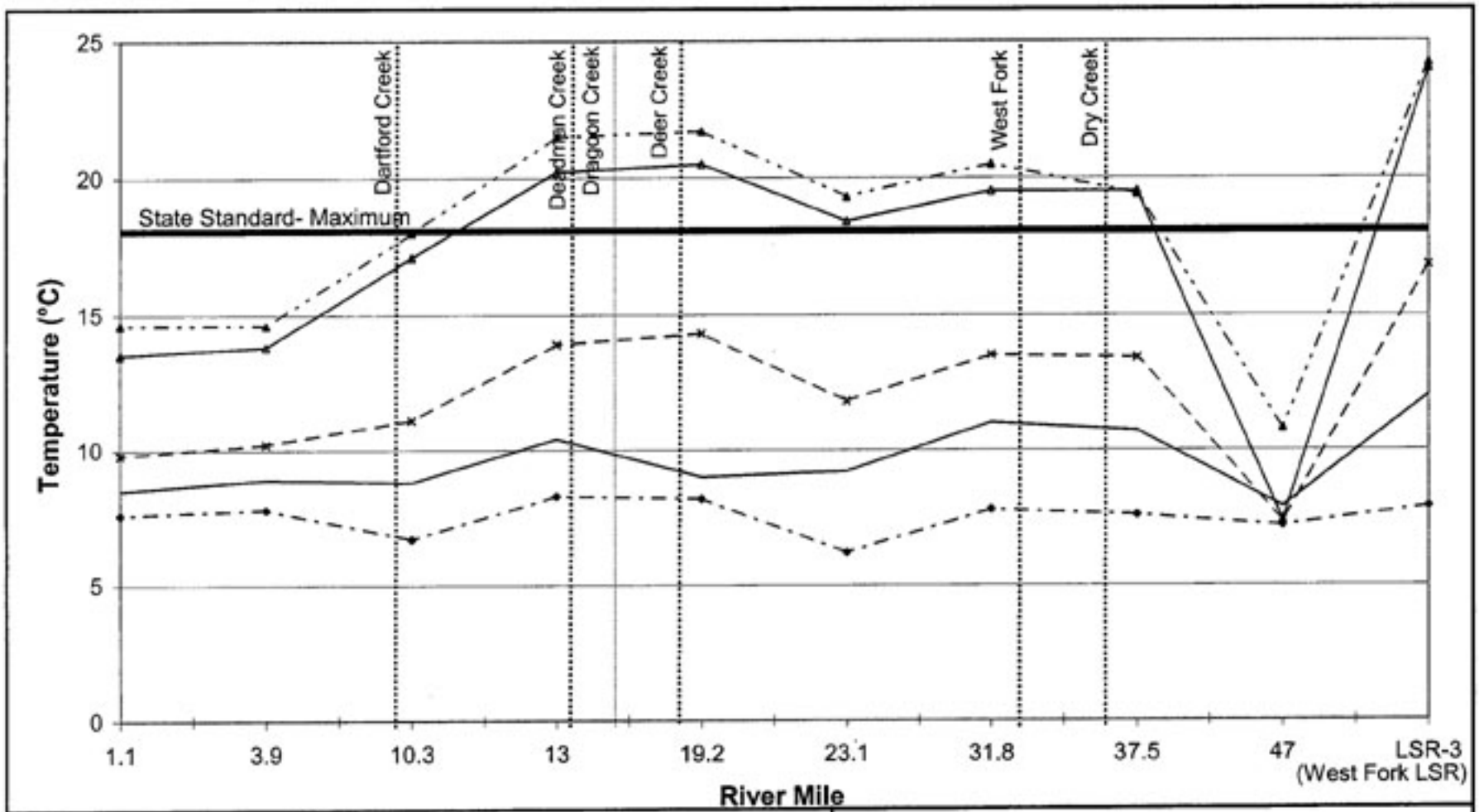
Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.3a:
Little Spokane River Temperature

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- time.xls

Golder Associates



Legend

Oct-12-98 — Nov-02-98 — Jul-12-99 — Aug-09-99 — Sep-13-99

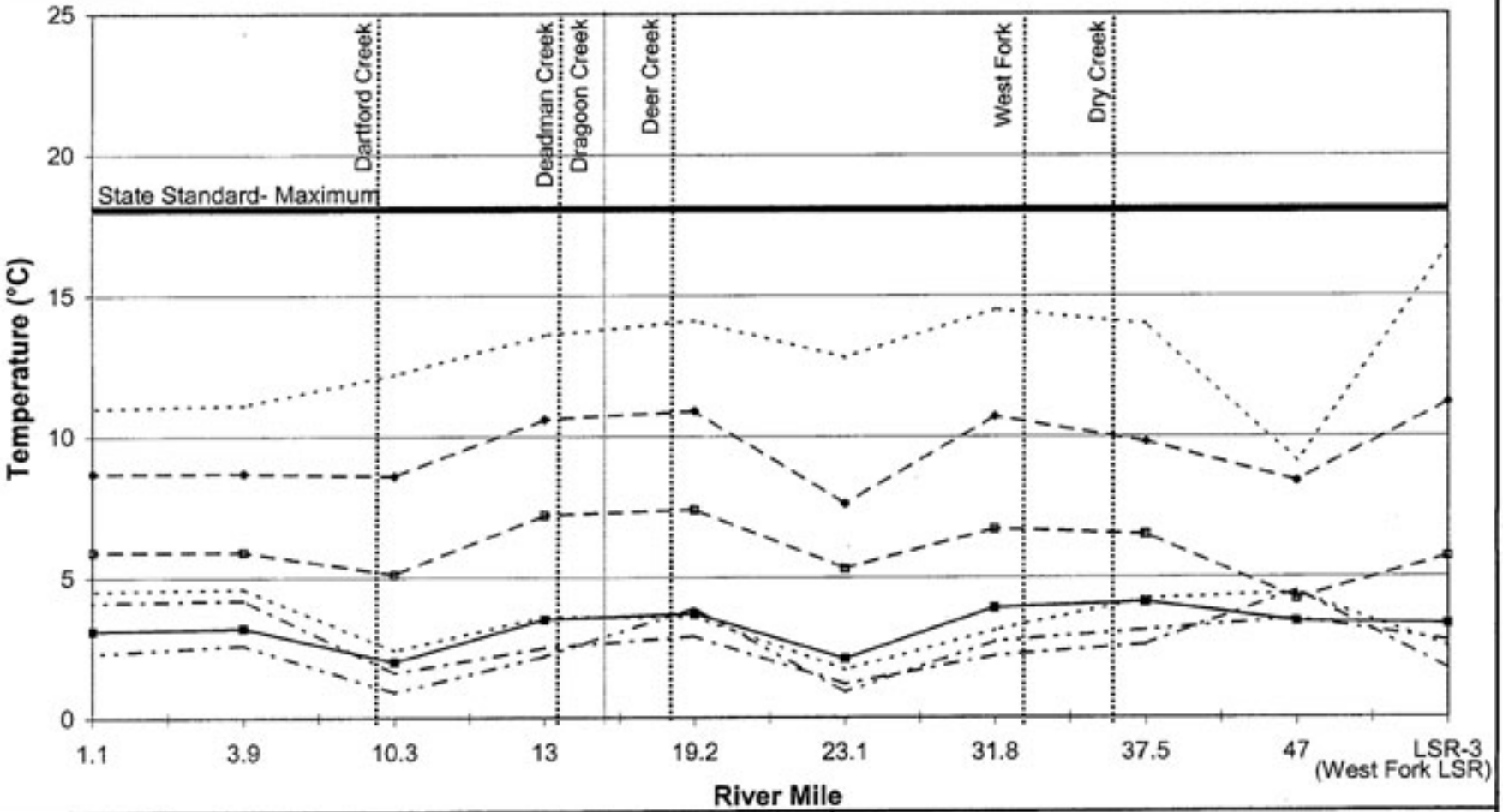
Notes: Lines indicate approximate location where tributary joins Little Spokane River
LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.3b:
Little Spokane River Temperature, Dry Season

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- space.xls

Golder Associates



Legend

- Dec-07-98
- Jan-11-99
- Feb-08-99
- Mar-08-99
- Apr-05-99
- May-03-99
- Jun-07-99

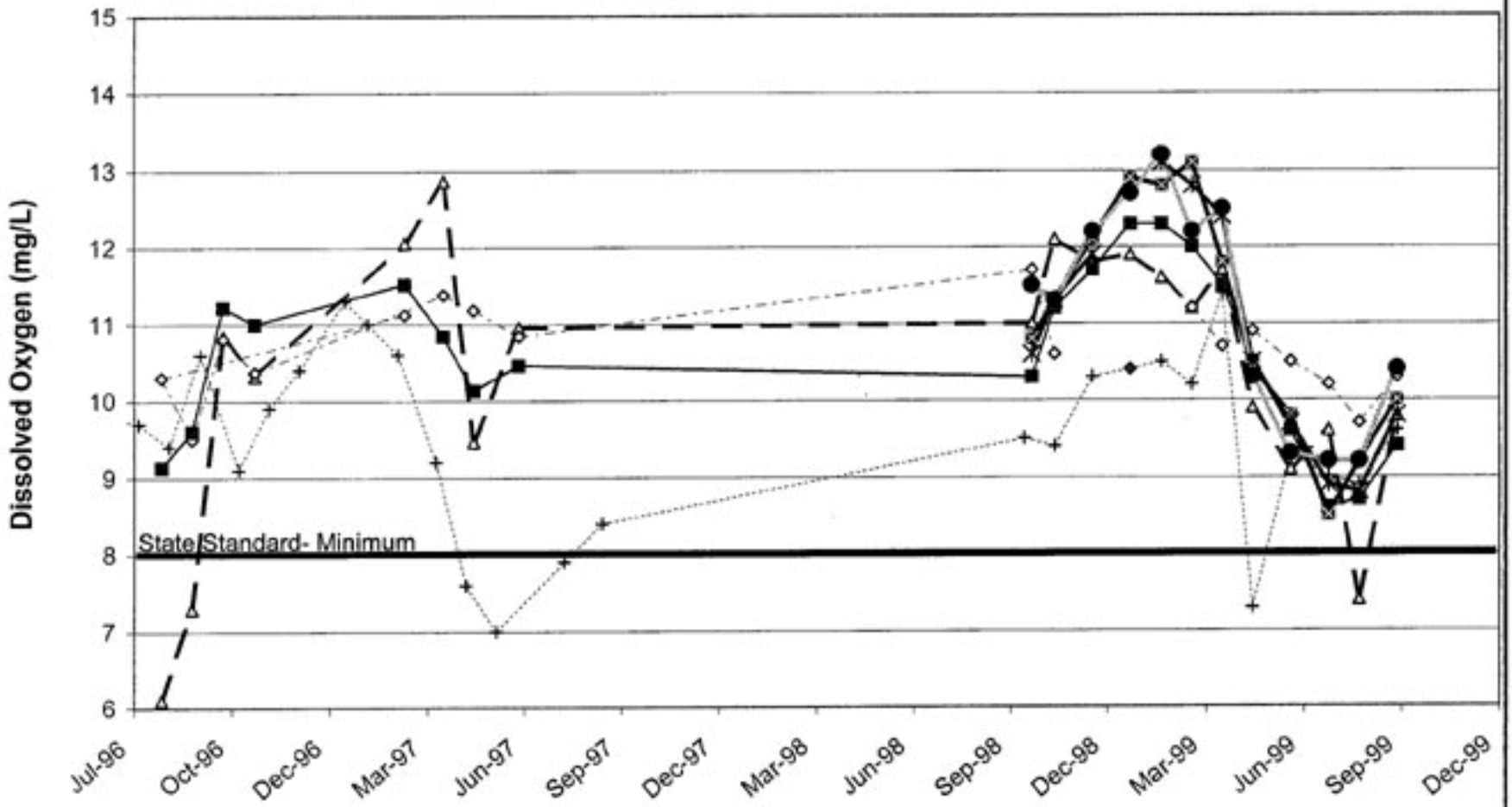
Notes: Lines indicate approximate location where tributary joins Little Spokane River
LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.3c:
Little Spokane River Temperature, Wet Season

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- space.xls

Golder Associates



Legend

LSR-3 · RM 47.0 · RM 37.5 · RM 31.8 · RM 19.2 · RM 13.0 · RM 1.1

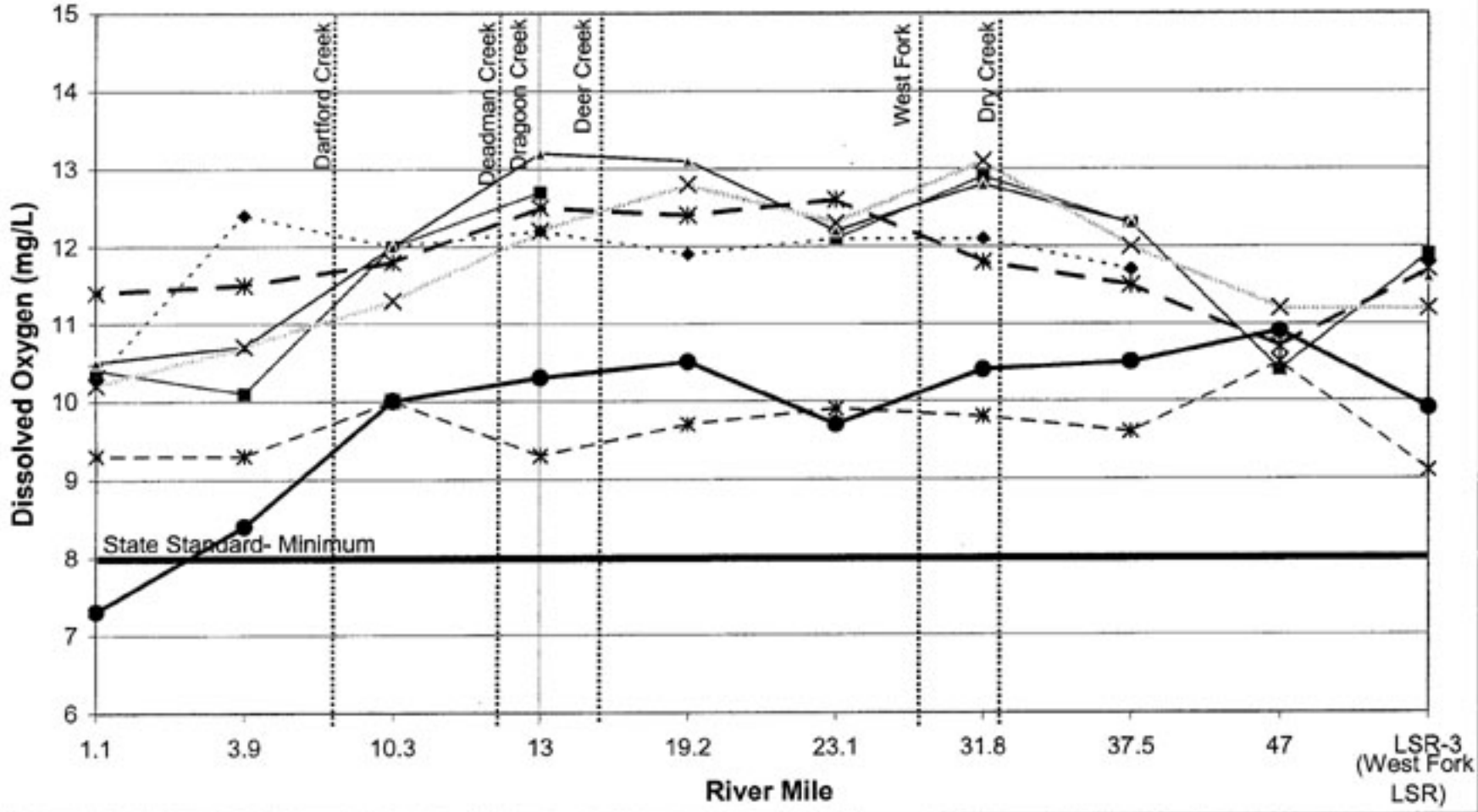
Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.4a:
Little Spokane River Dissolved Oxygen

Spokane County
Watershed Assessment

013-1372, 11/09/01, DO.xls

Golder Associates



Legend 12/7/98 — 1/11/99 — 2/8/99 — 3/8/99 — 4/5/99 — 5/3/99 — 6/7/99

Notes: Lines indicate approximate location where tributary joins Little Spokane River
LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

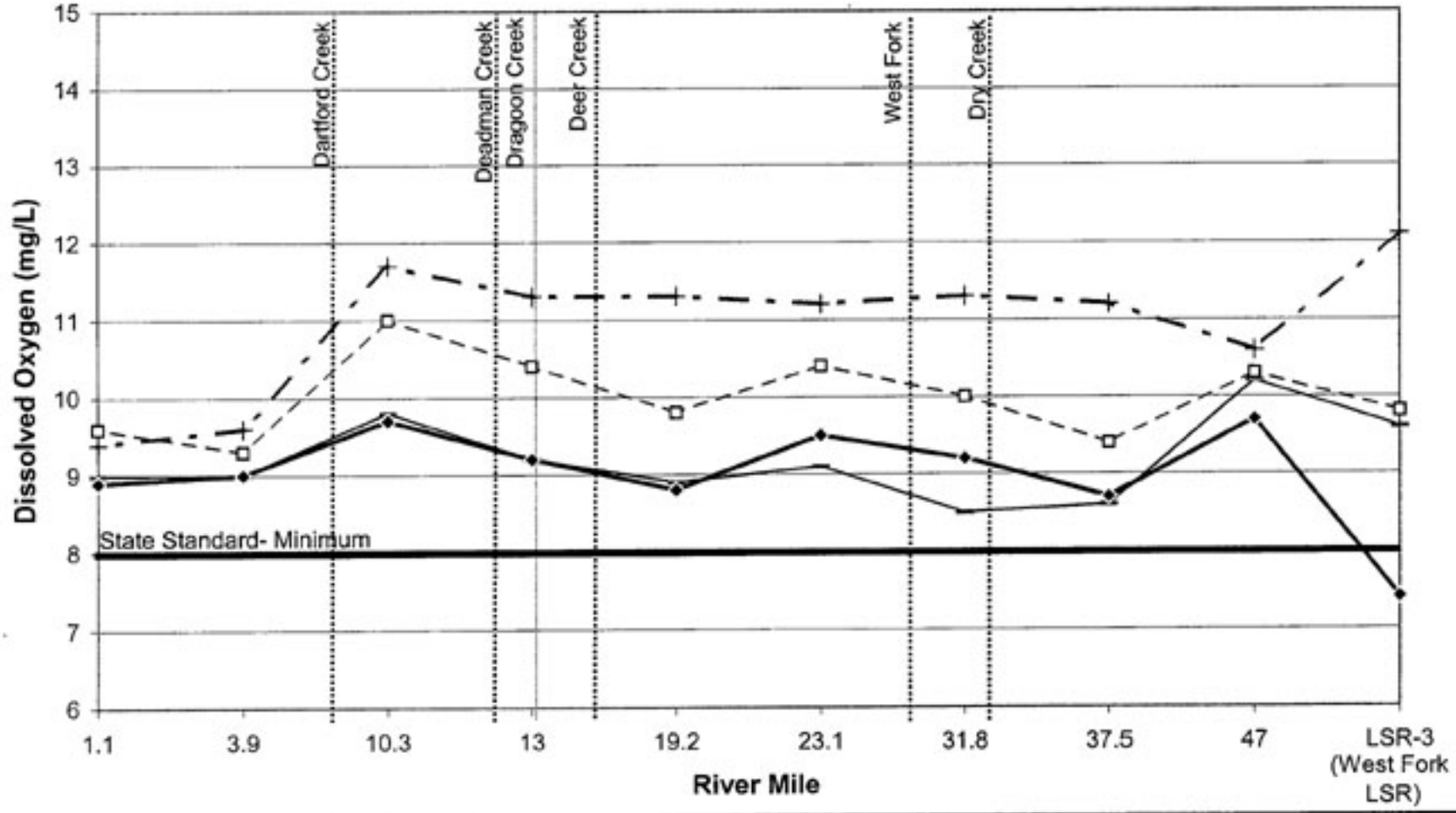
FIGURE 6.4b:

Little Spokane River Dissolved Oxygen, Wet Season

Spokane County
Watershed Assessment

Golder Associates

013-1372, 11/09/01, DO.xls



Legend

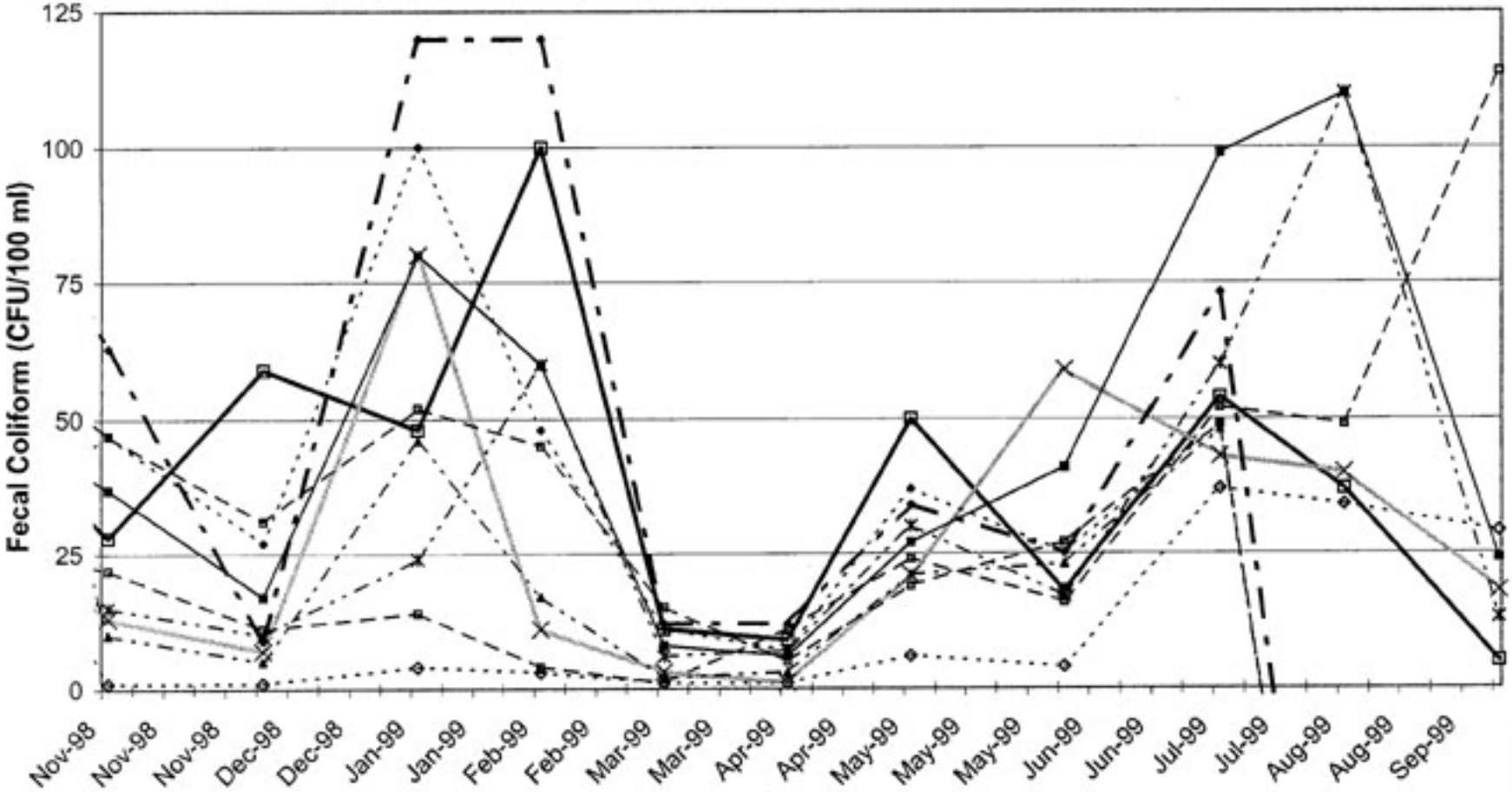
11/2/98 — 7/12/99 — 8/9/99 — 9/13/99

Notes: Lines indicate approximate location where tributary joins Little Spokane River
LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.4c:
Little Spokane River Dissolved Oxygen, Dry Season
Spokane County
Watershed Assessment

