# APPENDIX 1. Site Descriptions

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site A-P1

**LAND DESCRIPTION:** NW 27-2-26-4

**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 49.158 -113.401

**DESIGNED FLOW CAPACITY:** 2.41 cu m/sec (85 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** A-P1 is located on the Environment Headworks Canal just downstream of the automated check controlling flow into the AID. This water comes from Payne Lake (site MV-P1) through 20 km of the Environment Headworks Canal before reaching this point. The entire AID plus some domestic services within the Town of Cardston uses this water source with excess flow spilling into Aetna (Snake) Creek (site A-R1).

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site A-R1

**LAND DESCRIPTION:** NW 15-2-25-4

**LATERAL NAME:** Aetna Main Canal

**GPS CO-ORDINATES:** 49.130 -113.271

**DESIGNED FLOW CAPACITY:** 0.75 cu m/sec (26 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** The AID receives its water from Payne Lake through the Environment Headworks Canal. Site A-R1 is excess water spilling into Aetna (Snake) Creek which empties into Lee Creek. Samples were taken downstream of the road crossing in the NW 15. A return flow metering station is located approximately 600 m downstream of A-R1 at the structure into Aetna Creek. A small capacity of excess flow can be diverted south over the creek via a pipe to Lateral C8 serving 200 potential acres. Some acres within the AID also divert water from Aetna Creek downstream of the return flow metering station.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 11 Site AEP-P3

**LAND DESCRIPTION:** SE 32-21-25-4

**LATERAL NAME:** Environment Main Canal

**GPS CO-ORDINATES:** 50.824 -113.426

**DESIGNED FLOW CAPACITY:** 50.97 cu m/sec (1800 cfs)

**ACTIVE GAUGING STATION:** Yes – operated by AENV

**DESCRIPTION:** Site AEP-P3 is located on the Environment Headworks Canal approximately 2 km downstream of the diversion off the Bow River at the Caresland Weir. Water diverted here serves the Bow River Irrigation District after travelling several kilometers of Environment Main Canal, through Lake McGregor, Travers Reservoir and Little Bow Reservoir. Water samples were taken just west of the service road leading to the diversion structure. Flow capacities into the main canal are monitored by AENV.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site AEP-S3

**LAND DESCRIPTION:** SW 22-15-21-4

**LATERAL NAME:** McGregor Outlet Channel

**GPS CO-ORDINATES:** 50.268 -112.820

**DESIGNED FLOW CAPACITY:** 50.97 cu m/sec (1800 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** This sampling site is located on the channel between Lake McGregor and Travers Reservoir just south of the Secondary Highway 529 crossing. Water at this site was originally diverted from the Bow River at Caresland traveling several kilometers of Environment Headworks Canal before entering Lake McGregor. Once past Lake McGregor, this water flows through Travers and Little Bow Reservoirs into the BRID Main Canal. Flow capacities are monitored by BRID at the McGregor outlet gates just upstream of the site .

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-P1

**LAND DESCRIPTION:** SE 33-14-20-4

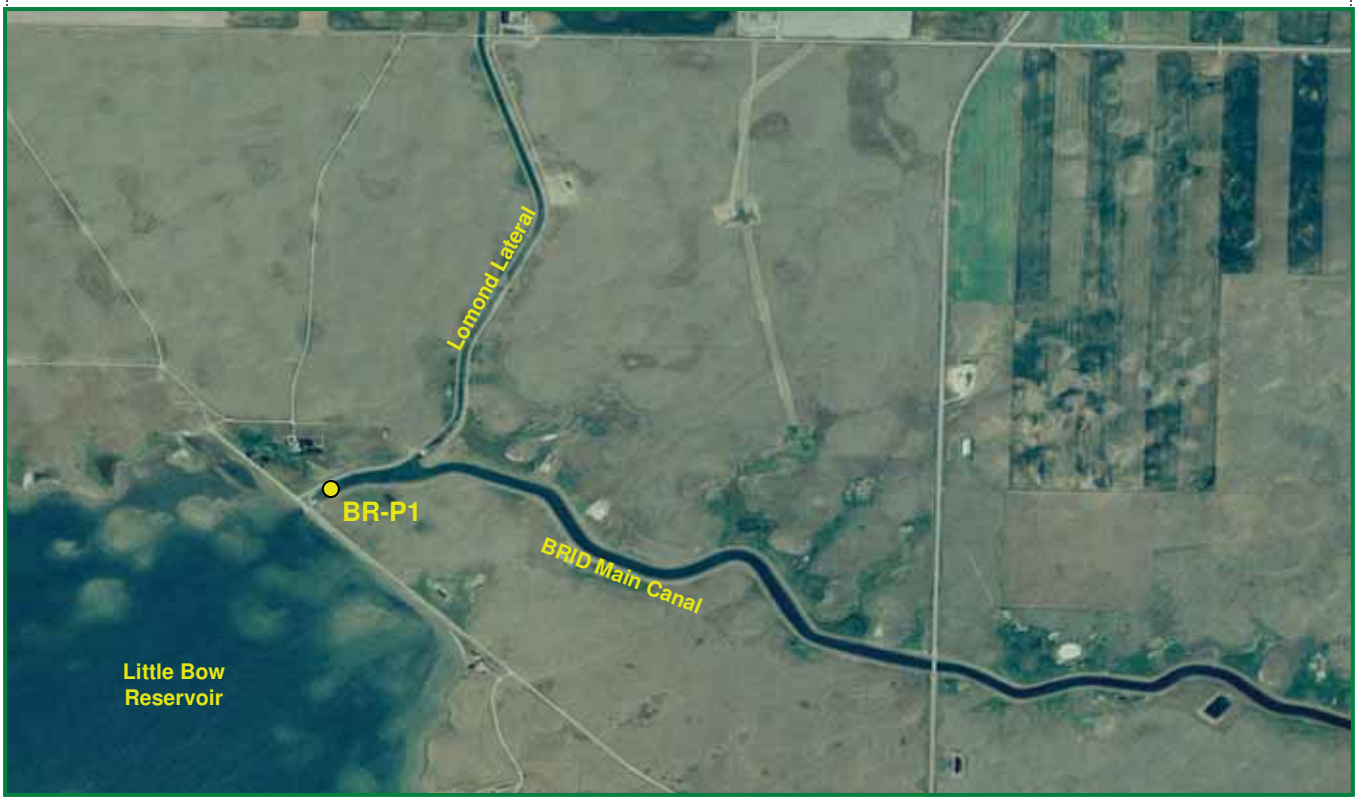
**LATERAL NAME:** BRID Main Canal

**GPS CO-ORDINATES:** 50.208 -112.668

**DESIGNED FLOW CAPACITY:** 96 cu m/sec (3390 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** This site is at the beginning of the BRID Main Canal at the diversion off Little Bow Reservoir supplying irrigation water to the entire 216,500 irrigated acres within the Bow River Irrigation District. Water sampled at this site originally comes from the Bow River Diversion at Caresland, through Lake McGregor, Travers Reservoir and Little Bow Reservoir. Spill water from the BRID Main Canal re-enters the Bow River through the Ronalane Wasteway east of Hays (site BR-R5). Spreadsheets for daily flow activity at site BR-P1 are developed using the Water Survey readings on the Lomond Lateral added to the Alberta Environment readings at Drop 3 plus ditchrider manual measurements of laterals off the Main Canal between the two.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site AEP-S2

**LAND DESCRIPTION:** NW 7-5-24-4

**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 49.376 -113.222

**DESIGNED FLOW CAPACITY:** 69.38 cu m/sec (2450 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** AEP-S2 is located on the Environment Headworks Canal flowing through the Blood Reserve just downstream of the turnout to the Mokowan Ridge Lateral serving the Blood Tribe Irrigation Project. This water is diverted from the Belly River at Spring Glen Park near Glenwood and flows through Bullhorn Lake on the reserve before reaching this point. Flow metering and flow control is maintained at the Belly River diversion by AENV. This site will show water quality across the reserve and water quality flowing into the St Mary Reservoir.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-S1

**LAND DESCRIPTION:** NE 29-16-18-4

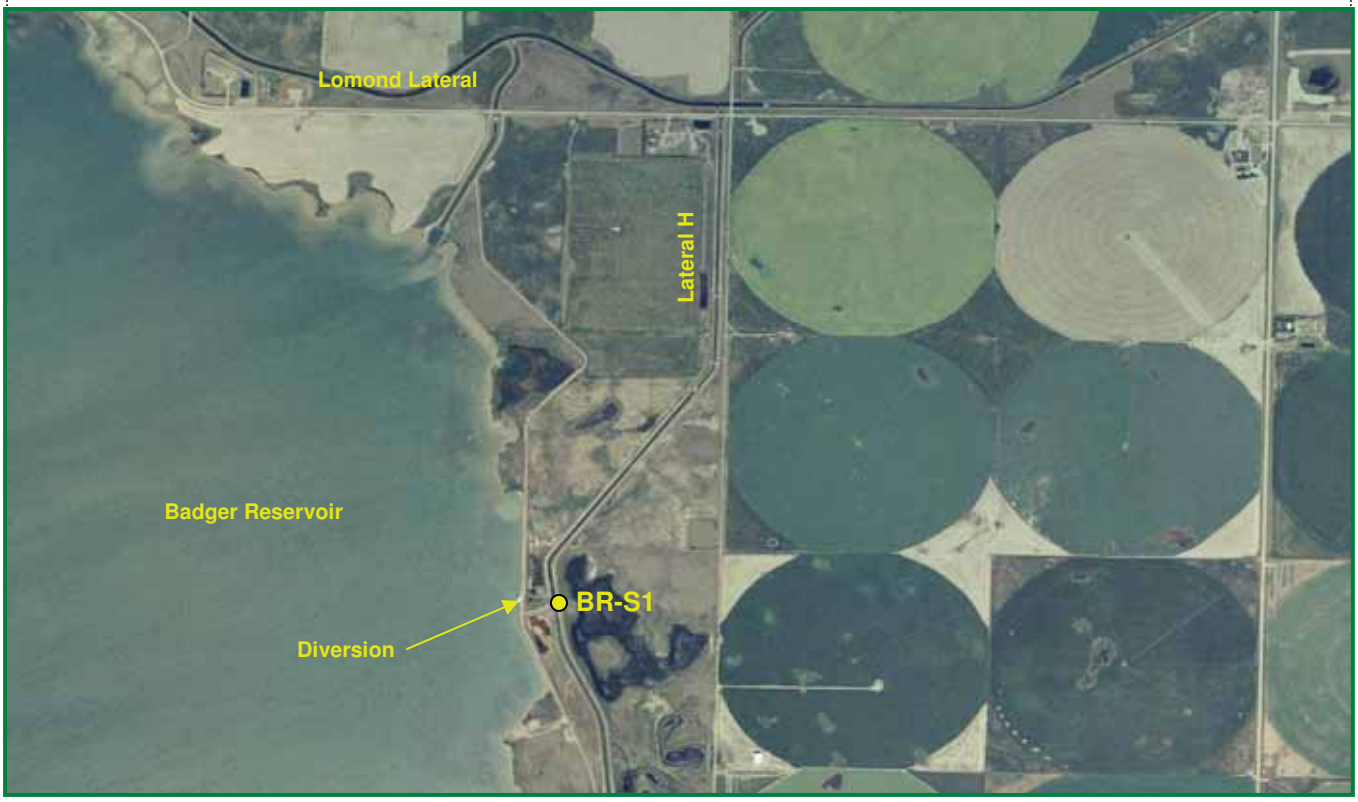
**LATERAL NAME:** Lateral H West Block

**GPS CO-ORDINATES:** 50.381 -112.440

**DESIGNED FLOW CAPACITY:** 7.63 cu m/sec (270 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID


**DESCRIPTION:** Sampling site BR-S1 is located on Lateral H West Block just downstream of the diversion gates off Badger Reservoir. Water at this site is a mixture of that diverted out of Badger and that diverted off the Lomond Lateral approximately 2 km upstream of the site. Water traveling downstream of the sampling site serves the Lateral H distribution system in the BRID West Block. Spill water from Lateral H was sampled on Drain F (New West Coulee) at site BR-R2 just before entering the Bow River. Flow capacities for Lateral H are daily, manual recorded measurements on a broad crested weir downstream of the sampling site.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-S2

**LAND DESCRIPTION:** NW 32-13-17-4

**LATERAL NAME:** Lost Lake Pumps

**GPS CO-ORDINATES:** 50.134 -112.295

**DESIGNED FLOW CAPACITY:** 3.57 cu m/sec (126 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** Samples at site BR-S2 were taken in the inlet channel to the Lost Lake Pumping Station. Lost Lake is a land locked lake collecting natural runoff and irrigation spill water. Lost Lake pumps were installed to alleviate the problem of the lake overflowing and flooding adjacent lands. Water from Lost Lake is pumped into the BRID Main Canal to be reused downstream. Samples will determine the water quality in the lake and therefore the quality being reused for irrigation purposes downstream. The pumphouse operator manually records the on/off times for each pump to determine daily capacities.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-S3

**LAND DESCRIPTION:** NW 34-13-17-4

**LATERAL NAME:** McMillan Check

**GPS CO-ORDINATES:** 50.129 -112.254

**DESIGNED FLOW CAPACITY:** 53 cu m/sec (1872 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** This site is on the BRID Main Canal just downstream of McMillan Check structure. Samples taken here show water quality entering the Lateral A distribution system south of Vauxhall and the Lateral B system to the north. Spill water sampling for these two systems are located at site BR-R3 for Lateral A and Site BR-R2 for Lateral B. No flow measurements were available for site BR-S3 other than an estimated approximation by the district.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-S4

**LAND DESCRIPTION:** NE 30-13-15-4

**LATERAL NAME:** C-11 Check

**GPS CO-ORDINATES:** 50.120 -112.029

**DESIGNED FLOW CAPACITY:** 27.6 cu m/sec (975 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** The BRID Main Canal is the one and only supply canal for the entire Bow River Irrigation District. Water is diverted into the BRID Main Canal off Little Bow Reservoir (site BR-P1) flowing east for approximately 106 km before spilling into the Bow River through the Ronalane Wasteway (site BR-R5). Site BR-S4 is located just downstream of where Lateral C reconnects with the Main Canal north of Vauxhall or, approximately 60 km from the Little Bow Reservoir. No flow measurements are available for this site other than an estimated approximation by the district. Samples were taken just upstream of C-11 Check and west of the road crossing.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-S5

**LAND DESCRIPTION:** NE 2-13-14-4

**LATERAL NAME:** Lateral R

**GPS CO-ORDINATES:** 50.059 -111.803

**DESIGNED FLOW CAPACITY:** 5.13 cu m/sec (181 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** Outletting from Scope Reservoir, Lateral R is the main supply for approximately 90% of the 17000 irrigable acres in the South Hays area. All of the spill water from Lateral R passes through Drain TA (site BR-R4) to the Oldman River. Water samples were taken just downstream of the headgates coming off Scope Reservoir. Flow capacities in Lateral R are manual readings taken daily by BRID personnel.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-R1

**LAND DESCRIPTION:** SE 12-17-18-4

**LATERAL NAME:** Lomond Lateral Spillway

**GPS CO-ORDINATES:** 50.419 -112.342

**DESIGNED FLOW CAPACITY:** 0.99 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Site BR-R1 is located on the downstream end of the Lomond Lateral before entering a natural drainage channel to the Bow River. Sampling at his site will basically determine the quality of water being returned to the Bow River and a comparison to the quality of water initially turned into the Lateral (site BR-P1). There are no measured flows at this site, however, the district suggests flows of up to 10 cfs throughout the irrigation season.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-R2

**LAND DESCRIPTION:** NW 35-14-16-4

**LATERAL NAME:** New West Coulee (Drain F)

**GPS CO-ORDINATES:** 50.222 -112.095

**DESIGNED FLOW CAPACITY:** 0.99 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** This sampling site is located on New West Coulee (Drain F) just east of Highway 36 approximately 16 km north of Vauxhall. New West Coulee is the main spill channel for tailouts coming off the Lateral B distribution system and, to a lesser extent, some spill water off the Lateral H distribution system. The inflow sampling site for Lateral B is BR-S3. New West Coulee spills into the Bow River approximately 1.5 km downstream of the sampling site. BRID owns and operates a flow measurement station near the site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-R3

**LAND DESCRIPTION:** SE 2-12-16-4

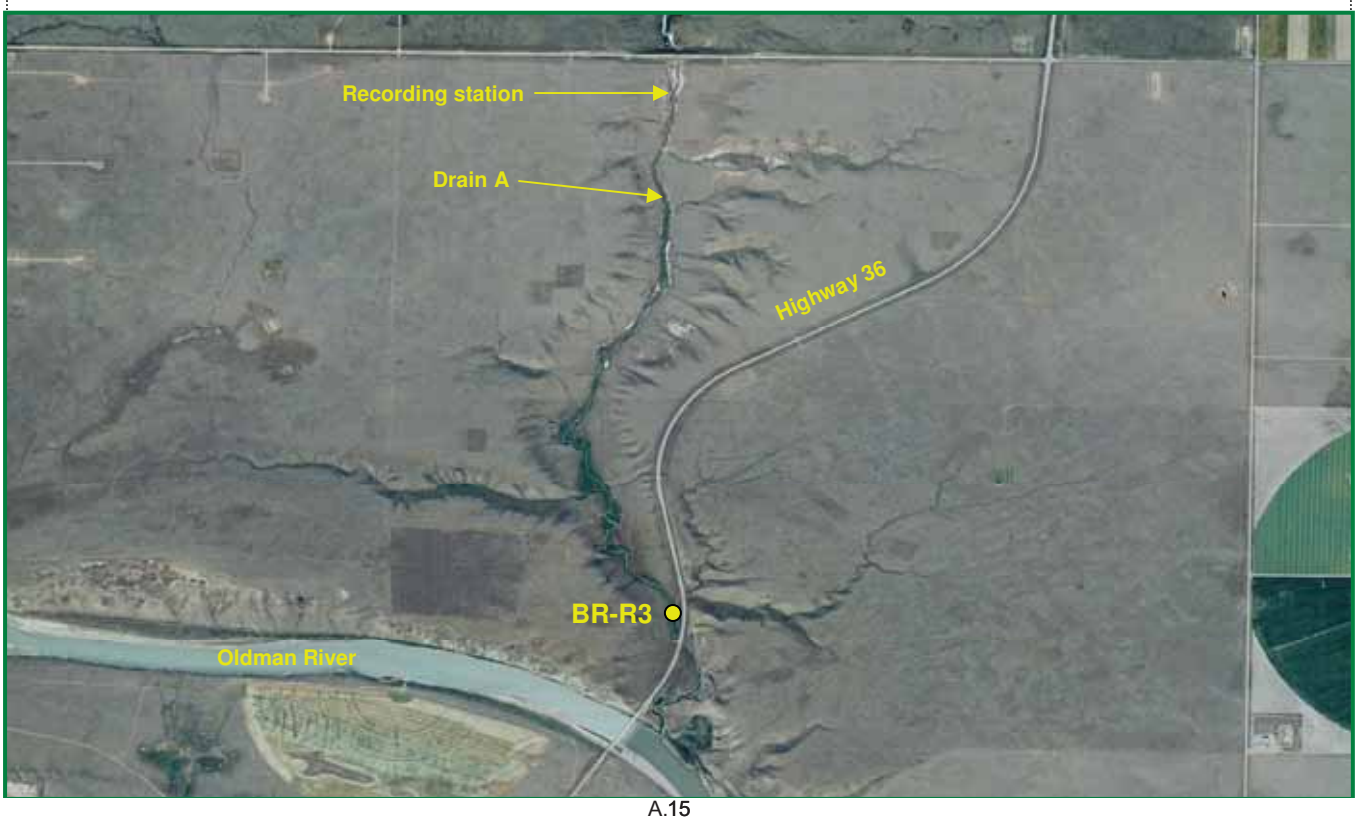
**LATERAL NAME:** Drain A

**GPS CO-ORDINATES:** 49.965 -112.082

**DESIGNED FLOW CAPACITY:** 0.33 cu m/sec (12 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** Site BR-R3 is a return flow site on Drain A. Drain A at this location carries runoff in spring and irrigation spill water from laterals in the Vauxhall area south of the BRID Main Canal, between Lateral A and Drain A, during the irrigation season. This is the only major spill for the Vauxhall area, and also picks up treated lagoon water from the Town of Vauxhall. Several pastures in the area occupied by livestock are flood irrigated. Runoff from these fields is collected in field drains connected to Drain A. Pumping sites on this drain just downstream of the Vauxhall lagoons irrigate potato fields. Water samples were taken on the west side of Highway 36 just a short distance upstream of its confluence with the Oldman River. A flow recording station approximately 2 km upstream of the sampling site is owned and operated by BRID.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-R4

**LAND DESCRIPTION:** NW 20-11-13-4

**LATERAL NAME:** Drain TA

**GPS CO-ORDINATES:** 49.925 -111.752

**DESIGNED FLOW CAPACITY:** 1.33 cu m/sec (47 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** Drain TA is the irrigation return flow channel for the Lateral R distribution system (site BR-S5) in the South Hays area. Return flows at this site first travel along Drain C before joining Drain TA and spilling into the Oldman River. Samples were taken just downstream of the concrete chute following the side of the coulee slope downstream of PFRID Reservoir. The district owns and operates a flow measurement station approximately 2 km downstream of the sampling site providing daily recorded flows.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-R5

**LAND DESCRIPTION:** NE 33-12-12-4

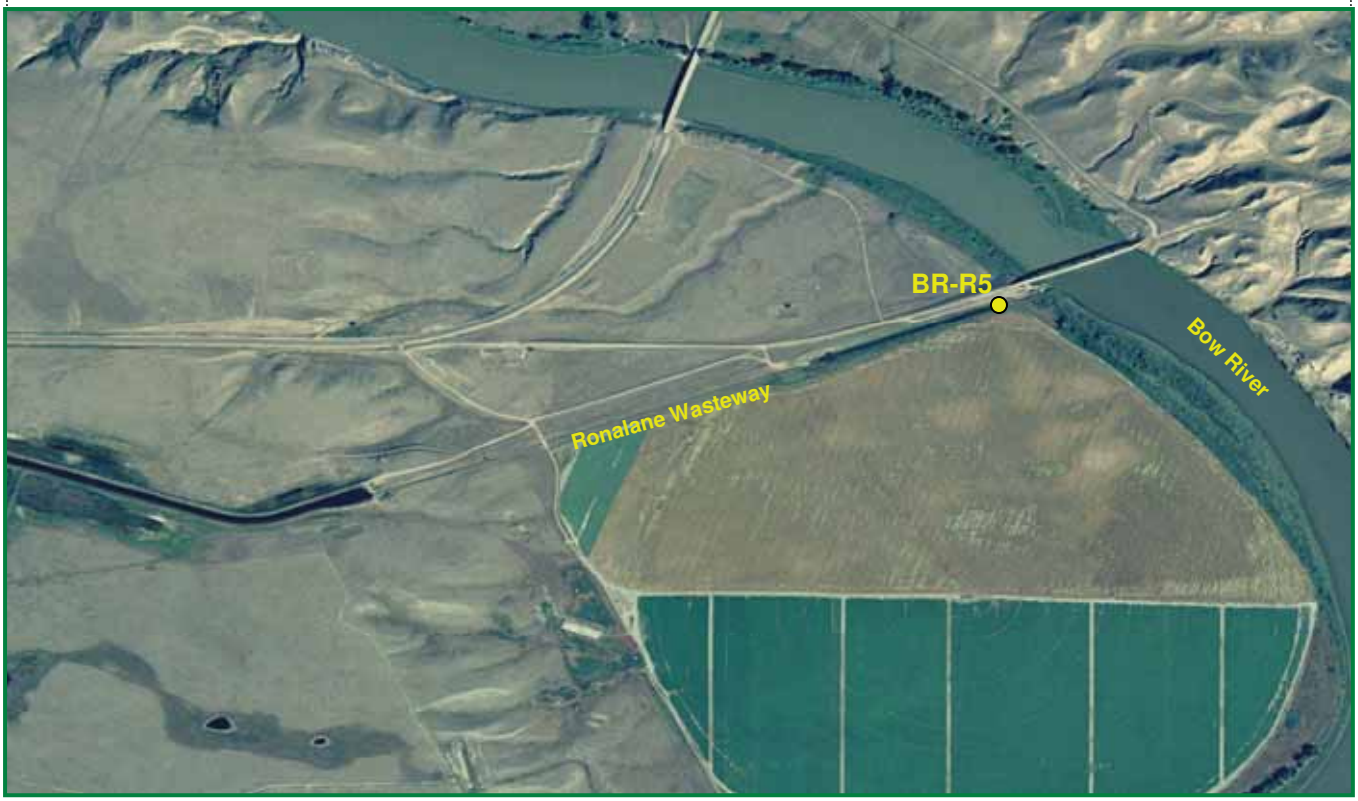
**LATERAL NAME:** Ronalane Wasteway

**GPS CO-ORDINATES:** 50.044 -111.583

**DESIGNED FLOW CAPACITY:** 8.5 cu m/sec (300 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by BRID

**DESCRIPTION:** This site is on the end of the BRID Main Canal called the Ronalane Wasteway. Samples were taken just before spilling into the Bow River east of Hays. The initial source of water spilling here comes from the Little Bow Reservoir (site BR-P1) approximately 106 km upstream but first flows through Scope Reservoir before reaching this location. The BRID has a real time flow measurement station at this site.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 4 Site BR-R6

**LAND DESCRIPTION:** NW 26-14-18-4

**LATERAL NAME:** Enchant Drain

**GPS CO-ORDINATES:** 50.419 -112.342

**DESIGNED FLOW CAPACITY:** 0.99 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** Yes – operated by BRID

**DESCRIPTION:** The Enchant Drain starts at the south dam of Badger Reservoir flowing in a SE direction approximately 14 km to Prouty Lake. From Prouty Lake the drain continues in a SE direction for another 16 km before entering Lost Lake. Enchant Drain is the major carrier for runoff and irrigation spill water for an 80,000 acre block between the Lomond Lateral on the west to Lateral H on the east, and Badger Reservoir on the North to the BRID Main Canal on the south. There are several feedlots in this block with manure spread on cultivated land. A portion of the cultivated and pasture land is irrigated by flooding. The sampling site was located approximately 8 km upstream of Lost Lake or halfway between Lost Lake and Prouty Lake. Samples were taken 1.5 km south of the correction line on the upstream side of the field crossing in the NW quarter of section 26. There is a flow monitoring station owned and operated by the BRID approximately 50 m downstream of the site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 10 Site E-P1

**LAND DESCRIPTION:** SE 6-21-18-4

**LATERAL NAME:** EID Main Canal

**GPS CO-ORDINATES:** 50.750 -112.475

**DESIGNED FLOW CAPACITY:** 99.1 cu m/sec (3500 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** This site is located on the EID Main Canal approximately 3 km downstream of the Bassano Diversion off the Bow River. Sampling was done just west of the bridge crossing the canal at this location. This canal carries water that serves the entire Eastern Irrigation District area of 284,000 acres through a network of canals, pipelines, reservoirs and drainage channels. Alberta Environment operates and monitors flow capacities into the canal on a real time basis.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 10 Site E-S1

**LAND DESCRIPTION:** SW 7-22-17-4

**LATERAL NAME:** North Branch Canal

**GPS CO-ORDINATES:** 50.855 -112.359

**DESIGNED FLOW CAPACITY:** 17 cu m/sec (600 cfs)

**ACTIVE GAUGING STATION:** Yes – calculated by EID

**DESCRIPTION:** The North Branch Canal turns off the EID Main Canal south of Bassano carrying water diverted from the Bow River (site E-P1) to Crawling Valley Reservoir. Site E-S1 is located just downstream of the North Branch headgates off Crawling Valley. This water serves the area located in the northwestern portion of the EID around Gem. 75–80% of the sublaterals coming off the North Branch Canal downstream of Crawling Valley are buried pipeline systems. The return flow site for the North Branch Canal is E-R1 carrying excess flows to the Red Deer River. There was no flow recording station at Site E-S1 at the time of water sampling. Flow capacities were calculated by EID ditchriding staff.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 10 Site E-S2

**LAND DESCRIPTION:** NW 15-20-16-4

**LATERAL NAME:** Springhill Canal

**GPS CO-ORDINATES:** 50.696 -112.149

**DESIGNED FLOW CAPACITY:** 22.65 cu m/sec (800 cfs)

**ACTIVE GAUGING STATION:** Yes – calculated by EID

**DESCRIPTION:** The Springhill Canal is a large system taking water from the East Branch Canal. The Springhill Canal serves an irrigable area of approximately 34,000 acres in the Duchess area of the EID eventually spilling excess water into the Red Deer River. Water samples were taken just downstream of the intersection with the Snake Lake outlet channel flowing into the Springhill Canal. Flow capacities provided by the EID at this site were derived at by adding measured flows at B Check and on the Snake Lake outlet below Snake Lake Reservoir. One of several return flows for the Springhill Canal system is site E-R2.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 9 Site E-S3

**LAND DESCRIPTION:** SW 13-17-16-4

**LATERAL NAME:** Bow Slope Canal

**GPS CO-ORDINATES:** 50.432 -112.087

**DESIGNED FLOW CAPACITY:** 24.1 cu m/sec (851 cfs)

**ACTIVE GAUGING STATION:** Yes – calculated by EID

**DESCRIPTION:** The Bow Slope Canal originates at the East Branch Canal flowing south into Kitsim Reservoir. The headgates off Kitsim are on the south dam. Water samples were taken approximately 200 m downstream of the headgates near an abandoned water measurement cable crossing the canal. Bow Slope Canal serves approximately 33,000 acres in the Scandia and Rainier areas of the EID. Flow capacities throughout the irrigation season are calculated by EID ditchriders. There is no recording station at this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 9 Site E-S4