013-1372, 11/09/01, DO.xls

Golder Associates



Legend

- LSR-3
- RM 47.0
- RM 37.5
- RM 31.8
- RM 23.1
- RM 19.2
- RM 13.0
- RM 10.3
- RM 3.9
- RM 1.1

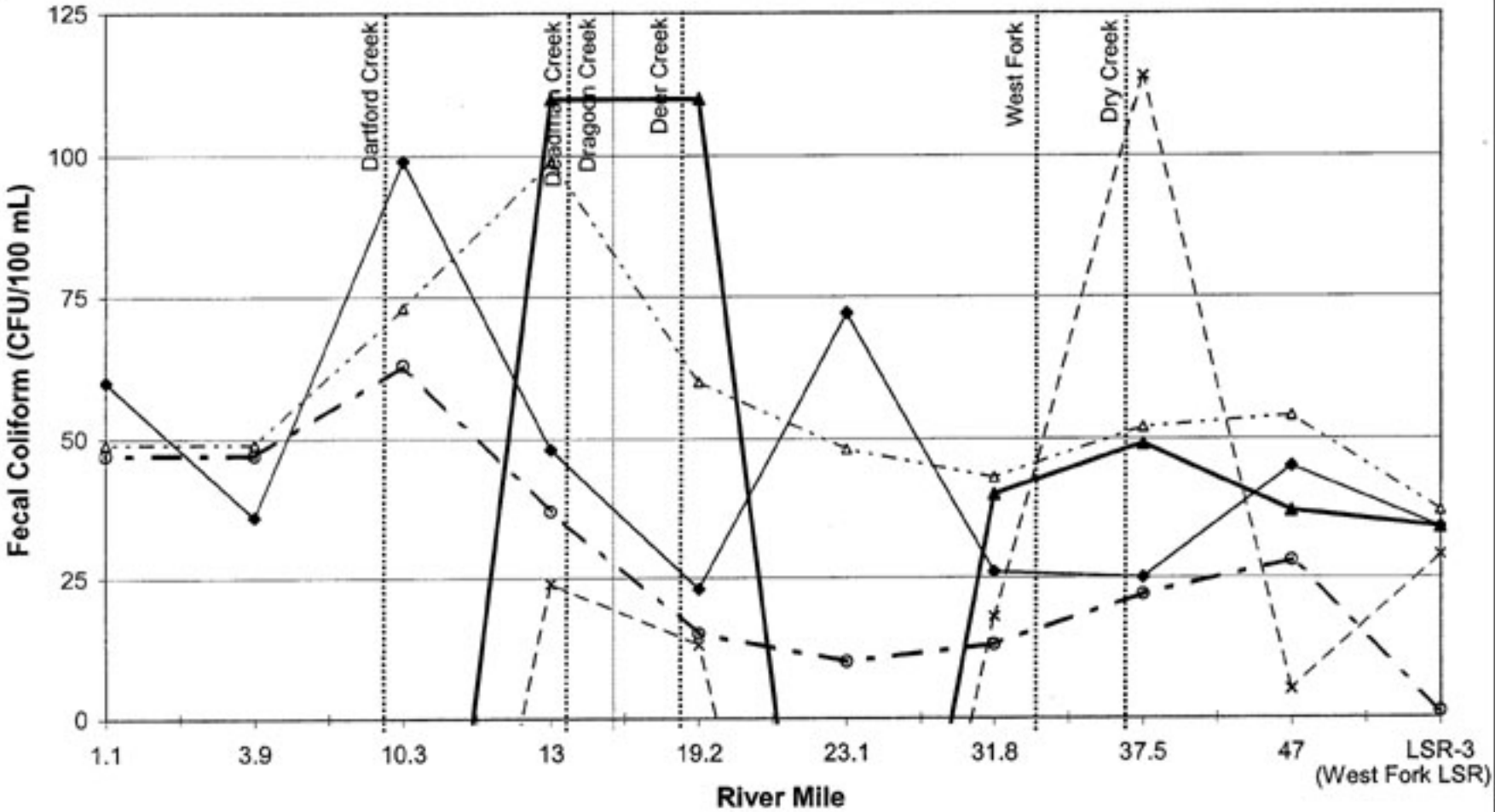
Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.5a:
Little Spokane River Fecal Coliform

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- time.xls

Golder Associates



Legend

- Oct-12-98
- Nov-02-98
- Jul-12-99
- Aug-09-99
- Sep-13-99

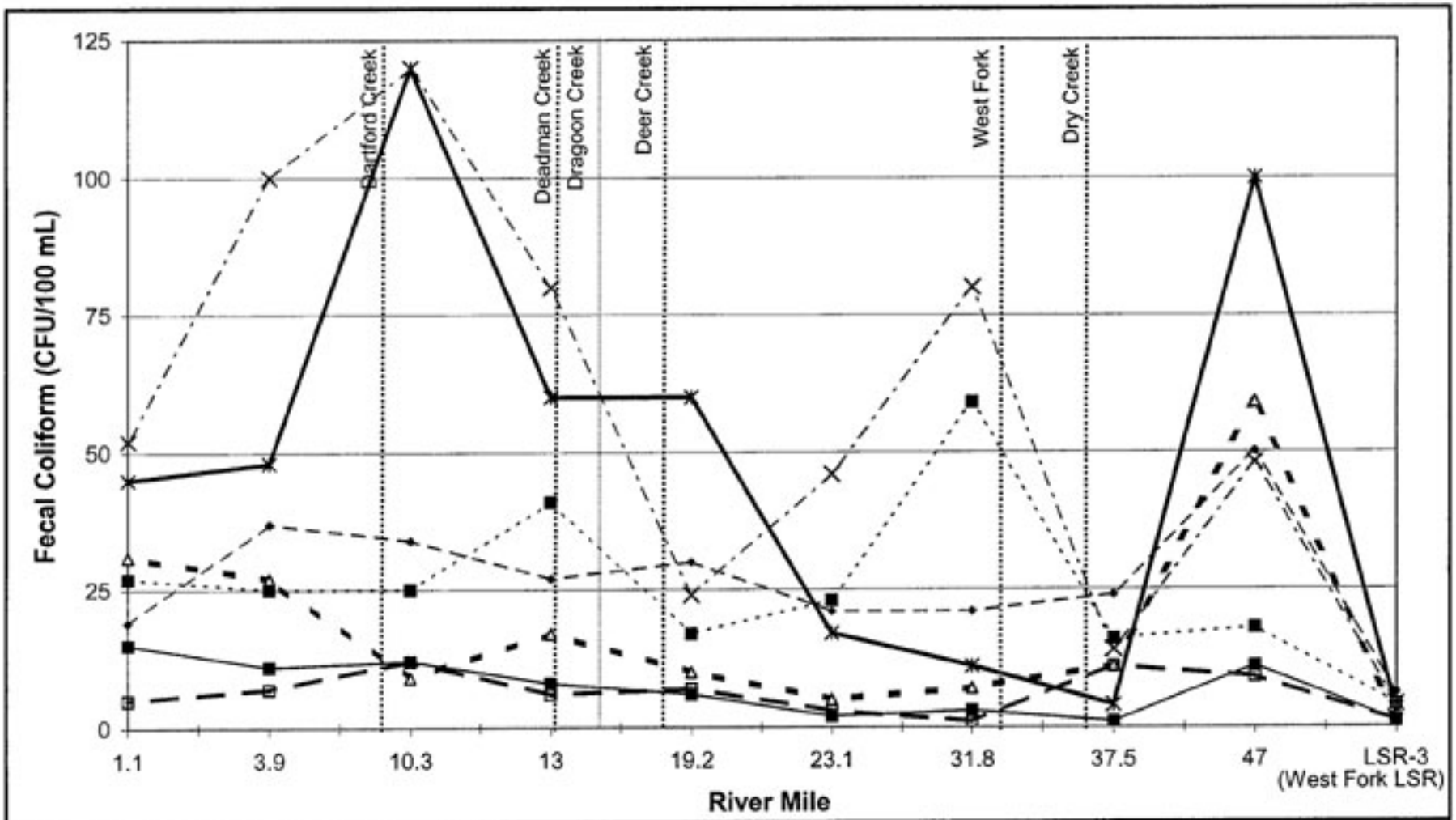
Notes: Lines indicate approximate location where tributary joins Little Spokane River
LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.5b:
Little Spokane River Fecal Coliform, Dry Season

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- space.xls

Golder Associates



Legend

- Dec-07-98
- Jan-11-99
- Feb-08-99
- Mar-08-99
- Apr-05-99
- May-03-99
- Jun-07-99

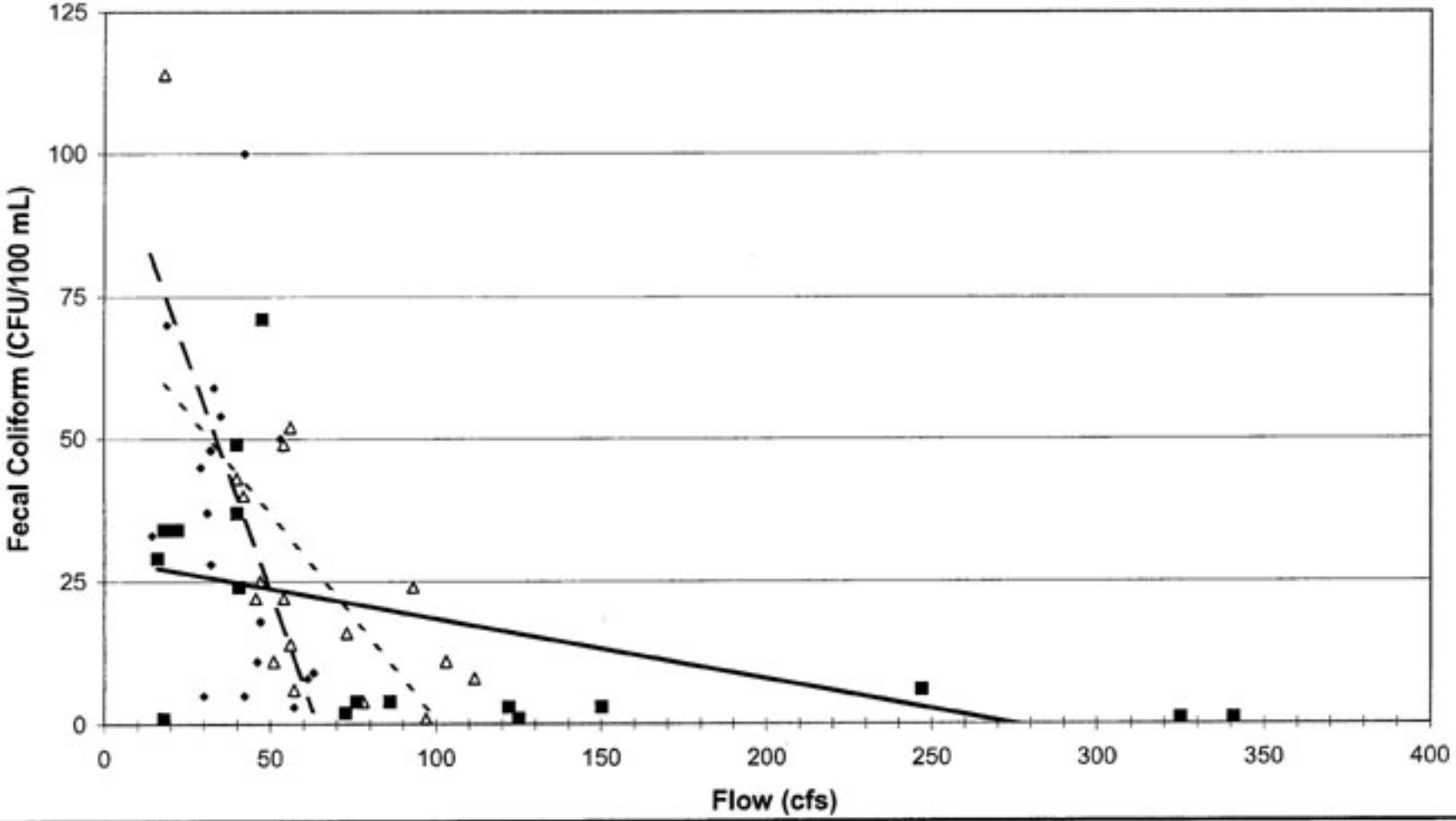
Notes: Lines indicate approximate location where tributary joins Little Spokane River
LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.5c:
Little Spokane River Fecal Coliform, Wet Season

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- space.xls

Golder Associates



Legend

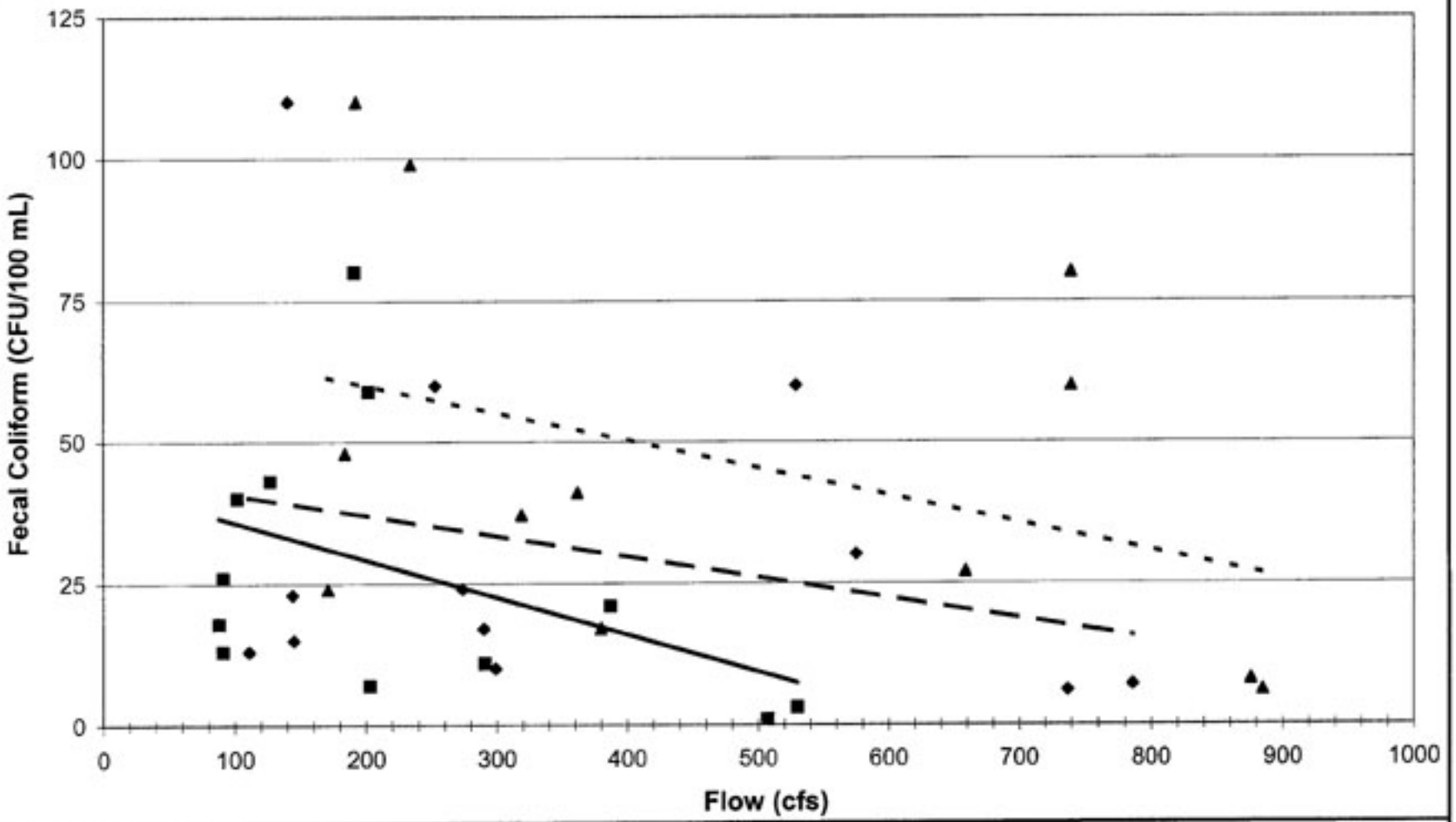
- LSR-3
- RM 47.0
- RM 37.5
- Linear (LSR-3)
- Linear (RM 47.0)
- Linear (RM 37.5)

Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.5d:
Little Spokane River Fecal Coliform-Flow Correlation
Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR cont v flow.xls

Golder Associates



Legend

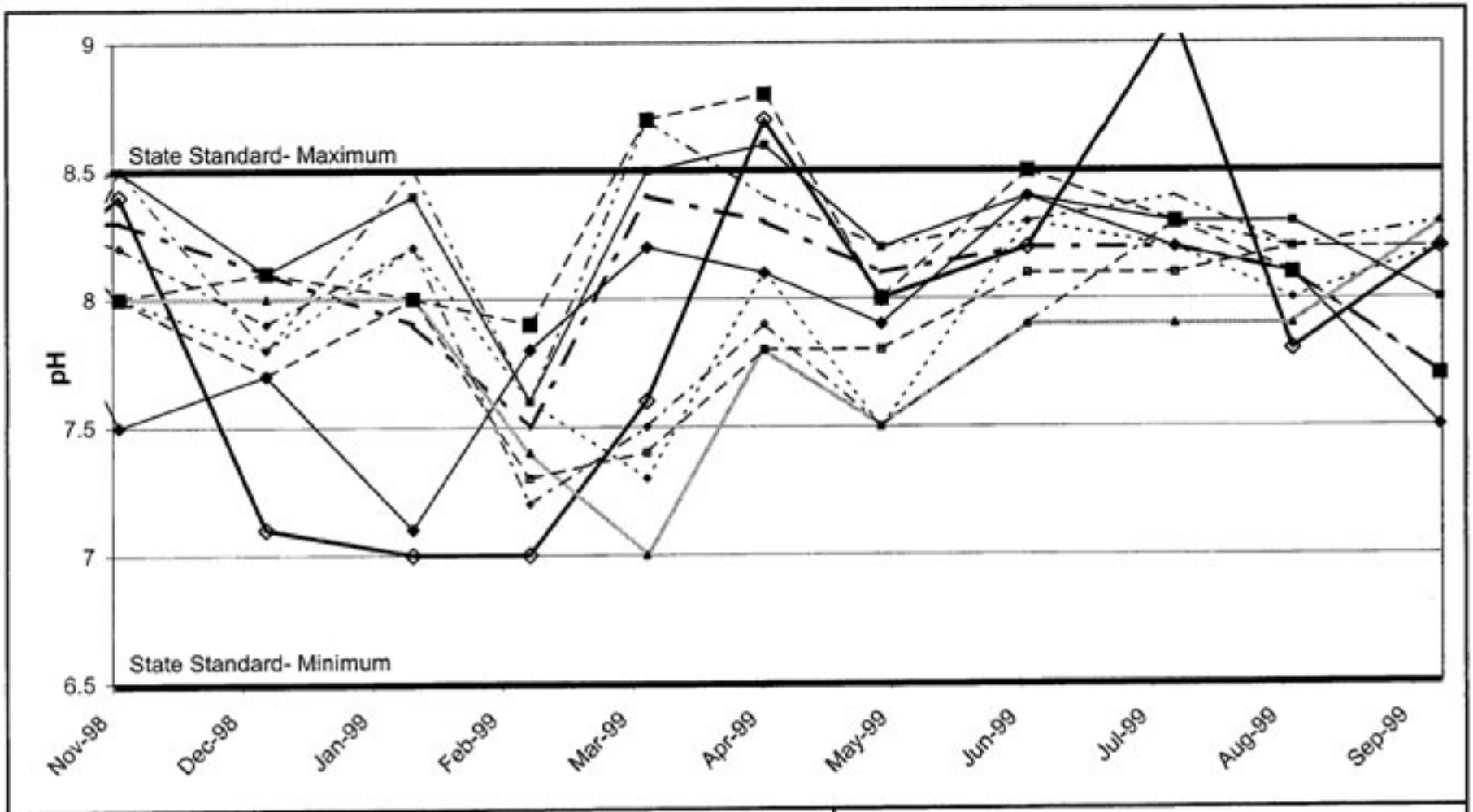
- ■ RM 31.8
- ◆ RM 19.2
- ▲ RM 13
- Linear (RM 31.8)
- Linear (RM 19.2)
- Linear (RM 13)

Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.5e:
Little Spokane River Fecal Coliform-Flow Correlation
Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR cont v flow.xls

Golder Associates



Legend

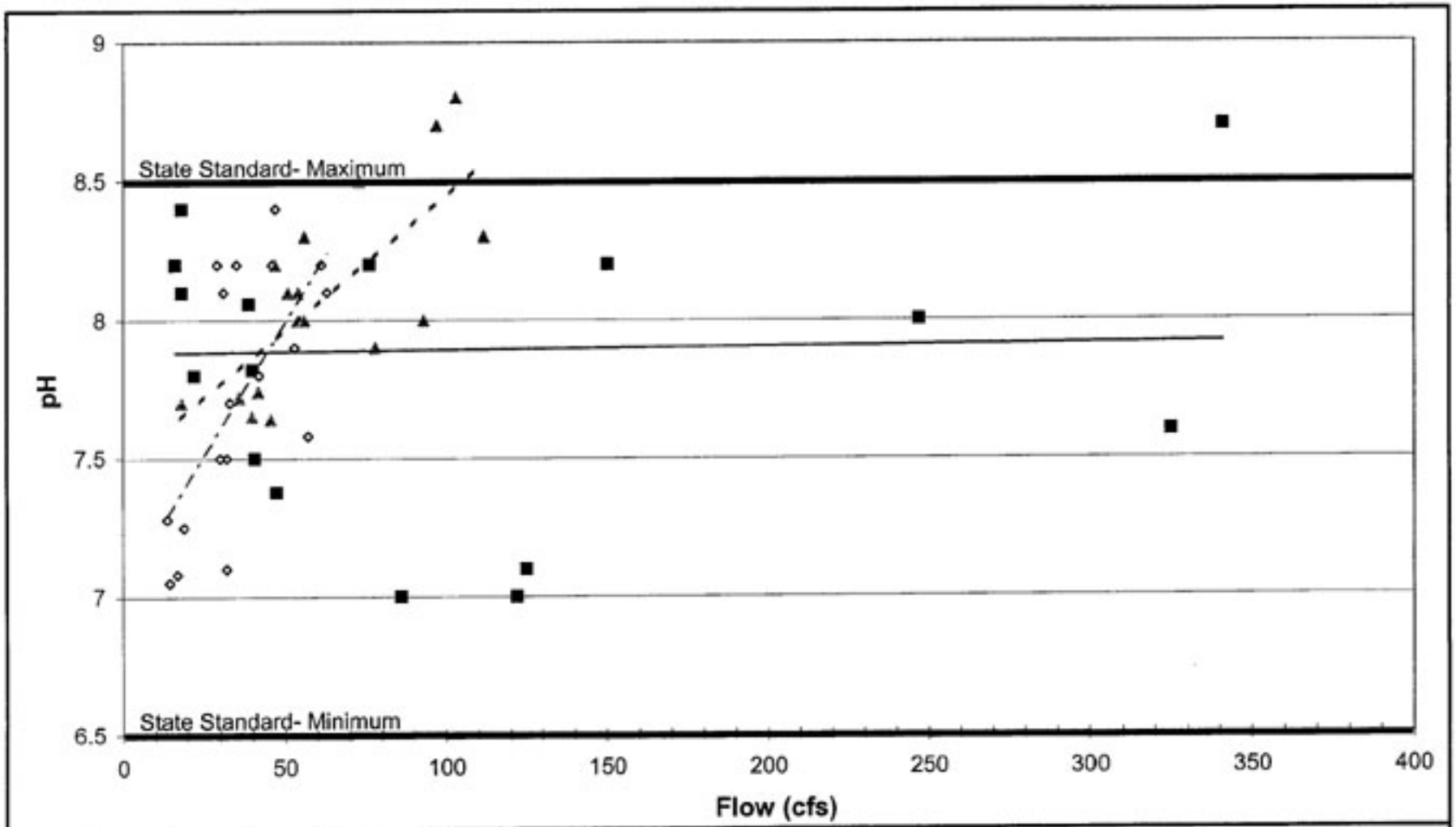
LSR-3	RM 47.0
RM 37.5	RM 31.8
RM 23.1	RM 19.2
RM 13.0	RM 10.3
RM 3.9	RM 1.1

Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.6a:
Little Spokane River pH
Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR- time.xls

Golder Associates



Legend

- LSR-3
- RM 47.0
- RM 37.5
- Linear (LSR-3)
- Linear (RM 47.0)
- Linear (RM 37.5)

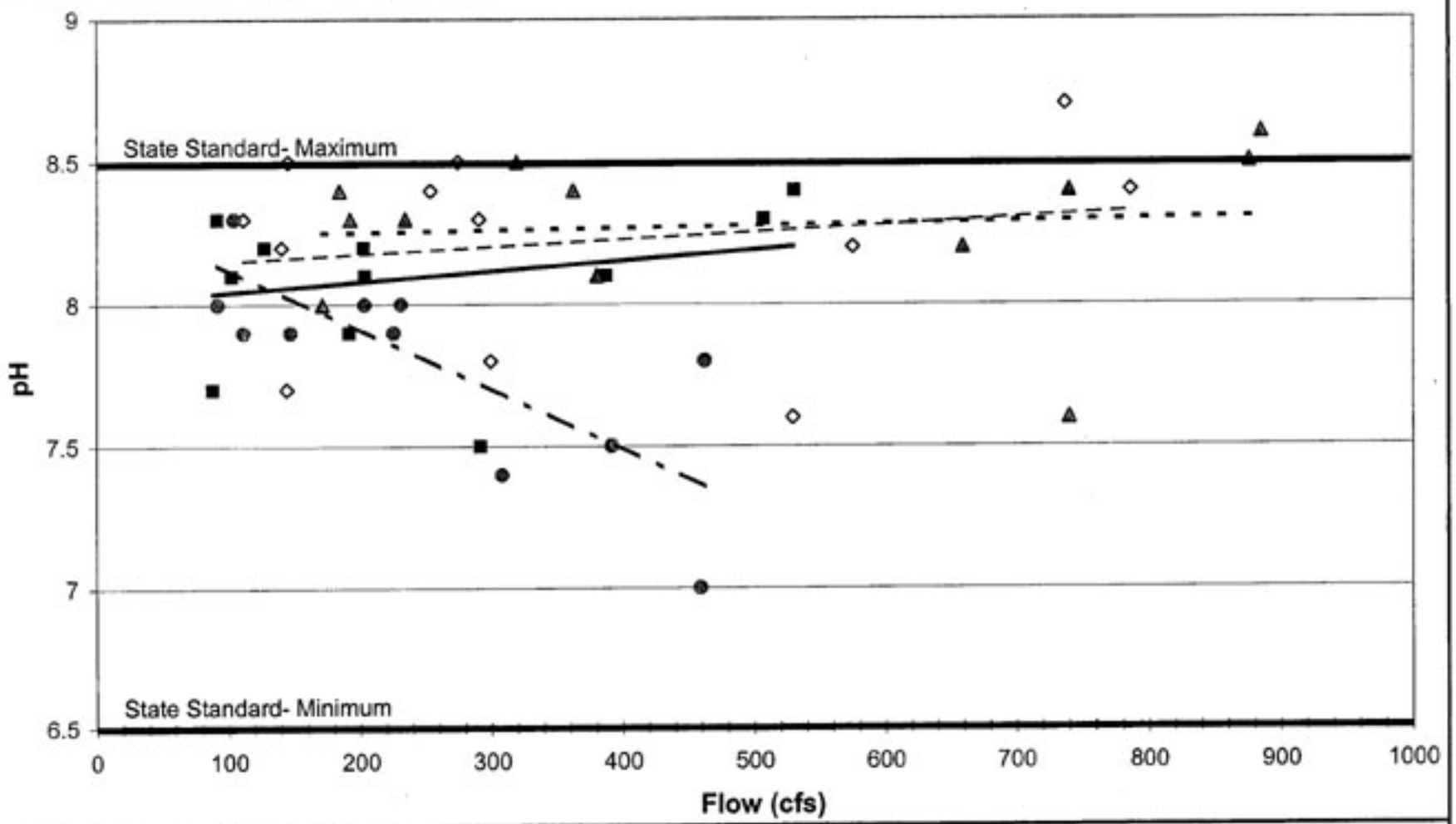
Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.6b:
Little Spokane River, pH-Flow Correlation

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR cont v flow.xls

Golder Associates



Legend

- ■ RM 31.8
- ◇ RM 19.2
- ▲ RM 13.0
- ● RM 23.1
- Linear (RM 31.8)
- Linear (RM 19.2)
- Linear (RM 13.0)
- Linear (RM 23.1)

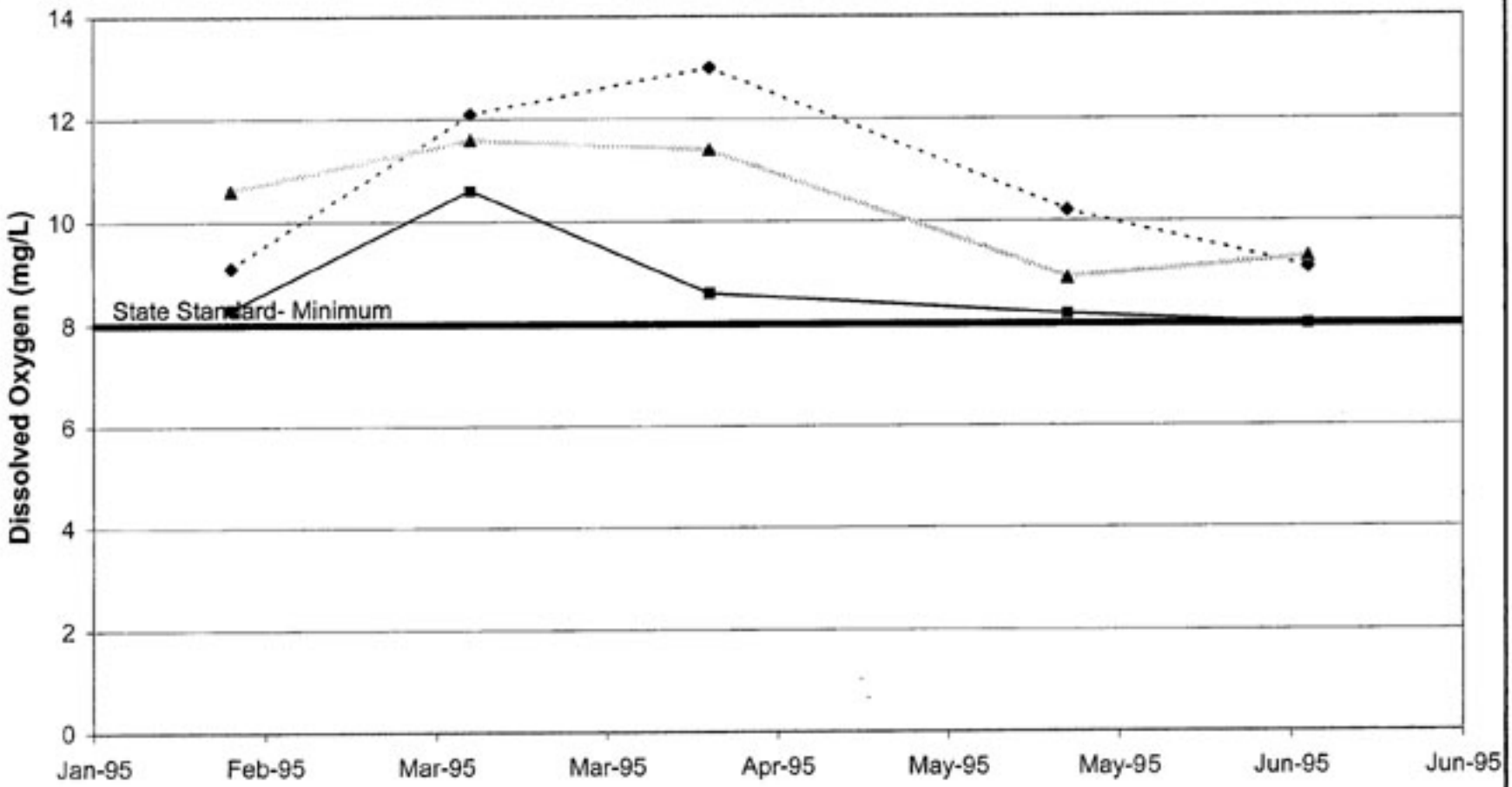
Notes: LSR 1-6 data from POCD- SCCD- DOE- 2000
55B070, 55B075, 55B082, 55B200 data from DOE monitoring
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.6c:
Little Spokane River pH-Flow Correlation

Spokane County
Watershed Assessment

013-1372, 11/09/01, LSR cont v flow.xls

Golder Associates



Legend

- - ◆ - - DR-1 —■— DR-2 ~~▲~~ DR-5

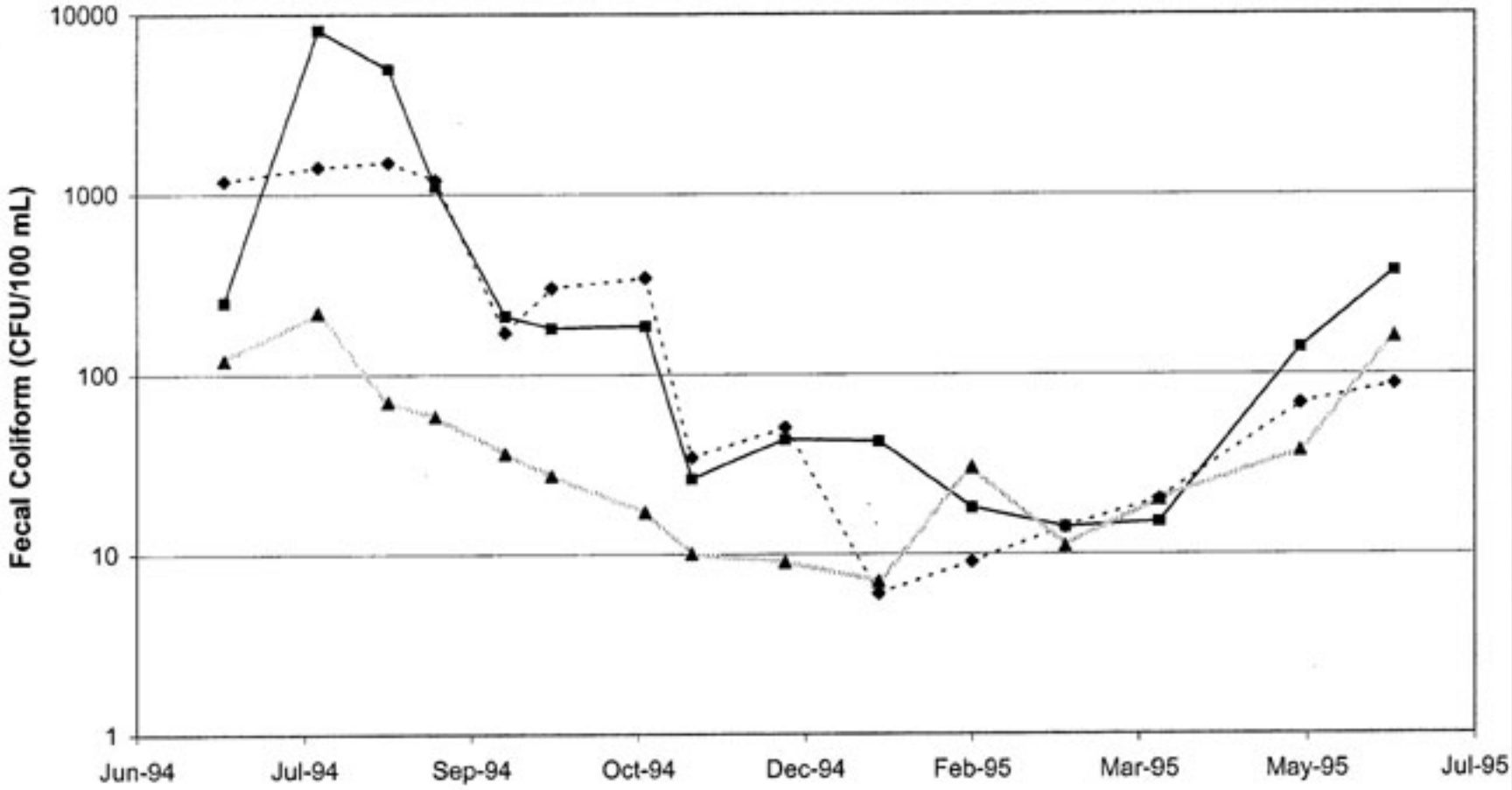
Notes: Dragoon joins Little Spokane after DR5
DR2 data from POCD-SCCD-DOE-2000
DR1 and DR5 data from WQMP
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.7:
Dragoon Creek Dissolved Oxygen

Spokane County
Watershed Assessment

Golder Associates

013-1372, 11/09/01, dragoon-space and time.xls



Legend

DR-1 DR-2 DR-5

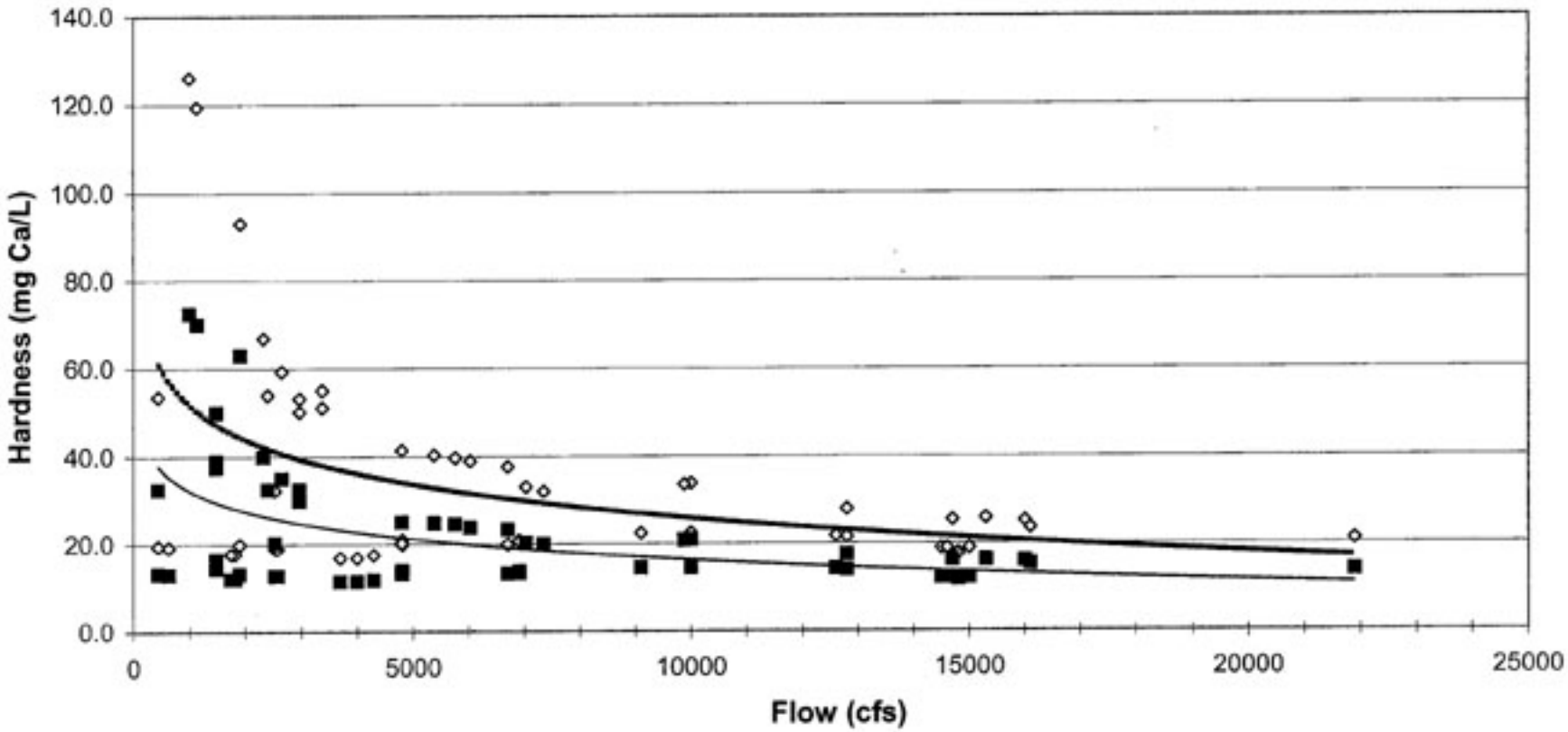
Notes: Data plotted on a Log scale so entire variation in values can be seen.
Dragoon joins Little Spokane after DR5
DR2 data from POCD-SCCD-DOE-2000
DR1 and DR5 data from WQMP
Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.8:
Dragoon Creek Fecal Coliform

Spokane County
Watershed Assessment

Golder Associates

013-1372, 11/09/01, dragoon-space and time.xls



Legend

- ◇ total hardness
- ■ calcium hardness
- —— Log Trendline (calcium hardness)
- - - - Log Trendline (total hardness)

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

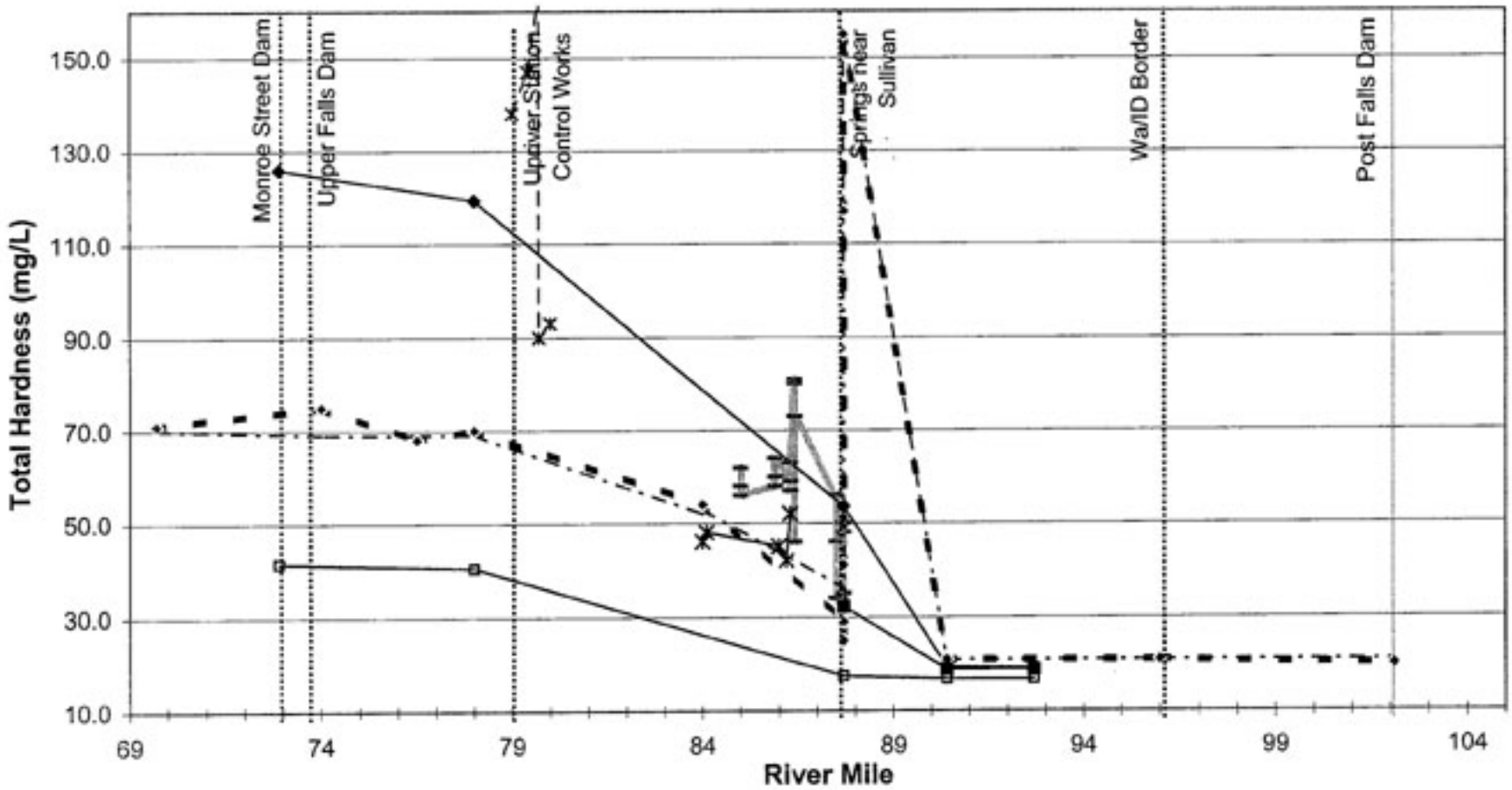
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.9a:
Spokane River Hardness-Flow Correlation

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

- Jul-12-96
- Sep-09-97
- Sep-16-97
- Sep-15-98
- Nov-03-98
- Jul-15-99
- Sep-09-99
- Nov-16-99