**LAND DESCRIPTION:** NW 5-18-14-4

**LATERAL NAME:** North Bantry Canal

**GPS CO-ORDINATES:** 50.493 -111.902

**DESIGNED FLOW CAPACITY:** 33.36 cu m/sec (1178 cfs)

**ACTIVE GAUGING STATION:** Yes – calculated by EID

**DESCRIPTION:** The North Bantry Canal serves approximately 30,000 acres of land east of Brooks. The water source is Lake Newell which is filled by the East Branch Canal and some from the Bow Slope Canal downstream of Kitsim Reservoir. Lake Newell water was originally diverted from the Bow River near Bassano (Site E-P1). Water samples at Site E-S4 were taken approximately 400m downstream of the outlet off Lake Newell. Flow capacities were calculated by EID ditchriding staff.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 9 Site E-S5

**LAND DESCRIPTION:** SW 28-16-14-4

**LATERAL NAME:** Rolling Hills Canal

**GPS CO-ORDINATES:** 50.373 -111.882

**DESIGNED FLOW CAPACITY:** 14.16 cu m/sec (500 cfs)

**ACTIVE GAUGING STATION:** Yes – calculated by EID

**DESCRIPTION:** This water sampling site is on the Rolling Hills Canal just downstream of the headgates outlet off Rolling Hills Reservoir. The canal serves an area of approximately 30,000 acres in the Rolling Hills area of the EID. Flow capacities were calculated by EID ditchriding staff.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 9 Site E-S6

**LAND DESCRIPTION:** NE 13-8-13-4

**LATERAL NAME:** Tilley Canal

**GPS CO-ORDINATES:** 50.528 -111.657

**DESIGNED FLOW CAPACITY:** 5.66 cu m/sec (200 cfs)

**ACTIVE GAUGING STATION:** Yes – calculated by EID

**DESCRIPTION:** Site E-S6 is located on the Tilley Canal just west of the road crossing downstream of the outlet gates off Louisiana Reservoir. Water flowing past this site serves approximately 12,500 irrigable acres in the Tilley area of the EID. Flow capacities were calculated by EID ditchriding staff.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 10 Site E-R1

**LAND DESCRIPTION:** NE 36-24-16-4

**LATERAL NAME:** North Branch Canal Spillway

**GPS CO-ORDINATES:** 51.096 -112.107

**DESIGNED FLOW CAPACITY:** 1.8 cu m/sec (64 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** This return flow site carries excess irrigation water from the North Branch Canal to Douglas Creek. Douglas Creek eventually spills into the Red Deer River some 40 km downstream of the sampling site. Water samples at Site E-R1 were taken just downstream of the existing pipeline spillway outlet on the end of the North Branch Canal. This is range land with cattle roaming freely and allowed to drink in the earth channel where the samples were taken. There were no flow measurements available for this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 10 Site E-R2

**LAND DESCRIPTION:** SW 36-21-13-4

**LATERAL NAME:** Lateral 17G Springhill

**GPS CO-ORDINATES:** 50.825 -111.681

**DESIGNED FLOW CAPACITY:** 1.27 cu m/sec (45 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** This is a return flow site representing excess irrigation water from the Springhill Canal distribution system of the EID. Water past this site was initially introduced into the district at the Bassano Diversion off the Bow River (site E-P1) but is now returning to the Red Deer River. The inflow comparison site is E-S2 located on the Springhill Canal. Water samples at Site E-R2 were taken approximately 800m east of the road allowance on Lateral 17G just downstream of the turnout to Lateral 03-17G and upstream of the precast check structure. There were no flow measurements available for this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 9 Site E-R3

**LAND DESCRIPTION:** NW 35-14-15-4

**LATERAL NAME:** Bow Slope Canal Spillway

**GPS CO-ORDINATES:** 50.222 -111.959

**DESIGNED FLOW CAPACITY:** 1 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** Yes – operated by EID

**DESCRIPTION:** Site E-R3 is on the main return flow channel for the Bow Slope Canal distribution system in the Scandia and Rainier areas of the EID. Taking water from Kitsim Reservoir (Site E-S3), the Bow Slope Canal serves approximately 33,000 acres before spilling excess flows to the Bow River. Water samples at Site E-R3 were taken between the outlet of the road crossing and the check structure downstream of the crossing on the north boundary of the NW 35-14-15-4. EID operates and maintains a data logger flow monitoring site on the spillway.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 10 Site E-R4

**LAND DESCRIPTION:** SW 22-20-12-4

**LATERAL NAME:** AH North Bantry Canal

**GPS CO-ORDINATES:** 50.710 -111.595

**DESIGNED FLOW CAPACITY:** 1 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** This site is representative of excess flows on the North Bantry distribution system returning to the Red Deer River. This return flow site is located on AH Canal which comes off the North Bantry Canal south of Patricia. The inflow comparison site for this return flow is E-S4 on the North Bantry Canal downstream of Lake Newell. There are no flow capacity measurements for this return flow site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 9 Site E-R5

**LAND DESCRIPTION:** SW 11-14-13-4

**LATERAL NAME:** Rolling Hills Canal Spillway

**GPS CO-ORDINATES:** 50.150 -111.687

**DESIGNED FLOW CAPACITY:** 1.7 cu m/sec (60 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Site E-R5 spills excess flows in the Rolling Hills Canal into 12 Mile Coulee which spills into the Bow River. The Rolling Hills Canal begins at Rolling Hills Reservoir (Site E-S5) serving approximately 30,000 acres in the Rolling Hills area of the EID. Water samples were taken approximately 300 m downstream of the spillway gates off the Rolling Hills Canal and just upstream of a precast structure. There are no flows recorded at this site by the EID. An estimated approximation based on visual observations during water sampling in July and August was less than 10 cfs throughout the irrigation season.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-P1

**LAND DESCRIPTION:** NE 11-9-27-4

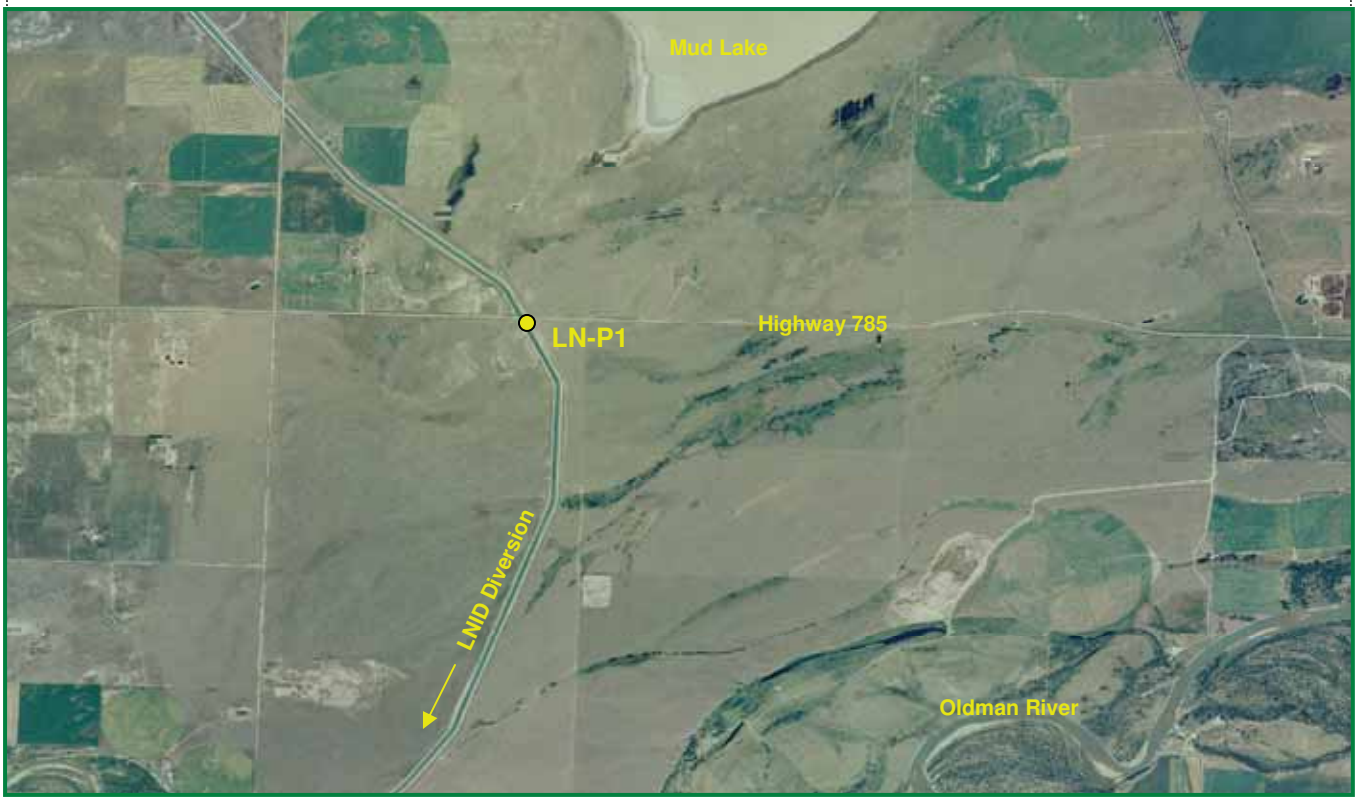
**LATERAL NAME:** LNID Main Canal

**GPS CO-ORDINATES:** 49.728 -113.552

**DESIGNED FLOW CAPACITY:** 42.5 cu m/sec (1500 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** Site LN-P1 is located on the LNID Main Canal west of Fort Macleod on the south side of the bridge crossing Secondary Highway 785. This location is approximately 11 km downstream of the LNID diversion off the Oldman River. There is a flow monitoring station at the diversion operated by AENV. Water diverted serves the entire LNID including the Keho-Barons Project. Return flows in the LNID eventually empty back into the Oldman River at several locations throughout the district.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-S1

**LAND DESCRIPTION:** SW 14-11-24-4

**LATERAL NAME:** LNID Main Canal

**GPS CO-ORDINATES:** 49.909 -113.181

**DESIGNED FLOW CAPACITY:** 42.5 cu m/sec (1500 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** Water samples at Site LN-S1 are taken in the LNID Main Canal at the headgates to the Monarch Canal just upstream of the Monarch Check. Samples at this site will show the quality of water flowing into the Monarch Canal, the Keho-Barons Project, and flows to Keho Lake and Park Lake. Water is originally diverted from the Oldman River (site LN-P1) flowing approximately 65 km before reaching this location. Flow capacities are recorded by AENV at the check.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-S2

**LAND DESCRIPTION:** NW 33-11-22-4

**LATERAL NAME:** LNID Main Canal 62F

**GPS CO-ORDINATES:** 49.955 -112.950

**DESIGNED FLOW CAPACITY:** 34.0 cu m/sec (1200 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** Site LN-S2 is located on Main Canal 62F immediately downstream of the headgates at the east end of Keho Lake. Water entering Keho at the west end is originally diverted off the Oldman River approximately 82 km upstream (site LN-P1). Water from Keho Lake serves the Picture Butte, Iron Springs and Turin areas of the LNID. Major return flow channels are the Pitchfork Drain (site LN-R1) and Battersea Drain (site LN-R2) carrying excess flows back to the Oldman River. Main Canal flows are real time recorded by AENV at the headgates.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-S3

**LAND DESCRIPTION:** SE 4-10-22-4

**LATERAL NAME:** South Park Lake Canal

**GPS CO-ORDINATES:** 49.786 -112.925

**DESIGNED FLOW CAPACITY:** 4.67 cu m/sec (165 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** The South Park Lake Canal serves the Coalhurst and West Lethbridge portions of the LNID. Water for this system comes via the Monarch Canal (site LN-S1) then through Park Lake. Samples were taken approximately 2 km downstream of the headgates off Park Lake just north of the road crossing. Excess flows from the South Park Lake system are returned to the Oldman River in West Lethbridge. Automated gate control and monitoring of flows into the South Park Lake Canal are done at the headgate with SCADA communication to the LNID shop.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-S4

**LAND DESCRIPTION:** SW 22-11-21-4

**LATERAL NAME:** LNID Main Canal 62F

**GPS CO-ORDINATES:** 49.917 -112.800

**DESIGNED FLOW CAPACITY:** 18.4 cu m/sec (650 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by LNID

**DESCRIPTION:** Site LN-S4 is located at the end of Main Canal 62F where the canal splits to the Turin Branch Pipeline and Picture Butte Lateral. Water at this site is diverted from Keho Lake (site LN-S2) approximately 13.5 km upstream and serves the Iron Springs/Turin areas plus the Town of Picture Butte water supply through Picture Butte Reservoir. Excess flows downstream of LN-S4 return to the Oldman River some first entering the Little Bow River. Flow capacities at this site are determined by adding the measured flows in the Turin Pipeline and Picture Butte Lateral.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-S5

**LAND DESCRIPTION:** SW 11-11-21-4

**LATERAL NAME:** Picture Butte Lateral

**GPS CO-ORDINATES:** 49.888 -112.772

**DESIGNED FLOW CAPACITY:** 5.85 cu m/sec (206 cfs)

**ACTIVE GAUGING STATION:** Yes – operated by LNID

**DESCRIPTION:** This site outlets on the east side of Picture Butte Reservoir serving a block of land directly east of Picture Butte south of the Battersea Drain. Water is diverted off the end of Main Canal 62F (site LN-S4), approximately 5 km upstream of the reservoir. Water flows through the reservoir from the west side to the east side before reaching this site. Picture Butte Reservoir is small and shallow and a haven for large quantities of waterfowl. The majority of excess flows reach the Oldman River via the Battersea Drain (site LN-R2).

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-R1

**LAND DESCRIPTION:** NW 30-12-20-4

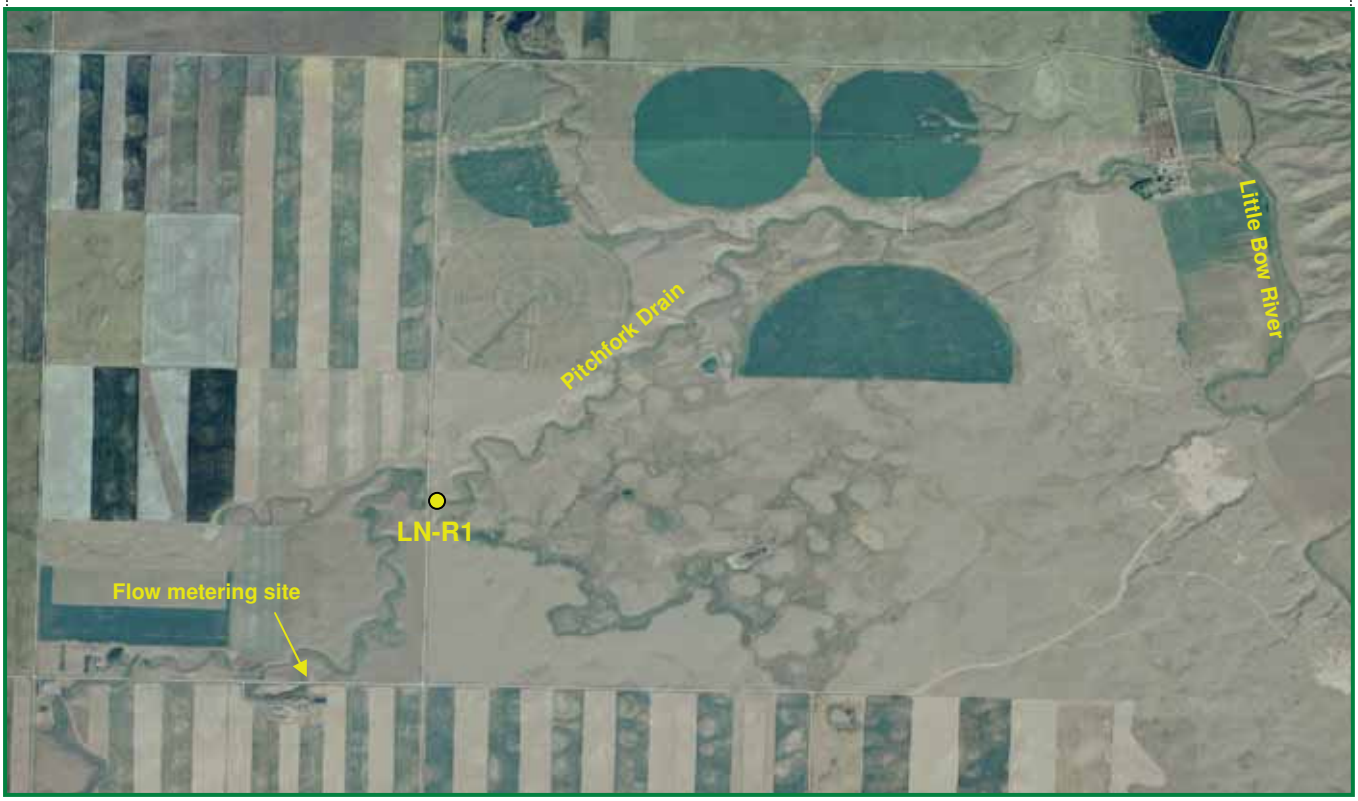
**LATERAL NAME:** Pitchfork Drain

**GPS CO-ORDINATES:** 50.027 -112.734

**DESIGNED FLOW CAPACITY:** 1 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** This drain carries excess flows from the Albion Ridge Canal to the Little Bow River, a distance of approximately 20 km. The drain follows a natural channel for the most part through mainly pasture populated by livestock. The Albion Ridge Canal headgates are on the LNID's Main Canal 62F which outlets from Keho Lake (site LN-S2). Flow capacities down the drain were minimal in the past but now, the entire Albion Ridge Sublateral system is in pipelines making Pitchfork Drain the major spillway for the Albion Ridge Canal. ARD operated a flow measurement station near the end of the drain just above the confluence with the Little Bow River. This flow measurement site has since been abandoned. The LNID now monitors flows approximately 2 km upstream of the LN-R1 sampling site. Water samples were taken just east of the N/S road crossing in the NW quarter of section 30.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 3 Site LN-R2

**LAND DESCRIPTION:** NW 36-10-20-4

**LATERAL NAME:** Battersea Drain

**GPS CO-ORDINATES:** 49.873 -112.600

**DESIGNED FLOW CAPACITY:** 1.76 cu m/sec (62 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** Battersea Drain is a major collector of excess irrigation water plus field runoff for the east Picture Butte and south Iron Springs areas of the LNID. There are several feedlots operating in these areas that could affect water quality being returned to the Oldman River. Site LN-R2 is located near a feedlot just before the drain enters a pipe drop to the river. The irrigation water supply for the east Picture Butte area comes out of the Picture Butte Reservoir (site LN-S5). Water samples were taken just downstream of the E/W road crossing upstream of the existing flow measurement station.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site AEP-P1

**LAND DESCRIPTION:** SE 25-4-28-4

**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 49.327 -113.634

**DESIGNED FLOW CAPACITY:** 56.63 cu m/sec (2000 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** This site location on the Environment Headworks Canal is approximately 2.5 km downstream of the headgates off Waterton Reservoir. The canal carries water from Waterton Reservoir, across the Blood Reserve to the St Mary Reservoir which supplies Irrigation water for the MID, RID, SMRID & TID. A short distance downstream of this sampling site, water can also be diverted into Cochrane Lake when required to supplement needs by the UID.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site AEP-S1

**LAND DESCRIPTION:** SW 27-4-27-4

**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 49.326 -113.567

**DESIGNED FLOW CAPACITY:** 69.38 cu m/sec (2450 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** Known as the Belly River Diversion, site AEP-S1 is located on the Environment Headworks Canal immediately downstream of the diversion headgates. Water at this site is a mixture of water from the Waterton Reservoir and Belly River. Approximately 2 km upstream of site AEP-S1, a chute structure on the Environment Headworks Canal spills the Waterton Reservoir water into the Belly River. Water from here flows down the Belly which is basically a wet lands area with swamp grasses and reeds before being diverted back into the Environment Headworks Canal on route to the St Mary Reservoir. Water is very clear at this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site M-P1

**LAND DESCRIPTION:** NE 32-4-23-4

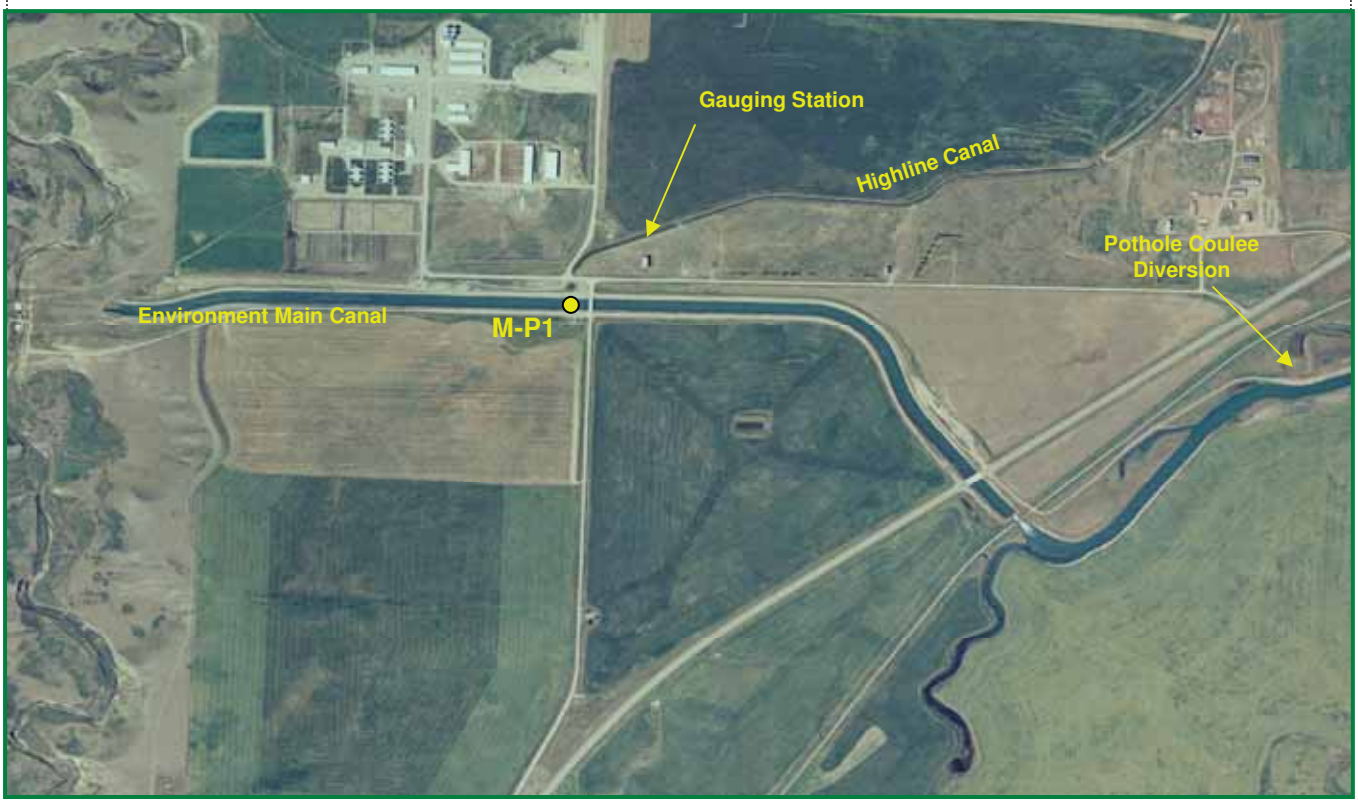
**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 49.348 -113.054

**DESIGNED FLOW CAPACITY:** 90.6 cu m/sec (3199 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** M-P1 is the primary source of water serving 2/3 of the MID through the Highline Canal system. This site is on the Environment Headworks Canal approximately 6 km downstream of the St Mary Reservoir. This site will identify the quality of water entering the MID through the Highline Canal, and also Pothole Coulee, which is a short distance downstream serving the MID's Lowline Canal. Capacities flowing down the Highline Canal are monitored by AENV at the gauging station just downstream of the headgates. Samples were taken in the main canal in front of the Highline Canal headgates.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site M-P2

**LAND DESCRIPTION:** SE 16-5-22-4

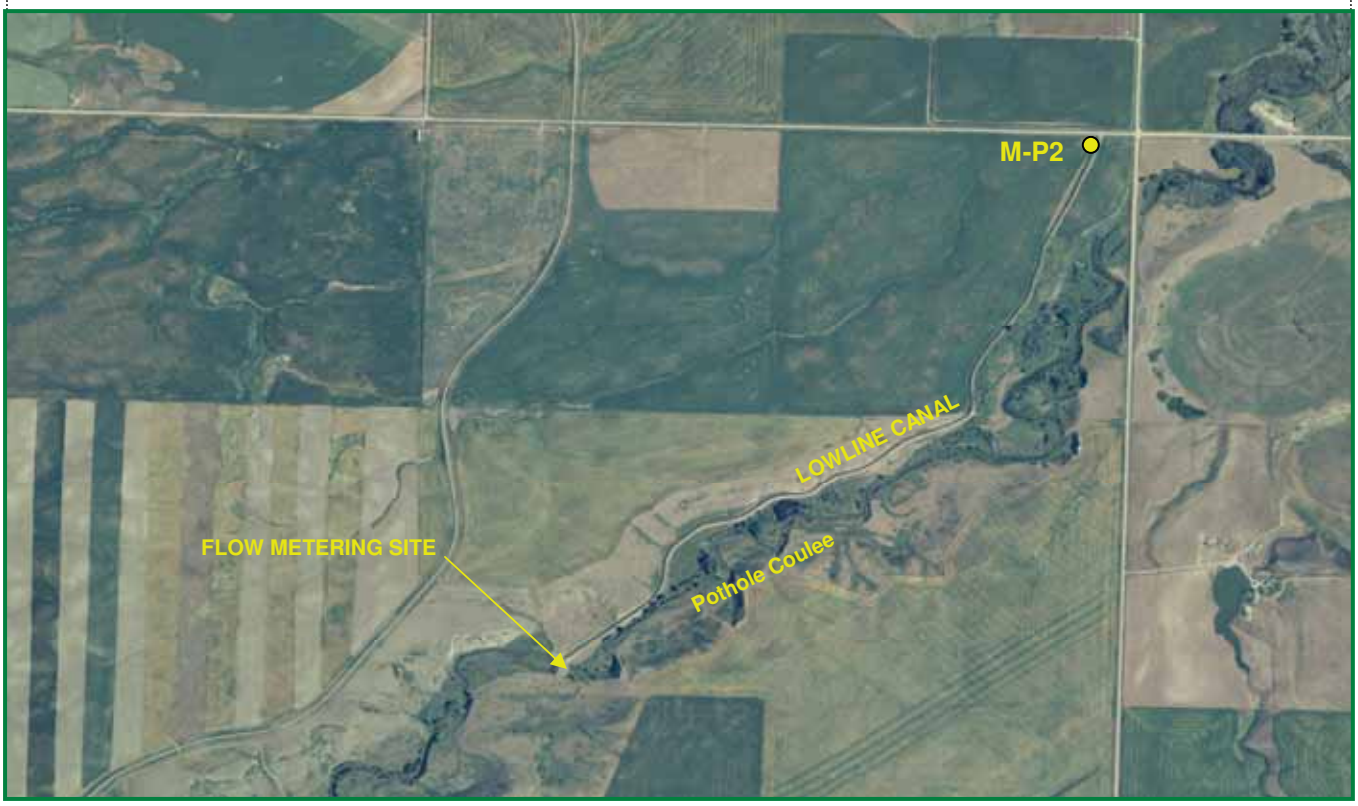
**LATERAL NAME:** Lowline Canal

**GPS CO-ORDINATES:** 49.378 -112.901

**DESIGNED FLOW CAPACITY:** 2.86 cu m/sec (101 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by MID

**DESCRIPTION:** Water for the Lowline distribution system of the MID is diverted off the Environment Headworks Canal into Pothole Coulee in the NE 33-4-23-4. A gauging station is operated by AENV at this location providing daily flows into Pothole. Approximately 13.5 km downstream along Pothole Coulee, this water is diverted into the Lowline Canal with excess flows continuing along Pothole. A flow metering station is situated on Pothole check maintained by MID. The difference in flows recorded by the two gauging stations is the capacity diverted into the Lowline Canal. M-P2 is located approximately 2.1 km downstream of the headgates for the Lowline Canal just south of the first E-W road crossing. Samples are taken just upstream of the crossing. The Lowline Canal serves approximately 1/3 of the district's irrigated area.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site M-R1

**LAND DESCRIPTION:** SE 29-6-22-4

**LATERAL NAME:** Natural Drain

**GPS CO-ORDINATES:** 49.495 -112.929

**DESIGNED FLOW CAPACITY:** 0.99 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** M-R1 is a return flow site located at the north end of the district collecting spill water and runoff from both the Highline and Lowline Canal systems of the MID. Water samples are taken just upstream of the flow metering station maintained by Alberta Agriculture. Spill water past this site flows into the St Mary River and eventually into the Oldman River. Sites M-P1 and M-P2 are initial sources of water reaching this point.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site MV-P1

**LAND DESCRIPTION:** SW 12-2-28-4

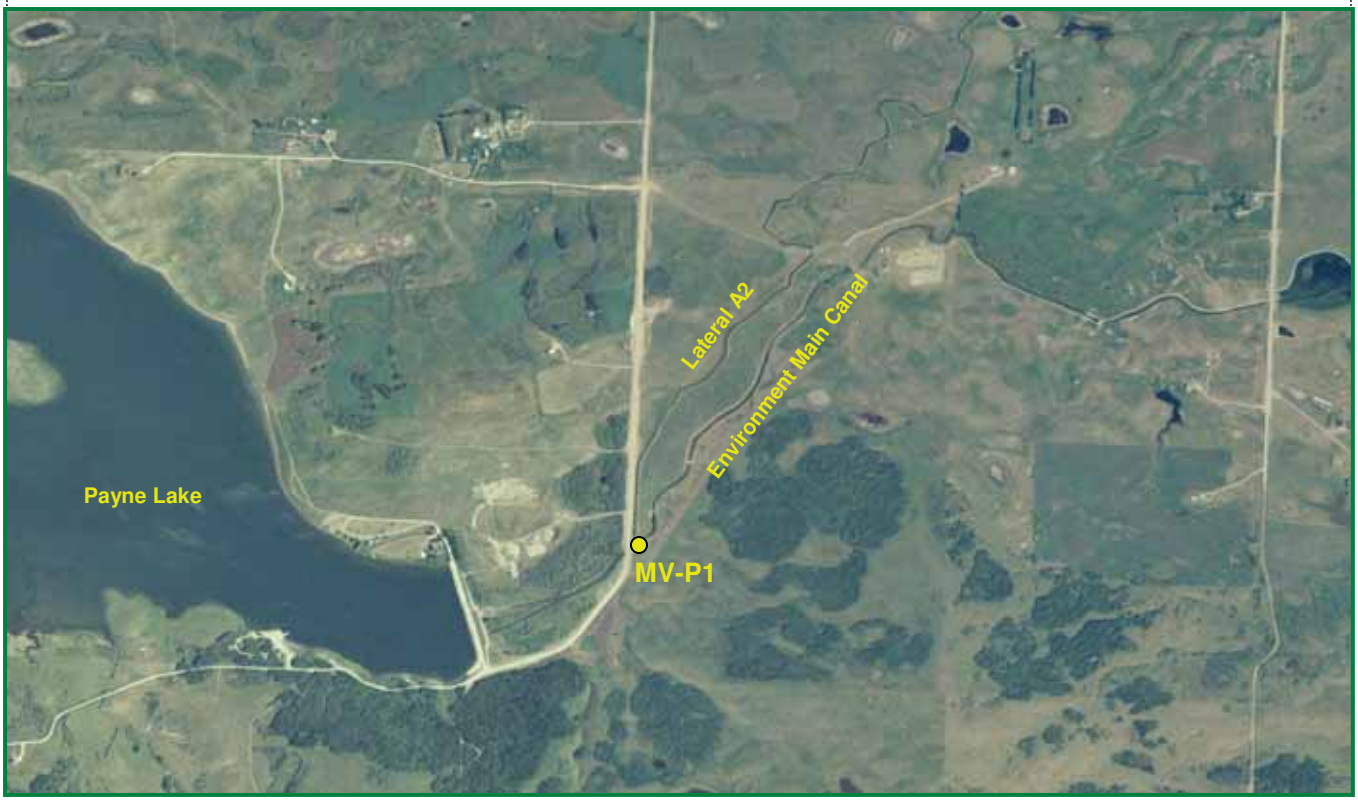
**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 49.105 -113.631

**DESIGNED FLOW CAPACITY:** 3.78 cu m/sec (133 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** This site is located on the Environment Headworks Canal at the split to the MVID's Lateral A2 distribution system and the Environment Headworks Canal that continues east to the LID and AID. Water at this site is initially diverted from the Belly River into Payne Lake. The Payne Lake outlet to the Environment Headworks Canal is approximately 500 m upstream of this sampling site. Water from this site is used by approximately 90% of the MVID and all of the LID and AID. Major return flow sites for this water are MV-R1 in the MVID and A-R1 in the AID. Water is very clear at this sampling site.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site MV-R1

**LAND DESCRIPTION:** NE 1-3-28-4

**LATERAL NAME:** Lateral A2 Spillway

**GPS CO-ORDINATES:** 49.184 -113.636

**DESIGNED FLOW CAPACITY:** 0.54 cu m/sec (19 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** This is the return flow site for the MVID's Lateral A2 system spilling excess water back to the Belly River from where it initially came through Payne Lake (site MV-P1). Samples were taken at the metering station approximately 100 m west of Highway 800 owned by the district but operated by ARD.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site R-P1

**LAND DESCRIPTION:** NE 30-5-20-4

**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.421 -112.676

**DESIGNED FLOW CAPACITY:** 82 cu m/sec (2900 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID


**DESCRIPTION:** The majority of irrigation water used by the RID is carried by the SMRID Main Canal downstream of Raymond Reservoir. Raymond Reservoir receives its water from Milk River Ridge Reservoir through Cross Coulee. A small amount of water is diverted into Raymond Reservoir from Environment Headworks Canal just upstream of Milk River Ridge Reservoir through the 20.5 MW power plant. R-P1 is located approximately 700 m downstream of Drop A at the bridge crossing on the SMRID Main Canal. A gauging station recording flow in the Main Canal is located at Drop A.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site R-R1

**LAND DESCRIPTION:** SE 4-7-19-4

**LATERAL NAME:** Stirling Drain

**GPS CO-ORDINATES:** 49.531 -112.512

**DESIGNED FLOW CAPACITY:** 2.69 cu m/sec (95 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** R-R1 is located on the Stirling Drain just north of the Village of Stirling in the NE portion of the RID. This drain collects spill water and runoff from all laterals and fields east of the SMRID Main Canal in the Raymond and Stirling areas including Kipp Coulee Lateral. This accounts for approximately 75% of the district. This spill water follows Etzikom Coulee east into Crow Indian Lake. Samples are taken immediately upstream of the return flow metering station owned by the district but data collected by ARD. The initial source of water comes from the Milk River Ridge Reservoir.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 1 Site R-R2

**LAND DESCRIPTION:** NW 10-7-21-4

**LATERAL NAME:** Natural Drain

**GPS CO-ORDINATES:** 49.552 -112.773

**DESIGNED FLOW CAPACITY:** 0.83 cu m/sec (29 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by ARD

**DESCRIPTION:** This site is located in the NW portion of the RID carrying spill and runoff from laterals and fields in the Welling area west of Nine Mile Coulee Drain in Tp6 Rg21 and west of the SMRID Main Canal in Tp7 Rg21. Water from this drain spills into Pothole Creek which spills into the St Mary River and eventually into the Oldman River. A return flow metering station is located approximately 400 m upstream of the sampling site that is owned by the district but data collected by ARD. The initial source of water comes from Site R-P1.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 5 Site SMW-P1

**LAND DESCRIPTION:** SE 25-7-21-4

**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.582 -112.713

**DESIGNED FLOW CAPACITY:** 74 cu m/sec (2613 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Samples taken at this site will provide the quality of irrigation water in the SMRID Main Canal serving the Lethbridge and Coaldale areas. Water quality can be compared to upstream sampling on the Main Canal at Site R-P1 just downstream of Raymond Reservoir. Flow capacities were determined by averaging upstream and downstream flows recorded by SMRID at measuring stations.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 5 Site SMW-S1

**LAND DESCRIPTION:** NE 7-8-20-4

**LATERAL NAME:** Lethbridge Lateral

**GPS CO-ORDINATES:** 49.633 -112.699

**DESIGNED FLOW CAPACITY:** 28.6 cu m/sec (1010 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Lethbridge Lateral is the main supply canal for acres served by the North and North East Lateral systems in the Lethbridge-Coaldale area of the SMRID West Block. This accounts for approximately 2/3 of the west block area. Samples at Site SMW-S1were taken just downstream of the Lethbridge Lateral headgates off the SMRID Main Canal. At the time of sampling, in 2006 and 2007, manual readings were taken daily by SMRID personnel using gauge and flow chart to calculate capacities.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 5 Site SMW-R1

**LAND DESCRIPTION:** NW 11-9-19-4

**LATERAL NAME:** Malloy Drain

**GPS CO-ORDINATES:** 49.723 -112.488

**DESIGNED FLOW CAPACITY:** 3.86 cu m/sec (136 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Malloy Drain collects irrigation spill water from laterals in the Coaldale area and carries it to Stafford Reservoir. Samples were taken in the drain approximately 5 km upstream of Stafford Reservoir on the east side of Secondary Highway 512. Flow capacities in the channel are manually measured by SMRID personnel at each lateral and/or drain spilling into Malloy, then added together.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 5 Site SMW-R2

**LAND DESCRIPTION:** NE 19-10-18-4

**LATERAL NAME:** Cameron 7 Spillway

**GPS CO-ORDINATES:** 49.844 -112.428

**DESIGNED FLOW CAPACITY:** 0.85 cu m/sec (30 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** The Cameron Lateral system starts at North East Reservoir serving the north eastern portion of the SMRID West Block. Water for North East Reservoir is supplied by the North East Lateral via the Lethbridge Lateral (Site SMW-S1). Cameron 7 Spillway is one of two tailouts for the Cameron system spilling into the Oldman River. Samples at Site SMW-R2 were taken just downstream of the SMRID return flow monitoring station in the NE 19.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 6 Site SMC-P1

**LAND DESCRIPTION:** SE 5-9-15-4

**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.706 -112.002

**DESIGNED FLOW CAPACITY:** 48.11 cu m/sec (1700 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Site SMC-P1 is representative of the water quality diverted into the Horsefly Channel serving the East Horsefly block and Horsefly Lake of the TID, and, the water quality entering the Central block of the SMRID. Samples were taken just downstream of the Horsefly Check on the SMRID Main Canal. A flow measurement station at Horsefly Check records capacities in the Main Canal.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-S1

**LAND DESCRIPTION:** SE 29-9-13-4

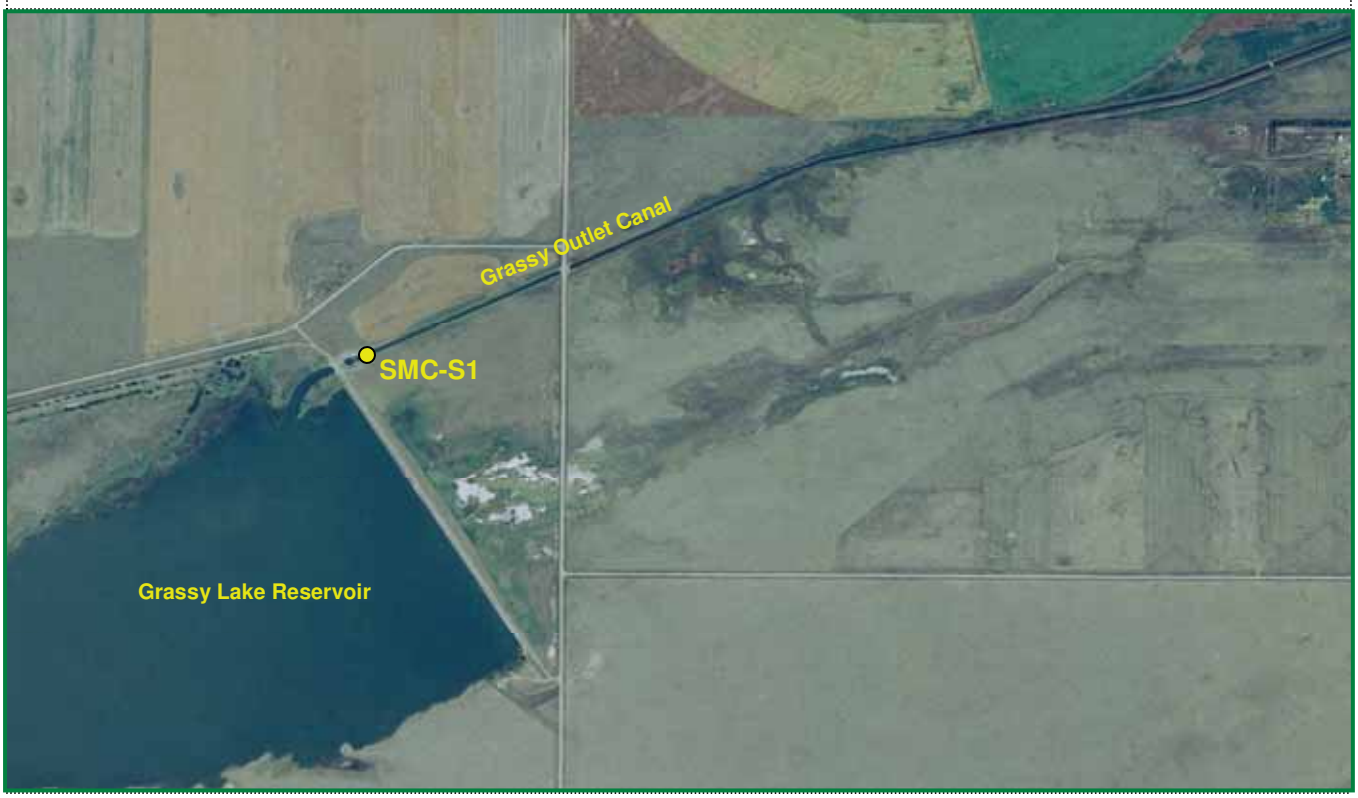
**LATERAL NAME:** Grassy Lake Outlet Canal

**GPS CO-ORDINATES:** 49.761 -111.726

**DESIGNED FLOW CAPACITY:** 7.9 cu m/sec (279 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** The Grassy Lake Reservoir (Sherburne Res) supplies water for the North Grassy and North Burdett irrigation tracts of the SMRID through the Grassy Outlet Canal. Flow capacities in the Outlet Canal are recorded by SMRID immediately downstream of the outlet gates. Water sampling was done just downstream of the measurement weir. Approximately 6 km downstream of the reservoir, the canal drops through Yellow Lake via a buried concrete syphon. At the outlet end of the syphon, the canal splits east and west into the North Burdett and North Grassy Main Canals (site SMC-S2). Water samples were also taken at this location.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-S2

**LAND DESCRIPTION:** NW 2-10-13-4

**LATERAL NAME:** Grassy Lake Outlet Canal

**GPS CO-ORDINATES:** 49.799 -111.668

**DESIGNED FLOW CAPACITY:** 7.9 cu m/sec (279 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** This sampling site is located on the Grassy Outlet Canal approximately 7 km downstream of Site SMC-S1 at Grassy Lake Reservoir (Sherburne). Samples were taken in the basin downstream of the syphon outlet between the headgates to the North Grassy and North Burdett Main Canals flowing east and west. A pump site on Yellow Lake outlets into the basin creating a mixture of Grassy Lake Reservoir water (Site SMC-S1) and Yellow Lake Water (Site SMC-R2). Yellow Lake is a melt water depression without an outlet. The lake collects spring runoff and irrigation spillwater. Pumps were installed several years ago to control water levels in the lake.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-S3

**LAND DESCRIPTION:** NE 33-8-11-4

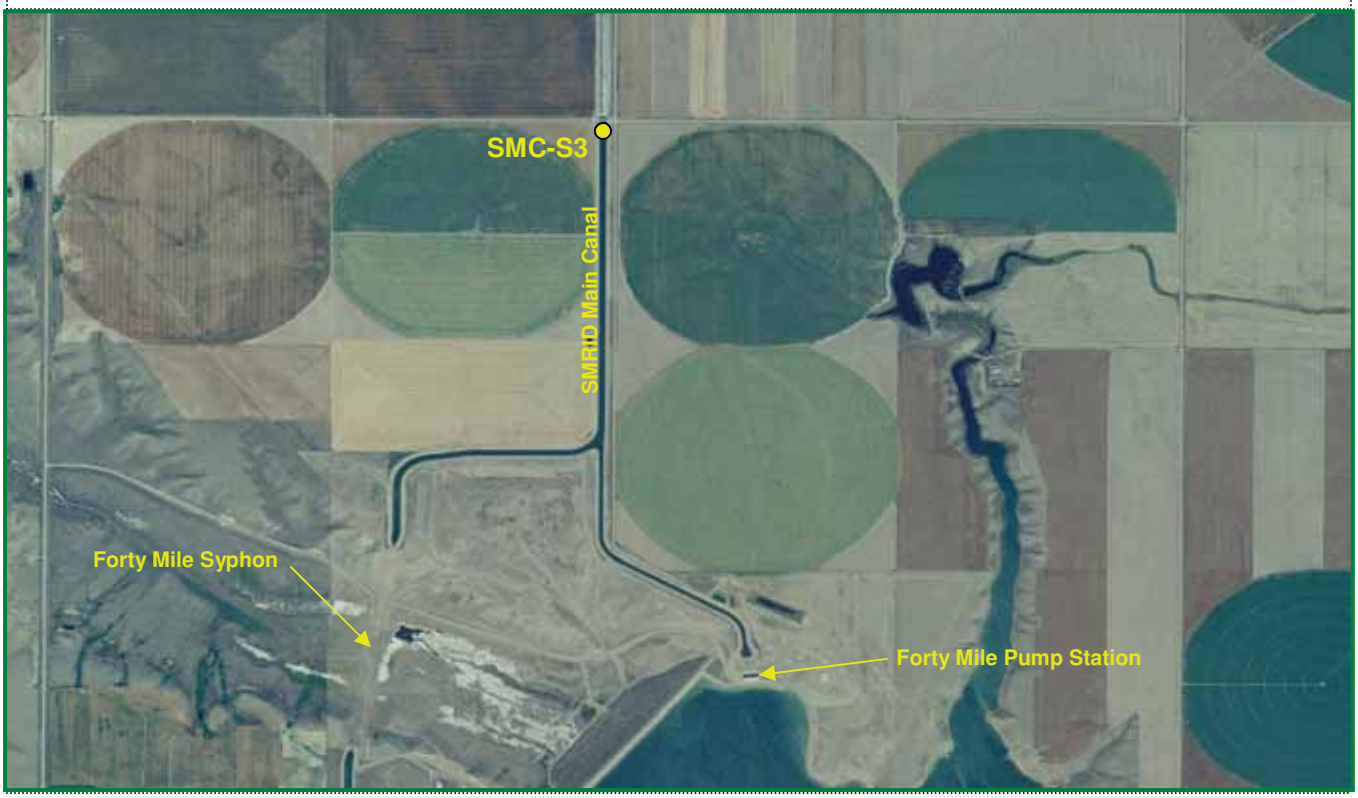
**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.698 -111.428

**DESIGNED FLOW CAPACITY:** 39.62 cu m/sec (1400 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Site SMC-S3 is the inflow source for the block of irrigated land between Forty Mile Reservoir and Sauder Reservoir. This site is located on the SMRID Main Canal approx 1.2 km downstream of the intersection of the Forty Mile Coulee Syphon outlet channel and the Forty Mile Reservoir Pumpstation outlet channel. SMC-S3 therefore can contain a mixture of water coming through the syphon and from the reservoir when the pumps are operating. Water sampled at this site is part of the overall Comprehensive Study of the thirteen irrigation districts and the only source of water for the Representative Study in the Bow Island area of the SMRID. The Representative Study involved sampling of the Lateral 9 pipeline system (site SMC-S3-P1) serving 2637 acres, and the Lateral 10 earth system (site SMC-S3-E1) serving 5071 acres. The return flow site for this study is SMC-R4 on Lateral 10 which spills into the South Saskatchewan River. Flow capacities for site SMC-S3 are monitored by SMRID at the Forty Mile Syphon inlet and at the Forty Mile Reservoir pumpstation. Adding these values gives the capacity at the sampling site.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-R1

**LAND DESCRIPTION:** SE 11-11-13-4

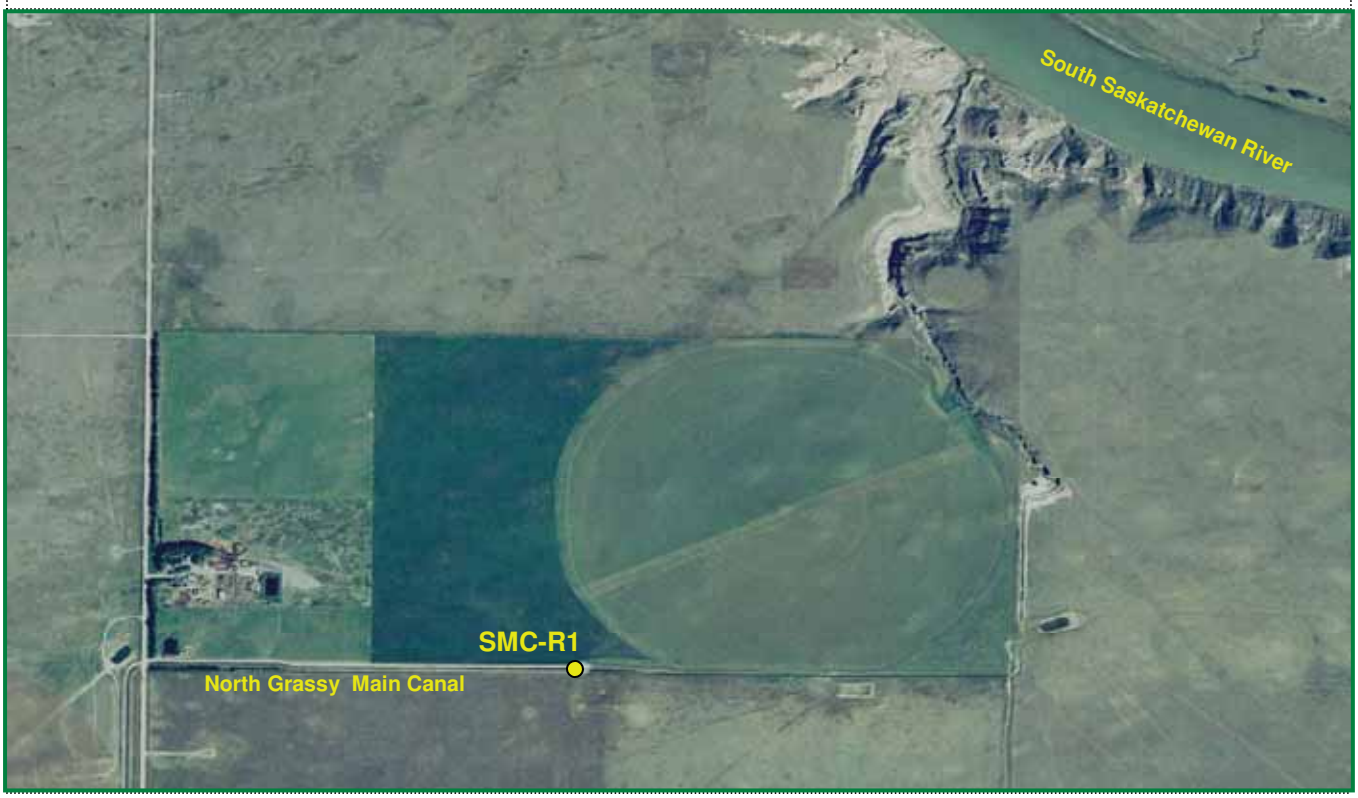
**LATERAL NAME:** North Grassy Main Canal Spillway

**GPS CO-ORDINATES:** 49.888 -111.676

**DESIGNED FLOW CAPACITY:** 1.3 cu m/sec (46 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Water samples at Site SMC-R1 will provide a comparison to the samples taken at Site SMC-S2, the beginning of the North Grassy Main Canal system. North Grassy Main has the potential of serving an irrigated area of approximately 11,600 acres. Sampling at this return flow site was done just upstream of the spillway pipeline inlet structure near the recording station. Spill water from here flows into the South Saskatchewan River. A datalogger, maintained by SMRID, records the spill flows.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-R2

**LAND DESCRIPTION:** SE 3-10-12-4

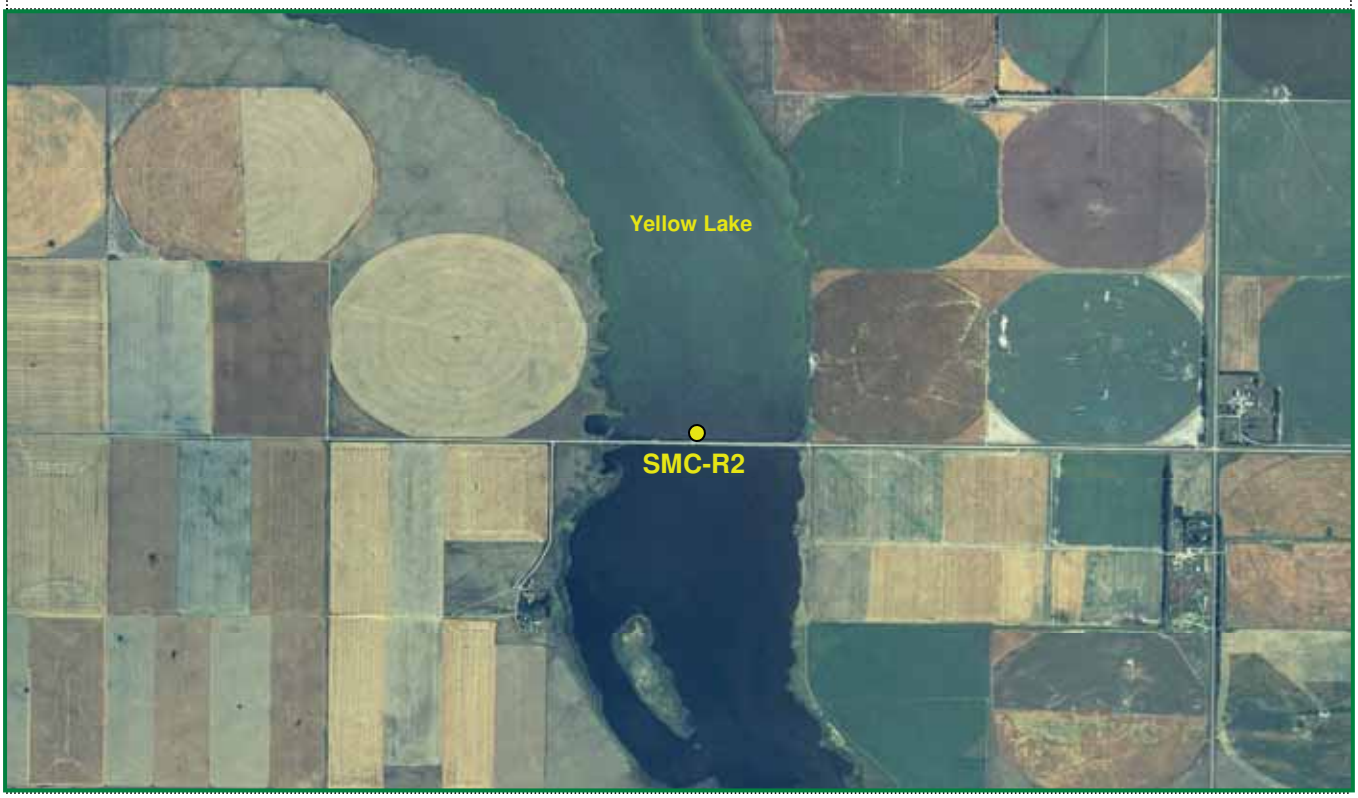
**LATERAL NAME:** Yellow Lake

**GPS CO-ORDINATES:** 49.786 -111.543

**DESIGNED FLOW CAPACITY:** N/A

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Yellow Lake is a glaciated melt water depression with no natural drainage outlets. The Lake collects spring runoff and irrigation spill water from numerous lateral systems in the south Grassy Lake, south Burdett and south Bow Island areas of the SMRID. Taking samples of Yellow Lake water will provide the quality of water mixing with the Grassy Lake Reservoir water (Site SMC-S1) at Site SMC-S2. Yellow Lake water is pumped into the Grassy Outlet Canal at Site SMC-S2. This mixed water serves the North Grassy Main Canal and North Burdett Main Canal systems. Samples from Yellow Lake were taken near the north (outlet) end of the road crossing culvert on the E-W road allowance.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-R3

**LAND DESCRIPTION:** NE 12-11-12-4

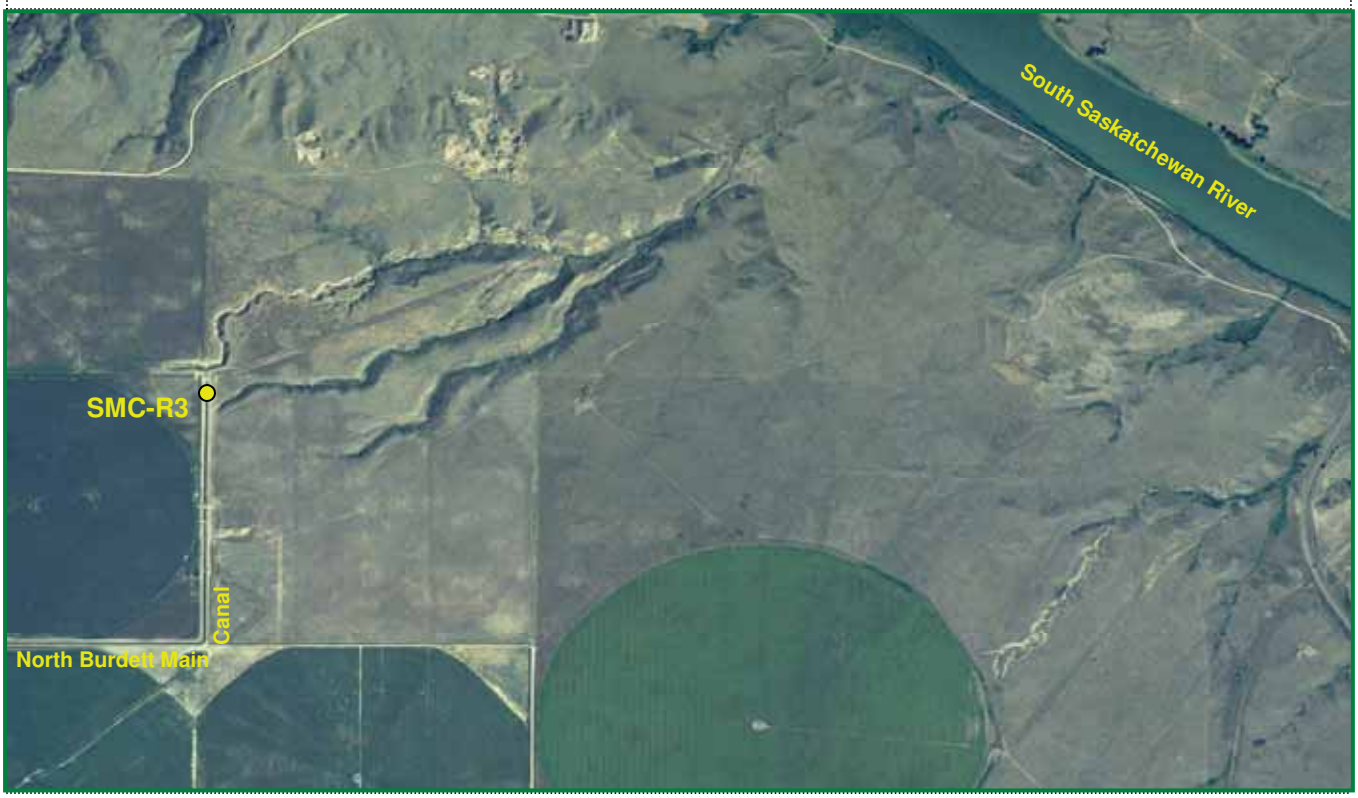
**LATERAL NAME:** North Burdett Main Canal Spillway