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

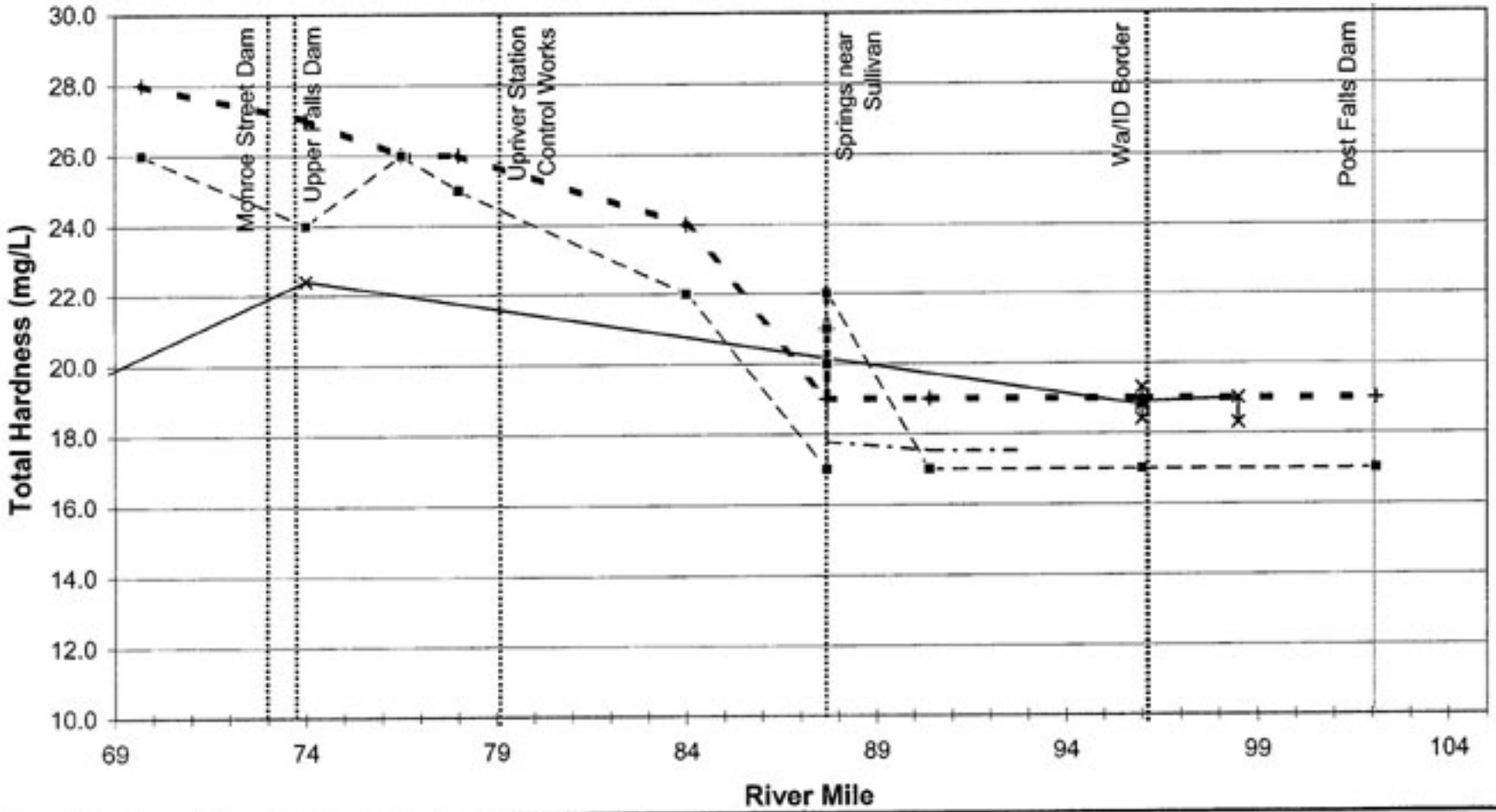
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.9b:
Dry Season - Spokane River Total Hardness by River Mile

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

May-12-97 — May-01-99 — Jun-01-99 — Jun-17-99

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

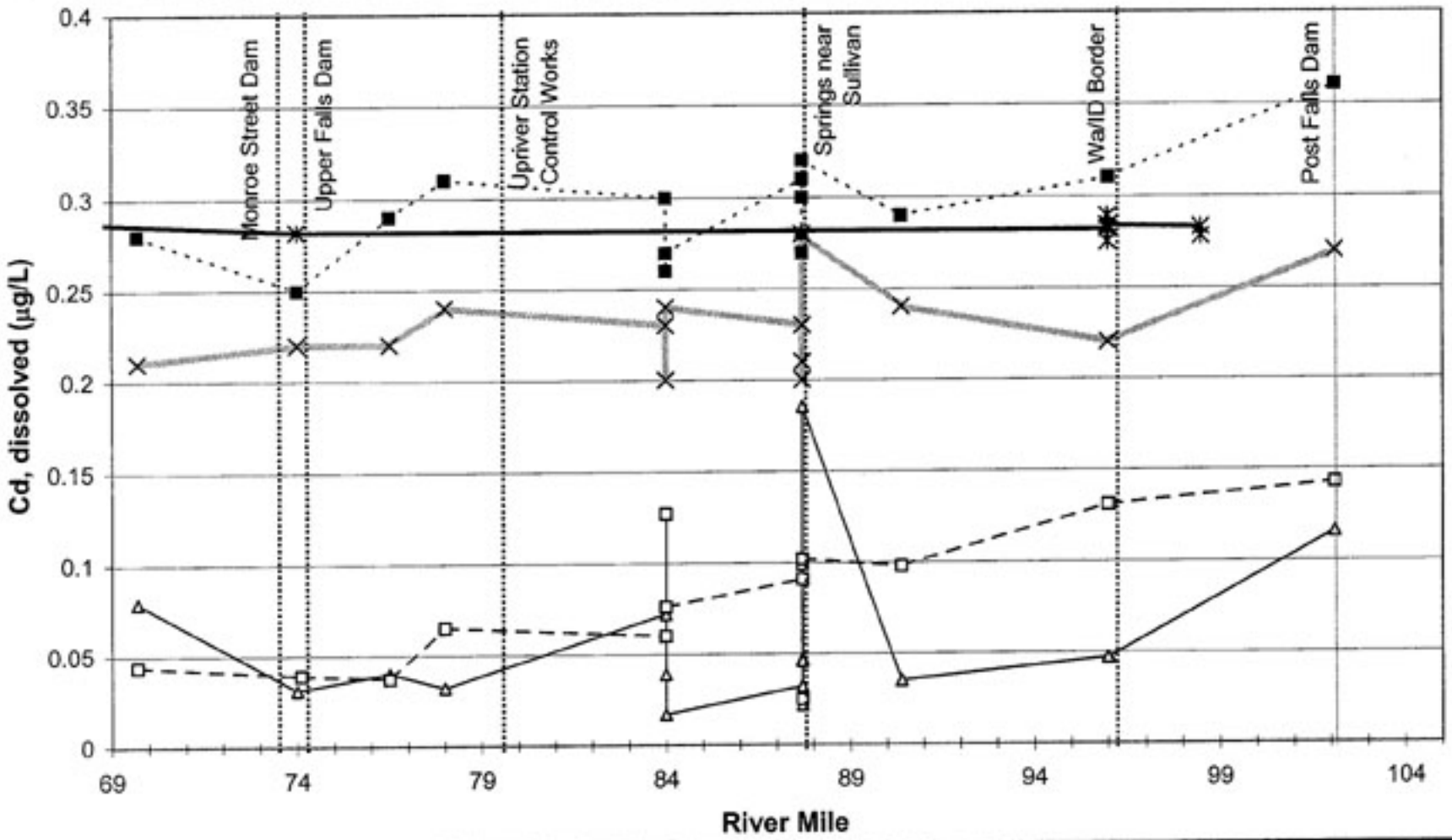
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.9c:
Wet Season - Spokane River Total Hardness by River Mile

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

- May-12-97
- Sep-15-98
- Nov-03-98
- May-01-99
- Jun-01-99

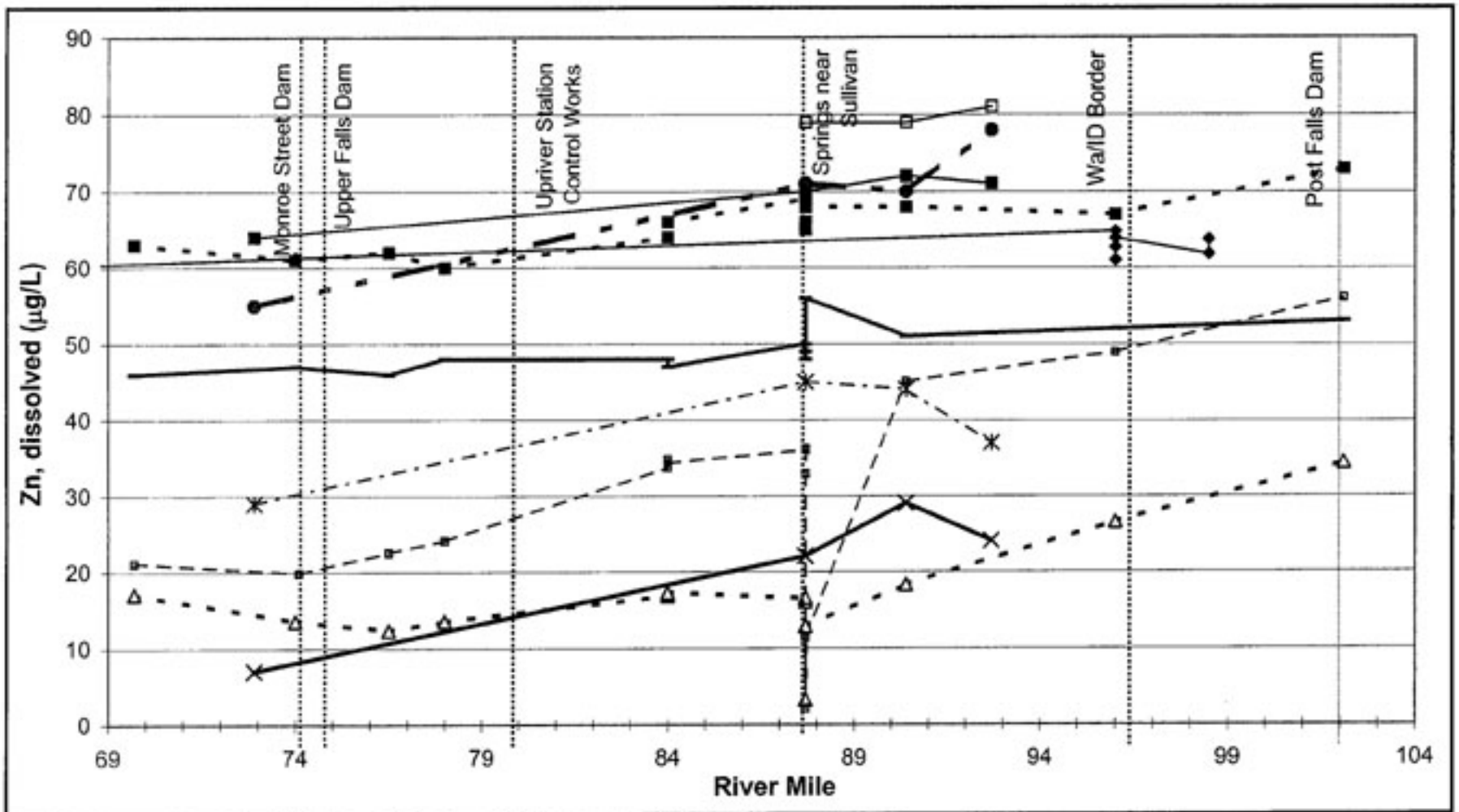
Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.10a:
Spokane River, Dissolved Cadmium Concentrations by River Mile
Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

- May-12-97
- Sep-15-98
- Nov-03-98
- May-01-99
- Jun-01-99
- Sep-09-99
- Nov-16-99
- Jan-06-00
- Feb-17-00
- Apr-05-00

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

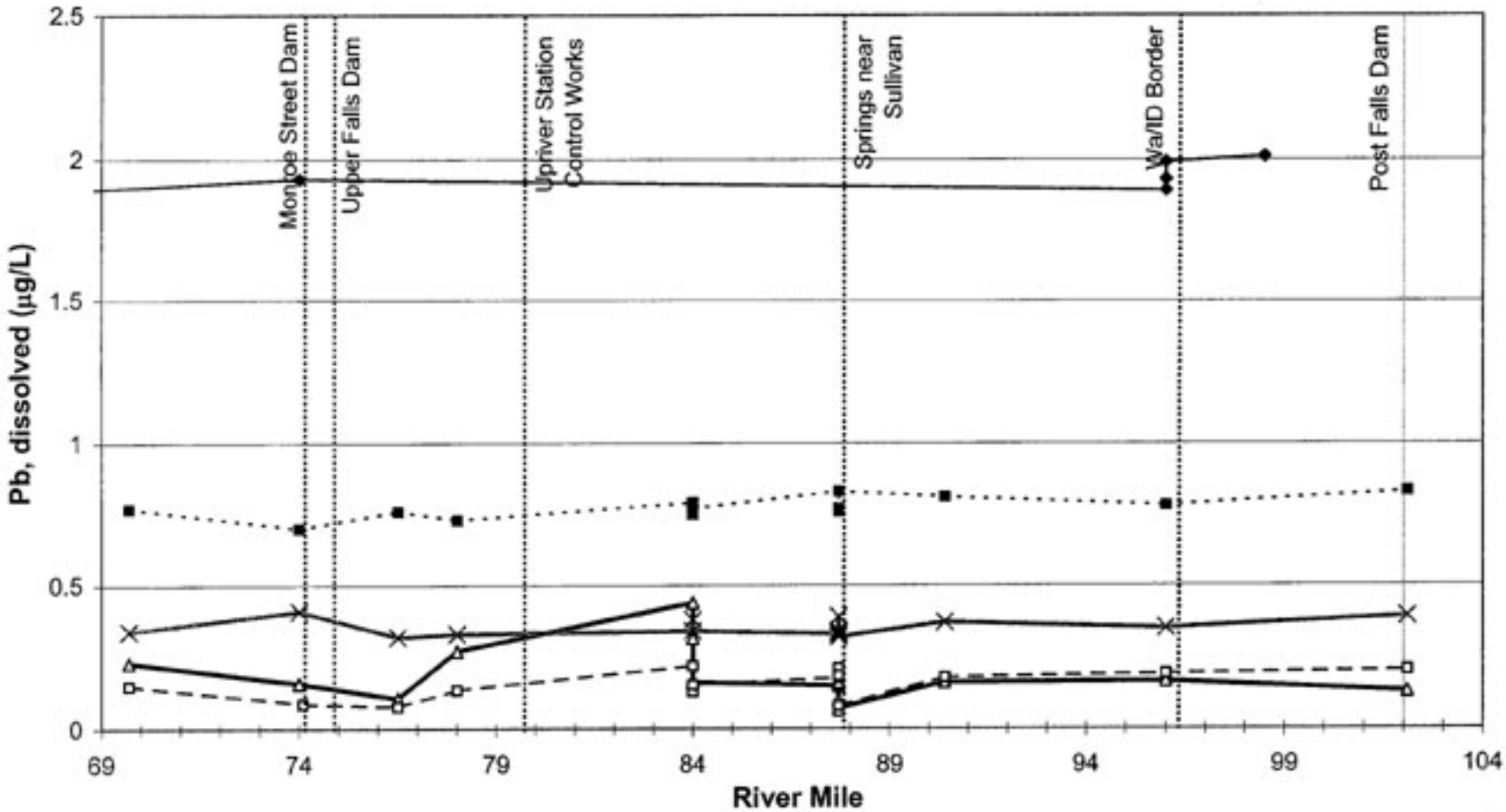
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.10b:
Spokane River, Dissolved Zinc Concentrations by River Mile

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

- Sep-15-98
- Jun-01-99
- May-12-97
- Nov-03-98
- May-01-99

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

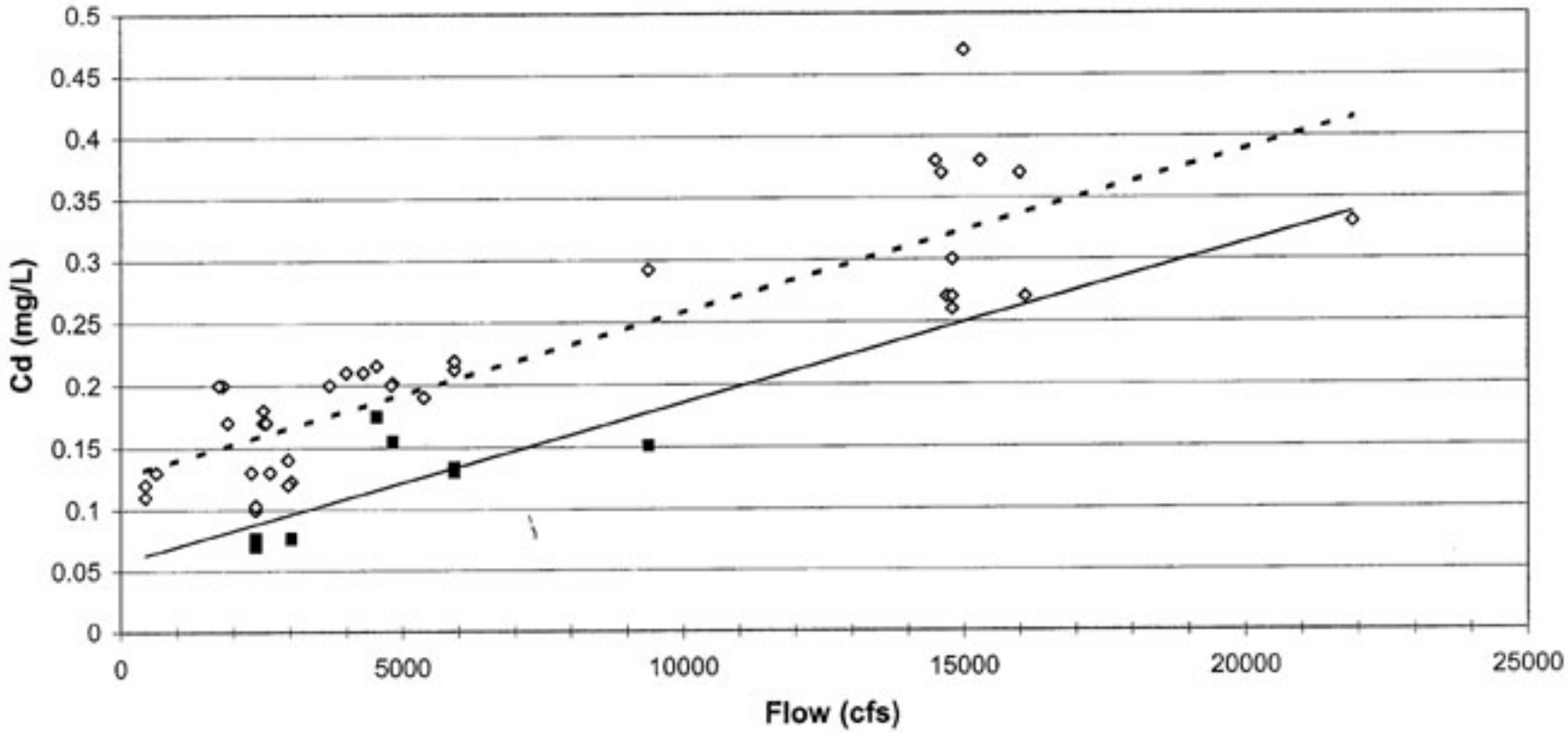
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.10c:
Spokane River, Dissolved Lead Concentrations by River Mile

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

◇ Total Cadmium ■ Dissolved Cadmium

- - - Linear (Total Cadmium) ——— Linear (Dissolved Cadmium)

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

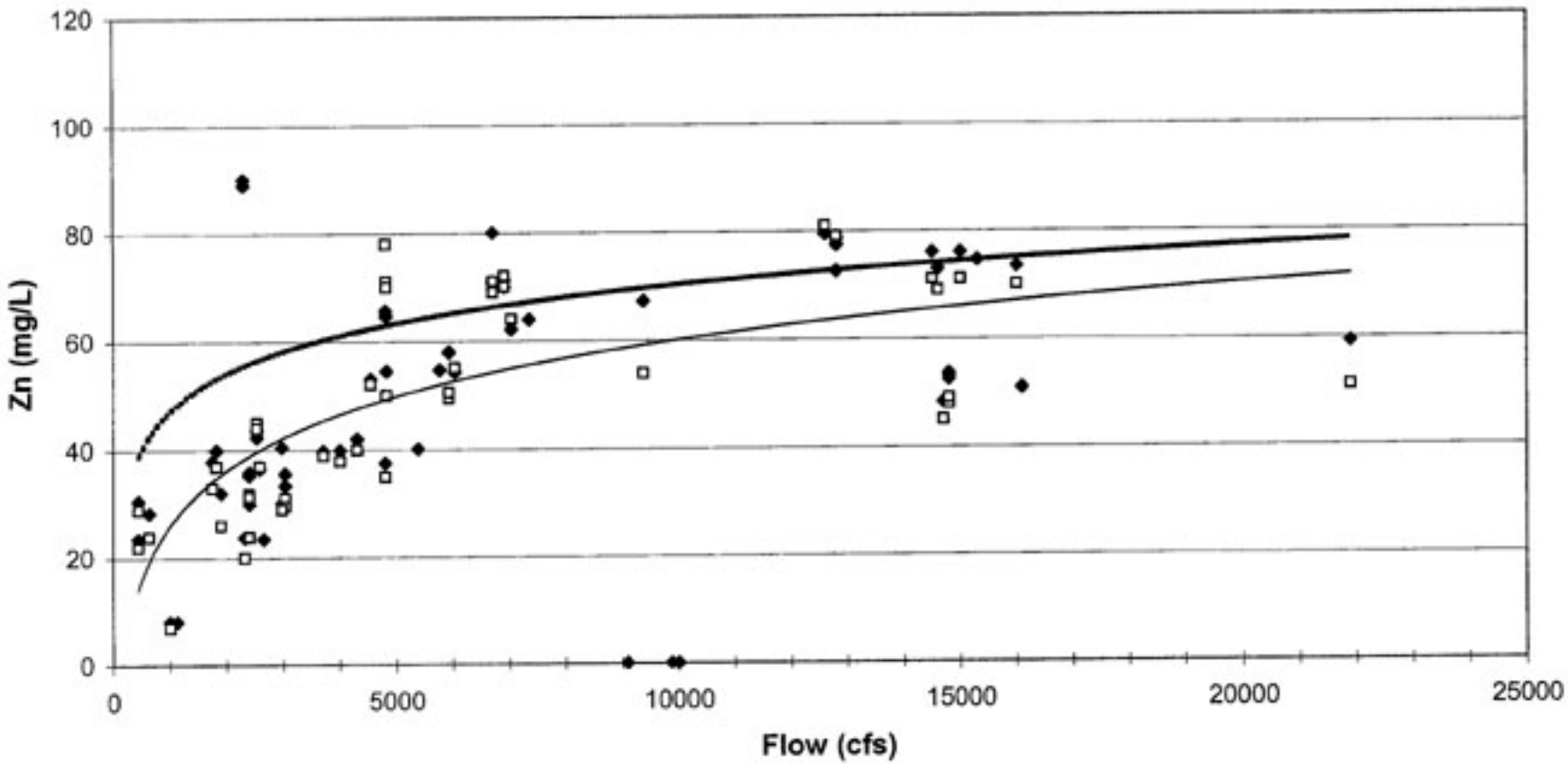
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.10d:
Spokane River Cadmium-Flow Correlation

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

- ◆ Total Zinc
- □ Dissolved Zinc
- - - - Log Trendline (Total Zinc)
- ——— Log Trendline (Dissolved Zinc)