**GPS CO-ORDINATES:** 49.902 -111.516

**DESIGNED FLOW CAPACITY:** 1.42 cu m/sec (50 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Water samples at Site SMC-R3 will provide a comparison to the samples taken at Site SMC-S2, the beginning of the North Burdett Main Canal. This canal has the potential of serving approximately 9000 irrigated acres. Water samples at this return flow site were taken just upstream of the spillway pipeline inlet structure. Spill water from here flows into the South Saskatchewan River. A datalogger, maintained by SMRID, records flows spilling from the system.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 7 Site SMC-R4

**LAND DESCRIPTION:** NE 32-10-11-4

**LATERAL NAME:** Bow Island Lateral 10 Spillway

**GPS CO-ORDINATES:** 49.870 -111.450

**DESIGNED FLOW CAPACITY:** 0.70 cu m/sec (25 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Site SMC-R4 is the return flow sampling site as part of the Representative Water Quality Study in the Bow Island area of the SMRID and is also part of the overall Comprehensive Study of the thirteen irrigation districts. SMC-R4 is located on Lateral 10 Spillway approximately 13 km downstream of the Lateral 10 inflow site (SMC-S3-E1) and approximately 29 km downstream of the inflow site SMC-S3 for the study. Water downstream of site SMC-R4 flows down Cherry Coulee to the South Saskatchewan River. There is a flow recording station at this site operated and maintained by SMRID.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 8 Site SME-P1

**LAND DESCRIPTION:** NE 11-12-8-4

**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.985 -110.991

**DESIGNED FLOW CAPACITY:** 24 cu m/sec (848 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Sauder Reservoir is the supply for irrigation water used throughout the eastern block of the SMRID. Water samples were taken in the Main Canal just downstream of the outlet off the reservoir. These samples will provide the quality of water used by irrigators between Sauder and Murray Reservoirs, an area of approximately 26,500 acres, as well as the quality of water flowing into Murray Reservoir. Flow capacities into the canal are transmitted by SCADA and recorded by SMRID.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 8 Site SME-S1

**LAND DESCRIPTION:** NE 18-10-7-4

**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.823 -110.935

**DESIGNED FLOW CAPACITY:** 10.2 cu m/sec (360 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Site SME-S1 is located in the SMRID Main Canal just downstream of the outlet gates off Murray Reservoir. This water serves the South Medicine Hat area of the SMRID ending at Bullshead Reservoir. Overflow water from Bullshead Reservoir spills into Bullshead Creek (Site SME-R1) and eventually to the South Saskatchewan River. Flow capacities into the canal from Murray are transmitted by SCADA and recorded by SMRID.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 8 Site SME-R1

**LAND DESCRIPTION:** NE 28-11-5-4

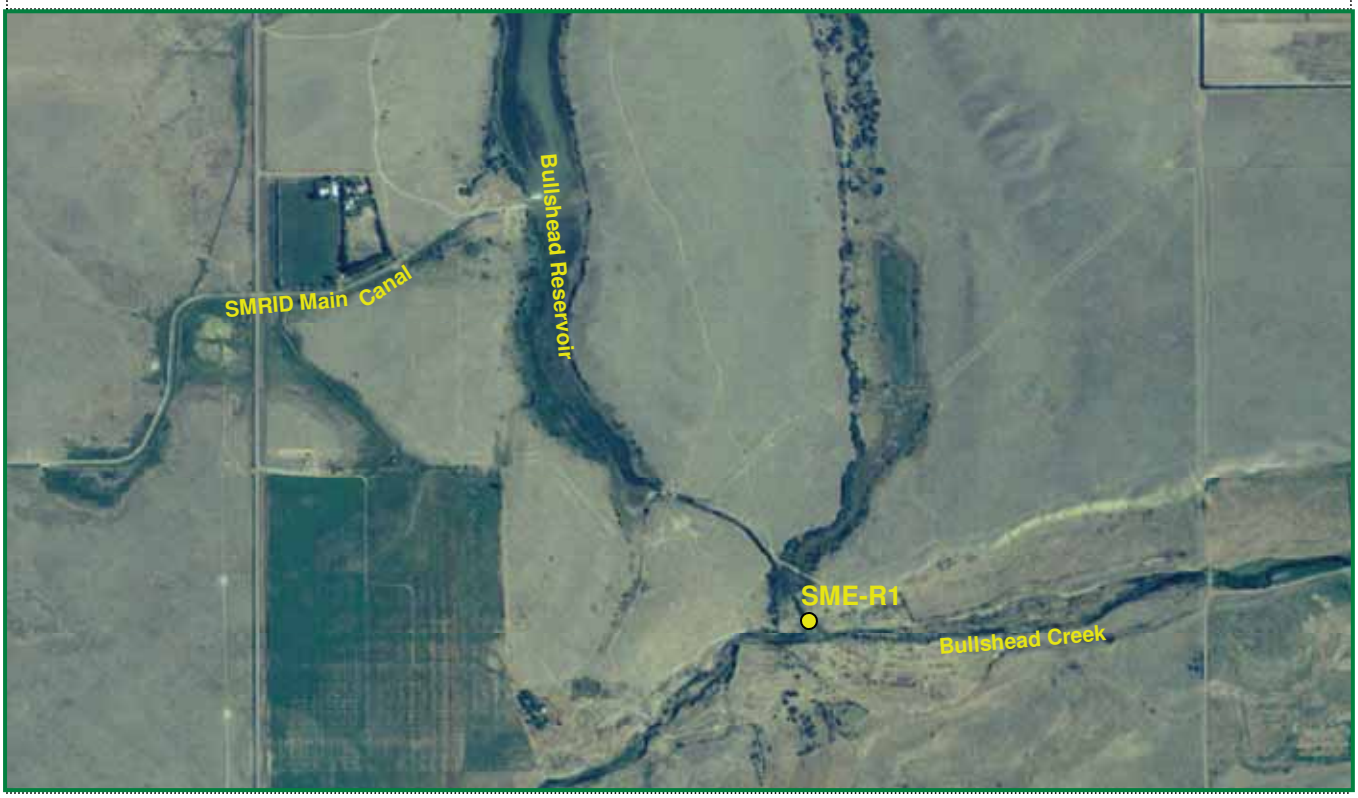
**LATERAL NAME:** Bullshead Spillway

**GPS CO-ORDINATES:** 49.943 -110.629

**DESIGNED FLOW CAPACITY:** 5 cu m/sec (177 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Water at Site SME-R1 has basically travelled across Southern Alberta, starting at the St Mary Reservoir in the west to Medicine Hat in the east eventually spilling into the South Saskatchewan River. Samples at this site were taken in the spill channel at the south end of Bullshead Reservoir just before entering Bullshead Creek. The inflow comparison site is SME-S1 on the SMRID Main Canal below Murray Reservoir. A data logger station owned and operated by SMRID records return flows.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 5 Site T-P1

**LAND DESCRIPTION:** SW 24-9-19-4

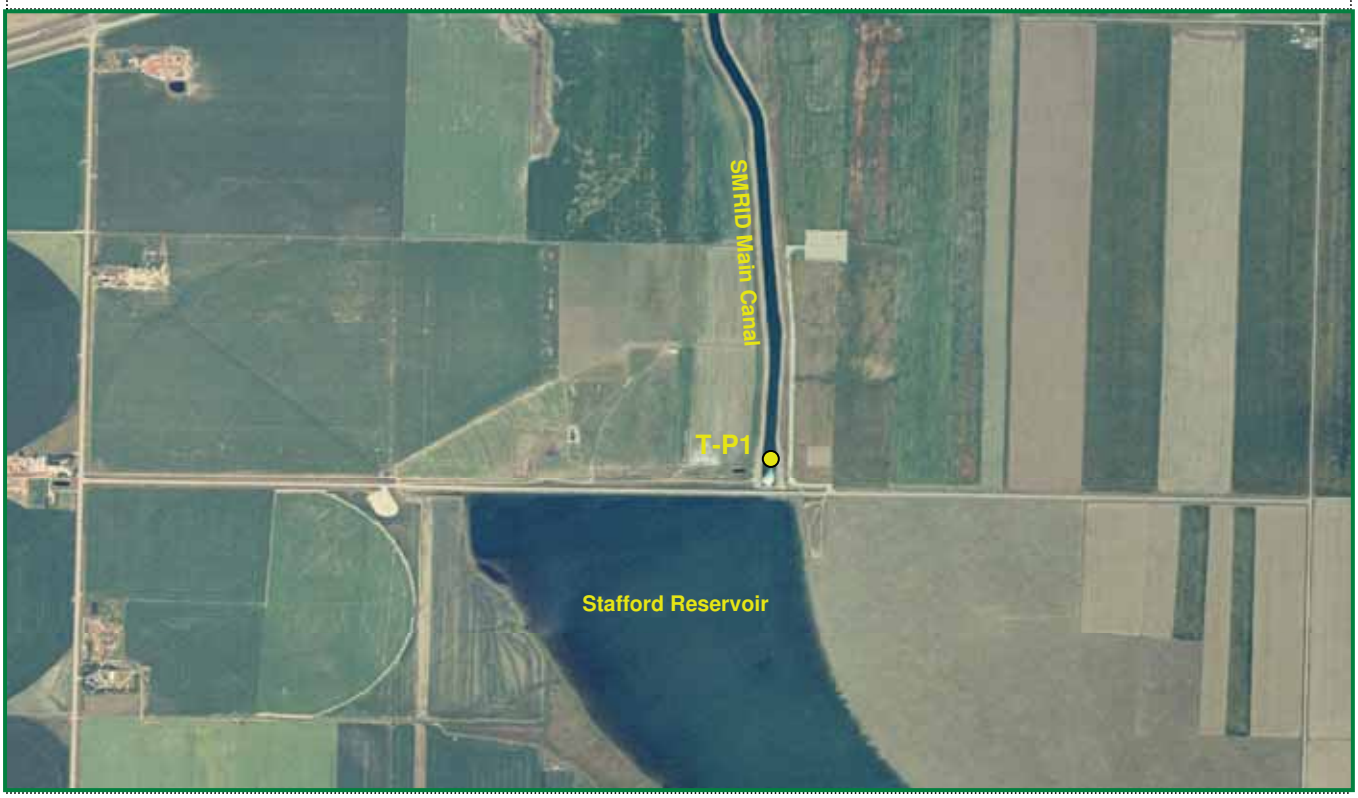
**LATERAL NAME:** SMRID Main Canal

**GPS CO-ORDINATES:** 49.743 -112.463

**DESIGNED FLOW CAPACITY:** 73.62 cu m/sec (2600 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** This site is just downstream of the SMRID Main Canal headgates off Stafford Reservoir. Diversion from Stafford Reservoir supplies the entire Taber Irrigation District plus the Central and Eastern portions of the SMRID with spill water eventually reaching the South Saskatchewan River east of Medicine Hat. Flow capacities at T-P1 are recorded and maintained by SMRID at the headgates.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 5 Site T-S1

**LAND DESCRIPTION:** NW 15-9-17-4

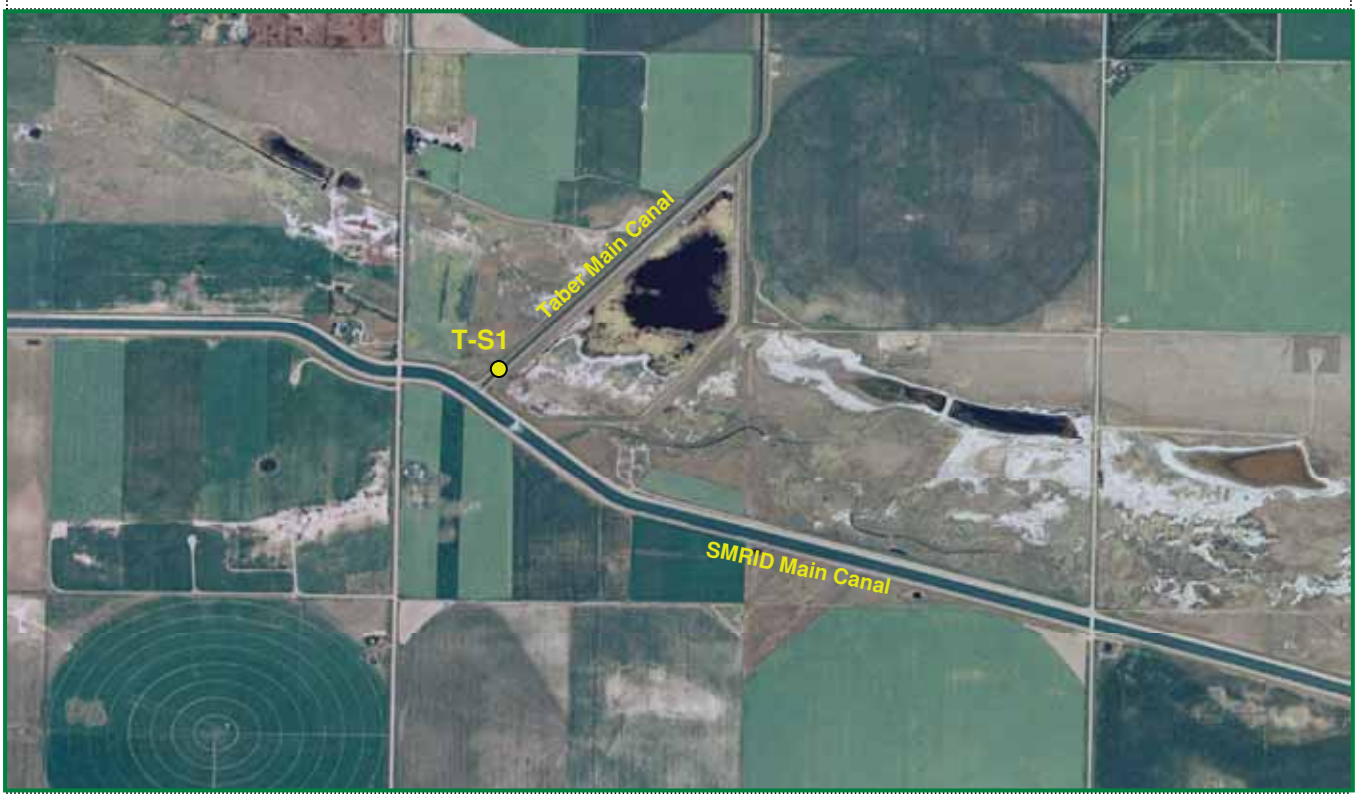
**LATERAL NAME:** Taber Main Canal

**GPS CO-ORDINATES:** 49.742 -112.235

**DESIGNED FLOW CAPACITY:** 7.79 cu m/sec (275 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by TID

**DESCRIPTION:** The Taber Main Canal serves approximately 12,500 assessed acres in the Barnwell and South Taber areas plus supplies water to Taber Lake via Lateral 17. Water samples were taken just downstream of the headgates off the SMRID Main Canal. SMRID measures water into the Taber Main Canal and, in the 2006 and 2007 sampling years, TID personnel also recorded daily flows manually.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 6 Site T-S2

**LAND DESCRIPTION:** NW 10-10-16-4

**LATERAL NAME:** Big Bend Main Canal

**GPS CO-ORDINATES:** 49.815 -112.098

**DESIGNED FLOW CAPACITY:** 7.65 cu m/sec (270 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by TID

**DESCRIPTION:** The Big Bend Main Canal system takes its water from Taber Lake to serve approximately 17,400 assessed acres in the Big Bend irrigation block north of the Town of Taber. One of three spill channels for the block carrying excess flow to the Oldman River is G7 Spillway, Site T-R1. Staff gauge readings are taken daily by TID personnel to record flows into the Big Bend system. Samples were taken downstream of the canal headgates off Taber Lake and just south of the road crossing.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 6 Site T-S3

**LAND DESCRIPTION:** SE 21-10-15-4

**LATERAL NAME:** Fincastle Lake Outlet Channel

**GPS CO-ORDINATES:** 49.834 -111.971

**DESIGNED FLOW CAPACITY:** 5.13 cu m/sec (181 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Fincastle Lake is the supply for TID's North Fincastle East and North Fincastle West distribution systems. Together, these systems are designed to serve a potential area of approximately 11,500 acres requiring a total capacity of 5.13 cu m/sec. Water samples were taken in the lake channel just upstream of the headgates to these two laterals. There are return flow sites for both systems to the Oldman River. Site T-R2 is the spill site for the North Fincastle East Canal. There is no flow measurement at Site T-S3.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 6 Site T-R1

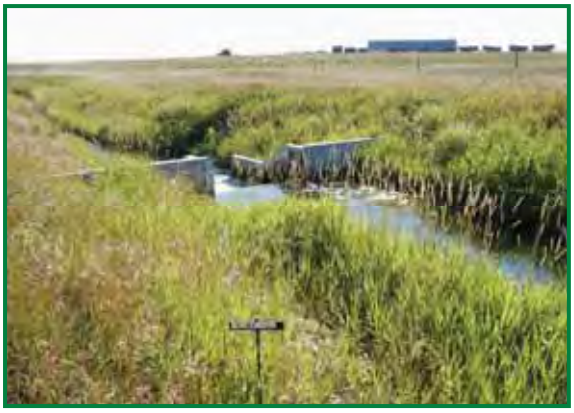
**LAND DESCRIPTION:** SW 12-11-16-4

**LATERAL NAME:** Lateral G7 Spillway

**GPS CO-ORDINATES:** 49.888 -112.074

**DESIGNED FLOW CAPACITY:** 1 cu m/sec (35 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by TID



**DESCRIPTION:** G7 is one of three spillways for the Big Bend Main Canal distribution system returning excess irrigation flows to the Oldman River. Site T-R1 is located near the TID's flow measurement station in the SW 12-11-16-4. Inflow for the Big Bend area comes from Taber Lake, Site T-S2.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 6 Site T-R2

**LAND DESCRIPTION:** NE 9-11-14-4

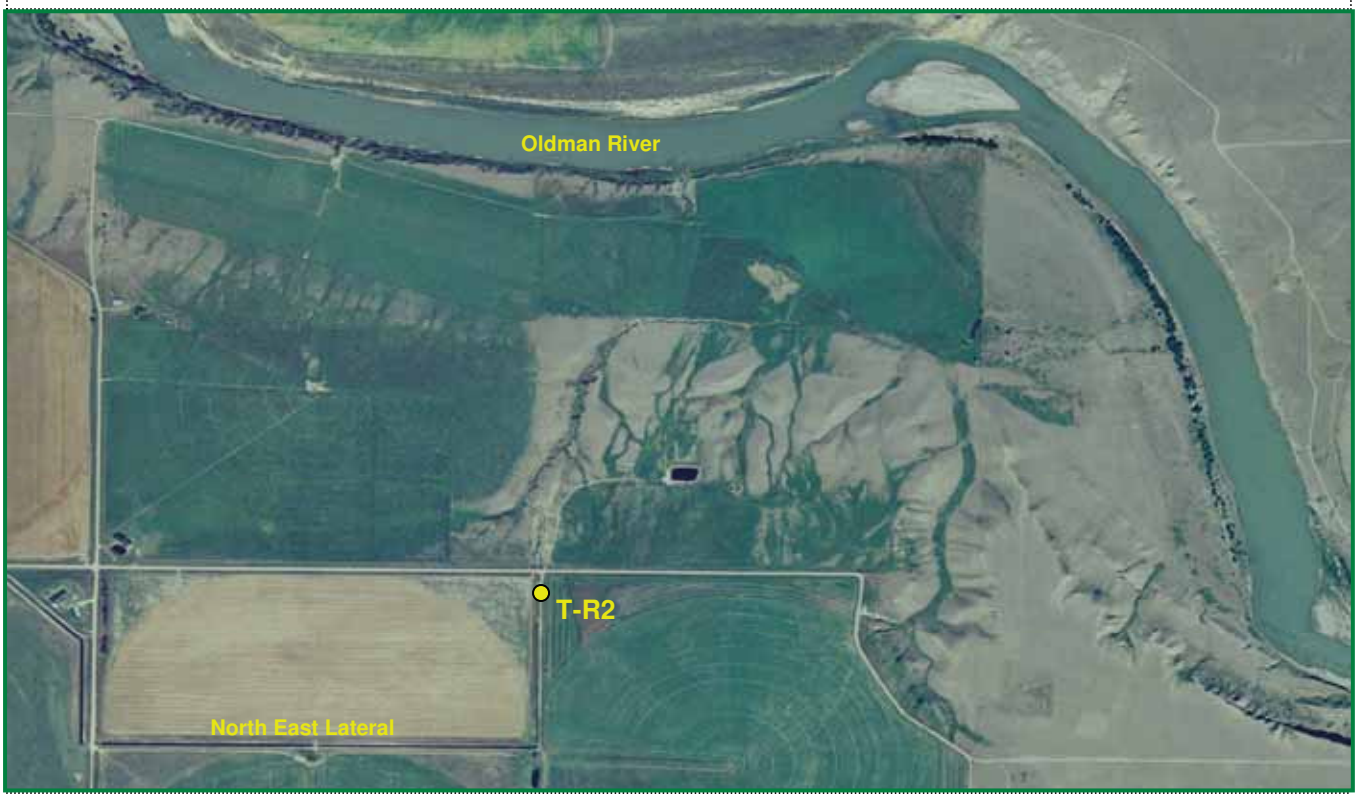
**LATERAL NAME:** North East Lateral Spill

**GPS CO-ORDINATES:** 49.902 -111.858

**DESIGNED FLOW CAPACITY:** 0.91 cu m/sec (32 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by TID

**DESCRIPTION:** T-R2 is located on the return flow channel for the North Fincastle East Canal distribution system situated in the most north easterly portion of the TID. Water samples were taken upstream of the weir structure for the flow recording station. From here, irrigation water enters a pipeline spillway to the Oldman River. Water for the North Fincastle East Canal comes from Fincastle Lake, Site T-S3.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site U-P1

**LAND DESCRIPTION:** NE 13-3-28-4

**LATERAL NAME:** UID Main Canal

**GPS CO-ORDINATES:** 49.215 -113.635

**DESIGNED FLOW CAPACITY:** 5.64 cu m/sec (199 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by AENV

**DESCRIPTION:** Sampling at site U-P1 was done in the UID Main Canal immediately downstream of the headgates off the Belly River. Water serves the Hillspring area of the UID plus carries water downstream for approximately 15 km to Cochrane Lake where it is diverted for use in the rest of the district. The AENV recording station is approximately 300 m downstream of this very clear sampling site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site U-S1

**LAND DESCRIPTION:** NW 29-4-27-4

**LATERAL NAME:** Glenrose Canal

**GPS CO-ORDINATES:** 49.332 -113.611

**DESIGNED FLOW CAPACITY:** 5.66 cu m/sec (200 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** U-S1 is located in the Glenrose Canal immediately downstream of the headgates off Cochrane Lake. This water is initially diverted from the Belly River into the UID Main Canal (site U-P1) flowing approximately 15 km to Cochrane Lake. The water flows through Cochrane Lake before entering the Glenrose Canal to serve the Glenwood block of the district. In extremely poor snow accumulation winters, runoff may be very low in the Belly River disallowing the district to divert required flows. A second source of water can be diverted into Cochrane Lake off the Environment Headworks Canal approximately 3.5 km downstream of Waterton Reservoir (near site AEP-P1).

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site U-R1

**LAND DESCRIPTION:** NW 5-6-25-4

**LATERAL NAME:** Lateral F7

**GPS CO-ORDINATES:** 49.444 -113.342

**DESIGNED FLOW CAPACITY:** 0.10 cu m/sec (3.5 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** U-R1 is the return flow site for Lateral F7. From here, excess flows spill into the Belly River via a natural drainage course. Water for the Lateral F7 system is diverted from Lateral F approximately 10 km upstream of the sampling site. The upstream 6.2 km of Lateral F7 is an open pipeline. Water for Lateral F comes from the Belly River (site U-P1), down the UID Main Canal to Cochrane Lake, diverted from Cochrane Lake into the Glenrose Canal (site U-S1), then from the Glenrose Canal into Lateral F. Water travels approximately 18 km from Cochrane Lake before being entering Lateral F7.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 2 Site U-R2

**LAND DESCRIPTION:** SW 12-6-26-4

**LATERAL NAME:** Lateral F

**GPS CO-ORDINATES:** 49.451 -113.387

**DESIGNED FLOW CAPACITY:** 1.10 cu m/sec (39 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Approximately 700 m downstream of this sampling site is Lateral F15 Spillway that carries excess flows from the Lateral F system to the Waterton River. Lateral F water comes from the Belly River (site U-P1) to Cochrane Lake then through the Glenrose Canal headgates (siteU-S1). Water is diverted from the Glenrose Canal into Lateral F traveling 14 km before flowing through a 400 m long balancing pond located approximately 1.5 km upstream of the U-R2 sampling site. Lateral F travels through cattle country before serving nine quarters with a closed pipeline system on the end of Lateral F adjacent to F15 Spillway inlet.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 11 Site AEP-P2

**LAND DESCRIPTION:** NE 33-23-28-4

**LATERAL NAME:** Environment Headworks Canal

**GPS CO-ORDINATES:** 51.009 -113.847

**DESIGNED FLOW CAPACITY:** 45.28 cu m/sec (1599 cfs)

**ACTIVE GAUGING STATION:** Yes – operated by AENV

**DESCRIPTION:** This site is located on the Main Canal between the diversion off the Bow River and Chestermere Lake. The site is approximately 2 km upstream of Chestermere on the south side of the bridge crossing the E-W road allowance. Water samples from this site will provide the quality of water diverted from the Bow River into Chestermere. This water can be compared to the quality leaving Chestermere through the B/C Main Canal (Site W-P2). Flow capacities diverted from the Bow River are monitored by AENV.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 11 Site W-P1

**LAND DESCRIPTION:** SE 36-22-27-4

**LATERAL NAME:** Secondary A Canal

**GPS CO-ORDINATES:** 50.911 -113.606

**DESIGNED FLOW CAPACITY:** 26.6 cu m/sec (939 cfs)

**ACTIVE GAUGING STATION:** Yes - calculated by WID

**DESCRIPTION:** Secondary A Canal diverts water from Chestermere Lake to serve 60% of the WID's intensified irrigable acres. Approximately 22 km downstream of Chestermere, Secondary A flows into Langdon Reservoir. Downstream of Langdon, Secondary A serves approximately 50,000 assessed acres with an intensified area of 67,500 acres. Water samples were taken approximately 700 m downstream of the outlet structure off Langdon Reservoir just west of the N-S road crossing. Flow capacities are calculated by WID ditchriding staff. There was no flow recording station at this site at the time of sampling.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 11 Site W-P2

**LAND DESCRIPTION:** NE 23-24-28-4

**LATERAL NAME:** B/C Main Canal

**GPS CO-ORDINATES:** 51.067 -113.802

**DESIGNED FLOW CAPACITY:** 18.7 cu m/sec (660 cfs)

**ACTIVE GAUGING STATION:** Yes - calculated by WID

**DESCRIPTION:** Site W-P2 is located approximately 1.3 km downstream of Chestermere Lake just before entering McElroy Slough. This site represents the quality of water being diverted from Chestermere serving the Secondary B and Secondary C distribution systems of the WID. Together, these two systems serve approximately 33,000 assessed acres. Water samples were taken just upstream of the E-W road crossing. Flow capacities are calculated by WID ditchriding staff. There was no flow recording station for the B/C Main Canal at the time of sampling.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 11 Site W-S1

**LAND DESCRIPTION:** NE 22-24-25-4

**LATERAL NAME:** North A Canal

**GPS CO-ORDINATES:** 51.066 -113.412

**DESIGNED FLOW CAPACITY:** 4.4 cu m/sec (155 cfs)

**ACTIVE GAUGING STATION:** Yes - calculated by WID

**DESCRIPTION:** On the west edge of the Town of Strathmore, Secondary A Canal splits with the majority of the flow continuing east and a smaller flow diverted north to serve an area of approx 13,000 acres north of Strathmore. Water samples were taken approximately 1.3 km downstream of the North A Canal headgates on the south side of the E-W road crossing. Flow capacities were calculated by WID ditchriding staff. There is no flow recording station at this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 12 Site W-S2

**LAND DESCRIPTION:** NW 31-22-22-4

**LATERAL NAME:** Secondary A Canal

**GPS CO-ORDINATES:** 50.918 -113.045

**DESIGNED FLOW CAPACITY:** 6.22 cu m/sec (220 cfs)

**ACTIVE GAUGING STATION:** Yes - calculated by WID

**DESCRIPTION:** This site is located on Secondary A Canal just upstream of the North Cluny and South Cluny Canal split. Together, the North and south Cluny Canals serve approximately 10,000 assessed acres in the southeastern most portion of the WID. Flow capacities were calculated by WID ditchriding staff. There were no recorded flow capacities available for this site at the time of sampling.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 12 Site W-S3

**LAND DESCRIPTION:** NE 34-24-24-4

**LATERAL NAME:** Secondary B Canal

**GPS CO-ORDINATES:** 51.095 -113.282

**DESIGNED FLOW CAPACITY:** 8 cu m/sec (283 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Site W-S3 is located on Secondary B Canal just upstream of the Glenrose Canal check structure. Samples taken at this site will provide water quality for acres served by the Glenrose Canal system and the downstream portion of Secondary B Canal. Together, these two areas serve approximately 17,500 intensified acres. Excess irrigation flows from the Glenrose system spill into Serviceberry Creek. Excess flows from Secondary B downstream of this site spill into Crowfoot Creek. There were no recorded flow capacities available for this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 12 Site W-S4

**LAND DESCRIPTION:** NE 18-26-24-4

**LATERAL NAME:** Secondary C Canal

**GPS CO-ORDINATES:** 51.225 -113.331

**DESIGNED FLOW CAPACITY:** 4.1 cu m/sec (145 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Secondary C Canal is a very long supply canal traveling from the B/C Canal split downstream of Chestermere Lake (Site W-P2) on the west side of the district and spilling into the Rosebud River near Redland in the northeast portion of the district serving only 11,000 assessed acres along the way. Due to its length, a water sampling site was located just over halfway with the majority of the acres served downstream of the site. Water samples at this site were taken upstream of the N-S road crossing on the west boundary of the NE 18-26-24-4. There were no recorded flow capacities available for this site.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Area 12 Site W-R2

**LAND DESCRIPTION:** SE 6-22-20-4

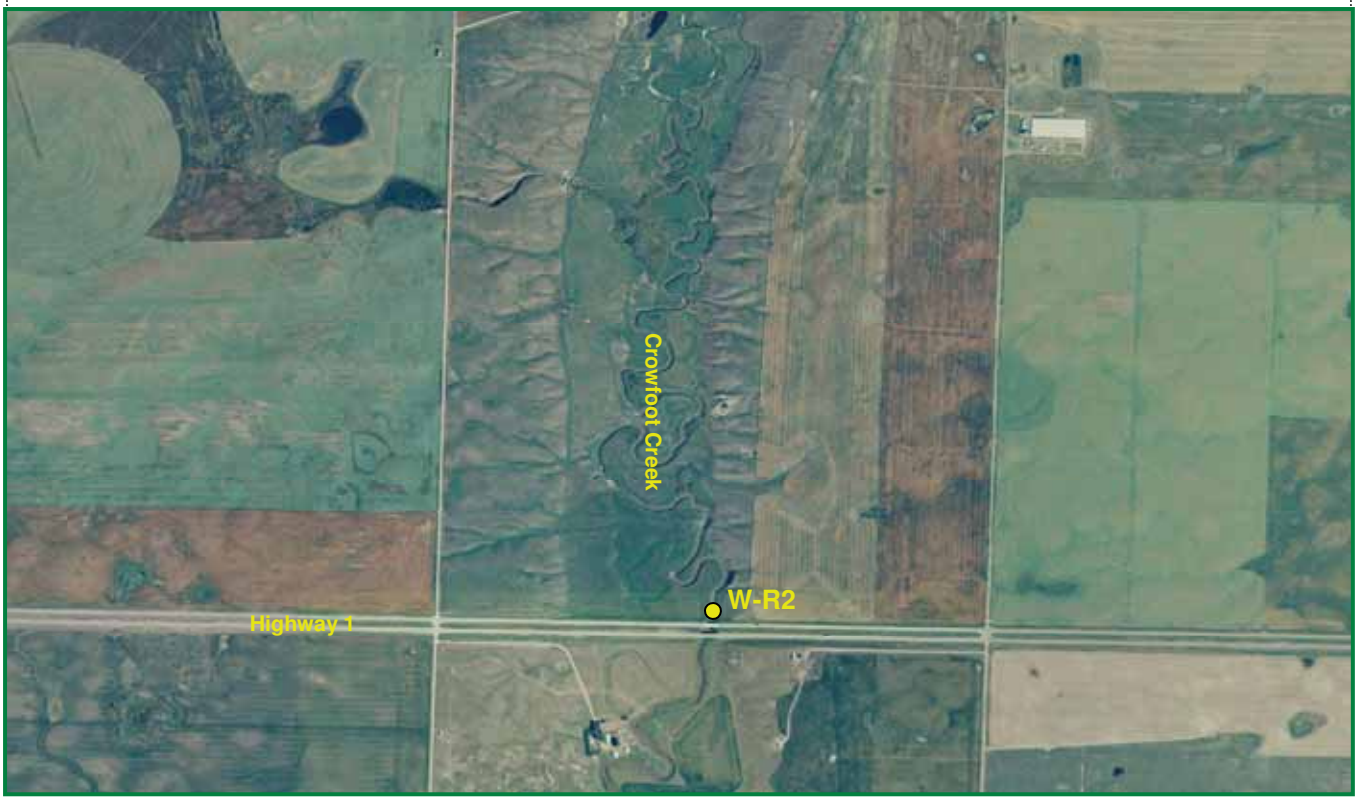
**LATERAL NAME:** Crowfoot Creek

**GPS CO-ORDINATES:** 50.834 -112.763

**DESIGNED FLOW CAPACITY:** 2.32 cu m/sec (82 cfs)

**ACTIVE GAUGING STATION:** Yes – operated by AENV

**DESCRIPTION:** During the irrigation season, Crowfoot carries excess irrigation spill water from the Secondary A and B distribution systems to the Bow River. Water samples were taken just north of Highway 1 near an existing flow monitoring station. This station is operated and monitored by Alberta Environment recording daily flows in Crowfoot Creek.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Representative Study Site SMC-S3-E1

**LAND DESCRIPTION:** NE 11-10-11-4

**LATERAL NAME:** Bow Island Lateral 10

**GPS CO-ORDINATES:** 49.809 -111.387

**DESIGNED FLOW CAPACITY:** 4.58 cu m/sec (162 cfs)

**ACTIVE GAUGING STATION:** Yes - operated by SMRID

**DESCRIPTION:** Bow Island Lateral 10 is the earth channel portion of the Representative Water Quality Study serving over 5000 acres of irrigable land. Four sampling sites were located on the Lateral 10 system which included return flow site SMC-R4 (which is also part of the Comprehensive Study). The inflow site for Lateral 10 is SMC-S3-E1 located just downstream of the headgates off the SMRID Main Canal. Lateral 10 headgates are approximately 16 km downstream of the initial source site for the study (SMC-S3). Samples were taken next to the flow monitoring station owned and operated by SMRID. Lateral 10 consists of a combination of earth channels and pipeline systems serving the irrigable area.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Representative Study Site SMC-S3-E2

**LAND DESCRIPTION:** NE 16-10-11-4

**LATERAL NAME:** Bow Island Lateral 10

**GPS CO-ORDINATES:** 49.822 -111.438

**DESIGNED FLOW CAPACITY:** 2.41 cu m/sec (85 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** The second sampling site of the earth channel portion of the Representative Water Quality Study is SMC-S3-E2. This site is located on Lateral 10 approximately 5.4 km downstream of Site SMC-S3-E1 at the headgates. E2 is approximately 2/5 of the distance between SMC-S3-E1and the return flow site SMC-R4. Samples were taken upstream of the precast check structure next to the farm turnout serving the NE quarter of section 16. Flow capacities at this site were determined from visual observation.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Representative Study Site SMC-S3-E3

**LAND DESCRIPTION:** SW 30-10-11-4

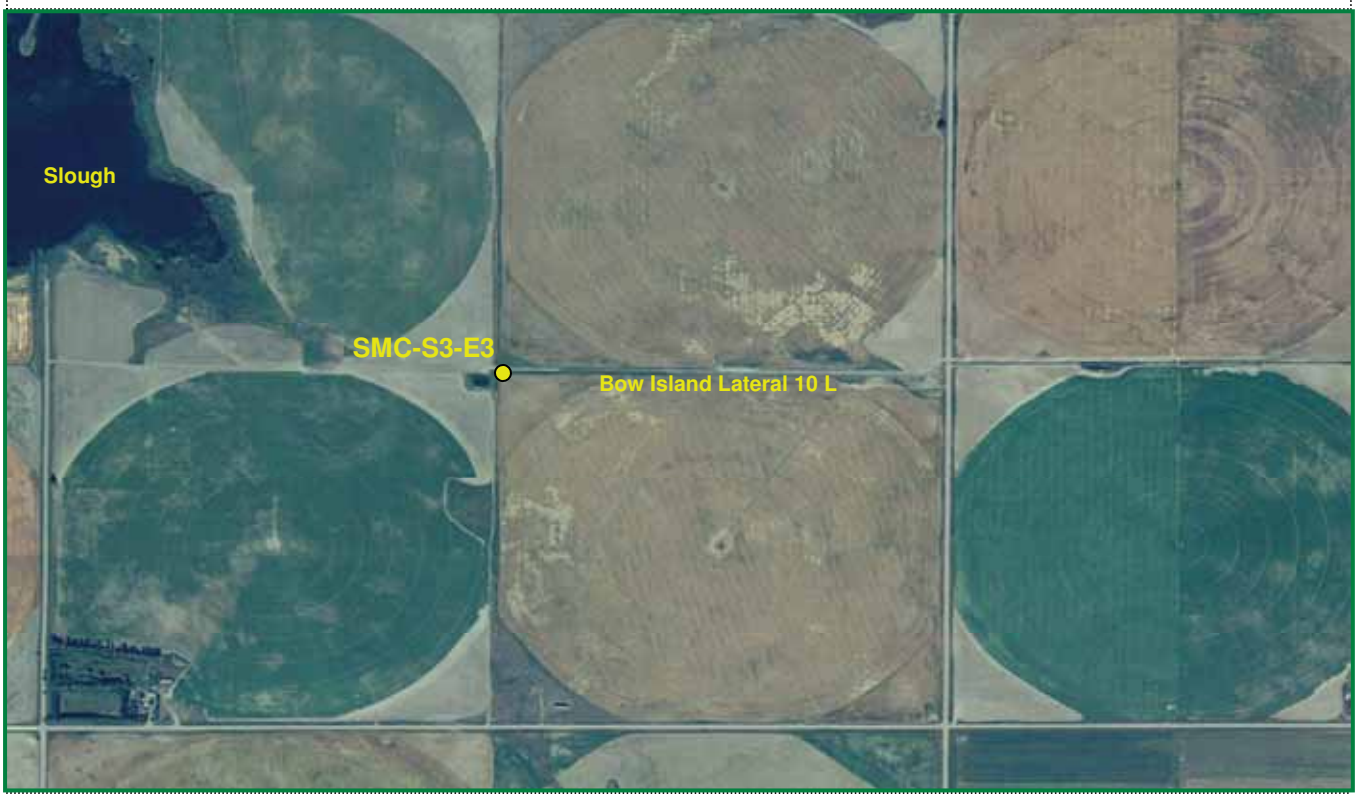
**LATERAL NAME:** Bow Island Lateral 10L

**GPS CO-ORDINATES:** 49.851 -111.484

**DESIGNED FLOW CAPACITY:** 0.45 cu m/sec (16 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Site SMC-S3-E3 is the third of four sites on the Lateral 10 earth channel portion of the Representative Water Quality Study. This site is located on the end of earth Lateral 10L approximately 11.7 km downstream of the inflow site for Lateral 10, Site SMC-S3-E1. Samples on 10L were taken just upstream of the pipeline inlet flowing to a small lake being used for irrigating purposes. Overflow from the lake spills north to the South Saskatchewan River. There was no flow measurement at this site, however, SMRID personnel suggested capacities of less then 5 cfs throughout the irrigation season would be a reasonable estimate. Specialty crops grown in the area include potatoes and sugar beets.



# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Representative Study Site SMC-S3-P1

**LAND DESCRIPTION:** NE 34-9-11-4

**LATERAL NAME:** Bow Island Lateral 9

**GPS CO-ORDINATES:** 49.785 -111.406

**DESIGNED FLOW CAPACITY:** 1.09 cu m/sec (38 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Bow Island Lateral 9 is the pipeline portion of the Representative Water Quality Study. SMC-S3-P1 is located in the settling pond for the pipeline. The water source for the pipeline is site SMC-S3 located on the SMRID Main Canal approximately 13 km upstream. Lateral 9 pipeline serves 2637 irrigable acres by sprinkler methods. Flow capacities into the pipeline are determined by the SMRID ditchrider taking daily counts of operating sprinkler systems and totalling the gpm of each pumping unit for that particular day.

# WATER QUALITY in IRRIGATION DISTRICTS

**SITE AREA and NAME:** Representative Study Site SMC-S3-P2

**LAND DESCRIPTION:** SE 31-9-11-4

**LATERAL NAME:** Bow Island Lateral 9

**GPS CO-ORDINATES:** 49.778 -111.472

**DESIGNED FLOW CAPACITY:** 0.07 cu m/sec (2.5 cfs)

**ACTIVE GAUGING STATION:** No

**DESCRIPTION:** Site SMC-S3-P2 is a farm turnout riser on the Bow Island Lateral 9 pipeline located approximately 5 km downstream of the pipeline settling pond (site SMC-S3-P1).

This turnout serves the SE quarter of section 31-9-11-4, having a 130 acre pivot system. Water sampling at this site will determine if the quality of water flowing through a pipeline changes from the pipeline inlet to the farm turnout. Annual flows are determined by recording the number of days the pivot was in operation multiplied by the gpm of the pumping unit and converted to inches of water applied.

# Appendix 2. Sampling Areas and Dates

| **Appendix 2.** Sampling areas, sites and sampling dates for the comprehensive sampling sites. | | | | | | |
|---|---|---|---|---|---|---|
| | **Sites** | **Sampling Dates** | | | **Sites** | **Sampling Dates** |
| Area 1 | R-R2 | 2006-07-10 | | Area 7 | SMC-S1 | 2006-07-07 |
| | R-R1 | 2006-07-24 | | | SMC-S2 | 2006-07-17 |
| | R-P1 | 2006-08-01 | | | SMC-R1 | 2006-08-14 |
| | M-P2 | 2006-08-21 | | | SMC-R3 | 2006-08-28 |
| | M-R1 | 2007-06-27 | | | SMC-S3 | 2007-06-25 |
| | M-P1 | 2007-07-16 | | | SMC-R2 | 2007-07-09 |
| | AEP-S2 | 2007-08-13 | | | | 2007-08-07 |
| | | 2007-06-27 | | | | 2007-08-20 |
| Area 2 | A-R1 | 2006-07-10 | | Area 8 | SME-R1 | 2006-07-07 |
| | A-P1 | 2006-07-24 | | | SME-S1 | 2006-07-17 |
| | MV-P1 | 2006-08-01 | | | SME-P1 | 2006-08-14 |
| | MV-R1 | 2006-08-21 | | | SMC-R4 | 2006-08-28 |
| | U-P1 | 2007-06-27 | | | | 2007-06-25 |
| | AEP-P1 | 2007-07-16 | | | | 2007-07-09 |
| | U-S1 | 2007-08-13 | | | | 2007-08-07 |
| | AEP-S1 | 2007-06-27 | | | | 2007-08-20 |
| | U-R2 | | | | | |
| | U-R1 | | | | | |
| Area 3 | LN-P1 | 2006-07-10 | | Area 9 | E-S3 | 2006-05-07 |
| | LN-S1 | 2006-07-24 | | | E-R3 | 2006-07-24 |
| | LN-S2 | 2006-08-01 | | | E-R5 | 2006-08-16 |
| | LN-S3 | 2006-08-21 | | | E-S5 | 2006-08-30 |
| | LN-S5 | 2007-06-27 | | | E-S4 | 2007-06-20 |
| | LN-S4 | 2007-07-16 | | | E-S6 | 2007-07-11 |
| | LN-R1 | 2007-08-13 | | | | 2007-08-08 |
| | LN-R2 | 2007-06-27 | | | | 2007-08-22 |
| Area 4 | BR-R3 | 2006-07-10 | | Area 10 | E-P1 | 2006-05-07 |
| | BR-R2 | 2006-07-24 | | | E-S2 | 2006-07-24 |
| | BR-S4 | 2006-08-01 | | | E-R4 | 2006-08-16 |
| | BR-S5 | 2006-08-21 | | | E-R2 | 2006-08-30 |
| | BR-R5 | 2007-06-27 | | | E-R1 | 2007-06-20 |
| | BR-R4 | 2007-07-16 | | | E-S1 | 2007-07-11 |
| | BR-S3 | 2007-08-13 | | | | 2007-08-08 |
| | BR-S2 | 2007-06-27 | | | | 2007-08-22 |
| | BR-P1 | | | | | |
| | AEP-S3 | | | | | |
| | BR-S1 | | | | | |
| | BR-R1 | | | | | |
| | BR-R6 | | | | | |
| Area 5 | SMW-P1 | 2006-07-07 | | Area 11 | W-P2 | 2006-05-07 |
| | SMW-S1 | 2006-07-17 | | | AEP-P2 | 2006-07-24 |
| | SMW-R1 | 2006-08-14 | | | W-P1 | 2006-08-17 |
| | T-P1 | 2006-08-28 | | | AEP-P3 | 2006-08-30 |
| | SMW-R2 | 2007-06-25 | | | W-S1 | 2007-06-20 |
| | T-S1 | 2007-07-09 | | | | 2007-07-11 |
| | | 2007-08-07 | | | | 2007-08-08 |
| | | 2007-08-20 | | | | 2007-08-22 |
| Area 6 | T-S2 | 2006-07-07 | | Area 12 | W-S3 | 2006-05-07 |
| | T-R1 | 2006-07-17 | | | W-S4 | 2006-07-24 |
| | T-R2 | 2006-08-14 | | | W-R1 | 2006-08-17 |
| | T-S3 | 2006-08-28 | | | W-R2 | 2006-08-30 |
| | SMC-P1 | 2007-06-25 | | | W-S2 | 2007-06-20 |
| | | 2007-07-09 | | | | 2007-07-11 |
| | | 2007-08-07 | | | | 2007-08-08 |
| | | 2007-08-20 | | | | 2007-08-22 |