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

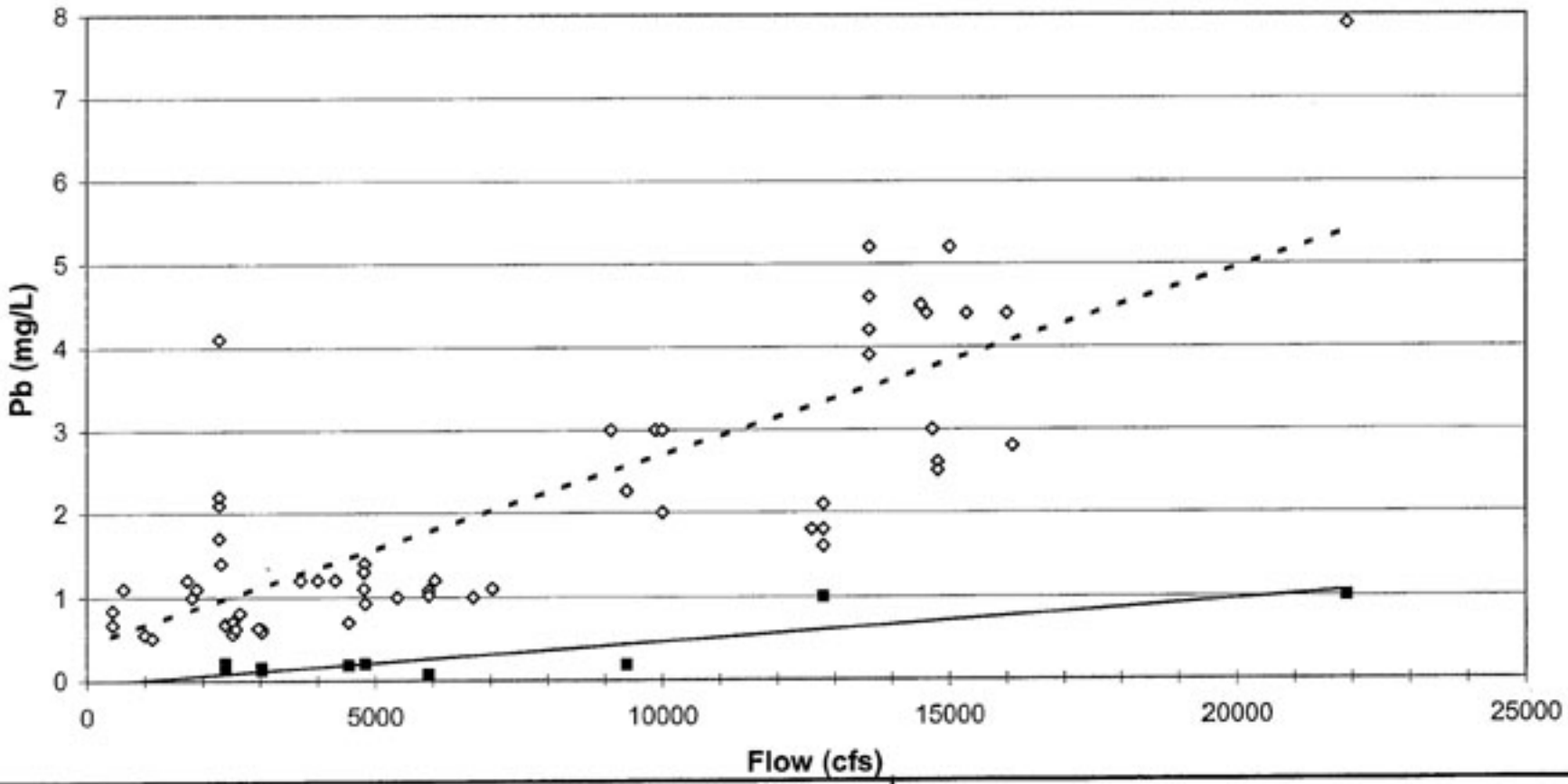
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.10e:
Spokane River Zinc-Flow Correlation

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

◇ Total Lead ■ Dissolved Lead

- - - Linear (Total Lead) —— Linear (Dissolved Lead)

Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

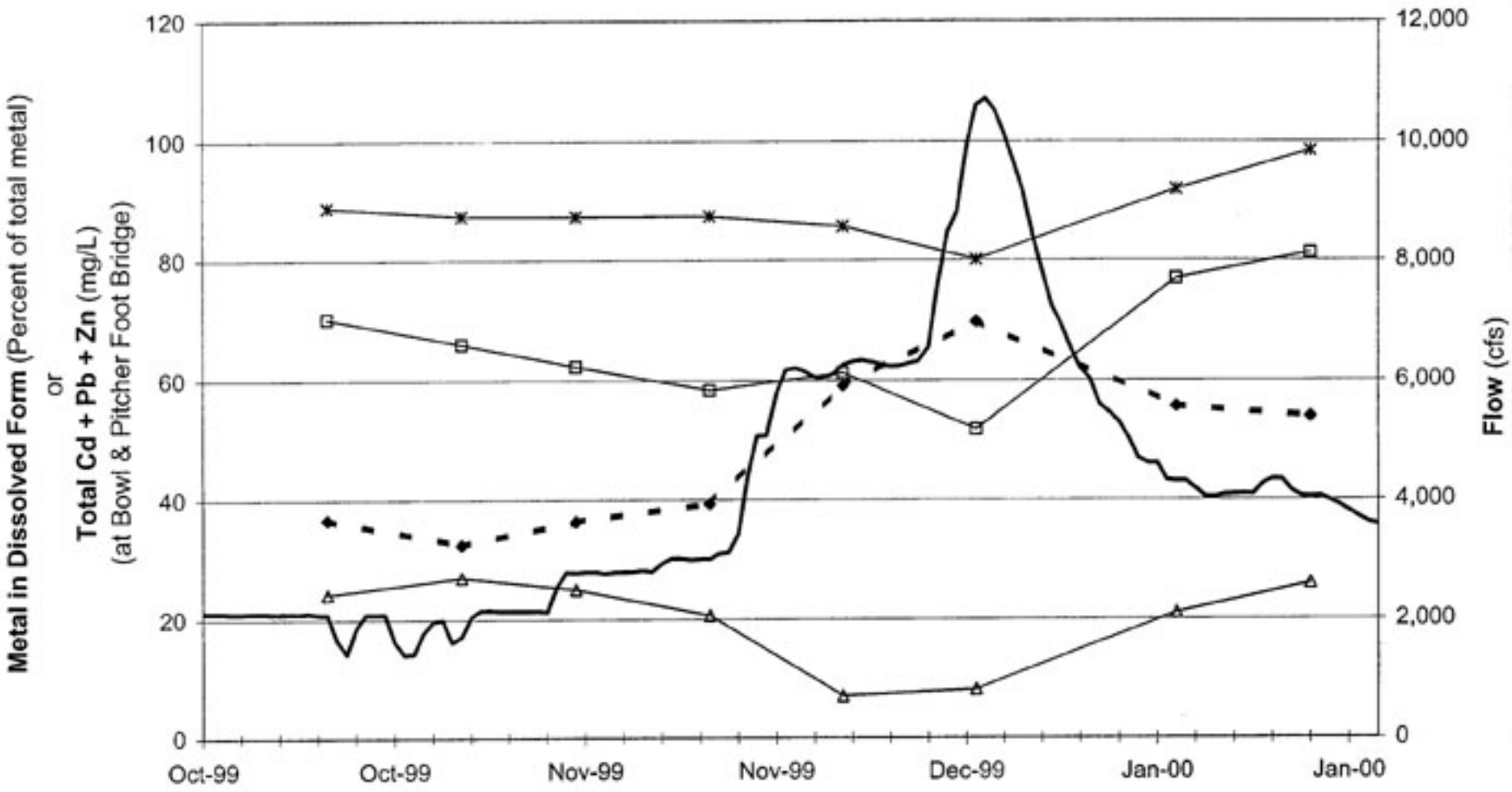
Data Sources: Pelletier and Merrill, 1998; City of Spokane, 2000; Walkley, 2000; USGS; Zheng, 1995; Spokane County, 1994, 1996, 1997

FIGURE 6.10f:
Spokane River Lead-Flow Correlation

Spokane County
Watershed Assessment

013-1372, 11/09/01, spokane data.xls

Golder Associates



Legend

- Total Cd + Pb + Zn
- Dissolved Cd (% of total Cd)
- Dissolved Pb (% of total Pb)
- Dissolved Zn (% of total Zn)
- Spokane River flow at Post Falls Dam

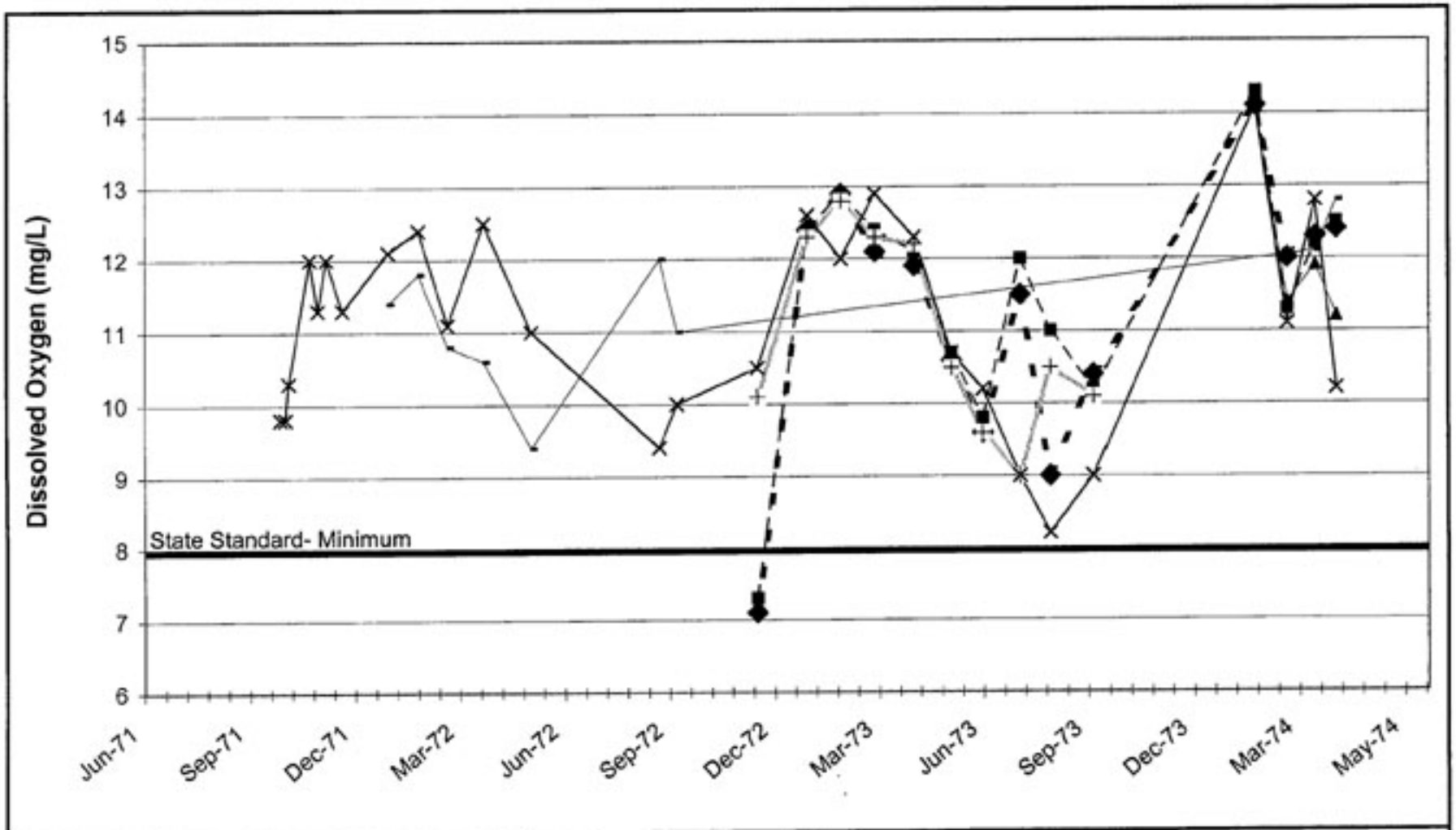
Data Sources: City of Spokane
USGS

FIGURE 6.10g:
Dissolved Metal Fraction - Spokane River

Spokane County
Watershed Assessment

Golder Associates

013-1372, June 2003, spokane Spokane - all flows.xls



Legend

RM 75.1 — RM 76.8 — RM 80.0

RM 80.5 — RM 84.2 — RM 92.7

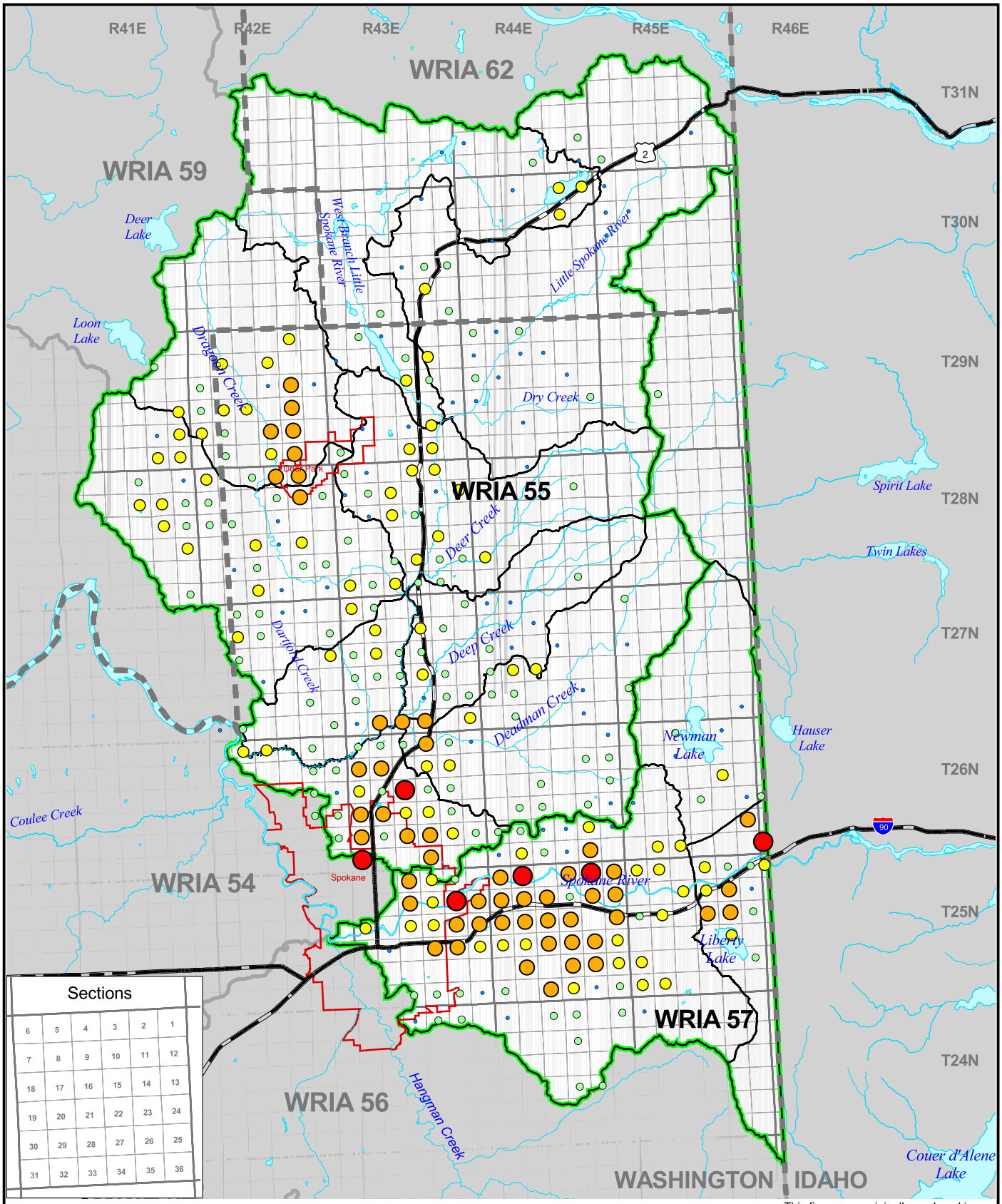
Note: Station abbrevations and locations can be found in Table 6.2 and Figure 6.1

FIGURE 6.11:
Spokane River Dissolved Oxygen

Spokane County
Watershed Assessment

013-1372, 11/09/01, DO.xls

Golder Associates



Sections					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Groundwater Certificates and Permits (Total Qa)

- 1 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 82,240 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

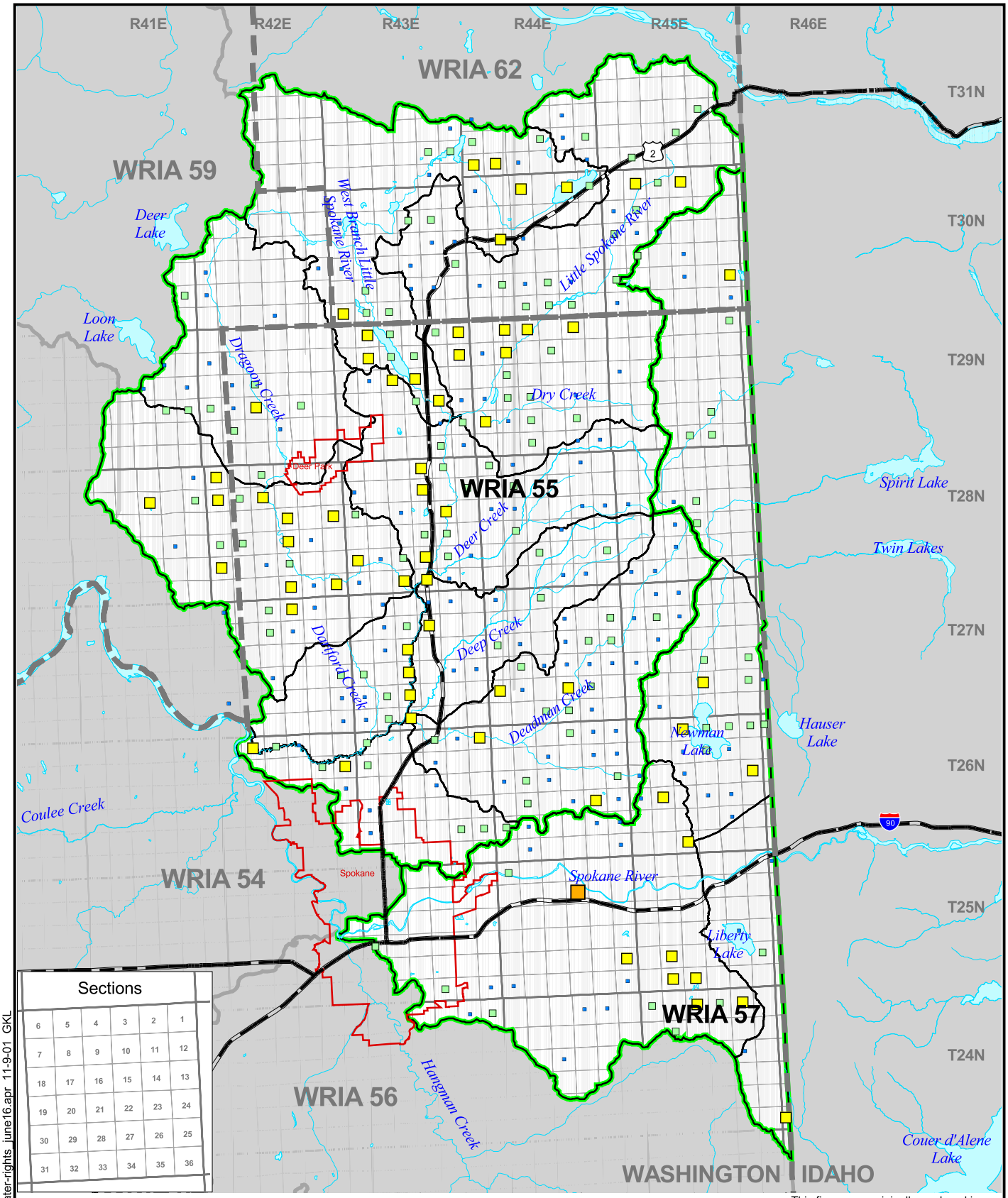
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Groundwater Certificates and Permits

Drawn: ATB	App'd:	Date: Nov. 04, 2003	Figure: 7.1

0131372170 0_110403.apr



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Surface Water Certificates and Permits (Total Qa)

- 1 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 70,000 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

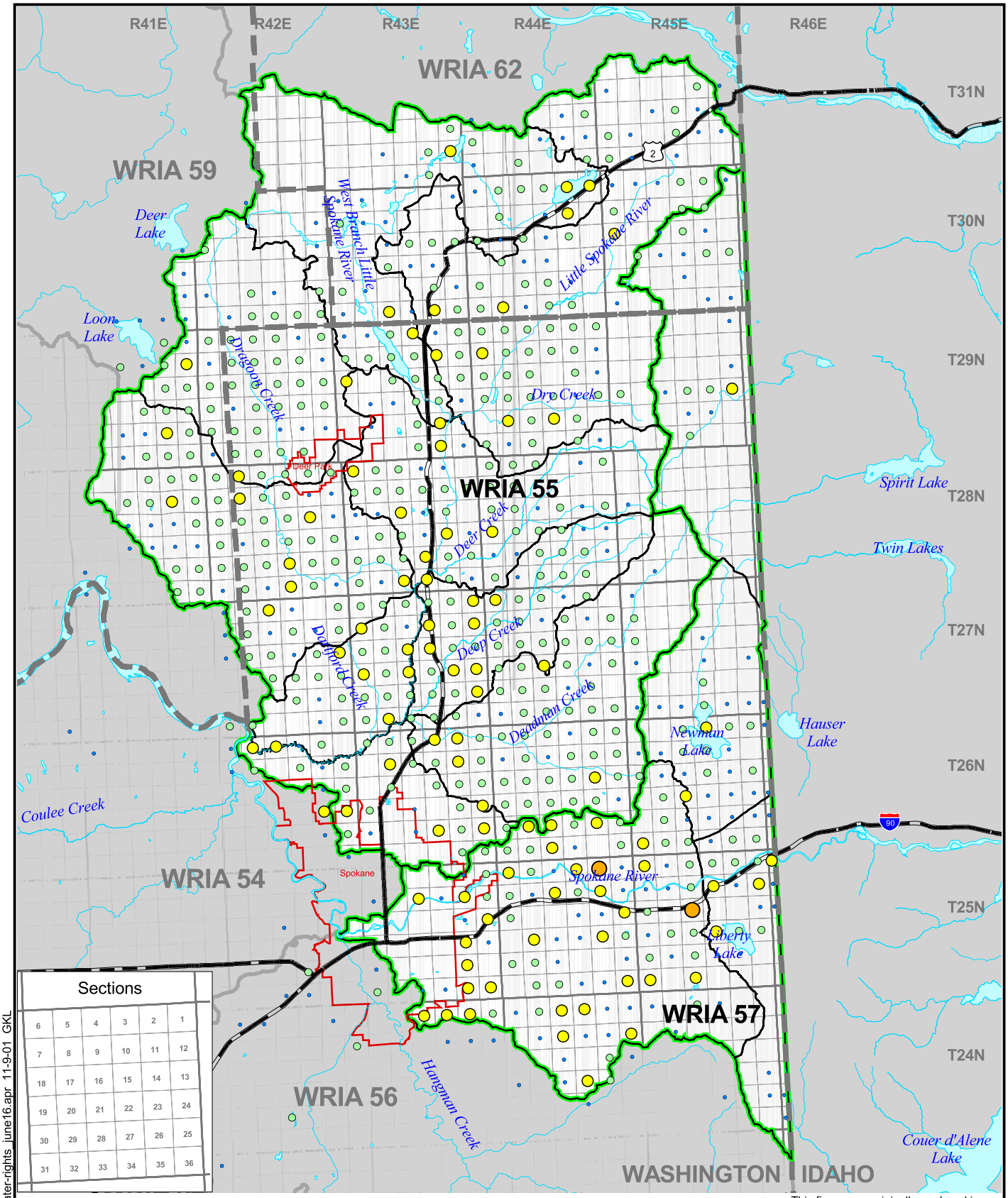
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Surface Water Certificates and Permits