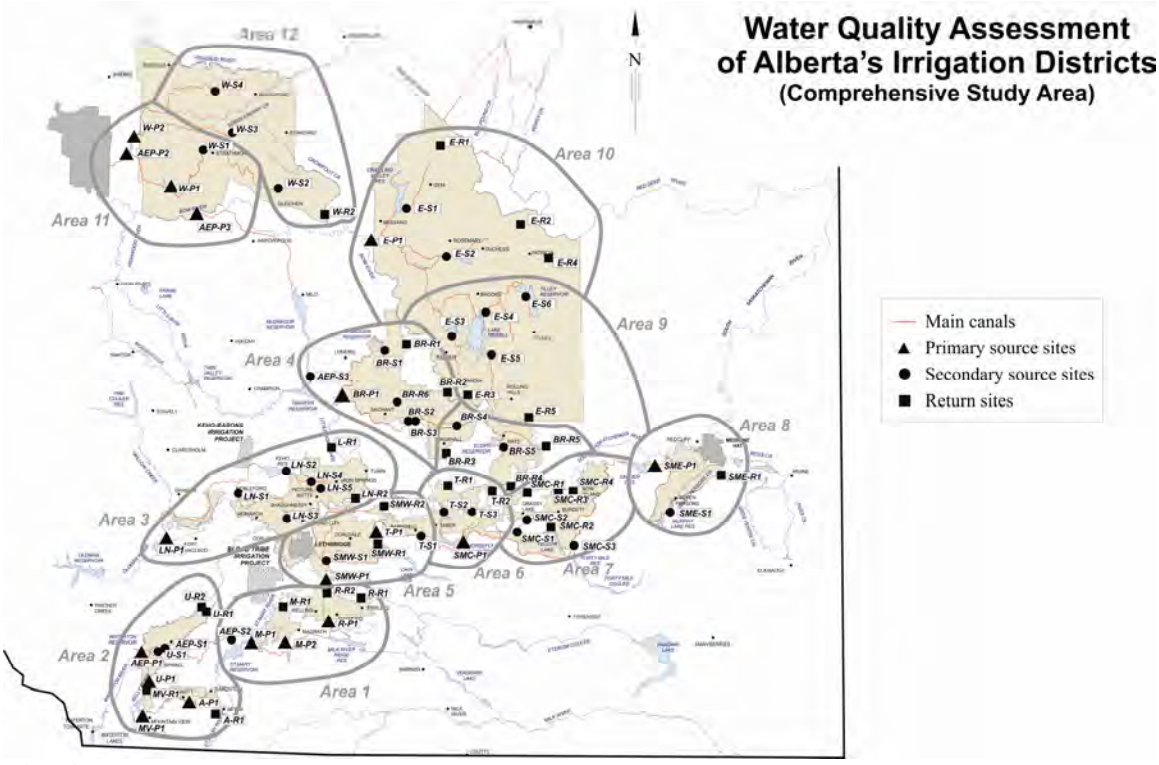



**Fig. A.1.** Sampling sites and areas.

**Appendix 3.** Raw water chemistry data

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-P1 | AID | 7/11/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | 11 | 40.0 | 1050.0 |
| A-P1 | AID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | 22 | 140.0 | 2420.0 |
| A-P1 | AID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | 19 | 99.0 | 1730.0 |
| A-P1 | AID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 10 | 78.0 | >201 |
| A-P1 | AID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 5 | 61 | 649 |
| A-P1 | AID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 17 | 272 | >2419 |
| A-P1 | AID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.2 | <3 | 105 | 325 |
| A-P1 | AID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 4 | 99 | >2419 |
| A-R1 | AID | 7/11/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.03 | 0.4 | 4 | 31.0 | 1120.0 |
| A-R1 | AID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.4 | 4 | 111.0 | 1050.0 |
| A-R1 | AID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.4 | <3 | 41.0 | 2420.0 |
| A-R1 | AID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 19.0 | >201 |
| A-R1 | AID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 96 | 1300 |
| A-R1 | AID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | 219 | >2419 |
| A-R1 | AID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | 161 | 488 |
| A-R1 | AID | 8/27/2007 | 0.16 | 0.09 | <0.05 | <0.01 | 0.03 | 0.3 | <3 | 137 | 1200 |
| AEP-P3 | BRID | 7/5/2006 | 0.42 | <0.05 | <0.05 | 0.01 | <0.02 | <0.2 | <3 | 16.0 | 285.0 |
| AEP-P3 | BRID | 7/19/2006 | <0.05 | <0.05 | <0.05 | 0.08 | 0.13 | 0.6 | 9 | 44.0 | 866.0 |
| AEP-P3 | BRID | 8/17/2006 | 0.74 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 111.0 | 2420.0 |
| AEP-P3 | BRID | 8/30/2006 | 0.91 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 78.0 | 1410.0 |
| AEP-P3 | BRID | 6/20/2007 | 0.36 | <0.05 | 0.07 | <0.01 | 0.07 | 0.5 | 14 | 687 | >2419 |
| AEP-P3 | BRID | 7/11/2007 | 0.54 | <0.05 | <0.05 | <0.01 | 0.05 | <0.2 | 3 | 26 | 1200 |
| AEP-P3 | BRID | 8/8/2007 | 0.63 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 186 | 2420 |
| AEP-P3 | BRID | 8/22/2007 | 0.79 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 96 | 1410 |
| AEP-S3 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | 4.0 | 261.0 |
| AEP-S3 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 1.0 | 1300.0 |
| AEP-S3 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 2.0 | 2420.0 |
| AEP-S3 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | 4 | 11.0 | >201 |
| AEP-S3 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 2 | 326 |
| AEP-S3 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 4 | 5 | 770 |
| AEP-S3 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.2 | <3 | 5 | 770 |
| AEP-S3 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.30 | <3 | 19 | 921 |
| BR-P1 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 1.0 | 179.0 |
| BR-P1 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 2.0 | 345.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-P1 | BRID | 7/24/2006 | 0.06 | 0.06 | <0.05 | <0.01 | <0.02 | 0.4 | 3 | 1.0 | 148.0 |
| BR-P1 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 14.0 | >201 |
| BR-P1 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | <3 | 3 | 99 |
| BR-P1 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 2 | 1050 |
| BR-P1 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 2 | 687 |
| BR-P1 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.30 | <3 | 5 | 727 |
| BR-R1 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 172.0 | 1990.0 |
| BR-R1 | BRID | 7/24/2006 | 0.08 | <0.05 | <0.05 | <0.01 | <0.02 | 0.6 | <3 | 147.0 | 1990.0 |
| BR-R1 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.04 | 0.7 | <3 | 43.0 | 1410.0 |
| BR-R1 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.14 | 0.5 | <3 | 56.0 | >201 |
| BR-R1 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 38 | >2419 |
| BR-R1 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.06 | 0.6 | <3 | 158 | >2419 |
| BR-R1 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | <3 | 36 | 866 |
| BR-R1 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.30 | <3 | 20 | >2419 |
| BR-R2 | BRID | 7/10/2006 | 0.06 | <0.05 | <0.05 | 0.06 | 0.11 | 0.6 | 31 | 345.0 | 4840.0 |
| BR-R2 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | 0.07 | 0.10 | 0.7 | 10 | 461.0 | >2419 |
| BR-R2 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.06 | 0.7 | 11 | 184.0 | >2419 |
| BR-R2 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.07 | 0.8 | 6 | 165.0 | >201 |
| BR-R2 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.10 | 0.15 | 0.7 | 8 | 104 | >2419 |
| BR-R2 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.05 | 0.6 | 14 | 150 | >2419 |
| BR-R2 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.05 | 0.4 | 12 | 308 | 2420 |
| BR-R2 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.08 | 0.50 | 7 | 147 | >2419 |
| BR-R3 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.06 | 0.11 | 0.9 | 16 | >201 | >201 |
| BR-R3 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.08 | 0.7 | 4 | 649.0 | >2419 |
| BR-R3 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.07 | 0.8 | 4 | 111.0 | >2419 |
| BR-R3 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.06 | 0.8 | 5 | 66.0 | >2419 |
| BR-R3 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.04 | 0.7 | 4 | 548 | >2419 |
| BR-R3 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.06 | 0.6 | 10 | 501 | >2419 |
| BR-R3 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.08 | 0.7 | 19 | 980 | >2419 |
| BR-R3 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.10 | 0.60 | 14 | 649 | >2419 |
| BR-R4 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.07 | 0.8 | 4 | 112.0 | >2419 |
| BR-R4 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.08 | 1.0 | 6 | 73.0 | >2419 |
| BR-R4 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.05 | 1.0 | 3 | 10.0 | >2419 |
| BR-R4 | BRID | 8/21/2006 | <0.05 | <0.05 | 0.05 | 0.01 | 0.06 | 1.0 | 6 | 3.0 | >201 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-R4 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.01 | <0.02 | 0.5 | <3 | 387 | >2419 |
| BR-R4 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.05 | 0.7 | <3 | 248 | >2419 |
| BR-R4 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.05 | 0.6 | <3 | 34 | >2419 |
| BR-R4 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.90 | 7 | 28 | >2419 |
| BR-R5 | BRID | 7/10/2006 | 0.50 | <0.05 | 0.29 | 0.01 | 0.02 | 1.8 | <3 | 108.0 | 1550.0 |
| BR-R5 | BRID | 7/24/2006 | 0.08 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 18.0 | 548.0 |
| BR-R5 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.6 | <3 | 23.0 | 1550.0 |
| BR-R5 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.10 | 0.8 | <3 | >201 | >201 |
| BR-R5 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 19 | 770 |
| BR-R5 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 102 | >2419 |
| BR-R5 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 9 | >2419 |
| BR-R5 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.50 | <3 | 26 | >2419 |
| BR-R6 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.03 | 0.5 | 4 | 308 | >2419 |
| BR-R6 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.03 | 0.5 | <3 | 104 | >2419 |
| BR-R6 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 6 | 81 | 921 |
| BR-R6 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.40 | 3 | 147 | >2419 |
| BR-S1 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 11.0 | 387.0 |
| BR-S1 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 16.0 | 2420.0 |
| BR-S1 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 4 | 19.0 | 1730.0 |
| BR-S1 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 3 | 59.0 | >201 |
| BR-S1 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 9 | 1300 |
| BR-S1 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 19 | 816 |
| BR-S1 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 4 | 13 | 416 |
| BR-S1 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.30 | <3 | 248 | 1300 |
| BR-S2 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.09 | 1.3 | 7 | 15.0 | 921.0 |
| BR-S2 | BRID | 7/24/2006 | 0.07 | 0.07 | <0.05 | 0.02 | 0.07 | 1.2 | 4 | 12.0 | 1550.0 |
| BR-S2 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.10 | 1.4 | 3 | 2.0 | 1300.0 |
| BR-S2 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.17 | 0.29 | 1.4 | 17 | 3.0 | >201 |
| BR-S2 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.08 | 1.4 | 10 | <1 | 50 |
| BR-S2 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.08 | 1.3 | 7 | 2 | >2419 |
| BR-S2 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.10 | 0.22 | 1.6 | 16 | 78 | >2419 |
| BR-S2 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.06 | 0.21 | 1.50 | 13 | 39 | >2419 |
| BR-S3 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.5 | 5 | 25.0 | 1050.0 |
| BR-S3 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 7 | 12.0 | 1550.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-S3 | BRID | 8/8/2006 | <0.05 | <0.05 | 0.05 | <0.01 | <0.02 | 0.6 | 4 | 28.0 | 1120.0 |
| BR-S3 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 3 | 5.0 | >201 |
| BR-S3 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 5 | 15 | 517 |
| BR-S3 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 14 | 1300 |
| BR-S3 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 10 | 613 |
| BR-S3 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.30 | <3 | 1 | 816 |
| BR-S4 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.5 | 8 | 6.0 | 575.0 |
| BR-S4 | BRID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 11 | 9.0 | 980.0 |
| BR-S4 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 4.0 | 722.0 |
| BR-S4 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 3 | 2.0 | >201 |
| BR-S4 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | <3 | 9 | 649 |
| BR-S4 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 62 | 1120 |
| BR-S4 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 4 | 866 |
| BR-S4 | BRID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.40 | 4 | 3 | 1050 |
| BR-S5 | BRID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.9 | 4 | 5.0 | 260.0 |
| BR-S5 | BRID | 7/24/2006 | 0.08 | 0.08 | <0.05 | <0.01 | <0.02 | 5.3 | 4 | 77.0 | 1300.0 |
| BR-S5 | BRID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.8 | 3 | 18.0 | 613.0 |
| BR-S5 | BRID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.8 | <3 | 8.0 | >201 |
| BR-S5 | BRID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.7 | 3 | 10 | 488 |
| BR-S5 | BRID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.7 | <3 | 6 | 517 |
| BR-S5 | BRID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.8 | 5 | 15 | 2420 |
| BR-S5 | BRID | 8/27/2007 | <0.07 | <0.05 | 0.05 | <0.01 | 0.04 | 0.90 | 3 | 7 | >2419 |
| E-P1 | EID | 7/5/2006 | 0.19 | <0.05 | <0.05 | 0.01 | 0.02 | <0.2 | 11 | 10.0 | 240.0 |
| E-P1 | EID | 7/19/2006 | 0.27 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 4 | 13.0 | 727.0 |
| E-P1 | EID | 8/16/2006 | 0.56 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 40.0 | 365.0 |
| E-P1 | EID | 8/30/2006 | 0.49 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 17.0 | 270.0 |
| E-P1 | EID | 6/20/2007 | 0.27 | <0.05 | 0.09 | <0.01 | 0.10 | 2.5 | 7 | 196 | >2419 |
| E-P1 | EID | 7/11/2007 | 0.24 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 5 | 365 |
| E-P1 | EID | 8/8/2007 | 0.46 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | 26 | 1550 |
| E-P1 | EID | 8/22/2007 | 0.51 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 13 | 649 |
| E-R1 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.4 | <3 | 78.0 | 914.0 |
| E-R1 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 31.0 | 1990.0 |
| E-R1 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 3 | 99.0 | 1120.0 |
| E-R1 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 57.0 | 1990.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R1 | EID | 6/20/2007 | <0.07 | <0.05 | 0.11 | <0.01 | <0.02 | 0.5 | <3 | 111 | 1120 |
| E-R1 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.03 | 0.7 | <3 | 111 | >2419 |
| E-R1 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 32 | 1990 |
| E-R1 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 16 | 1550 |
| E-R2 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.06 | 0.7 | <3 | 691.0 | 691.0 |
| E-R2 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.11 | <0.2 | 11 | 156.0 | >2419 |
| E-R2 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.02 | 0.2 | 3 | 78.0 | >2419 |
| E-R2 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.03 | 0.3 | 6 | 488.0 | >2419 |
| E-R2 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.03 | 0.4 | <3 | 980 | >2419 |
| E-R2 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.06 | 0.4 | 5 | 2420 | >2419 |
| E-R2 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.05 | 0.3 | 11 | 248 | >2419 |
| E-R2 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.03 | 0.4 | <3 | 66 | >2419 |
| E-R3 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.6 | <3 | 37.0 | 1410.0 |
| E-R3 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | <3 | 93.0 | 1990.0 |
| E-R3 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 29.0 | 1550.0 |
| E-R3 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 44.0 | >2419 |
| E-R3 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 38 | 1730 |
| E-R3 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.08 | 0.5 | <3 | 55 | >2419 |
| E-R3 | EID | 8/8/2007 | 5.54 | 5.54 | <0.05 | <0.01 | 0.03 | <0.2 | <3 | 21 | >2419 |
| E-R3 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 9 | 1300 |
| E-R4 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.04 | 0.6 | 6 | 18.0 | 572.0 |
| E-R4 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 96.0 | >2419 |
| E-R4 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 5 | 185.0 | 961.0 |
| E-R4 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 5 | 86.0 | 1990.0 |
| E-R4 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 238 | >2419 |
| E-R4 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 67 | >2419 |
| E-R4 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 5 | 157 | >2419 |
| E-R4 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | <3 | 58 | >2419 |
| E-R5 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 12.0 | 1120.0 |
| E-R5 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 39.0 | 1410.0 |
| E-R5 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 4.0 | 2420.0 |
| E-R5 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 12.0 | >2419 |
| E-R5 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 23 | >2419 |
| E-R5 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.07 | 0.3 | <3 | 41 | >2419 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R5 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 16 | >2419 |
| E-R5 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 35 | >2419 |
| E-S1 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.4 | 4 | 17.0 | 304.0 |
| E-S1 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 4 | 23.0 | 866.0 |
| E-S1 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.6 | 4 | 6.0 | 1410.0 |
| E-S1 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | 5 | 12.0 | >2419 |
| E-S1 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | <3 | 4 | 365 |
| E-S1 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 3 | 2 | 488 |
| E-S1 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.9 | <3 | 2 | 1550 |
| E-S1 | EID | 8/22/2007 | 0.10 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | <3 | <1 | 921 |
| E-S2 | EID | 7/5/2006 | 0.11 | <0.05 | <0.05 | 0.01 | <0.02 | <0.2 | <3 | 78.0 | 1200.0 |
| E-S2 | EID | 7/19/2006 | 0.18 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 12 | 20.0 | 1120.0 |
| E-S2 | EID | 8/16/2006 | 0.52 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 4 | 20.0 | 1990.0 |
| E-S2 | EID | 8/30/2006 | 0.43 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | 13.0 | 1410.0 |
| E-S2 | EID | 6/20/2007 | 0.21 | <0.05 | 0.06 | <0.01 | <0.02 | <0.2 | <3 | 60 | 579 |
| E-S2 | EID | 7/11/2007 | 0.23 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 12 | 921 |
| E-S2 | EID | 8/8/2007 | 0.35 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 6 | 11 | 1550 |
| E-S2 | EID | 8/22/2007 | 0.43 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 14 | 921 |
| E-S3 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.3 | <3 | 17.0 | 261.0 |
| E-S3 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.08 | 0.5 | 4 | 24.0 | 613.0 |
| E-S3 | EID | 8/16/2006 | 0.15 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 5 | 4.0 | 194.0 |
| E-S3 | EID | 8/30/2006 | 0.11 | <0.05 | 0.06 | <0.01 | 0.02 | 0.4 | <3 | 9.0 | 2420.0 |
| E-S3 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 5 | 123 |
| E-S3 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.08 | 0.3 | 3 | 4 | 517 |
| E-S3 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | 8 | 197 | >2419 |
| E-S3 | EID | 8/22/2007 | 0.14 | <0.05 | <0.05 | <0.01 | 0.04 | 0.5 | 7 | 17 | 1550 |
| E-S4 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.06 | <0.02 | <0.2 | <3 | 6.0 | 461.0 |
| E-S4 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 7.0 | 1200.0 |
| E-S4 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 2.0 | 411.0 |
| E-S4 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 5.0 | 921.0 |
| E-S4 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 1 | 127 |
| E-S4 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 2 | 613 |
| E-S4 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | <1 | 1410 |
| E-S4 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.2 | <3 | 3 | 270 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S5 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.3 | <3 | 1.0 | 179.0 |
| E-S5 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 4.0 | 178.0 |
| E-S5 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 6.0 | 1010.0 |
| E-S5 | EID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | <1 | 461.0 |
| E-S5 | EID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 6 | 68 |
| E-S5 | EID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.3 | <3 | 1 | 365 |
| E-S5 | EID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 2 | 517 |
| E-S5 | EID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 1 | 727 |
| E-S6 | EID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.02 | 0.7 | 3 | 2.0 | 328.0 |
| E-S6 | EID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 3 | 1.0 | 291.0 |
| E-S6 | EID | 8/16/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.9 | <3 | 10.0 | 727.0 |
| E-S6 | EID | 8/30/2006 | 0.06 | <0.05 | <0.05 | 0.02 | 0.06 | 0.7 | 8 | 32.0 | 120.0 |
| E-S6 | EID | 6/20/2007 | <0.07 | <0.05 | 0.09 | <0.01 | 0.02 | 0.6 | <3 | 1 | 143 |
| E-S6 | EID | 7/11/2007 | 0.26 | <0.05 | <0.05 | <0.01 | 0.11 | 1.2 | 8 | 2 | 488 |
| E-S6 | EID | 8/8/2007 | <0.07 | <0.05 | 0.31 | 0.05 | 0.14 | 2.1 | 10 | 130 | >2419 |
| E-S6 | EID | 8/22/2007 | <0.07 | <0.05 | 0.05 | 0.07 | 0.17 | 1.7 | 6 | 10 | >2419 |
| LN-P1 | LNID | 7/10/2006 | 0.09 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 9 | 78.0 | 488.0 |
| LN-P1 | LNID | 7/24/2006 | 0.19 | 0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 161.0 | 1120.0 |
| LN-P1 | LNID | 8/8/2006 | 0.10 | <0.05 | 0.06 | <0.01 | <0.02 | <0.2 | 4 | 15.0 | 214.0 |
| LN-P1 | LNID | 8/21/2006 | 0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 29.0 | 118.0 |
| LN-P1 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 9 | 4 | 649 |
| LN-P1 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 21 | 387 |
| LN-P1 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 7 | 99 |
| LN-P1 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 23 | 517 |
| LN-R1 | LNID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.14 | 0.8 | 164 | >2419 | >2419 |
| LN-R1 | LNID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.10 | 0.8 | 91 | 649.0 | >2419 |
| LN-R1 | LNID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.09 | 0.6 | 24 | 189.0 | >2419 |
| LN-R1 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.10 | 0.9 | 87 | 201.0 | 201.0 |
| LN-R1 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.09 | 0.6 | 76 | 166 | >2419 |
| LN-R1 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.19 | 0.7 | 152 | 1050 | >2419 |
| LN-R1 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.05 | 0.4 | 57 | 185 | >2419 |
| LN-R1 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.07 | 0.40 | 59 | 236 | >2419 |
| LN-R2 | LNID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.08 | 0.6 | 12 | 179.0 | >2419 |
| LN-R2 | LNID | 7/24/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.08 | 0.6 | 10 | 397.0 | >2419 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-R2 | LNID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.04 | 0.5 | 5 | 86.0 | 1990.0 |
| LN-R2 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.04 | 0.5 | 6 | >201 | >201 |
| LN-R2 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | 10 | 70 | >2419 |
| LN-R2 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.06 | 0.4 | 10 | 205 | >2419 |
| LN-R2 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.4 | 8 | 144 | >2419 |
| LN-R2 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.30 | 9 | 137 | >2419 |
| LN-S1 | LNID | 7/10/2006 | 0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 24 | 42.0 | 2420.0 |
| LN-S1 | LNID | 7/24/2006 | 0.10 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 8 | 261.0 | 1410.0 |
| LN-S1 | LNID | 8/8/2006 | 0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 22.0 | 236.0 |
| LN-S1 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 14.0 | >201 |
| LN-S1 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 9 | 921 |
| LN-S1 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 35 | 1120 |
| LN-S1 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 11 | 345 |
| LN-S1 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 36 | 435 |
| LN-S2 | LNID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 5 | <1 | 236.0 |
| LN-S2 | LNID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.6 | 3 | 14.0 | 980.0 |
| LN-S2 | LNID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | 4 | 2.0 | 770.0 |
| LN-S2 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 7 | >201 | >201 |
| LN-S2 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 10 | 111 |
| LN-S2 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 3 | 260 |
| LN-S2 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 4 | 26 | 457 |
| LN-S2 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.30 | 5 | 38 | 866 |
| LN-S3 | LNID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | <3 | 7.0 | 411.0 |
| LN-S3 | LNID | 7/24/2006 | 0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | <3 | 12.0 | 517.0 |
| LN-S3 | LNID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 3 | 2.0 | 355.0 |
| LN-S3 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 15.0 | >201 |
| LN-S3 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 1 | 488 |
| LN-S3 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 2 | 1200 |
| LN-S3 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 51 | 1410 |
| LN-S3 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 59 | >2419 |
| LN-S4 | LNID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.03 | 0.4 | 24 | 11.0 | 980.0 |
| LN-S4 | LNID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 11 | 7.0 | 866.0 |
| LN-S4 | LNID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 6 | 7.0 | 687.0 |
| LN-S4 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.7 | 5 | 22.0 | >201 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S4 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.05 | 0.4 | 56 | 17 | 326 |
| LN-S4 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 14 | 23 | 1730 |
| LN-S4 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 6 | 82 | 1990 |
| LN-S4 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.30 | 6 | 24 | 1300 |
| LN-S5 | LNID | 7/10/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | 6 | 10.0 | 345.0 |
| LN-S5 | LNID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | <3 | 58.0 | 1300.0 |
| LN-S5 | LNID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 4 | 54.0 | 2420.0 |
| LN-S5 | LNID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | 6 | >201 | >201 |
| LN-S5 | LNID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 5 | 4 | 225 |
| LN-S5 | LNID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 6 | 1990 |
| LN-S5 | LNID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 5 | 133 | 921 |
| LN-S5 | LNID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.40 | 5 | 135 | >2419 |
| AEP-P1 | MID | 7/11/2006 | 0.09 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 19.0 | >2419 |
| AEP-P1 | MID | 7/24/2006 | 0.11 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 6.0 | 21.0 |
| AEP-P1 | MID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 10.0 | 108.0 |
| AEP-P1 | MID | 8/21/2006 | 0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 27.0 | 201.0 |
| AEP-P1 | MID | 6/27/2007 | 0.08 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 5 | 86 |
| AEP-P1 | MID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 2 | 1200 |
| AEP-P1 | MID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | <1 | 91 |
| AEP-P1 | MID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | <3 | 6 | 78 |
| AEP-S1 | MID | 7/11/2006 | 0.09 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 18.0 | >2419 |
| AEP-S1 | MID | 7/24/2006 | 0.09 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 11.0 | 192.0 |
| AEP-S1 | MID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 21.0 | 435.0 |
| AEP-S1 | MID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 14.0 | 165.0 |
| AEP-S1 | MID | 6/27/2007 | 0.08 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 32 | 276 |
| AEP-S1 | MID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 50 | 1200 |
| AEP-S1 | MID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 20 | 435 |
| AEP-S1 | MID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 17 | 194 |
| AEP-S2 | MID | 7/10/2006 | 0.08 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 34.0 | 548.0 |
| AEP-S2 | MID | 7/24/2006 | 0.13 | 0.06 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 124.0 | 345.0 |
| AEP-S2 | MID | 8/9/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 6.0 | 140.0 |
| AEP-S2 | MID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 2.0 | 145.0 |
| AEP-S2 | MID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 12 | 112 |
| AEP-S2 | MID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 47 | 687 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AEP-S2 | MID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 2 | 387 |
| AEP-S2 | MID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 5 | 147 |
| M-P1 | MID | 7/10/2006 | 0.18 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 6.0 | 1200.0 |
| M-P1 | MID | 7/24/2006 | 0.17 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 4.0 | >2419 |
| M-P1 | MID | 8/9/2006 | 0.08 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 3.0 | >2419 |
| M-P1 | MID | 8/21/2006 | 0.09 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 1.0 | >201 |
| M-P1 | MID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 4 | 120 |
| M-P1 | MID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 6 | >2419 |
| M-P1 | MID | 8/13/2007 | 0.28 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 2 | 249 |
| M-P1 | MID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | 3 | 2 | 291 |
| M-P2 | MID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.07 | 0.3 | 3 | 308.0 | 1730.0 |
| M-P2 | MID | 7/24/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.05 | 0.9 | 3 | 130.0 | 613.0 |
| M-P2 | MID | 8/9/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.13 | 0.2 | 4 | 113.0 | 1990.0 |
| M-P2 | MID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.2 | <3 | 41.0 | >201 |
| M-P2 | MID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.04 | 0.2 | <3 | 921 | >2419 |
| M-P2 | MID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.05 | 0.04 | 0.2 | 3 | 166 | >2419 |
| M-P2 | MID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.04 | <0.2 | 8 | 76 | 435 |
| M-P2 | MID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.03 | <0.2 | <3 | 20 | >2419 |
| M-R1 | MID | 7/10/2006 | 0.46 | <0.05 | <0.05 | 0.02 | 0.10 | 0.7 | 69 | 770.0 | >2419 |
| M-R1 | MID | 7/24/2006 | 0.31 | <0.05 | <0.05 | 0.03 | 0.07 | 0.5 | 24 | 139.0 | 2420.0 |
| M-R1 | MID | 8/9/2006 | 0.19 | <0.05 | <0.05 | 0.03 | 0.04 | 0.3 | 7 | 43.0 | >2419 |
| M-R1 | MID | 8/21/2006 | 0.31 | <0.05 | <0.05 | 0.02 | 0.03 | 0.3 | 4 | 14.0 | >201 |
| M-R1 | MID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.07 | 0.3 | 38 | 387 | >2419 |
| M-R1 | MID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.06 | 0.4 | 15 | 816 | >2419 |
| M-R1 | MID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.03 | <0.2 | <3 | 19 | 365 |
| M-R1 | MID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.04 | <0.2 | 7 | 93 | >2419 |
| MV-P1 | MVID | 7/11/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.04 | 0.4 | <3 | <1 | 436.0 |
| MV-P1 | MVID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | <3 | 1.0 | 770.0 |
| MV-P1 | MVID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | 3 | <1 | >2419 |
| MV-P1 | MVID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.03 | 0.3 | <3 | <1 | 201.0 |
| MV-P1 | MVID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | 3 | 3 | 225 |
| MV-P1 | MVID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.01 | <0.02 | 0.3 | 3 | <1 | 579 |
| MV-P1 | MVID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 4 | 4 | 921 |
| MV-P1 | MVID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.9 | 6 | 3 | 1200 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MV-R1 | MVID | 7/11/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.07 | 0.9 | 23 | 517.0 | >2419 |
| MV-R1 | MVID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.05 | 0.6 | 14 | 173.0 | >2419 |
| MV-R1 | MVID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 11 | 70.0 | 1200.0 |
| MV-R1 | MVID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 6 | 101.0 | 145.0 |
| MV-R1 | MVID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 62 | 1550 |
| MV-R1 | MVID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 6 | 291 | >2419 |
| MV-R1 | MVID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | <3 | 86 | 1050 |
| MV-R1 | MVID | 8/27/2007 | 0.15 | 0.09 | <0.05 | <0.01 | 0.04 | 0.6 | <3 | 238 | >2419 |
| R-P1 | RID | 7/10/2006 | 0.17 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 9 | 15.0 | 816.0 |
| R-P1 | RID | 7/24/2006 | 0.17 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 6 | 36.0 | 1730.0 |
| R-P1 | RID | 8/9/2006 | 0.64 | 0.10 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 10.0 | 727.0 |
| R-P1 | RID | 8/21/2006 | 0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 5.0 | 118.0 |
| R-P1 | RID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 9 | 261 |
| R-P1 | RID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.2 | 5 | 31 | 1550 |
| R-P1 | RID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 17 | 756 |
| R-P1 | RID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 16 | 980 |
| R-R1 | RID | 7/10/2006 | 0.08 | <0.05 | <0.05 | 0.08 | 0.14 | 0.5 | 40 | 517.0 | >2419 |
| R-R1 | RID | 7/24/2006 | <0.05 | <0.05 | 0.09 | 0.20 | 0.27 | 0.9 | 34 | 517.0 | >2419 |
| R-R1 | RID | 8/9/2006 | <0.05 | <0.05 | <0.05 | 0.17 | 0.21 | 0.5 | 7 | 219.0 | >2419 |
| R-R1 | RID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.08 | 0.12 | 0.5 | 19 | >201 | >201 |
| R-R1 | RID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.12 | 0.5 | 25 | 687 | >2419 |
| R-R1 | RID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.08 | 0.17 | 0.5 | 28 | 770 | >2419 |
| R-R1 | RID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.06 | 0.11 | 0.4 | 32 | 326 | 2420 |
| R-R1 | RID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.09 | 0.30 | 17 | 192 | >2419 |
| R-R2 | RID | 7/10/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.07 | 0.3 | 29 | 99.0 | >2419 |
| R-R2 | RID | 7/24/2006 | 0.12 | 0.06 | <0.05 | 0.03 | 0.08 | 0.3 | 35 | 313.0 | >2419 |
| R-R2 | RID | 8/9/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.05 | 0.3 | 20 | 77.0 | >2419 |
| R-R2 | RID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.05 | 0.2 | 18 | 130.0 | >201 |
| R-R2 | RID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.06 | 0.2 | 4 | 613 | >2419 |
| R-R2 | RID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.05 | 0.3 | 14 | 1990 | >2419 |
| R-R2 | RID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.05 | 0.2 | 14 | 161 | 2420 |
| R-R2 | RID | 8/27/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.06 | 0.20 | 11 | 157 | >2419 |
| SMC-P1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.02 | 0.2 | 13 | 28.0 | 980.0 |
| SMC-P1 | SMRID | 7/17/2006 | 0.06 | 0.06 | <0.05 | <0.01 | <0.02 | 0.4 | 6 | 6.0 | 517.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-P1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 36.0 | 219.0 |
| SMC-P1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 9.0 | 461.0 |
| SMC-P1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 68 | >2419 |
| SMC-P1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 13 | 28 | 2420 |
| SMC-P1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 50 | 2420 |
| SMC-P1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 31 | 579 |
| SMC-R1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | 3 | 39.0 | 1730.0 |
| SMC-R1 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.7 | <3 | 152.0 | 1050.0 |
| SMC-R1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | 4 | 77.0 | 1730.0 |
| SMC-R1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.05 | 1.1 | 3 | 13.0 | 866.0 |
| SMC-R1 | SMRID | 6/25/2007 | <0.07 | <0.05 | 0.07 | <0.01 | <0.02 | 0.5 | <3 | 326 | >2419 |
| SMC-R1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 5 | 76 | >2419 |
| SMC-R1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.11 | 1.3 | 6 | 96 | >2419 |
| SMC-R1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.10 | 1.4 | 13 | 153 | >2419 |
| SMC-R2 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.05 | 0.12 | 1.3 | 9 | <1 | 59.0 |
| SMC-R2 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.7 | <3 | 3.0 | 73.0 |
| SMC-R2 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.27 | 3.0 | 23 | 1.0 | 157.0 |
| SMC-R2 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.54 | 5.0 | 47 | 1.0 | 921.0 |
| SMC-R2 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.05 | 0.9 | <3 | 2 | 140 |
| SMC-R2 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.07 | 0.8 | <3 | 1 | 56 |
| SMC-R2 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.24 | 2.9 | 17 | 7 | >2419 |
| SMC-R2 | SMRID | 8/20/2007 | <0.07 | <0.05 | 0.16 | <0.01 | 0.25 | 3.2 | 17 | 9 | 1120 |
| SMC-R3 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.03 | 0.6 | <3 | 10.0 | 281.0 |
| SMC-R3 | SMRID | 7/17/2006 | 0.06 | 0.06 | <0.05 | 0.11 | 0.23 | 2.1 | 10 | 5.0 | 613.0 |
| SMC-R3 | SMRID | 8/14/2006 | 0.14 | <0.05 | <0.05 | <0.01 | 0.04 | 0.7 | 5 | 13.0 | 579.0 |
| SMC-R3 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.09 | 1.2 | 8 | 24.0 | 1300.0 |
| SMC-R3 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 222 | >2419 |
| SMC-R3 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 74 | >2419 |
| SMC-R3 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 44 | >2419 |
| SMC-R3 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.12 | 1.7 | 11 | 19 | >2419 |
| SMC-R4 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 3 | 50.0 | 2420.0 |
| SMC-R4 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 9 | 199.0 | 1990.0 |
| SMC-R4 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 361.0 | >2419 |
| SMC-R4 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 8 | 365.0 | >2419 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-R4 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 84 | >2419 |
| SMC-R4 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 11 | 687 | >2419 |
| SMC-R4 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | <3 | 238 | >2419 |
| SMC-S1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 3.0 | 238.0 |
| SMC-S1 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.02 | 0.5 | <3 | 2.0 | 435.0 |
| SMC-S1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 16.0 | 1050.0 |
| SMC-S1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | 3 | 6.0 | >2419 |
| SMC-S1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 1 | 194 |
| SMC-S1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 5 | 387 |
| SMC-S1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | 3 | 13 | >2419 |
| SMC-S1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.4 | <3 | 15 | >2419 |
| SMC-S2 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 3 | 84.0 | 1120.0 |
| SMC-S2 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | 4 | 72.0 | 461.0 |
| SMC-S2 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | 4 | 27.0 | 1550.0 |
| SMC-S2 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.07 | 0.9 | 4 | 16.0 | 921.0 |
| SMC-S2 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 326 | >2419 |
| SMC-S2 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | <3 | 30 | 1410 |
| SMC-S2 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.04 | 0.5 | 3 | 12 | >2419 |
| SMC-S2 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.10 | 1.3 | 6 | 20 | >2419 |
| SMC-S3 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.04 | 0.4 | 22 | 27.0 | 1550.0 |
| SMC-S3 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 15 | 12.0 | 326.0 |
| SMC-S3 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 7 | 16.0 | 649.0 |
| SMC-S3 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 6 | 13.0 | 921.0 |
| SMC-S3 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 15 | 29 | 649 |
| SMC-S3 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 8 | 7 | 148 |
| SMC-S3 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 15 | 436 |
| SME-P1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.5 | 4 | <1 | 291.0 |
| SME-P1 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.6 | <3 | <1 | 387.0 |
| SME-P1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.6 | <3 | 7.0 | 1410.0 |
| SME-P1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | 3 | <1 | 1050.0 |
| SME-P1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 3 | 7 | 210 |
| SME-P1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | 7 | 1 | 1200 |
| SME-P1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.4 | 5 | 37 | >2419 |
| SME-P1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.11 | 1.4 | 22 | 10 | 1730 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SME-R1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.06 | 0.8 | 5 | 488.0 | >2419 |
| SME-R1 | SMRID | 7/17/2006 | <0.05 | <0.05 | 0.10 | <0.01 | 0.14 | 1.4 | 67 | >2419 | >2419 |
| SME-R1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.11 | 1.1 | 28 | 921.0 | >2419 |
| SME-R1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.18 | 2.0 | 26 | 54.0 | >2419 |
| SME-R1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.9 | 10 | 548 | >2419 |
| SME-R1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.08 | 0.9 | 12 | 102 | >2419 |
| SME-R1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.04 | 0.5 | 20 | 228 | >2419 |
| SME-R1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.11 | 1.2 | 30 | 517 | >2419 |
| SME-S1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.04 | 0.7 | 10 | 1.0 | >2419 |
| SME-S1 | SMRID | 7/17/2006 | <0.05 | <0.05 | 0.05 | 0.01 | 0.09 | 1.2 | 11 | 15.0 | 1990.0 |
| SME-S1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.13 | 1.2 | 21 | 1.0 | 649.0 |
| SME-S1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.05 | 0.18 | 1.4 | 32 | 16.0 | 1990.0 |
| SME-S1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.9 | 10 | 1 | 276 |
| SME-S1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.09 | 1.1 | 19 | 6 | 1990 |
| SME-S1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.09 | 1.1 | 21 | 3 | >2419 |
| SME-S1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.8 | 8 | 37 | >2419 |
| SMW-P1 | SMRID | 7/4/2006 | 0.25 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | 9 | 8.0 | 461.0 |
| SMW-P1 | SMRID | 7/17/2006 | 0.11 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 9 | 5.0 | 687.0 |
| SMW-P1 | SMRID | 8/14/2006 | 0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 1.0 | 328.0 |
| SMW-P1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 2.0 | 727.0 |
| SMW-P1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 10 | 488 |
| SMW-P1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | 7 | 10 | 613 |
| SMW-P1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 19 | >2419 |
| SMW-P1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | 6 | 6 | 649 |
| SMW-R1 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 14 | 127.0 | 756.0 |
| SMW-R1 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | 13 | 219.0 | 1010.0 |
| SMW-R1 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 11 | 96.0 | 1730.0 |
| SMW-R1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 14 | 111.0 | >2419 |
| SMW-R1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 249 | >2419 |
| SMW-R1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 8 | 231 | >2419 |
| SMW-R1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 613 | >2419 |
| SMW-R1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | <0.2 | 3 | 276 | >2419 |
| SMW-R2 | SMRID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.07 | 0.5 | 10 | 28.0 | 602.0 |
| SMW-R2 | SMRID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.05 | 0.2 | 11 | 19.0 | 1120.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SMW-R2 | SMRID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 4 | 39.0 | 2420.0 |
| SMW-R2 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | <3 | 28.0 | >2419 |
| SMW-R2 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 49 | >2419 |
| SMW-R2 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.2 | 21 | 125 | >2419 |
| SMW-R2 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 9 | 88 | >2419 |
| SMW-R2 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 6 | 66 | >2419 |
| SMW-S1 | SMRID | 7/4/2006 | 0.26 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 27 | 21.0 | 299.0 |
| SMW-S1 | SMRID | 7/17/2006 | 0.13 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 8 | 12.0 | 517.0 |
| SMW-S1 | SMRID | 8/14/2006 | 0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 10.0 | 548.0 |
| SMW-S1 | SMRID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 5.0 | 649.0 |
| SMW-S1 | SMRID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 11 | 435 |
| SMW-S1 | SMRID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 9 | 12 | 866 |
| SMW-S1 | SMRID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | 12 | 11 | >2419 |
| SMW-S1 | SMRID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 3 | 411 |
| T-P1 | TID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 1.0 | 99.0 |
| T-P1 | TID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 1.0 | 387.0 |
| T-P1 | TID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 488.0 | >2419 |
| T-P1 | TID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | 649.0 | >2419 |
| T-P1 | TID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 7 | 1410 |
| T-P1 | TID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 5 | 5 | 816 |
| T-P1 | TID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 228 | >2419 |
| T-P1 | TID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 210 | >2419 |
| T-R1 | TID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.04 | 0.7 | 3 | 27.0 | 1730.0 |
| T-R1 | TID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.9 | 3 | 10.0 | 1010.0 |
| T-R1 | TID | 8/14/2006 | <0.05 | <0.05 | 0.07 | 0.02 | 0.07 | 0.8 | 5 | 15.0 | >2419 |
| T-R1 | TID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.05 | 0.6 | 5 | 76.0 | >2419 |
| T-R1 | TID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.6 | <3 | 99 | >2419 |
| T-R1 | TID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.05 | 0.8 | 6 | 38 | >2419 |
| T-R1 | TID | 8/7/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.07 | 0.6 | <3 | 43 | >2419 |
| T-R1 | TID | 8/20/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.07 | 0.7 | 3 | 179 | >2419 |
| T-R2 | TID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.04 | 0.6 | 4 | 19.0 | 2420.0 |
| T-R2 | TID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.07 | 0.7 | 5 | 22.0 | 2420.0 |
| T-R2 | TID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.6 | 5 | 28.0 | 1990.0 |
| T-R2 | TID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | 3 | 15.0 | 770.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T-R2 | TID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 135 | >2419 |
| T-R2 | TID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 3 | 66 | >2419 |
| T-R2 | TID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | <3 | 7 | >2419 |
| T-R2 | TID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.4 | 5 | 43 | >2419 |
| T-S1 | TID | 7/4/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 8 | 16.0 | 756.0 |
| T-S1 | TID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 6 | 9.0 | 687.0 |
| T-S1 | TID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 68.0 | 886.0 |
| T-S1 | TID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 31.0 | 1730.0 |
| T-S1 | TID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 5 | 23 | >2419 |
| T-S1 | TID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 6 | 21 | 1990 |
| T-S1 | TID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 81 | >2419 |
| T-S1 | TID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | <0.2 | 4 | 70 | 1550 |
| T-S2 | TID | 7/4/2006 | <0.05 | <0.05 | 0.05 | 0.02 | 0.03 | 0.7 | 3 | 21.0 | 387.0 |
| T-S2 | TID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.05 | 1.0 | 6 | 19.0 | >2419 |
| T-S2 | TID | 8/14/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.08 | 0.8 | <3 | 47.0 | >2419 |
| T-S2 | TID | 8/28/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.06 | 0.8 | 4 | 435.0 | >2419 |
| T-S2 | TID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.6 | <3 | 4 | 770 |
| T-S2 | TID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.9 | 9 | 16 | >2419 |
| T-S2 | TID | 8/7/2007 | <0.07 | <0.05 | <0.05 | 0.03 | 0.07 | 0.7 | <3 | 119 | 2420 |
| T-S2 | TID | 8/20/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.10 | 1.1 | 7 | 649 | >2419 |
| T-S3 | TID | 7/4/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.02 | 0.6 | 6 | 5.0 | 154.0 |
| T-S3 | TID | 7/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.8 | <3 | 142.0 | 1050.0 |
| T-S3 | TID | 8/14/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.9 | <3 | 44.0 | 1730.0 |
| T-S3 | TID | 8/28/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.5 | <3 | 40.0 | >2419 |
| T-S3 | TID | 6/25/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | <3 | 131 | 1050 |
| T-S3 | TID | 7/9/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | <3 | 23 | 387 |
| T-S3 | TID | 8/7/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 1.0 | 4 | 770 | >2419 |
| T-S3 | TID | 8/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.7 | 3 | 365 | >2419 |
| U-P1 | UID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 117 | 291 |
| U-P1 | UID | 7/11/2006 | 0.10 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 29.0 | 135.0 |
| U-P1 | UID | 7/24/2006 | 0.06 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 51.0 | 138.0 |
| U-P1 | UID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 16.0 | 126.0 |
| U-P1 | UID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 14.0 | 201.0 |
| U-P1 | UID | 6/27/2007 | 0.09 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 4 | 51 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-P1 | UID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 141 | 579 |
| U-P1 | UID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 46 | 276 |
| U-R1 | UID | 7/11/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.09 | 0.5 | 58 | 33.0 | 1990.0 |
| U-R1 | UID | 7/24/2006 | 0.07 | 0.07 | <0.05 | 0.03 | 0.13 | 0.5 | 109 | 133.0 | >2419 |
| U-R1 | UID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.08 | 0.5 | 55 | 78.0 | >2419 |
| U-R1 | UID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.05 | 0.3 | 6 | 16.0 | >201 |
| U-R1 | UID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.08 | 0.3 | 60 | 57 | 1050 |
| U-R1 | UID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.08 | 0.3 | 72 | 579 | >2419 |
| U-R1 | UID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.06 | 0.4 | 31 | 345 | 2420 |
| U-R1 | UID | 8/27/2007 | <0.07 | 0.06 | <0.05 | 0.01 | 0.07 | 0.3 | 53 | 186 | >2419 |
| U-R2 | UID | 7/11/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.06 | 0.3 | 8 | 79.0 | >2419 |
| U-R2 | UID | 7/24/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.06 | 0.3 | 13 | 172.0 | 2420.0 |
| U-R2 | UID | 8/8/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.04 | 0.3 | 5 | 44.0 | 980.0 |
| U-R2 | UID | 8/21/2006 | <0.05 | <0.05 | <0.05 | 0.01 | 0.03 | 0.3 | <3 | 201.0 | >201 |
| U-R2 | UID | 6/27/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.06 | 0.2 | 31 | 28 | >2419 |
| U-R2 | UID | 7/16/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.03 | 0.2 | 20 | 326 | >2419 |
| U-R2 | UID | 8/13/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.03 | 0.2 | <3 | 48 | 921 |
| U-R2 | UID | 8/27/2007 | <0.07 | 0.06 | <0.05 | 0.01 | 0.04 | 0.2 | 3 | 101 | 1200 |
| U-S1 | UID | 7/11/2006 | <0.05 | <0.05 | 0.10 | 0.01 | 0.03 | 0.3 | <3 | 4.0 | 2420.0 |
| U-S1 | UID | 7/24/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 3.0 | >2419 |
| U-S1 | UID | 8/8/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 2.0 | 659.0 |
| U-S1 | UID | 8/21/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 9.0 | >201 |
| U-S1 | UID | 6/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 4 | 248 |
| U-S1 | UID | 7/16/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 3 | 6 | 534 |
| U-S1 | UID | 8/13/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | <3 | <1 | 120 |
| U-S1 | UID | 8/27/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | <0.2 | 4 | <1 | 326 |
| AEP-P2 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | <0.2 | 5 | 161.0 | 1050.0 |
| AEP-P2 | WID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 4 | 99.0 | >2419 |
| AEP-P2 | WID | 8/17/2006 | 0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 5 | 86.0 | >2419 |
| AEP-P2 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 77.0 | 602.0 |
| AEP-P2 | WID | 6/20/2007 | 0.40 | <0.05 | <0.05 | <0.01 | 0.11 | 1.7 | 10 | 28 | >2419 |
| AEP-P2 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.05 | <0.2 | 6 | 96 | >2419 |
| AEP-P2 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 44 | 1050 |
| AEP-P2 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | <0.2 | <3 | 19 | 1410 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W-P1 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.4 | 3 | 2.0 | >2419 |
| W-P1 | WID | 7/19/2006 | <0.05 | <0.05 | <0.05 | 0.24 | 0.33 | 1.5 | 11 | 12.0 | >2419 |
| W-P1 | WID | 8/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 6 | 2.0 | 980.0 |
| W-P1 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | 9 | 14.0 | 1010.0 |
| W-P1 | WID | 6/20/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 70 | <1 | 387 |
| W-P1 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.07 | 0.4 | 6 | 6 | >2419 |
| W-P1 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | <3 | 10 | >2419 |
| W-P1 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 5 | 15 | >2419 |
| W-P2 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.02 | <0.02 | 0.3 | 5 | 18.0 | 1120.0 |
| W-P2 | WID | 7/19/2006 | <0.05 | <0.05 | <0.05 | 0.02 | 0.03 | 0.3 | 5 | 10.0 | 1990.0 |
| W-P2 | WID | 8/17/2006 | <0.05 | <0.05 | 0.07 | <0.01 | <0.02 | 0.3 | 3 | 3.0 | 1410.0 |
| W-P2 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.02 | 0.2 | <3 | 21.0 | 1550.0 |
| W-P2 | WID | 6/20/2007 | 0.12 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 47 | 43 | 461 |
| W-P2 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.5 | 5 | 2 | 1120 |
| W-P2 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.2 | <3 | 15 | >2419 |
| W-P2 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.2 | 3 | 7 | 1550 |
| W-R2 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.14 | 0.27 | 0.9 | 26 | 120.0 | >2419 |
| W-R2 | WID | 7/19/2006 | 0.56 | 0.05 | <0.05 | <0.01 | <0.02 | <0.2 | 4 | 99.0 | 1410.0 |
| W-R2 | WID | 8/17/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.06 | 0.6 | 12 | 162.0 | >2419 |
| W-R2 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | 0.04 | 0.08 | 0.5 | 11 | 70.0 | >2419 |
| W-R2 | WID | 6/20/2007 | 0.37 | <0.05 | <0.05 | 0.11 | 0.15 | 1.3 | <3 | 219 | 1410 |
| W-R2 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | 0.13 | 0.31 | 1.1 | 47 | 687 | >2419 |
| W-R2 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | 0.06 | 0.11 | 0.4 | 37 | 87 | >2419 |
| W-R2 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | 0.04 | 0.07 | 0.4 | 14 | 178 | >2419 |
| W-S1 | WID | 7/5/2006 | 0.08 | <0.05 | <0.05 | 0.01 | 0.02 | 0.4 | 10 | 649.0 | 2420.0 |
| W-S1 | WID | 7/19/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.03 | 0.3 | 4 | 210.0 | 1990.0 |
| W-S1 | WID | 8/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.4 | 3 | 36.0 | 579.0 |
| W-S1 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.18 | 0.3 | 3 | 157.0 | 1730.0 |
| W-S1 | WID | 6/20/2007 | 2.78 | <0.05 | 0.05 | <0.01 | 0.06 | 1.2 | 18 | 89 | >2419 |
| W-S1 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.06 | 0.4 | 7 | 50 | 516 |
| W-S1 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 6 | 57 | 1730 |
| W-S1 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 7 | 52 | 397 |
| W-S2 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.07 | 0.5 | 10 | 71.0 | 1300.0 |
| W-S2 | WID | 7/19/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 7 | 31.0 | 816.0 |