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.2

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



Sections					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Groundwater Claims (Total Qa)

- 1 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 70,000 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

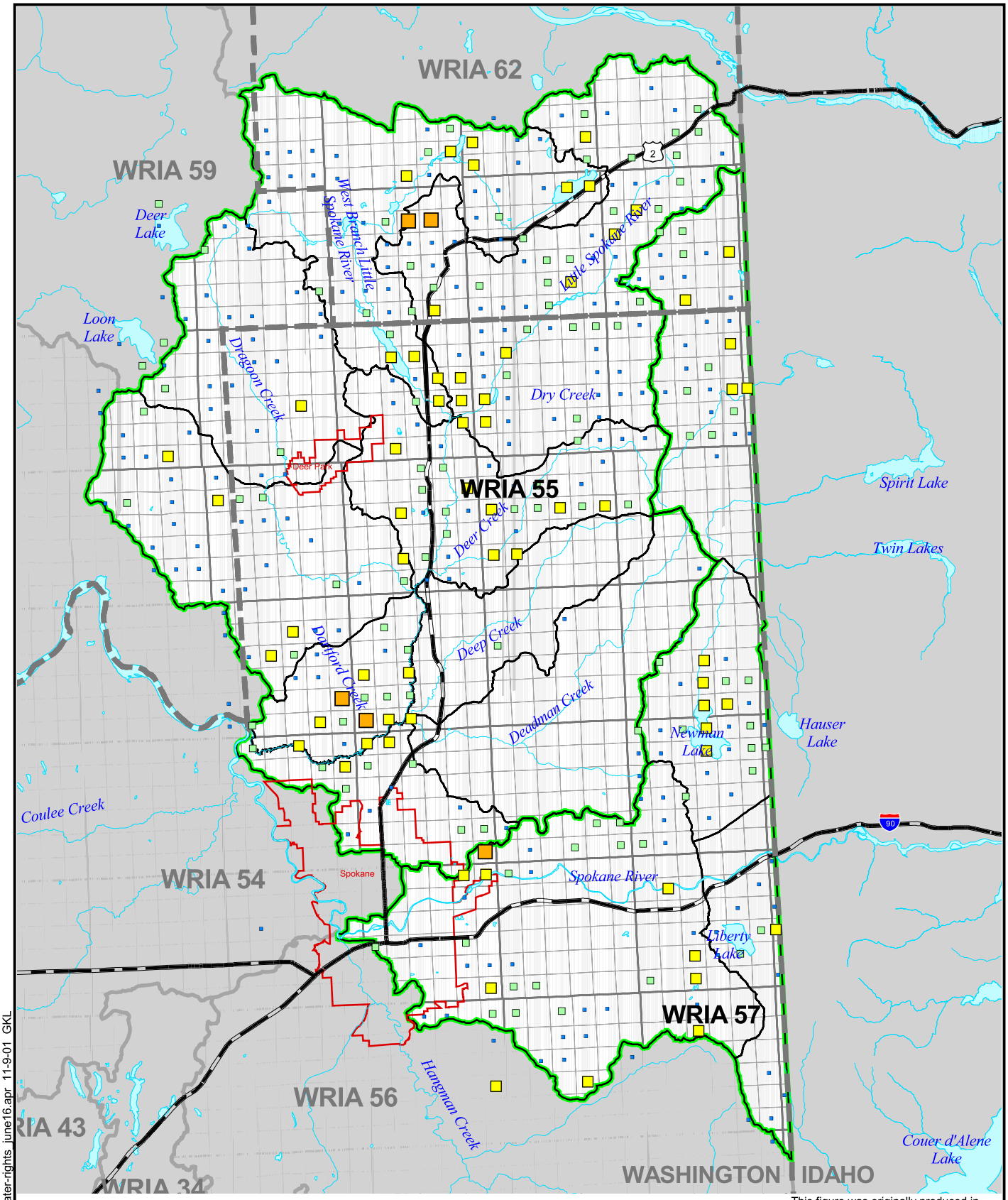
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Groundwater Claims

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.3

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Surface Water Claims (Total Qa)

- 1 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 70,000 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

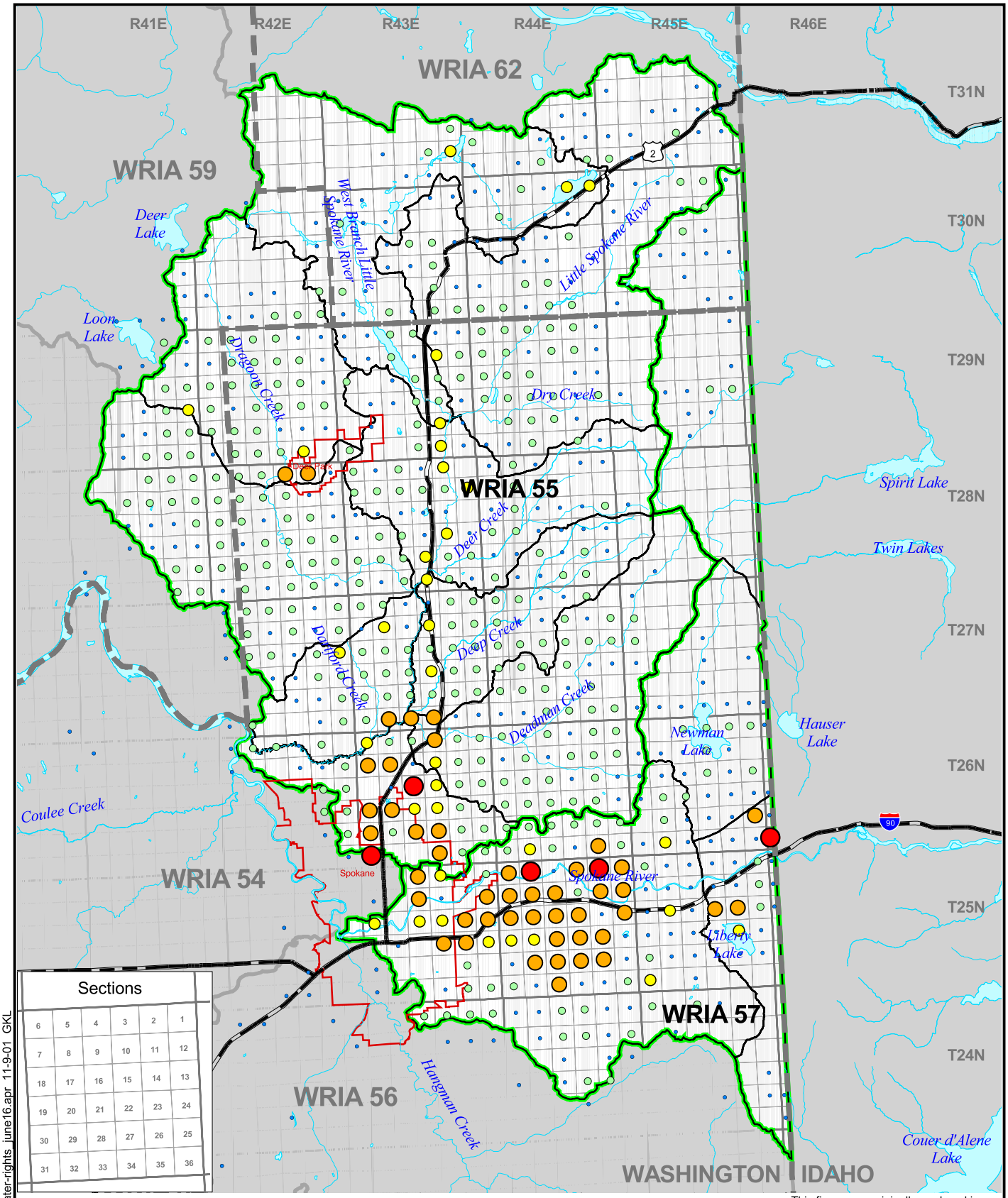
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Surface Water Claims

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.4

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



Sections					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Non-irrigation Use Groundwater Rights and Claims (Total Qa)

- 1 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 70,000 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

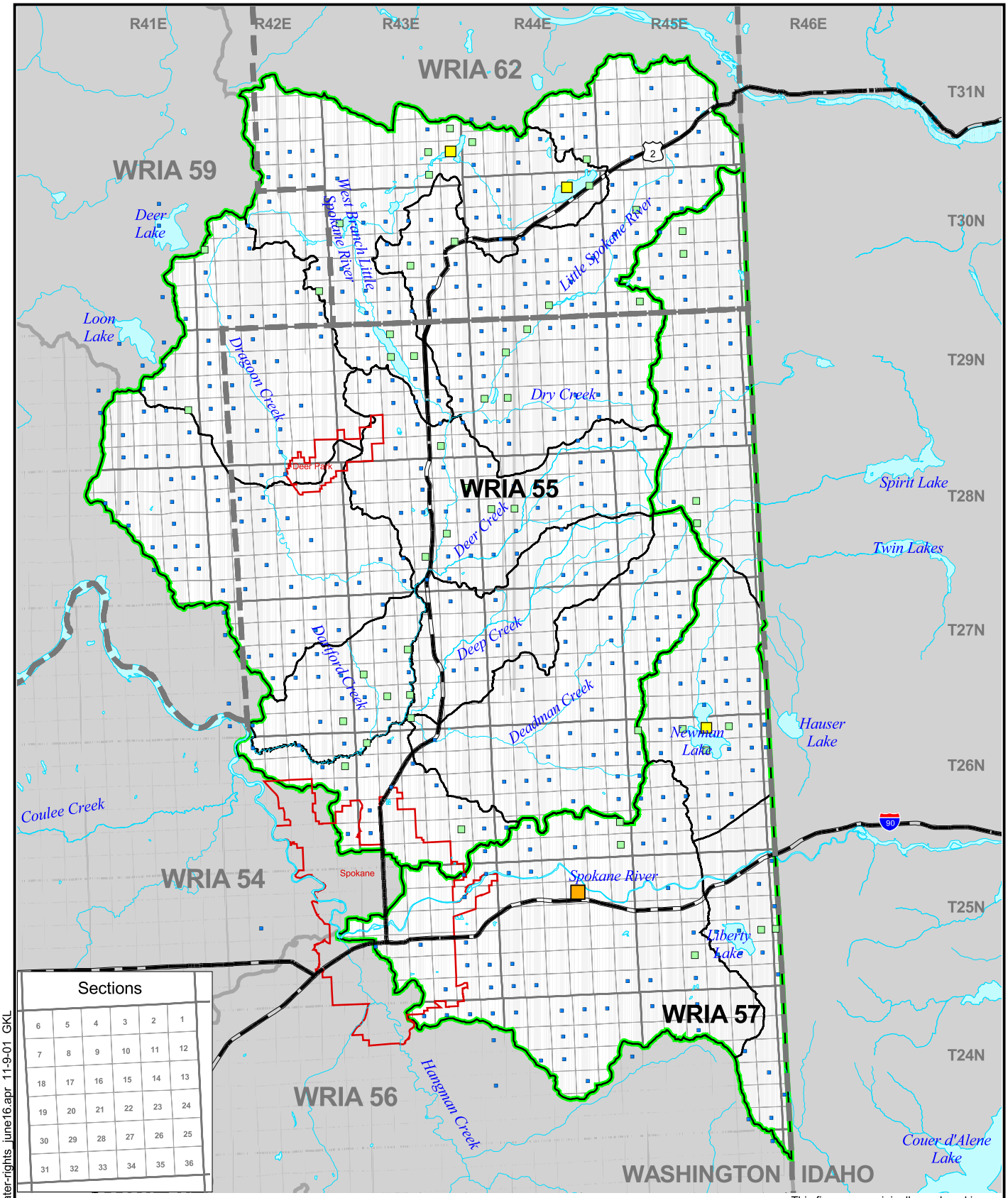
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Non-irrigation Use Groundwater Rights and Claims

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.5

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Non-irrigation Use Surface Water Rights and Claims (Total Qa)

- 0 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 70,000 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

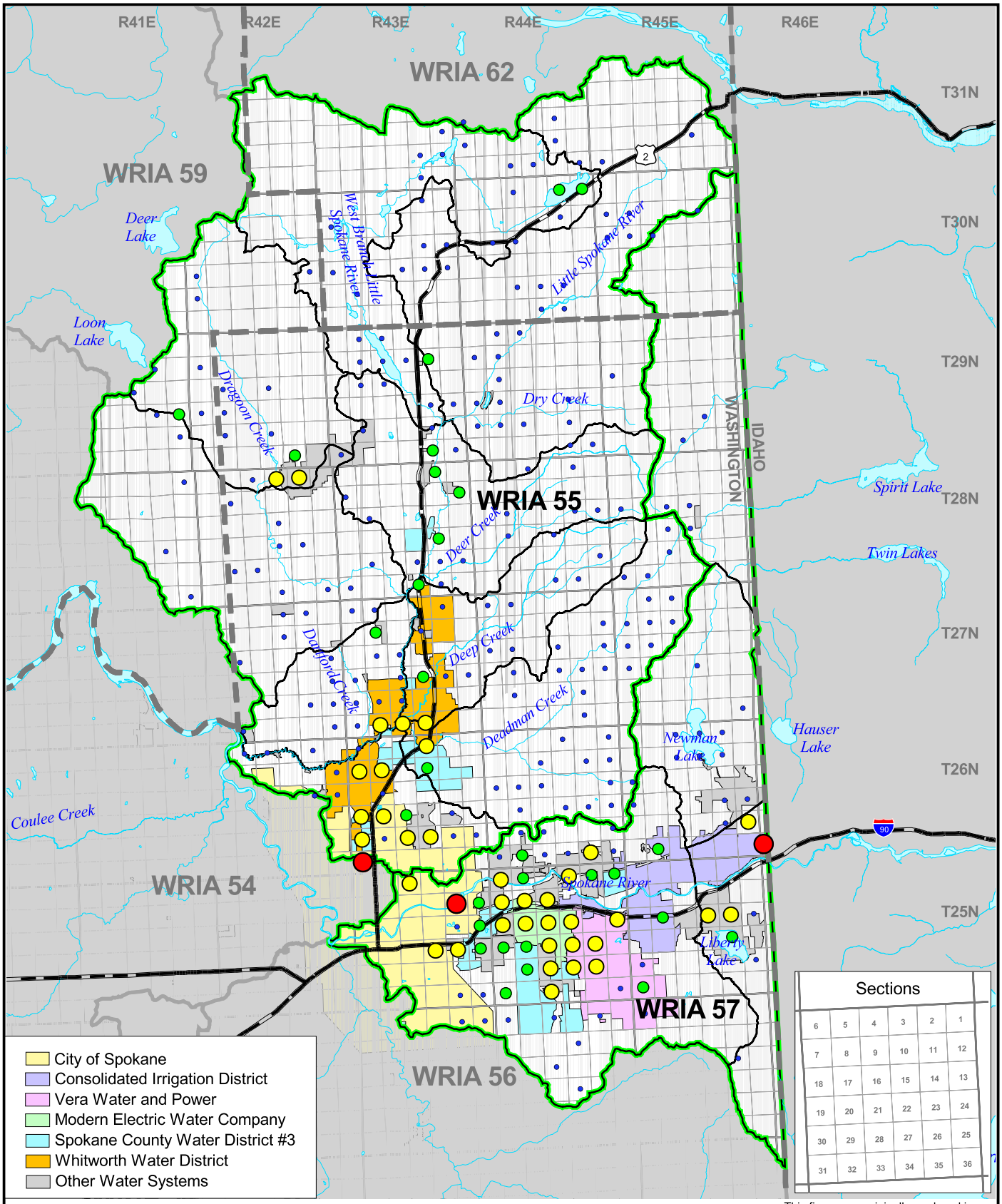
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Non-irrigation Use Surface Water Rights and Claims

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.6

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Water Right Certificates and Permits for Municipal and Domestic Purpose of Use

- < 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 89,240 AF/yr

Note: Water right claims for ~14,000 AF/yr not plotted.

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

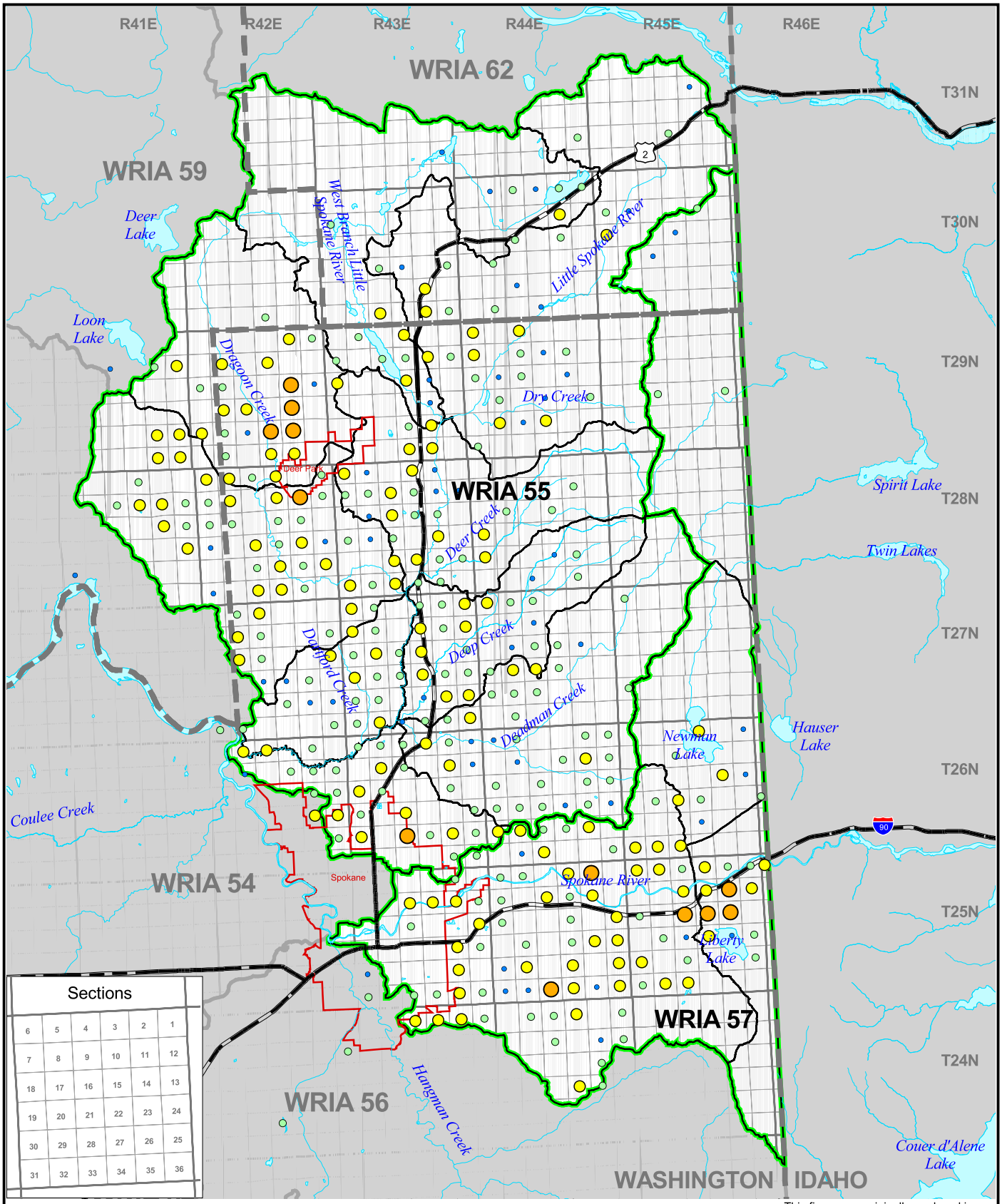
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Municipal and Domestic Certificates and Permits

Drawn: ATB	App'd:	Date: Nov. 04, 2003	Figure: 7.7

0131372170 0_110403.apr



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Total Irrigation Use Rights and Claims (Total Qa)

- < 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 2,362 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

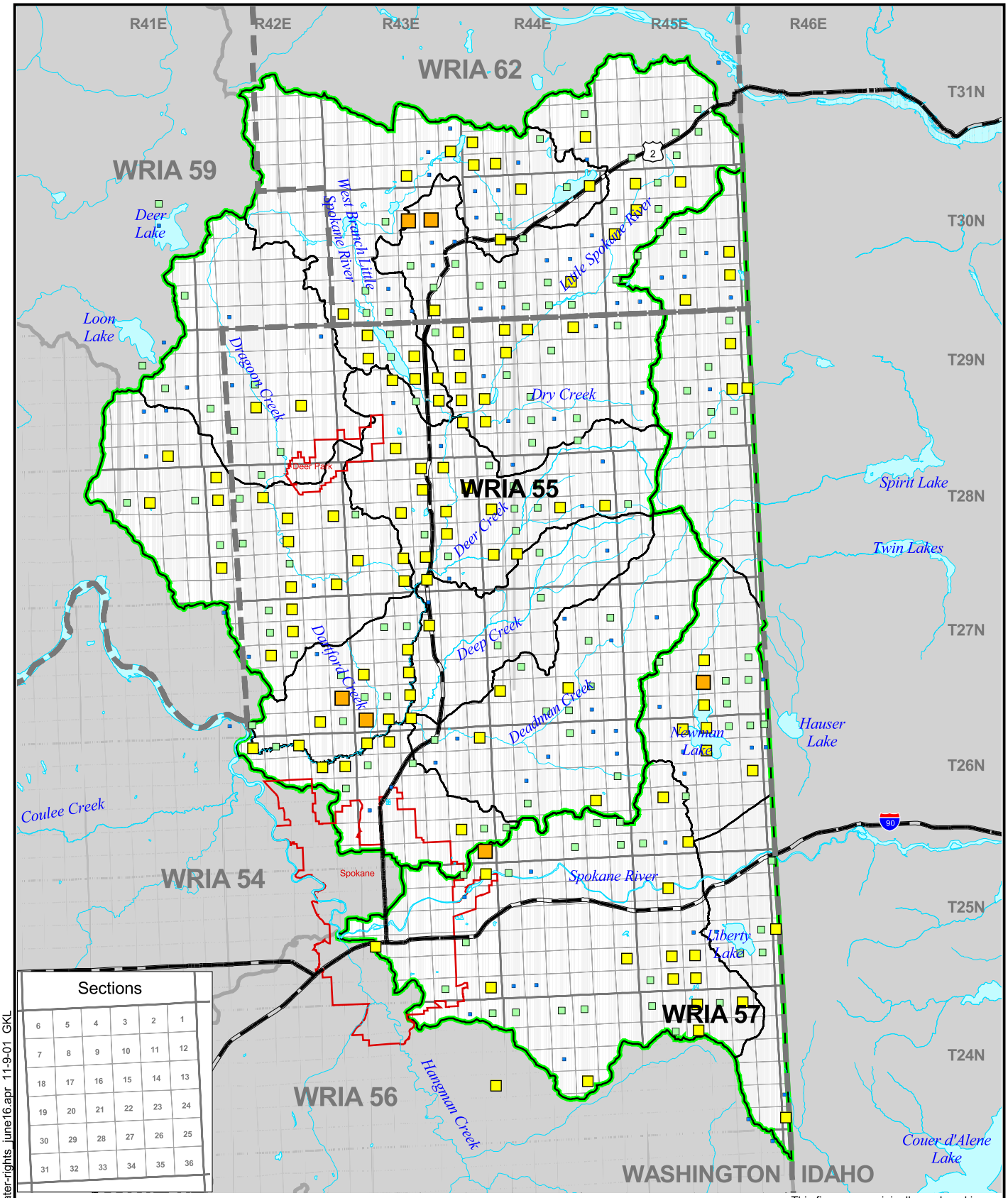
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Groundwater Irrigation Use Rights and Claims

Drawn: ATB	App'd:	Date: Nov. 04, 2003	Figure: 7.8

0131372170 0_110403.apr



Sections					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Irrigation Use Surface Water Rights and Claims (Total Qa)

- 1 - 10 AF/yr
- 10 - 100 AF/yr
- 100 - 1,000 AF/yr
- 1,000 - 10,000 AF/yr
- 10,000 - 70,000 AF/yr

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (March 2000). Annual quantities calculated as described in text, and aggregated by section.

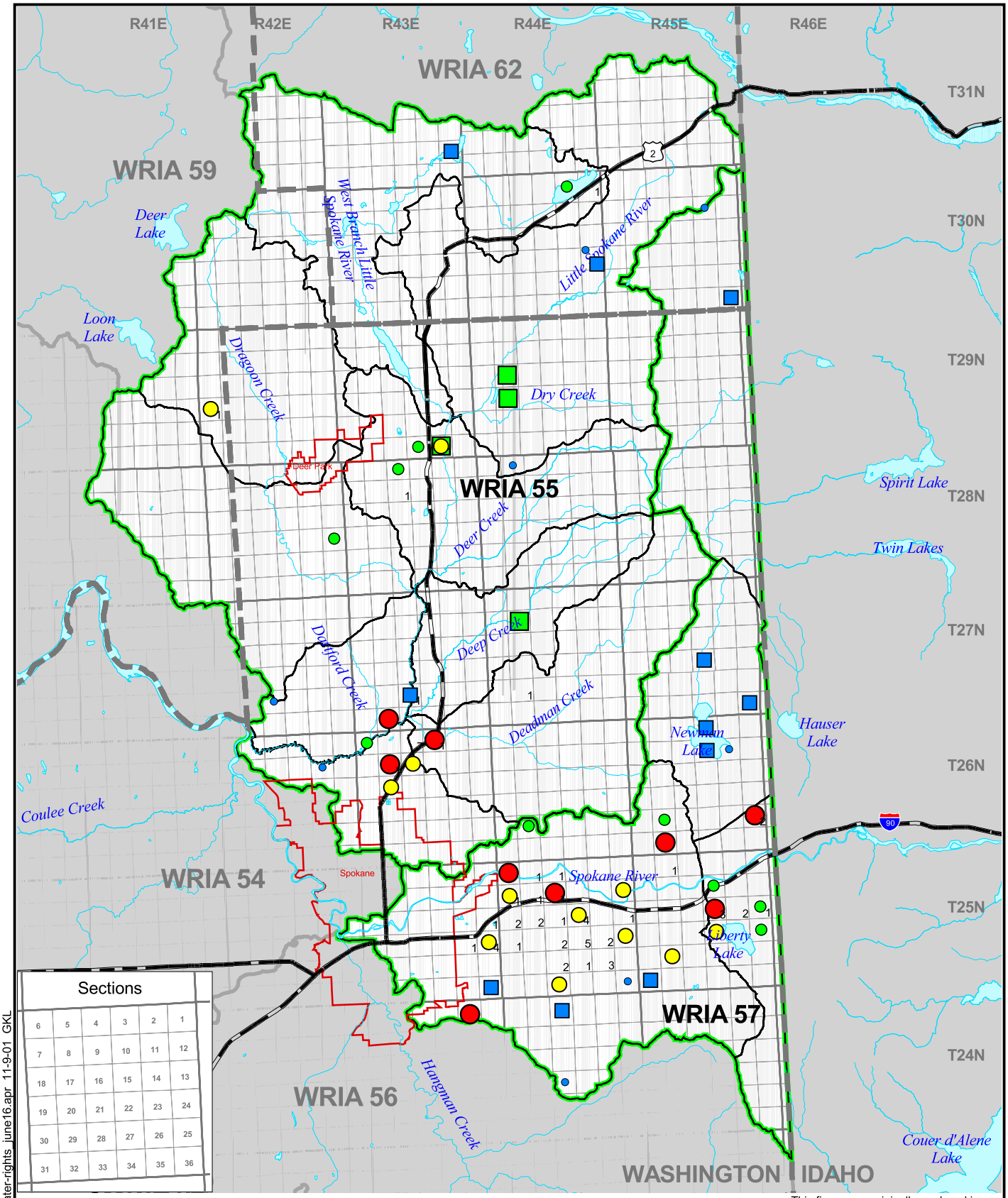
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Irrigation Use Surface Water Rights and Claims

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.9

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Applications for new groundwater rights (gpm)

- 5 - 50
- 50 - 500
- 500 - 2,000
- 2,000 - 10,000

Applications for new surface water rights (cfs)

- 0.01 - 0.1
- 0.1 - 1.0
- 3 Number of change applications

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Original Data Source: Washington Department of Ecology Water Rights Application Tracking System (WRATS) database (April, 2001). Annual quantities calculated as described in text, and aggregated by section.

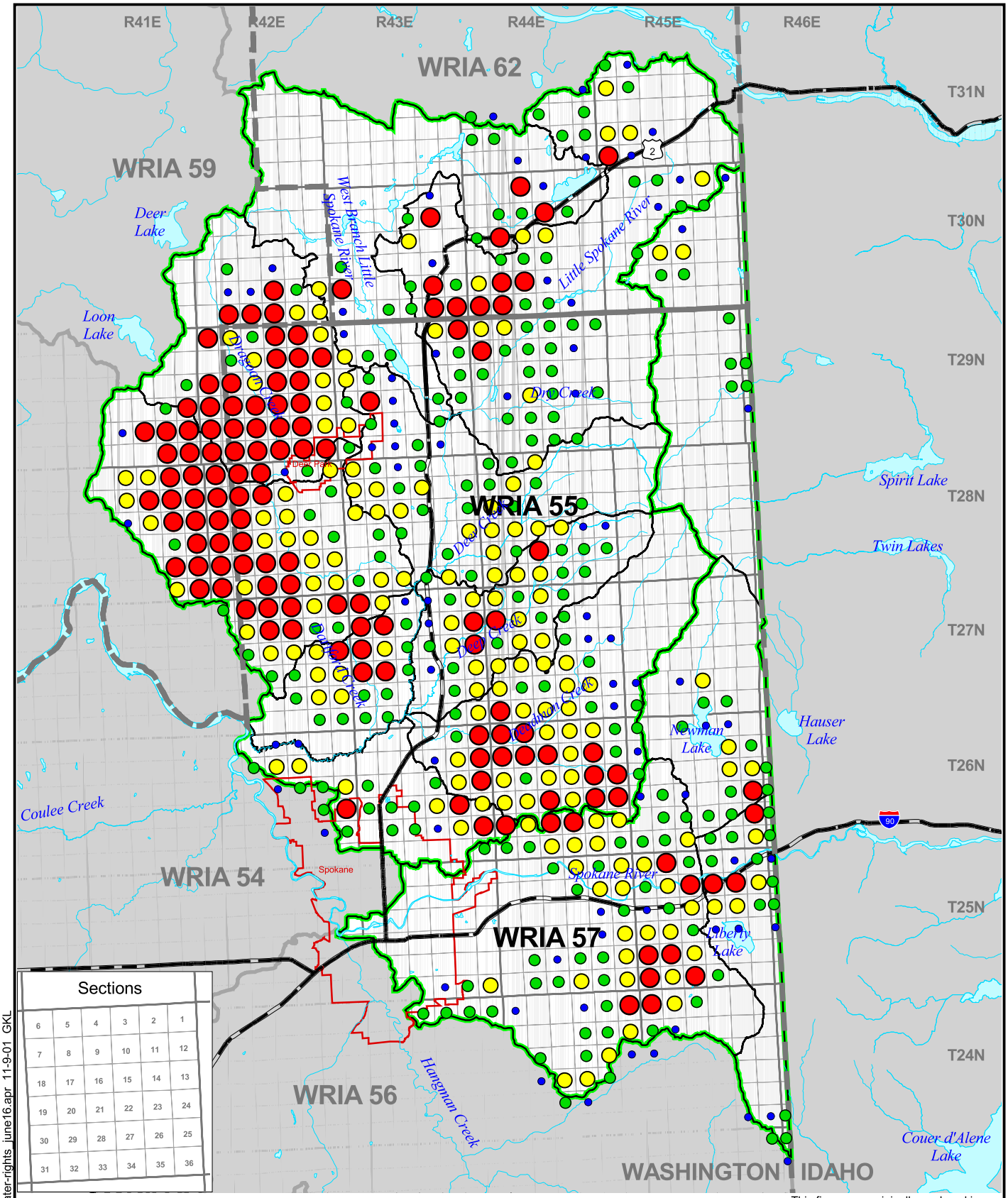
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Applications for New Water Rights and Claims

Drawn: GKL	App'd:	Date: Nov 9, 2001	Figure: 7.10

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Annual Water Use (AF/yr)

- < 2
- 2 - 10
- 10 - 20
- > 20

Note: Annual values are based on growing season extending from April to October.

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Data Derived from agricultural information obtained from USGS, (Land Cover, 1986) and USDA, (Agricultural Census, 1997).

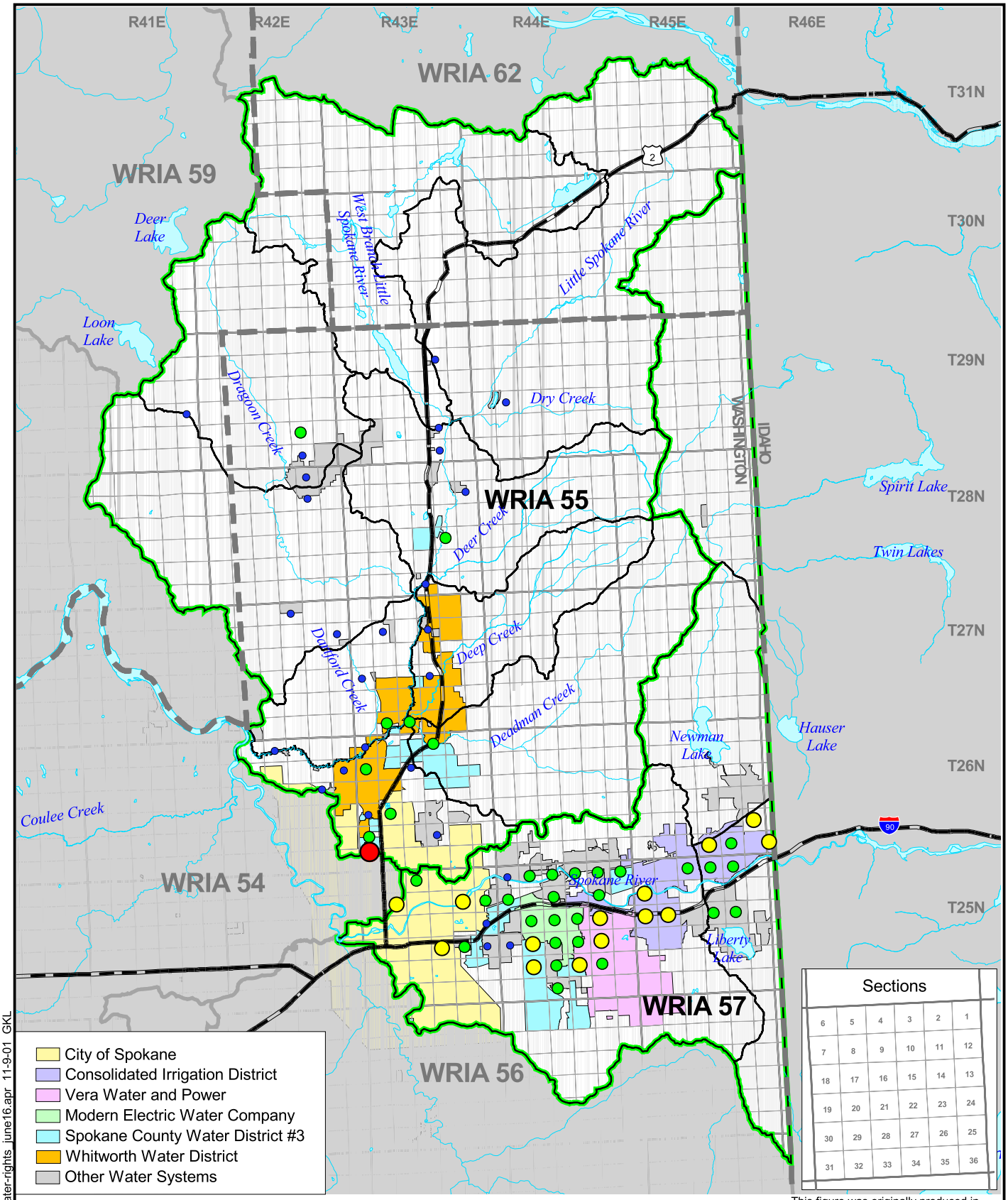
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Annual Estimated Agricultural Irrigation Consumptive Use

Drawn: GKL	App'd:	Date: Nov 9, 2001	Figure: 7.11

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



This figure was originally produced in color. Reproduction in black and white may result in loss of information.

LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Average Annual Use Aggregated by Section (Acre/ft)

- < 100
- 100 - 1000
- 1000 - 10000
- > 10000

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

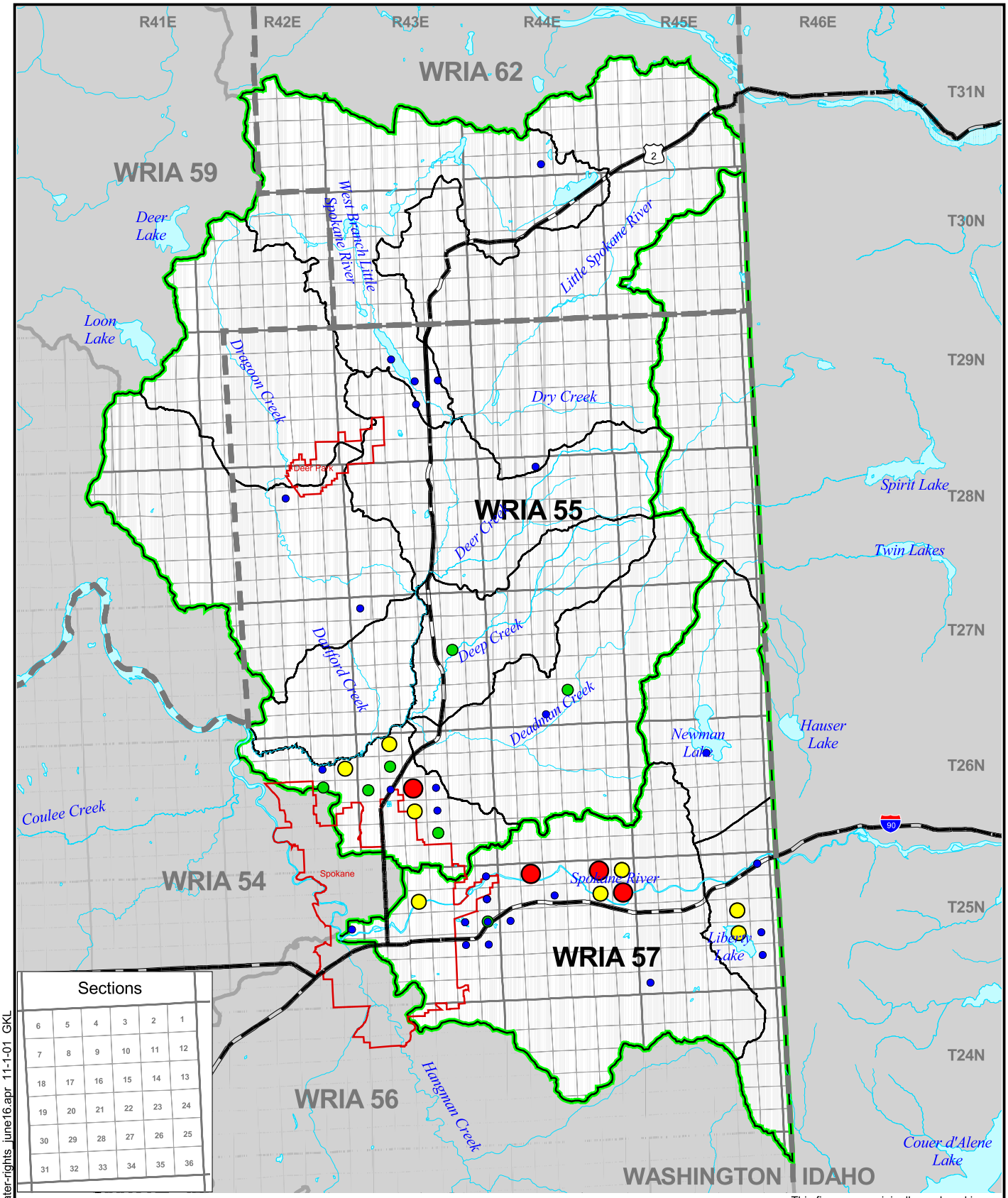
Data provided by Spokane County

Golder Associates

Annual Estimated Purveyor Use

Drawn: GKL	App'd:	Date: Nov 9, 2001	Figure: 7.12

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



This figure was originally produced in color. Reproduction in black and white may result in loss of information.

LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Annual Water Use Aggregated by Section (AF/yr)

- < 10
- 10 - 100
- 100 - 1000
- > 1000

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

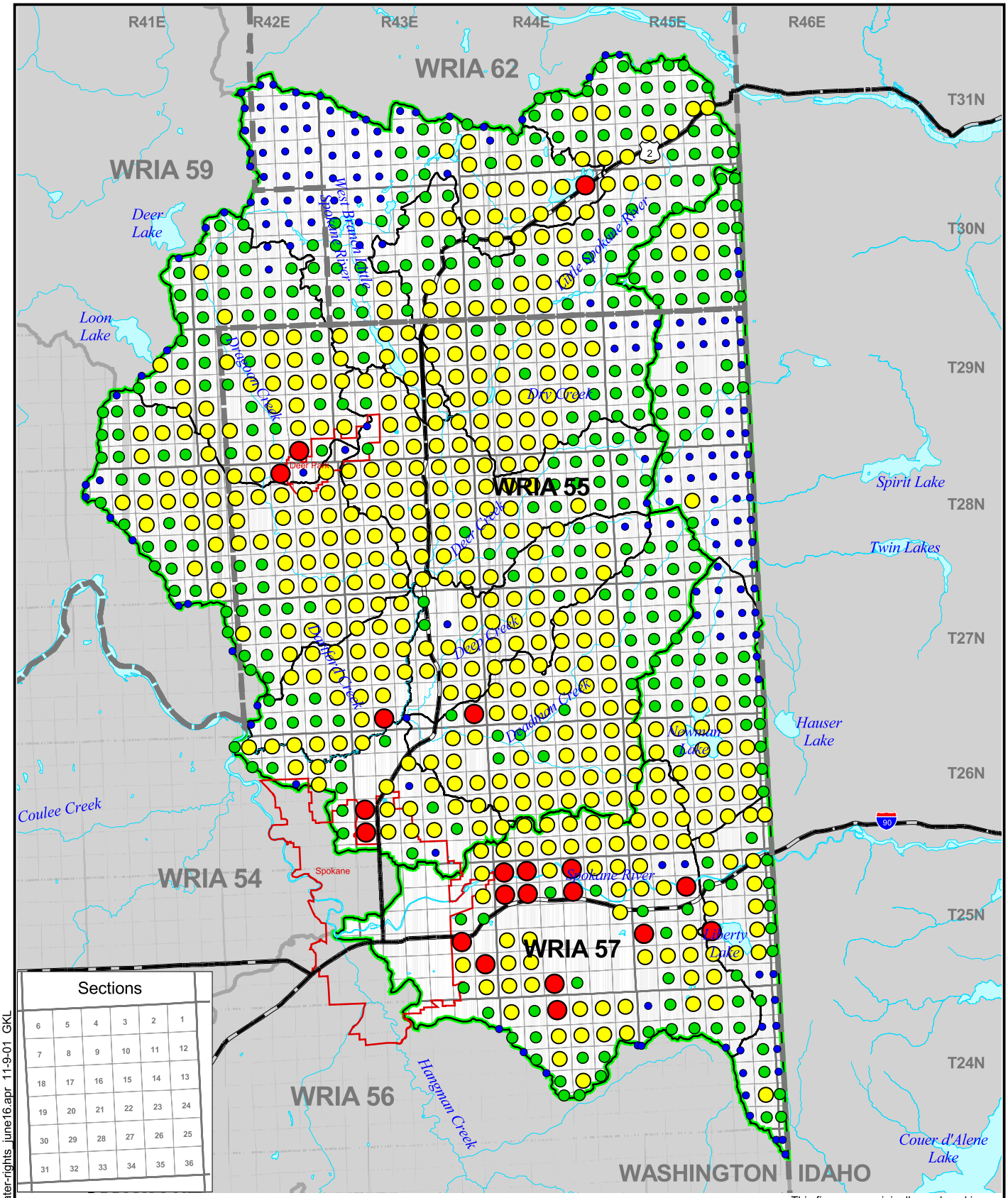
Data provided by Spokane County

Golder Associates

Annual Estimated Commercial and Industrial Use

Drawn: GKL	App'd:	Date: Nov 9, 2001	Figure: 7.13

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-1-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Annual Use Aggregated by Section (AF/yr)

- < 1
- 1 -10
- 10 - 100
- > 100

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Data Derived from US Census 2000 and Spokane County Data

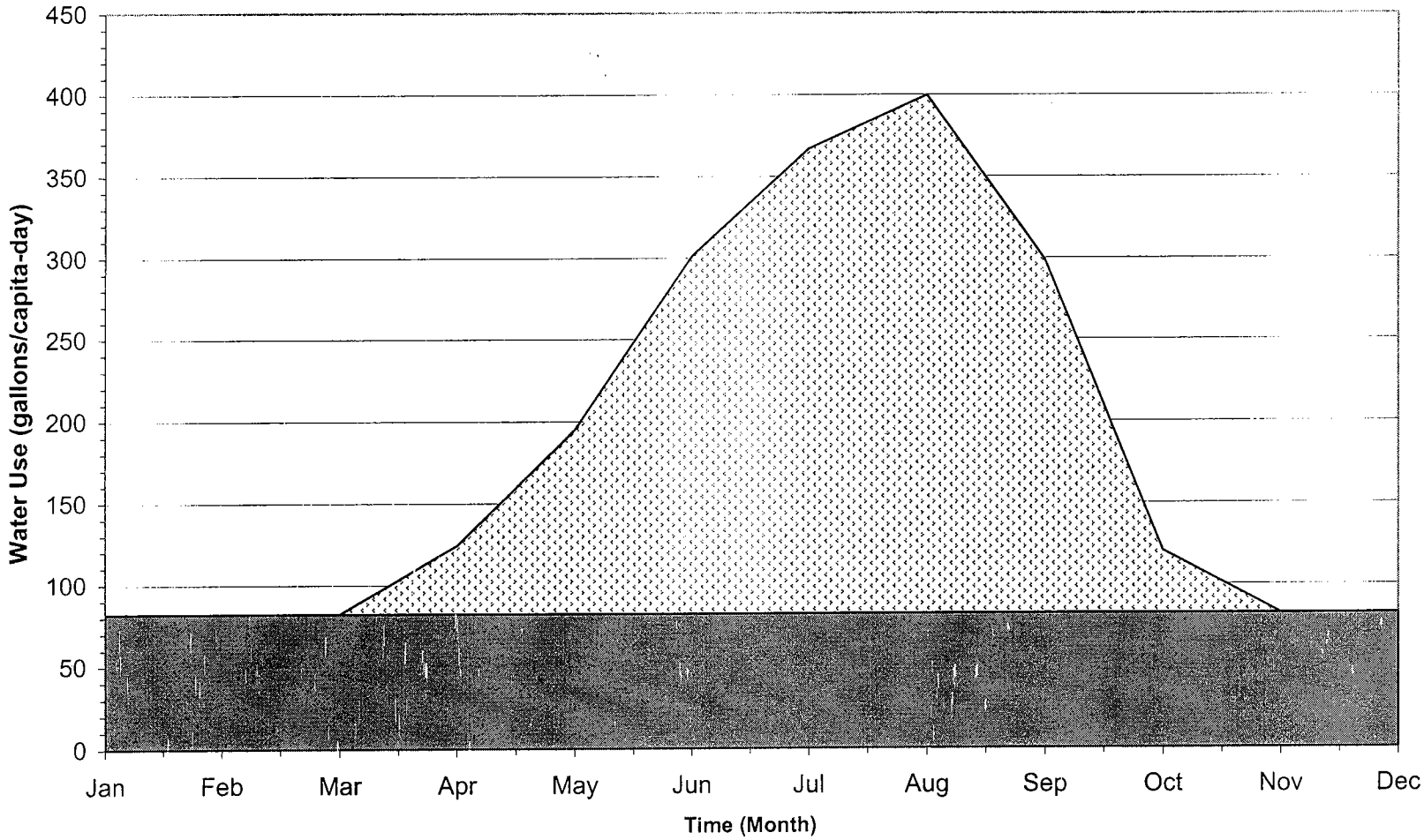
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Annual Estimated Exempt Well Use

Drawn: BBA	App'd:	Date: June 27, 2003	Figure: 7.14

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



Legend

Total Use Base Use

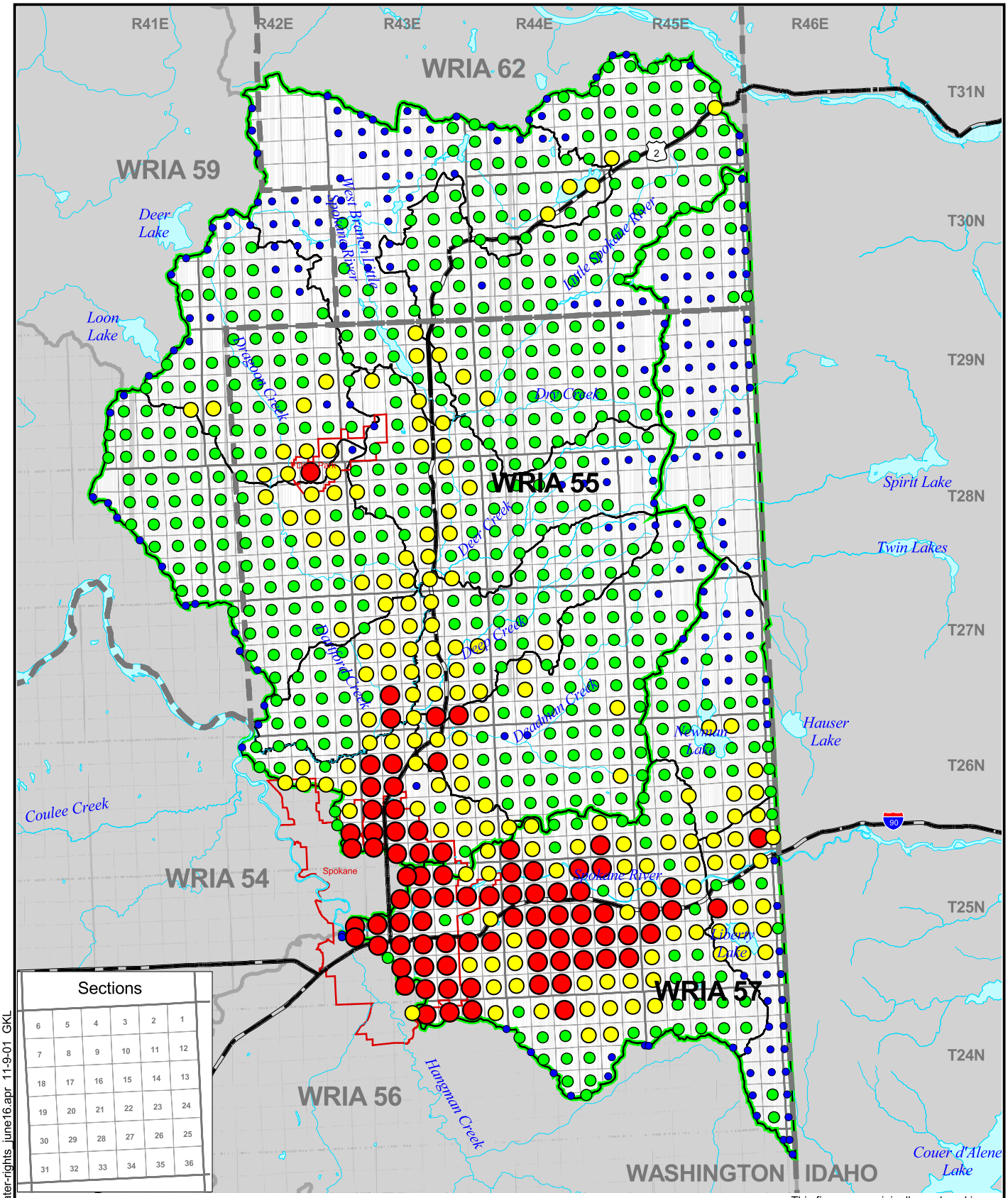
Data obtained from Spokane County,

FIGURE 7.15:
Per-Capita Daily Domestic Water Use

Spokane County
Watershed Inventory Assesment

013-1372, 7.13 and 7.15.xls, 10/15/01

Golder Associates



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Annual Application Aggregated by Section (AF/yr)

- < 1
- 1 - 10
- 10 - 100
- > 100

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Data Derived from US Census 2000 and Spokane County Data

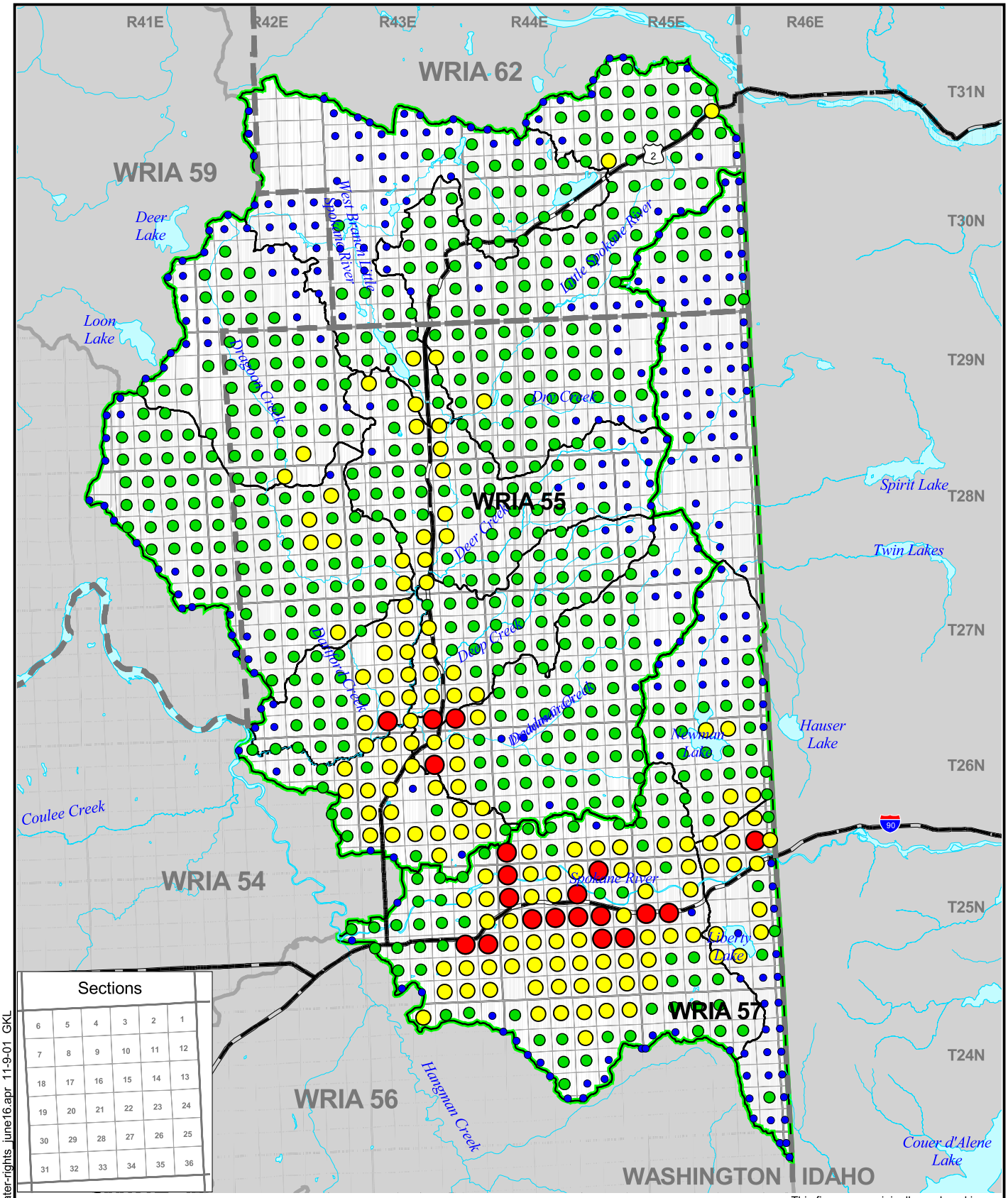
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Annual Estimated Non-Agricultural Irrigation Water Use

Drawn: GKL	App'd:	Date: Nov 9 2001	Figure: 7.16

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



LEGEND

- WRIA Boundaries
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams

Annual Wastewater Recharge (AF/yr)

- < 1
- 1 -10
- 10 - 100
- > 100

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

Data Derived from US Census 2000 and Spokane County Data

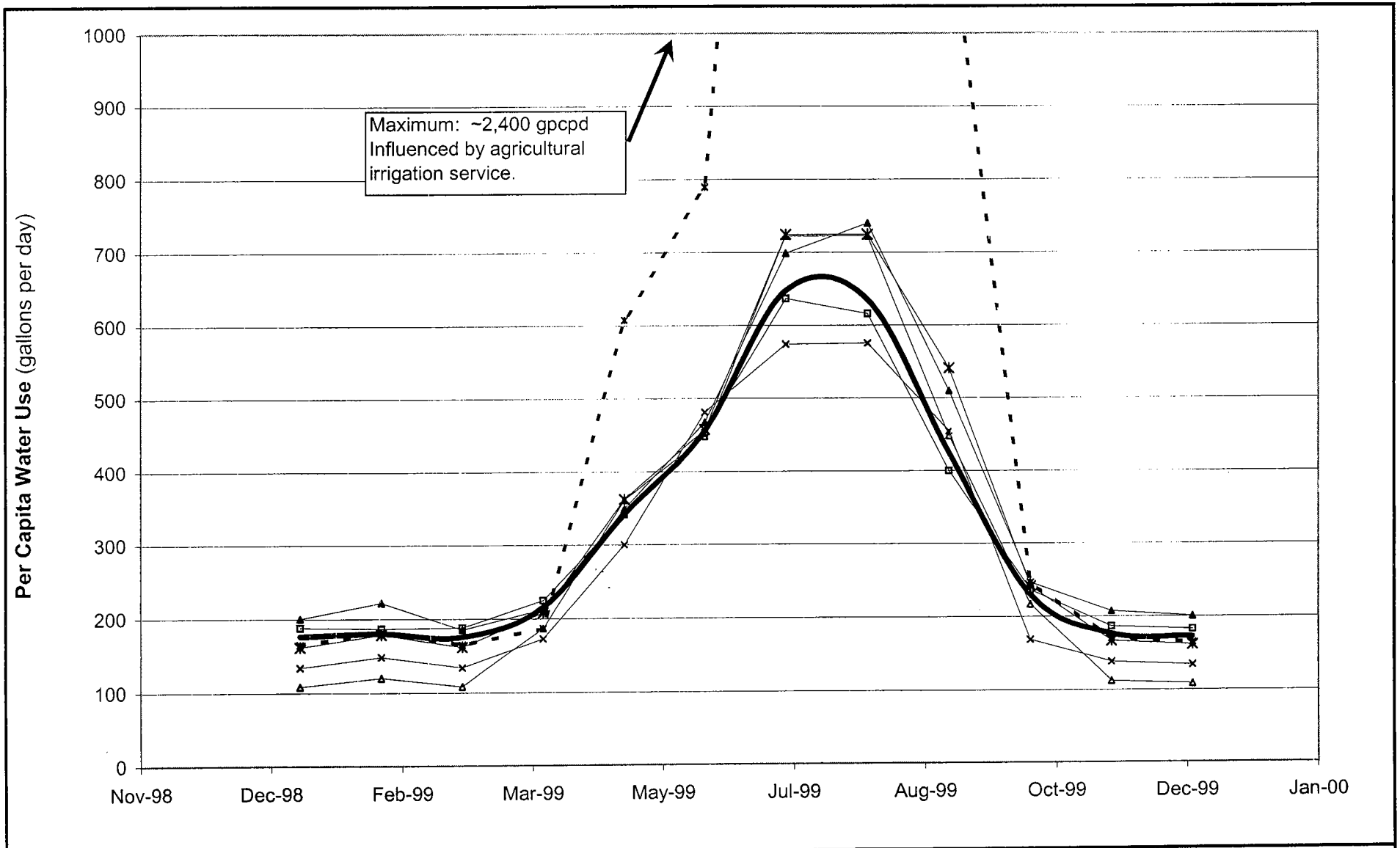
This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Annual Estimated Recharge from Septic Systems

Drawn: GKL	App'd:	Date: Nov 9, 2001	Figure: 7.17

L:\projects\2001\0131372\gis\aprs\water-rights_june16.apr 11-9-01 GKL



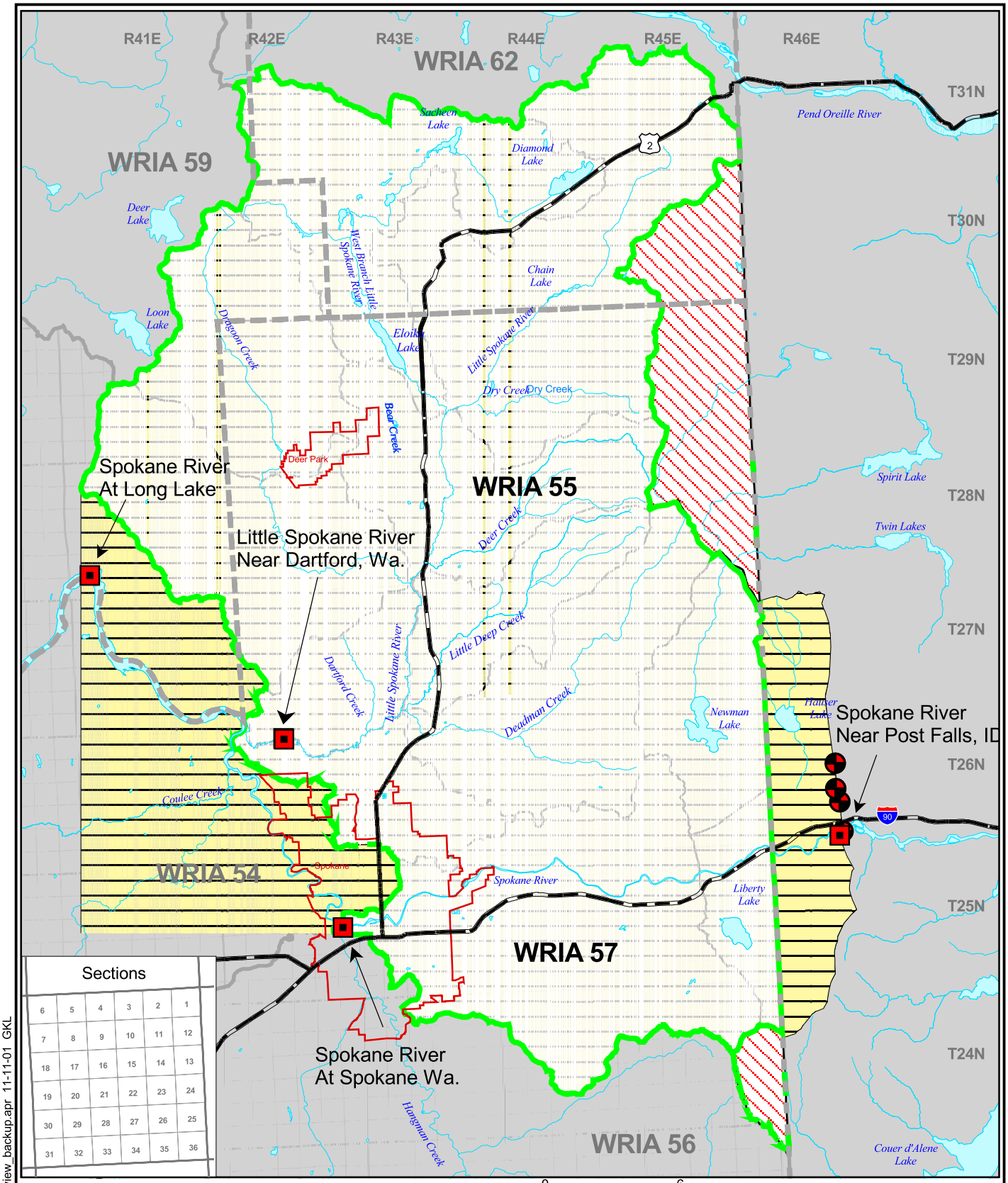
City of Spokane
Modern Electric Water Company
Vera Water and Power
Average (excluding CID)
Consolidated Irrigation District
Spokane County Water District No. 3
Whitworth Water District No.2

Average annual water use (1999) = 318 gpcpd (excluding CID data).
Per capita use is total water use including retail, commercial, industrial, etc.
Residential per capita use will be smaller.

FIGURE 7.18:
Average Monthly Per Capita Water Use

Golder Associates

Job Number, mm/dd/yy, filname.xls



LEGEND

- Model Domain
- WAU Boundaries
- Townships
- Sections
- City Limits
- County Boundaries
- Roads
- Rivers and Streams
- Surface Water Calibration Points
- Groundwater Calibration Points
- WRIA Area Included in Model
- WRIA Area Excluded from Model

Original Data Source: Washington Department of Ecology

N

0 6

Scale 1" = 6 Miles

Map Projection: Washinton State Plane North Zone, NAD83, Feet

This figure was originally produced in color. Reproduction in black and white may result in loss of information.

Golder Associates

Model Domain

Drawn: GKL	App'd:	Date: Nov. 11, 2001	Figure: 8.1

L:\projects\2001\0131372\gis\aprs\overview_backup.apr 11-11-01 GKL

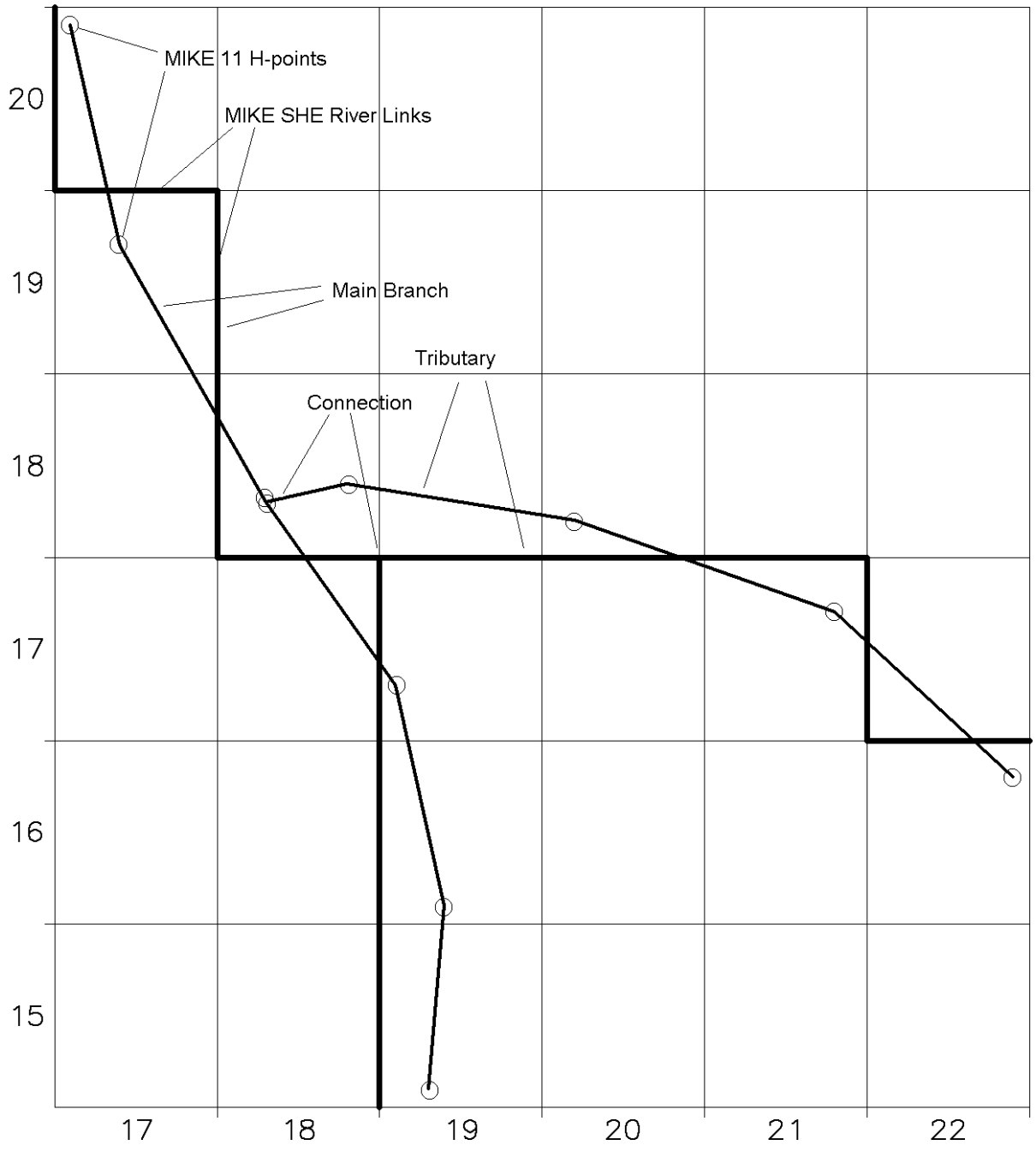


FIGURE **8.2**

MIKE 11 - MIKE SHE CONNECTIVITY

SPOKANE COUNTY/LEVELI ASSESSMENT/WA

PROJECT NO. 013 1372_1700 DRAWING NO. 92887 DATE 11/05//01 DRAWN BY ETF

Golder Associates