**Appendix 3.1.** Nutrient, suspended solid and bacteria concentrations from the 80 irrigation district water quality study sites.

| CLIENTID | ID | SMPDATE | $NO_2$+$NO_3$-N mg $L^{-1}$ | $NO_2$-N mg $L^{-}$ | $NH_3$-N mg $L^{-}$ | DRP mg $L^{-}$ | TP mg $L^{-}$ | TKN mg $L^{-}$ | TSS mg $L^{-}$ | *E. coli* MPN 100 $mL^{-1}$ | Tot. Coliforms MPN 100 $mL^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W-S2 | WID | 8/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 9 | 172.0 | 1120.0 |
| W-S2 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.04 | 0.4 | 6 | 130.0 | 1050.0 |
| W-S2 | WID | 6/20/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.04 | 0.6 | <3 | 99 | 1050 |
| W-S2 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.09 | 0.6 | 6 | 56 | 1300 |
| W-S2 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.04 | 0.5 | 7 | 116 | >2419 |
| W-S2 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 23 | 80 | >2419 |
| W-S3 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.03 | 0.05 | 0.4 | 5 | 76.0 | 1120.0 |
| W-S3 | WID | 7/19/2006 | <0.05 | <0.05 | <0.05 | 0.03 | <0.02 | 0.3 | <3 | 23.0 | 866.0 |
| W-S3 | WID | 8/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.5 | 12 | 93.0 | 548.0 |
| W-S3 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 10 | 52.0 | 980.0 |
| W-S3 | WID | 6/20/2007 | 0.56 | <0.05 | 0.11 | 0.11 | 0.19 | 1.9 | <3 | 411 | >2419 |
| W-S3 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | 0.01 | 0.04 | 0.5 | 6 | 43 | 980 |
| W-S3 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 11 | 152 | >2419 |
| W-S3 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.2 | 7 | 86 | 1050 |
| W-S4 | WID | 7/5/2006 | <0.05 | <0.05 | <0.05 | 0.01 | <0.02 | 0.4 | 6 | 308.0 | 1730.0 |
| W-S4 | WID | 7/19/2006 | 0.07 | <0.05 | <0.05 | <0.01 | <0.02 | 0.2 | 12 | 53.0 | 866.0 |
| W-S4 | WID | 8/17/2006 | <0.05 | <0.05 | <0.05 | <0.01 | <0.02 | 0.3 | 5 | 210.0 | 2420.0 |
| W-S4 | WID | 8/30/2006 | <0.05 | <0.05 | <0.05 | <0.01 | 0.23 | 0.2 | 3 | 261.0 | >2419 |
| W-S4 | WID | 6/20/2007 | 0.58 | <0.05 | 0.05 | 0.31 | 0.49 | 2.0 | <3 | >2419 | >2419 |
| W-S4 | WID | 7/11/2007 | <0.07 | <0.05 | <0.05 | 0.02 | 0.03 | 0.5 | 4 | 196 | 1990 |
| W-S4 | WID | 8/8/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.03 | 0.3 | 3 | 272 | >2419 |
| W-S4 | WID | 8/22/2007 | <0.07 | <0.05 | <0.05 | <0.01 | 0.02 | 0.3 | 3 | 57 | >2419 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-P1 | AID | 7/11/2006 | 0.2 | 0.2 | 0.6 | 14.6 | 123 | 118 | 5.2 | 224 | 128 | 10 | <5 | 121 | 22.4 | 0.9 | 13.8 |
| A-P1 | AID | 7/24/2006 | 0.5 | 0.5 | 0.4 | 13.8 | 113 | 105 | 4.6 | 208 | 131 | 5 | <5 | 116 | 19.6 | 0.7 | 13.3 |
| A-P1 | AID | 8/8/2006 | 0.5 | 0.5 | 0.3 | 12.7 | 99 | 93 | 4.8 | 195 | 115 | <5 | <5 | 101 | 17.5 | 0.5 | 12.3 |
| A-P1 | AID | 8/21/2006 | 0.5 | 0.5 | 0.3 | 11.7 | 101 | 92 | 4.5 | 200 | 118 | 6 | <5 | 106 | 19.4 | 0.5 | 13.4 |
| A-P1 | AID | 6/27/2007 | 0.4 | 24.1 | 0.5 | 14.2 | 119 | 119 | 5.4 | 229 | 136 | <5 | <5 | 116 | 23.9 | 0.6 | 14.1 |
| A-P1 | AID | 7/16/2007 | 0.4 | 22.6 | 0.6 | 11.1 | 104 | 102 | 4.7 | 200 | 126 | <5 | <5 | 103 | 21.8 | 0.9 | 10.5 |
| A-P1 | AID | 8/13/2007 | 0.3 | 22.8 | 0.7 | 12 | 141 | 106 | 4.7 | 217 | 97 | 34 | <5 | 136 | 22.9 | 0.9 | 10.5 |
| A-P1 | AID | 8/27/2007 | 0.4 | 21 | 0.82 | 12.2 | 134 | 103 | 5.6 | 206 | 141 | <5 | <5 | 116 | 22.3 | 0.8 | 10.4 |
| A-R1 | AID | 7/11/2006 | 0.3 | 0.3 | 0.8 | 15.3 | 127 | 122 | 5.7 | 237 | 144 | <5 | <5 | 126 | 22.2 | 1 | 14.2 |
| A-R1 | AID | 7/24/2006 | 0.5 | 0.5 | 0.5 | 14.1 | 120 | 111 | 4.8 | 219 | 144 | <5 | <5 | 122 | 20.5 | 0.7 | 13.9 |
| A-R1 | AID | 8/8/2006 | 0.4 | 0.4 | 0.4 | 12.7 | 104 | 96 | 5 | 206 | 127 | <5 | <5 | 106 | 18.5 | 0.5 | 12.3 |
| A-R1 | AID | 8/21/2006 | 0.5 | 0.5 | 0.3 | 12 | 104 | 95 | 4.6 | 204 | 122 | <5 | <5 | 108 | 19.6 | 0.4 | 13.3 |
| A-R1 | AID | 6/27/2007 | 0.4 | 31.7 | 0.7 | 18 | 134 | 153 | 5.5 | 230 | 143 | <5 | <5 | 120 | 24.1 | 0.7 | 14.6 |
| A-R1 | AID | 7/16/2007 | 0.2 | 23.7 | 0.7 | 11.8 | 111 | 108 | 4.5 | 209 | 136 | <5 | <5 | 112 | 22.7 | 0.9 | 10.9 |
| A-R1 | AID | 8/13/2007 | 0.3 | 21.7 | 0.7 | 12.3 | 139 | 105 | 4.9 | 214 | 97 | 32 | <5 | 133 | 22.3 | 0.9 | 10.3 |
| A-R1 | AID | 8/27/2007 | 1.3 | 20.7 | 0.96 | 12.4 | 143 | 103 | 7.9 | 220 | 151 | <5 | <5 | 124 | 23 | 0.9 | 11.1 |
| AEP-P3 | BRID | 7/5/2006 | 6.2 | 6.2 | 1.2 | 13.7 | 191 | 161 | 37.8 | 325 | 155 | 5 | <5 | 135 | 42.9 | 1.2 | 13.5 |
| AEP-P3 | BRID | 7/19/2006 | 17.3 | 17.3 | 3.5 | 21.5 | 404 | 188 | 157 | 657 | 182 | 7 | <5 | 160 | 38.4 | 3.5 | 21.3 |
| AEP-P3 | BRID | 8/17/2006 | 8.1 | 8.1 | 1.6 | 14.6 | 197 | 162 | 41.8 | 352 | 147 | <5 | <5 | 127 | 38.4 | 1.6 | 13.1 |
| AEP-P3 | BRID | 8/30/2006 | 9.8 | 9.8 | 1.8 | 14.9 | 208 | 170 | 46.5 | 361 | 150 | <5 | <5 | 127 | 38.8 | 1.8 | 13.1 |
| AEP-P3 | BRID | 6/20/2007 | 5.2 | 43.3 | 1.4 | 13.7 | 190 | 165 | 32.8 | 331 | 160 | 5 | <5 | 140 | 44.2 | 2.2 | 13.5 |
| AEP-P3 | BRID | 7/11/2007 | 5.3 | 36.3 | 0.9 | 12.1 | 170 | 140 | 34.9 | 303 | 145 | <5 | <5 | 119 | 37.1 | 1.1 | 11.9 |
| AEP-P3 | BRID | 8/8/2007 | 7.3 | 41.8 | 1.5 | 16.3 | 222 | 171 | 40.4 | 342 | 162 | <5 | <5 | 133 | 39.1 | 1.6 | 13.3 |
| AEP-P3 | BRID | 8/22/2007 | 8.3 | 37.4 | 0.8 | 13.3 | 234 | 148 | 42 | 360 | 183 | <5 | <5 | 150 | 40.6 | 1.5 | 13.3 |
| AEP-S3 | BRID | 7/10/2006 | 7.4 | 7.4 | 2.8 | 21.1 | 300 | 205 | 104 | 491 | 161 | 7 | <5 | 143 | 44.4 | 2.6 | 18.5 |
| AEP-S3 | BRID | 7/24/2006 | 9 | 9 | 2.6 | 20.1 | 316 | 206 | 115 | 506 | 167 | 7 | <5 | 149 | 44.9 | 2.4 | 18.7 |
| AEP-S3 | BRID | 8/8/2006 | 8.5 | 8.5 | 2.5 | 19.1 | 292 | 184 | 105 | 504 | 160 | 6 | <5 | 141 | 43.5 | 2.3 | 18.7 |
| AEP-S3 | BRID | 8/21/2006 | 8.5 | 8.5 | 2.4 | 18.1 | 285 | 177 | 102 | 500 | 158 | 7 | <5 | 140 | 44.9 | 2.5 | 20.3 |
| AEP-S3 | BRID | 6/27/2007 | 9.7 | 44.4 | 2.3 | 20.1 | 292 | 194 | 110 | 512 | 148 | <5 | <5 | 122 | 45.5 | 2.3 | 20.7 |
| AEP-S3 | BRID | 7/16/2007 | 9.9 | 43.2 | 1.9 | 19 | 294 | 186 | 112 | 504 | 157 | <5 | <5 | 129 | 42.4 | 2.5 | 18.9 |
| AEP-S3 | BRID | 8/13/2007 | 9.6 | 39.8 | 2.1 | 20.4 | 331 | 183 | 107 | 509 | 124 | 39 | <5 | 167 | 41.3 | 2.4 | 18.6 |
| AEP-S3 | BRID | 8/27/2007 | 9.3 | 38.9 | 2.1 | 20.5 | 318 | 182 | 101 | 489 | 185 | <5 | <5 | 152 | 36.2 | 1.87 | 19.3 |
| BR-P1 | BRID | 7/10/2006 | 11.3 | 11.3 | 4.4 | 26.5 | 394 | 228 | 147 | 614 | 186 | 10 | <5 | 170 | 44.5 | 3.9 | 23.2 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-P1 | BRID | 8/8/2006 | 11.8 | 11.8 | 3.9 | 23.6 | 370 | 204 | 143 | 618 | 178 | 9 | <5 | 161 | 42.9 | 3.7 | 22.9 |
| BR-P1 | BRID | 7/24/2006 | 13.3 | 13.3 | 4.2 | 25.1 | 409 | 225 | 160 | 623 | 190 | 12 | <5 | 175 | 45 | 4 | 23.1 |
| BR-P1 | BRID | 8/21/2006 | 11.9 | 11.9 | 3.7 | 22.3 | 366 | 197 | 142 | 625 | 178 | 10 | <5 | 162 | 44.7 | 3.9 | 24.6 |
| BR-P1 | BRID | 6/27/2007 | 14 | 48.3 | 4.5 | 26.9 | 417 | 231 | 167 | 699 | 187 | <5 | <5 | 154 | 49 | 4.2 | 27.1 |
| BR-P1 | BRID | 7/16/2007 | 13.5 | 47.1 | 3.3 | 24.4 | 396 | 218 | 160 | 652 | 189 | <5 | <5 | 155 | 46.6 | 4 | 24.6 |
| BR-P1 | BRID | 8/13/2007 | 13.2 | 41.4 | 3.5 | 26.4 | 424 | 212 | 158 | 653 | 137 | 41 | <5 | 181 | 42.4 | 3.6 | 24.4 |
| BR-P1 | BRID | 8/27/2007 | 13.4 | 36.4 | 3.4 | 24.9 | 415 | 193 | 156 | 638 | 206 | <5 | <5 | 169 | 37.2 | 3.11 | 24.9 |
| BR-R1 | BRID | 7/10/2006 | 11.2 | 11.2 | 4.7 | 26.7 | 373 | 212 | 143 | 595 | 177 | 5 | <5 | 154 | 38.2 | 4.2 | 23.7 |
| BR-R1 | BRID | 7/24/2006 | 13.6 | 13.6 | 4.5 | 25.3 | 393 | 200 | 162 | 619 | 181 | 5 | <5 | 157 | 37.8 | 4.1 | 24.2 |
| BR-R1 | BRID | 8/8/2006 | 12.5 | 12.5 | 4.3 | 24.5 | 362 | 190 | 147 | 611 | 165 | 6 | <5 | 146 | 29.1 | 3.3 | 19.5 |
| BR-R1 | BRID | 8/21/2006 | 12.1 | 12.1 | 3.7 | 22.5 | 350 | 181 | 144 | 601 | 159 | 7 | <5 | 143 | 34.8 | 3.7 | 22.3 |
| BR-R1 | BRID | 6/27/2007 | 13.8 | 34.3 | 4.2 | 26.5 | 381 | 195 | 166 | 646 | 148 | <5 | <5 | 122 | 36.2 | 4.4 | 27.7 |
| BR-R1 | BRID | 7/16/2007 | 14.6 | 37.4 | 4.0 | 25.9 | 392 | 200 | 165 | 654 | 172 | <5 | <5 | 141 | 36.5 | 5 | 25.2 |
| BR-R1 | BRID | 8/13/2007 | 13.6 | 34.6 | 3.7 | 28.2 | 411 | 203 | 161 | 632 | 114 | 41 | <5 | 162 | 33.1 | 3.5 | 23.4 |
| BR-R1 | BRID | 8/27/2007 | 13.5 | 33.4 | 3.7 | 26.3 | 410 | 192 | 157 | 631 | 194 | <5 | <5 | 159 | 33.7 | 3.28 | 26.1 |
| BR-R2 | BRID | 7/10/2006 | 11.5 | 11.5 | 6.0 | 27.1 | 393 | 229 | 147 | 618 | 192 | <5 | <5 | 166 | 44.4 | 5.4 | 24.3 |
| BR-R2 | BRID | 7/24/2006 | 16.1 | 16.1 | 5.9 | 25.7 | 424 | 227 | 161 | 674 | 218 | <5 | <5 | 186 | 48.6 | 5.8 | 24.4 |
| BR-R2 | BRID | 8/8/2006 | 12 | 12 | 4.9 | 25.1 | 377 | 206 | 148 | 628 | 176 | 9 | <5 | 159 | 41.7 | 4.7 | 24.6 |
| BR-R2 | BRID | 8/21/2006 | 12.7 | 12.7 | 5.0 | 23 | 377 | 192 | 154 | 637 | 174 | 6 | <5 | 154 | 41.2 | 5.6 | 25.4 |
| BR-R2 | BRID | 6/27/2007 | 14.6 | 50.8 | 6.1 | 27.4 | 441 | 240 | 180 | 728 | 190 | <5 | <5 | 162 | 50.1 | 6.7 | 27.1 |
| BR-R2 | BRID | 7/16/2007 | 14.3 | 45.9 | 4.0 | 25.5 | 415 | 220 | 169 | 672 | 197 | <5 | <5 | 162 | 43.7 | 4.6 | 24.5 |
| BR-R2 | BRID | 8/13/2007 | 14.1 | 43.7 | 4.9 | 29.6 | 447 | 231 | 164 | 688 | 204 | 18 | <5 | 197 | 41.9 | 4.5 | 24.7 |
| BR-R2 | BRID | 8/27/2007 | 14.6 | 32.7 | 4.3 | 26.7 | 437 | 192 | 164 | 673 | 209 | <5 | <5 | 172 | 34.2 | 4.06 | 26.8 |
| BR-R3 | BRID | 8/21/2006 | 18 | 18 | 6.8 | 35.5 | 607 | 272 | 305 | 945 | 203 | 6 | <5 | 177 | 53.6 | 7.2 | 38.8 |
| BR-R3 | BRID | 7/10/2006 | 20.7 | 20.7 | 6.6 | 36 | 516 | 258 | 222 | 790 | 196 | 6 | <5 | 172 | 42.4 | 6 | 33.2 |
| BR-R3 | BRID | 7/24/2006 | 20.2 | 20.2 | 5.8 | 31.5 | 472 | 228 | 213 | 737 | 183 | <5 | <5 | 157 | 37.7 | 5.5 | 30.1 |
| BR-R3 | BRID | 8/8/2006 | 15.6 | 15.6 | 4.8 | 28.5 | 424 | 206 | 185 | 698 | 168 | 10 | <5 | 154 | 36.6 | 4.8 | 28 |
| BR-R3 | BRID | 6/27/2007 | 18.3 | 41.1 | 4.9 | 33.7 | 507 | 241 | 239 | 840 | 168 | <5 | <5 | 144 | 41.2 | 5.2 | 33.3 |
| BR-R3 | BRID | 7/16/2007 | 20.2 | 37.7 | 4.4 | 31.9 | 499 | 226 | 236 | 791 | 172 | <5 | <5 | 141 | 36.4 | 5 | 30.4 |
| BR-R3 | BRID | 8/13/2007 | 17.7 | 40.9 | 5.3 | 33.9 | 506 | 242 | 212 | 779 | 231 | <5 | <5 | 189 | 39 | 5.1 | 28.6 |
| BR-R3 | BRID | 8/27/2007 | 18.7 | 34 | 5.3 | 33.5 | 526 | 223 | 223 | 809 | 210 | <5 | <5 | 172 | 33.6 | 4.78 | 32.5 |
| BR-R4 | BRID | 7/10/2006 | 10.5 | 10.5 | 6.3 | 28.5 | 347 | 205 | 130 | 556 | 173 | 5 | <5 | 150 | 33 | 5.5 | 25.6 |
| BR-R4 | BRID | 7/24/2006 | 14.4 | 14.4 | 5.7 | 26.6 | 380 | 190 | 166 | 572 | 169 | <5 | <5 | 146 | 30.9 | 5.4 | 25.2 |
| BR-R4 | BRID | 8/8/2006 | 12.5 | 12.5 | 4.6 | 26.5 | 355 | 184 | 144 | 602 | 160 | 7 | <5 | 143 | 30.4 | 4.8 | 25.1 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-R4 | BRID | 8/21/2006 | 13.2 | 13.2 | 5.1 | 25.5 | 358 | 178 | 147 | 612 | 159 | 8 | <5 | 144 | 32.1 | 5.4 | 28.2 |
| BR-R4 | BRID | 6/27/2007 | 14.2 | 33.2 | 5.0 | 29.7 | 391 | 205 | 169 | 666 | 158 | <5 | <5 | 132 | 33.3 | 5.1 | 29.2 |
| BR-R4 | BRID | 7/16/2007 | 15.4 | 33.8 | 4.1 | 28.2 | 410 | 201 | 173 | 675 | 186 | <5 | <5 | 152 | 32.6 | 4.4 | 27.3 |
| BR-R4 | BRID | 8/13/2007 | 16.6 | 31.1 | 5.5 | 32.3 | 452 | 211 | 178 | 695 | 127 | 43 | <5 | 176 | 30.8 | 5.3 | 27.6 |
| BR-R4 | BRID | 8/27/2007 | 17.4 | 24.3 | 5.3 | 31 | 456 | 188 | 183 | 702 | 194 | <5 | <5 | 159 | 25.9 | 4.82 | 30.9 |
| BR-R5 | BRID | 7/10/2006 | 10.9 | 10.9 | 4.5 | 26.4 | 345 | 191 | 140 | 555 | 136 | 11 | <5 | 130 | 30.7 | 3.9 | 23 |
| BR-R5 | BRID | 7/24/2006 | 15 | 15 | 4.7 | 25.2 | 389 | 200 | 163 | 606 | 174 | <5 | <5 | 150 | 36.6 | 4.4 | 23.9 |
| BR-R5 | BRID | 8/8/2006 | 12.2 | 12.2 | 4.3 | 24.5 | 343 | 174 | 146 | 583 | 143 | 7 | <5 | 130 | 29.7 | 4.2 | 23.8 |
| BR-R5 | BRID | 8/21/2006 | 12.5 | 12.5 | 4.1 | 23.2 | 345 | 167 | 149 | 591 | 146 | 6 | <5 | 129 | 30.6 | 4.4 | 26.1 |
| BR-R5 | BRID | 6/27/2007 | 14 | 22.7 | 4.0 | 26.5 | 357 | 166 | 166 | 602 | 91 | 17 | <5 | 103 | 24.4 | 4.1 | 27.7 |
| BR-R5 | BRID | 7/16/2007 | 14.7 | 39 | 3.6 | 25.9 | 403 | 204 | 172 | 655 | 178 | <5 | <5 | 146 | 36.7 | 4 | 24.6 |
| BR-R5 | BRID | 8/13/2007 | 14.3 | 28.8 | 3.9 | 28 | 407 | 187 | 166 | 626 | 81 | 49 | <5 | 149 | 28.4 | 3.9 | 24.5 |
| BR-R5 | BRID | 8/27/2007 | 15.4 | 22.3 | 4.1 | 27 | 414 | 167 | 171 | 637 | 165 | <5 | <5 | 136 | 22.7 | 3.78 | 26.9 |
| BR-R6 | BRID | 6/27/2007 | 14.2 | 45.5 | 4.6 | 28 | 420 | 229 | 175 | 700 | 179 | <5 | <5 | 146 | 45.8 | 4.3 | 28.1 |
| BR-R6 | BRID | 7/16/2007 | 14.2 | 36.4 | 3.5 | 27.2 | 408 | 203 | 182 | 673 | 166 | <5 | <5 | 136 | 35.7 | 4.4 | 26.9 |
| BR-R6 | BRID | 8/13/2007 | 13.6 | 42.5 | 4.0 | 30.2 | 426 | 230 | 158 | 655 | 145 | 38 | <5 | 182 | 39.7 | 3.8 | 25 |
| BR-R6 | BRID | 8/27/2007 | 14 | 31.3 | 3.6 | 26.2 | 419 | 186 | 164 | 645 | 189 | <5 | <5 | 155 | 32.4 | 3.33 | 26.3 |
| BR-S1 | BRID | 7/10/2006 | 9.1 | 9.1 | 3.7 | 23.6 | 294 | 188 | 104 | 487 | 149 | 8 | <5 | 135 | 34.5 | 3.5 | 21.5 |
| BR-S1 | BRID | 7/24/2006 | 11.6 | 11.6 | 3.5 | 23.1 | 326 | 187 | 125 | 530 | 164 | 7 | <5 | 145 | 33.7 | 3.3 | 21.2 |
| BR-S1 | BRID | 8/8/2006 | 10.6 | 10.6 | 3.3 | 22.2 | 300 | 174 | 114 | 520 | 149 | 6 | <5 | 133 | 34.1 | 3.5 | 22.3 |
| BR-S1 | BRID | 8/21/2006 | 11.1 | 11.1 | 3.3 | 21.5 | 312 | 171 | 122 | 545 | 153 | 7 | <5 | 137 | 38.9 | 3.9 | 25 |
| BR-S1 | BRID | 6/27/2007 | 11.9 | 36.1 | 3.7 | 24.6 | 326 | 191 | 129 | 570 | 152 | <5 | <5 | 124 | 37.2 | 3.6 | 25.1 |
| BR-S1 | BRID | 7/16/2007 | 12.7 | 34.4 | 3.1 | 23.8 | 333 | 184 | 136 | 564 | 156 | <5 | <5 | 128 | 39.4 | 4 | 23.9 |
| BR-S1 | BRID | 8/13/2007 | 13.2 | 36.5 | 3.7 | 27.5 | 408 | 204 | 151 | 628 | 120 | 44 | <5 | 172 | 36.3 | 3.6 | 24.3 |
| BR-S1 | BRID | 8/27/2007 | 13.5 | 33.7 | 3.4 | 25.2 | 410 | 188 | 157 | 631 | 194 | <5 | <5 | 159 | 35.1 | 3.16 | 25.6 |
| BR-S2 | BRID | 7/10/2006 | 18.6 | 18.6 | 10.9 | 39.8 | 558 | 251 | 301 | 797 | 93 | 21 | <5 | 111 | 33.8 | 10.3 | 35.8 |
| BR-S2 | BRID | 7/24/2006 | 18.6 | 18.6 | 9.0 | 33.2 | 521 | 209 | 294 | 768 | 46 | 36 | <5 | 98 | 29.5 | 8.7 | 32 |
| BR-S2 | BRID | 8/8/2006 | 16.3 | 16.3 | 7.4 | 29.2 | 453 | 185 | 239 | 723 | 56 | 36 | <5 | 106 | 27.5 | 7.2 | 28.7 |
| BR-S2 | BRID | 8/21/2006 | 16.7 | 16.7 | 7.5 | 27.6 | 449 | 188 | 225 | 727 | 68 | 41 | <5 | 123 | 30.8 | 7.6 | 27.7 |
| BR-S2 | BRID | 6/27/2007 | 20.4 | 21 | 6.8 | 36.5 | 464 | 203 | 232 | 753 | 72 | 24 | <5 | 99 | 21.8 | 6.2 | 36.3 |
| BR-S2 | BRID | 7/16/2007 | 20.7 | 21 | 4.9 | 32.6 | 486 | 187 | 252 | 782 | 66 | 32 | <5 | 108 | 21.9 | 6.3 | 33.5 |
| BR-S2 | BRID | 8/13/2007 | 19.8 | 24.5 | 5.4 | 36 | 509 | 209 | 227 | 783 | 44 | 70 | <5 | 153 | 24.6 | 5.4 | 31.2 |
| BR-S2 | BRID | 8/27/2007 | 19.2 | 20.9 | 4.5 | 31.7 | 499 | 183 | 224 | 768 | 111 | 34 | <5 | 147 | 22.3 | 4.32 | 32.6 |
| BR-S3 | BRID | 7/10/2006 | 11.4 | 11.4 | 4.8 | 27 | 398 | 229 | 152 | 624 | 187 | 8 | <5 | 166 | 45.1 | 4.3 | 23.8 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-S3 | BRID | 7/24/2006 | 13.1 | 13.1 | 4.4 | 25.4 | 401 | 220 | 159 | 632 | 197 | <5 | <5 | 166 | 44.5 | 4.2 | 23.7 |
| BR-S3 | BRID | 8/8/2006 | 11.9 | 11.9 | 4.2 | 24.7 | 375 | 209 | 149 | 623 | 172 | 8 | <5 | 155 | 42.7 | 4 | 24 |
| BR-S3 | BRID | 8/21/2006 | 12.1 | 12.1 | 4.0 | 22.8 | 367 | 192 | 149 | 622 | 163 | 11 | <5 | 153 | 40 | 4 | 22.6 |
| BR-S3 | BRID | 6/27/2007 | 14.6 | 45.5 | 4.7 | 28.2 | 419 | 230 | 173 | 701 | 177 | <5 | <5 | 145 | 45.5 | 4.5 | 28.1 |
| BR-S3 | BRID | 7/16/2007 | 14 | 45.3 | 3.3 | 24.3 | 399 | 213 | 165 | 657 | 185 | <5 | <5 | 152 | 43.9 | 4.3 | 24.3 |
| BR-S3 | BRID | 8/13/2007 | 13.3 | 44.7 | 3.9 | 28.6 | 422 | 229 | 158 | 649 | 144 | 35 | <5 | 176 | 41.9 | 3.5 | 23.6 |
| BR-S3 | BRID | 8/27/2007 | 13.5 | 33.9 | 3.4 | 24.9 | 415 | 187 | 156 | 638 | 206 | 5 | <5 | 178 | 35.5 | 3.13 | 25.2 |
| BR-S4 | BRID | 7/10/2006 | 11 | 11 | 4.4 | 26 | 388 | 225 | 145 | 608 | 190 | 7 | <5 | 167 | 47.2 | 4.3 | 24.6 |
| BR-S4 | BRID | 7/24/2006 | 10.1 | 10.1 | 4.2 | 24.4 | 414 | 222 | 168 | 641 | 202 | 7 | <5 | 177 | 45.7 | 4.3 | 23.5 |
| BR-S4 | BRID | 8/8/2006 | 11.7 | 11.7 | 3.6 | 23.8 | 364 | 202 | 143 | 612 | 176 | 7 | <5 | 156 | 42 | 3.6 | 22.8 |
| BR-S4 | BRID | 8/21/2006 | 12.4 | 12.4 | 3.7 | 22.5 | 358 | 183 | 149 | 606 | 156 | 10 | <5 | 144 | 38.6 | 4.2 | 24.7 |
| BR-S4 | BRID | 6/27/2007 | 14.5 | 43.5 | 4.6 | 27.8 | 419 | 223 | 172 | 705 | 177 | <5 | <5 | 153 | 43.7 | 4.8 | 27.2 |
| BR-S4 | BRID | 7/16/2007 | 14 | 44.6 | 3.3 | 24.1 | 401 | 211 | 165 | 650 | 190 | <5 | <5 | 156 | 43 | 3.8 | 23.7 |
| BR-S4 | BRID | 8/13/2007 | 13.2 | 42.7 | 3.7 | 27.5 | 421 | 220 | 157 | 648 | 137 | 40 | <5 | 178 | 40.9 | 3.7 | 23.6 |
| BR-S4 | BRID | 8/27/2007 | 13.5 | 33.6 | 3.4 | 25.2 | 419 | 188 | 157 | 644 | 200 | <5 | <5 | 164 | 34.8 | 3.11 | 25.3 |
| BR-S5 | BRID | 7/10/2006 | 10.1 | 10.1 | 4.1 | 24.9 | 306 | 170 | 126 | 495 | 113 | 14 | <5 | 116 | 27.6 | 4.1 | 24.4 |
| BR-S5 | BRID | 7/24/2006 | 14.6 | 14.6 | 4.4 | 24.8 | 360 | 187 | 150 | 571 | 143 | 12 | <5 | 137 | 31.4 | 4 | 23.4 |
| BR-S5 | BRID | 8/8/2006 | 12 | 12 | 4.1 | 24.2 | 327 | 165 | 139 | 555 | 124 | 13 | <5 | 124 | 26.7 | 4.1 | 23.4 |
| BR-S5 | BRID | 8/21/2006 | 12.2 | 12.2 | 3.9 | 22.8 | 331 | 164 | 140 | 568 | 132 | 12 | <5 | 128 | 29.7 | 4.2 | 25.6 |
| BR-S5 | BRID | 6/27/2007 | 14.3 | 30.3 | 4.4 | 28 | 372 | 191 | 160 | 628 | 142 | 5 | <5 | 125 | 30 | 4.6 | 27.3 |
| BR-S5 | BRID | 7/16/2007 | 15.1 | 31 | 3.7 | 26.8 | 387 | 188 | 172 | 623 | 156 | <5 | <5 | 128 | 29.3 | 3.9 | 25.1 |
| BR-S5 | BRID | 8/13/2007 | 15.2 | 29.5 | 4.5 | 30.1 | 419 | 198 | 172 | 644 | 94 | 46 | <5 | 154 | 28.1 | 4.1 | 25.1 |
| BR-S5 | BRID | 8/27/2007 | 15.5 | 22.8 | 4.1 | 27.3 | 413 | 169 | 170 | 636 | 167 | <5 | <5 | 137 | 23 | 3.94 | 28 |
| E-P1 | EID | 7/5/2006 | 6.7 | 6.7 | 1.3 | 14.4 | 208 | 162 | 49.6 | 351 | 149 | 8 | <5 | 136 | 42.3 | 1.6 | 13.6 |
| E-P1 | EID | 7/19/2006 | 6.7 | 6.7 | 1.2 | 14.4 | 197 | 156 | 47.9 | 349 | 140 | 7 | <5 | 126 | 37.4 | 1.4 | 14 |
| E-P1 | EID | 8/16/2006 | 8.9 | 8.9 | 1.8 | 14.5 | 203 | 155 | 50.7 | 363 | 141 | <5 | <5 | 123 | 37.7 | 1.8 | 13.8 |
| E-P1 | EID | 8/30/2006 | 9.3 | 9.3 | 1.9 | 15.3 | 204 | 157 | 51 | 358 | 135 | 6 | <5 | 121 | 35.6 | 1.8 | 14.2 |
| E-P1 | EID | 6/20/2007 | 5.1 | 42.8 | 1.4 | 14.2 | 197 | 165 | 38.3 | 344 | 157 | 6 | <5 | 139 | 45.2 | 2.3 | 14.3 |
| E-P1 | EID | 7/11/2007 | 4.7 | 38.6 | 1.0 | 12.5 | 186 | 148 | 41.8 | 330 | 154 | <5 | <5 | 126 | 37.8 | 1.1 | 12.6 |
| E-P1 | EID | 8/8/2007 | 7.1 | 37 | 1.3 | 15.4 | 221 | 156 | 42.7 | 340 | 203 | <5 | <5 | 167 | 37.9 | 1.6 | 13.4 |
| E-P1 | EID | 8/22/2007 | 8 | 35.1 | 0.8 | 13.3 | 226 | 142 | 44.7 | 347 | 173 | <5 | <5 | 142 | 37.9 | 1.5 | 14 |
| E-R1 | EID | 7/5/2006 | 9.8 | 9.8 | 1.9 | 17.4 | 204 | 151 | 54.3 | 348 | 134 | 8 | <5 | 124 | 31.5 | 1.8 | 16.5 |
| E-R1 | EID | 7/19/2006 | 8.5 | 8.5 | 1.7 | 16.5 | 205 | 157 | 51.2 | 365 | 148 | <5 | <5 | 128 | 33.7 | 1.8 | 16 |
| E-R1 | EID | 8/16/2006 | 8.9 | 8.9 | 2.1 | 16.7 | 183 | 134 | 49.4 | 328 | 125 | <5 | <5 | 107 | 25.1 | 2 | 15.5 |
| E-R1 | EID | 8/30/2006 | 9.2 | 9.2 | 2.2 | 17.7 | 199 | 151 | 50.1 | 205 | 141 | <5 | <5 | 120 | 25.3 | 2 | 16.4 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R1 | EID | 6/20/2007 | 8.7 | 36.1 | 2.1 | 18.3 | 228 | 166 | 65.7 | 403 | 154 | <5 | <5 | 129 | 35.3 | 2.4 | 17.7 |
| E-R1 | EID | 7/11/2007 | 8.8 | 30.9 | 2.6 | 16.4 | 200 | 145 | 50.5 | 358 | 149 | <5 | <5 | 122 | 30.3 | 2.7 | 16.8 |
| E-R1 | EID | 8/8/2007 | 9.1 | 28 | 2.0 | 19.1 | 233 | 149 | 53.1 | 359 | 155 | <5 | <5 | 127 | 27.9 | 2 | 15.9 |
| E-R1 | EID | 8/22/2007 | 9.7 | 28.4 | 1.3 | 16.2 | 235 | 138 | 53.9 | 361 | 177 | <5 | <5 | 145 | 29.6 | 2 | 16.3 |
| E-R2 | EID | 7/5/2006 | 8.1 | 8.1 | 2.9 | 20 | 301 | 182 | 114 | 488 | 151 | 7 | <5 | 135 | 38.8 | 2.7 | 18.9 |
| E-R2 | EID | 7/19/2006 | 8.3 | 8.3 | 2.3 | 16.6 | 240 | 174 | 67.6 | 420 | 165 | <5 | <5 | 140 | 40.4 | 2.4 | 16.1 |
| E-R2 | EID | 8/16/2006 | 8.7 | 8.7 | 2.4 | 17.6 | 242 | 176 | 72.2 | 425 | 161 | <5 | <5 | 133 | 39 | 2.4 | 16.2 |
| E-R2 | EID | 8/30/2006 | 10.5 | 10.5 | 2.8 | 18.9 | 283 | 189 | 95.6 | 362 | 170 | <5 | <5 | 141 | 22.3 | 2.9 | 18 |
| E-R2 | EID | 6/20/2007 | 5.7 | 38.5 | 1.6 | 18.1 | 265 | 171 | 97.9 | 450 | 141 | <5 | <5 | 120 | 37.7 | 1.7 | 16.7 |
| E-R2 | EID | 7/11/2007 | 7.3 | 43.2 | 2.2 | 16.1 | 246 | 174 | 69.1 | 425 | 175 | <5 | <5 | 144 | 41.2 | 2.5 | 16.2 |
| E-R2 | EID | 8/8/2007 | 9 | 38.9 | 2.2 | 18.6 | 267 | 174 | 66.8 | 411 | 172 | <5 | <5 | 141 | 38.5 | 2.6 | 15.5 |
| E-R2 | EID | 8/22/2007 | 9.2 | 46.1 | 2.4 | 19.8 | 293 | 162 | 79.6 | 451 | 202 | <5 | <5 | 166 | 43.8 | 2.8 | 17 |
| E-R3 | EID | 8/16/2006 | 8 | 8 | 1.5 | 14.9 | 171 | 126 | 45.4 | 311 | 114 | <5 | <5 | 100 | 25.4 | 1.4 | 14.6 |
| E-R3 | EID | 7/5/2006 | 7 | 7 | 1.5 | 15.5 | 187 | 132 | 54.2 | 316 | 126 | <5 | <5 | 110 | 27 | 1.4 | 14.9 |
| E-R3 | EID | 7/19/2006 | 6.9 | 6.9 | 1.4 | 14.9 | 184 | 142 | 47.2 | 326 | 135 | <5 | <5 | 115 | 30.3 | 1.4 | 14.1 |
| E-R3 | EID | 8/30/2006 | 8.7 | 8.7 | 1.8 | 15.8 | 199 | 151 | 50.3 | 288 | 148 | <5 | <5 | 121 | 31.6 | 1.7 | 14.6 |
| E-R3 | EID | 6/20/2007 | 7.1 | 29.3 | 1.1 | 15.4 | 182 | 137 | 48.3 | 324 | 127 | <5 | <5 | 110 | 27 | 1.3 | 13.7 |
| E-R3 | EID | 7/11/2007 | 5.7 | 27.1 | 1.2 | 13.3 | 169 | 122 | 41.3 | 304 | 135 | <5 | <5 | 111 | 28.1 | 1.2 | 13.5 |
| E-R3 | EID | 8/8/2007 | 0.4 | 33.9 | 1.9 | 17.7 | 220 | 158 | 54.7 | 338 | 161 | <5 | <5 | 132 | 32.1 | 1.8 | 14.1 |
| E-R3 | EID | 8/22/2007 | 8 | 33.1 | 1.1 | 14 | 225 | 140 | 44.1 | 346 | 172 | <5 | <5 | 142 | 34.5 | 1.8 | 13.9 |
| E-R4 | EID | 7/5/2006 | 10.3 | 10.3 | 1.9 | 15.8 | 174 | 113 | 58.9 | 296 | 78 | 12 | <5 | 84 | 19.1 | 1.8 | 15.4 |
| E-R4 | EID | 7/19/2006 | 7.9 | 7.9 | 1.8 | 16.1 | 198 | 151 | 52.7 | 354 | 136 | <5 | <5 | 119 | 32.3 | 1.9 | 15.6 |
| E-R4 | EID | 8/16/2006 | 8.1 | 8.1 | 1.8 | 15.8 | 179 | 133 | 52.4 | 322 | 112 | 5 | <5 | 100 | 25.6 | 1.7 | 14.7 |
| E-R4 | EID | 8/30/2006 | 8.8 | 8.8 | 1.8 | 16 | 190 | 137 | 53.4 | 424 | 129 | <5 | <5 | 110 | 39.5 | 1.8 | 15.5 |
| E-R4 | EID | 6/20/2007 | 8 | 23.2 | 1.5 | 16.1 | 172 | 124 | 51.8 | 312 | 109 | <5 | <5 | 94 | 22.8 | 2 | 15.9 |
| E-R4 | EID | 7/11/2007 | 6.3 | 31.8 | 1.5 | 15.6 | 186 | 144 | 42.8 | 352 | 144 | <5 | <5 | 118 | 31.2 | 1.6 | 15.9 |
| E-R4 | EID | 8/8/2007 | 8.3 | 28.5 | 1.8 | 18.3 | 226 | 147 | 53.6 | 347 | 146 | <5 | <5 | 120 | 29.1 | 1.9 | 15.2 |
| E-R4 | EID | 8/22/2007 | 8.7 | 31.3 | 1.2 | 15.9 | 240 | 144 | 54.8 | 369 | 181 | <5 | <5 | 148 | 32.3 | 2 | 15.7 |
| E-R5 | EID | 7/5/2006 | 10.2 | 10.2 | 2.1 | 19.5 | 235 | 173 | 78 | 387 | 135 | <5 | <5 | 118 | 36.2 | 1.8 | 18.2 |
| E-R5 | EID | 7/19/2006 | 9.5 | 9.5 | 1.8 | 18.3 | 223 | 161 | 72.8 | 386 | 132 | <5 | <5 | 115 | 33.3 | 2 | 17.7 |
| E-R5 | EID | 8/16/2006 | 8.9 | 8.9 | 1.8 | 17.7 | 201 | 148 | 61.9 | 362 | 122 | 5 | <5 | 108 | 29.7 | 1.8 | 17.1 |
| E-R5 | EID | 8/30/2006 | 9.3 | 9.3 | 1.9 | 17.8 | 204 | 149 | 63.2 | 422 | 128 | <5 | <5 | 107 | 38 | 1.8 | 16.2 |
| E-R5 | EID | 6/20/2007 | 8.5 | 36.2 | 1.6 | 18.8 | 223 | 168 | 69.4 | 394 | 141 | <5 | <5 | 121 | 37.1 | 2 | 18.9 |
| E-R5 | EID | 7/11/2007 | 9.5 | 30.9 | 1.7 | 17 | 219 | 147 | 72.5 | 375 | 140 | <5 | <5 | 115 | 31.8 | 1.9 | 17.1 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R5 | EID | 8/8/2007 | 10 | 30 | 1.9 | 21.6 | 244 | 164 | 70.7 | 376 | 145 | <5 | <5 | 119 | 29.1 | 2.1 | 17.4 |
| E-R5 | EID | 8/22/2007 | 9.8 | 27.9 | 1.2 | 17.2 | 245 | 140 | 67.2 | 377 | 105 | 31 | <5 | 139 | 29.4 | 1.8 | 17.5 |
| E-S1 | EID | 7/5/2006 | 10.2 | 10.2 | 2.2 | 17 | 213 | 160 | 54.3 | 362 | 149 | 6 | <5 | 131 | 35.2 | 1.9 | 16.2 |
| E-S1 | EID | 7/19/2006 | 8.5 | 8.5 | 1.8 | 16.3 | 203 | 156 | 50.5 | 361 | 143 | 6 | <5 | 127 | 33.9 | 1.9 | 15.9 |
| E-S1 | EID | 8/16/2006 | 8.9 | 8.9 | 2.1 | 16.7 | 194 | 148 | 48.8 | 348 | 133 | 7 | <5 | 120 | 31.5 | 2.1 | 16.1 |
| E-S1 | EID | 8/30/2006 | 9.1 | 9.1 | 2.1 | 16.2 | 197 | 146 | 49.2 | 269 | 142 | <5 | <5 | 124 | 37.2 | 2 | 15.9 |
| E-S1 | EID | 6/20/2007 | 8.5 | 36.3 | 1.9 | 17.4 | 210 | 162 | 51 | 377 | 157 | <5 | <5 | 132 | 36.3 | 2.3 | 17.4 |
| E-S1 | EID | 7/11/2007 | 8.1 | 33.2 | 1.8 | 15.8 | 201 | 148 | 48.6 | 360 | 157 | <5 | <5 | 128 | 32.4 | 2 | 15.9 |
| E-S1 | EID | 8/8/2007 | 9.1 | 31.3 | 2.1 | 20.1 | 238 | 161 | 53.2 | 366 | 159 | <5 | <5 | 130 | 30.9 | 2.2 | 16.3 |
| E-S1 | EID | 8/22/2007 | 9.8 | 30.3 | 1.4 | 16.5 | 239 | 144 | 54.3 | 368 | 183 | <5 | <5 | 150 | 30.9 | 2.1 | 16.8 |
| E-S2 | EID | 7/5/2006 | 6.5 | 6.5 | 1.4 | 14.6 | 208 | 161 | 50.7 | 349 | 152 | 6 | <5 | 135 | 40.4 | 1.4 | 13.7 |
| E-S2 | EID | 7/19/2006 | 6 | 6 | 1.1 | 14.2 | 193 | 154 | 45.7 | 345 | 142 | 6 | <5 | 127 | 37.3 | 1.3 | 13.6 |
| E-S2 | EID | 8/16/2006 | 8.3 | 8.3 | 1.7 | 14.3 | 198 | 152 | 48.3 | 353 | 137 | 5 | <5 | 121 | 36.5 | 1.7 | 13.6 |
| E-S2 | EID | 8/30/2006 | 9.2 | 9.2 | 1.8 | 14.9 | 203 | 152 | 53.1 | 362 | 135 | 6 | <5 | 120 | 35.7 | 1.7 | 14.4 |
| E-S2 | EID | 6/20/2007 | 4.7 | 37 | 0.9 | 12.6 | 174 | 144 | 35.9 | 308 | 135 | 6 | <5 | 121 | 36.8 | 1.1 | 12.3 |
| E-S2 | EID | 7/11/2007 | 5.2 | 38.8 | 1.0 | 12.6 | 193 | 149 | 46.1 | 334 | 156 | <5 | <5 | 128 | 37.9 | 1.1 | 12.7 |
| E-S2 | EID | 8/8/2007 | 7 | 36.9 | 1.4 | 15.8 | 222 | 157 | 43.3 | 342 | 162 | <5 | <5 | 133 | 37 | 1.5 | 13.2 |
| E-S2 | EID | 8/22/2007 | 7.9 | 40 | 1.4 | 16.5 | 227 | 142 | 46.5 | 349 | 179 | <5 | <5 | 147 | 37.3 | 1.6 | 14.1 |
| E-S3 | EID | 7/5/2006 | 6.6 | 6.6 | 1.5 | 14.7 | 183 | 132 | 53.2 | 307 | 114 | 8 | <5 | 107 | 28.6 | 1.4 | 14.1 |
| E-S3 | EID | 7/19/2006 | 7 | 7 | 1.2 | 14.4 | 168 | 125 | 47.2 | 299 | 106 | 7 | <5 | 98 | 25 | 1.2 | 13.7 |
| E-S3 | EID | 8/16/2006 | 7.7 | 7.7 | 1.7 | 15 | 178 | 136 | 46.5 | 319 | 120 | 5 | <5 | 107 | 28.1 | 1.6 | 14.2 |
| E-S3 | EID | 8/30/2006 | 8.7 | 8.7 | 1.8 | 15.2 | 191 | 143 | 50.2 | 331 | 140 | <5 | <5 | 114 | 30.7 | 1.8 | 14.1 |
| E-S3 | EID | 6/20/2007 | 6.5 | 28.5 | 1.0 | 14.3 | 170 | 130 | 45.5 | 306 | 113 | 6 | <5 | 102 | 26.6 | 1.2 | 13 |
| E-S3 | EID | 7/11/2007 | 5.7 | 26.3 | 1.2 | 13.2 | 168 | 120 | 41.2 | 296 | 134 | <5 | <5 | 110 | 26.8 | 1.3 | 13.3 |
| E-S3 | EID | 8/8/2007 | 7.2 | 32.8 | 2.0 | 17.4 | 216 | 154 | 53 | 333 | 158 | <5 | <5 | 129 | 31.6 | 2 | 14.3 |
| E-S3 | EID | 8/22/2007 | 7.8 | 31.9 | 1.1 | 13.9 | 224 | 137 | 43.6 | 345 | 118 | 26 | <5 | 140 | 34.6 | 1.9 | 14.4 |
| E-S4 | EID | 7/5/2006 | 9.7 | 9.7 | 1.9 | 16.2 | 209 | 156 | 56.6 | 354 | 141 | 5 | <5 | 124 | 35.8 | 1.7 | 15.7 |
| E-S4 | EID | 7/19/2006 | 8.2 | 8.2 | 1.7 | 15.8 | 203 | 155 | 53.3 | 360 | 139 | 5 | <5 | 123 | 34.1 | 1.7 | 14.7 |
| E-S4 | EID | 8/16/2006 | 8.2 | 8.2 | 1.9 | 16.1 | 198 | 152 | 51.1 | 355 | 139 | <5 | <5 | 121 | 34.6 | 1.8 | 15.6 |
| E-S4 | EID | 8/30/2006 | 8.6 | 8.6 | 1.8 | 16.1 | 201 | 153 | 52.9 | 316 | 142 | <5 | <5 | 121 | 36 | 1.8 | 14.7 |
| E-S4 | EID | 6/20/2007 | 8 | 36.5 | 1.5 | 16.6 | 206 | 159 | 52.6 | 366 | 142 | 5 | <5 | 126 | 35.3 | 1.9 | 15.9 |
| E-S4 | EID | 7/11/2007 | 9.1 | 32.3 | 1.5 | 14.9 | 208 | 142 | 59 | 358 | 152 | <5 | <5 | 125 | 32.9 | 1.8 | 14.7 |
| E-S4 | EID | 8/8/2007 | 8.4 | 35.5 | 1.8 | 19.5 | 238 | 169 | 54.7 | 366 | 161 | <5 | <5 | 132 | 32.8 | 1.7 | 15.2 |
| E-S4 | EID | 8/22/2007 | 8.6 | 37.4 | 1.2 | 17.5 | 237 | 165 | 54.2 | 365 | 180 | <5 | <5 | 148 | 32.7 | 1.6 | 15.7 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S5 | EID | 7/5/2006 | 10.5 | 10.5 | 2.0 | 18.3 | 236 | 166 | 80.1 | 387 | 134 | 5 | <5 | 119 | 36.3 | 1.9 | 17.6 |
| E-S5 | EID | 7/19/2006 | 9.2 | 9.2 | 1.9 | 18 | 217 | 159 | 69.6 | 379 | 128 | 5 | <5 | 114 | 32.3 | 1.9 | 17.5 |
| E-S5 | EID | 8/16/2006 | 8.9 | 8.9 | 2.0 | 17.9 | 204 | 151 | 63.3 | 366 | 125 | <5 | <5 | 109 | 30.2 | 1.9 | 16.8 |
| E-S5 | EID | 8/30/2006 | 9.1 | 9.1 | 2.0 | 17.5 | 204 | 149 | 62.3 | 282 | 130 | <5 | <5 | 110 | 31.8 | 1.8 | 16.3 |
| E-S5 | EID | 6/20/2007 | 8.5 | 35.4 | 1.7 | 18.2 | 220 | 163 | 68.4 | 391 | 136 | <5 | <5 | 120 | 34.8 | 2 | 18 |
| E-S5 | EID | 7/11/2007 | 8.8 | 29.9 | 1.7 | 16.7 | 215 | 143 | 71.7 | 368 | 139 | <5 | <5 | 114 | 30.4 | 1.9 | 16.6 |
| E-S5 | EID | 8/8/2007 | 9.6 | 30.1 | 2.0 | 21.1 | 246 | 162 | 67.5 | 378 | 147 | <5 | <5 | 120 | 29.4 | 2 | 17.2 |
| E-S5 | EID | 8/22/2007 | 9.7 | 28.1 | 1.2 | 16.9 | 245 | 140 | 65.8 | 377 | 165 | <5 | <5 | 136 | 29.5 | 1.9 | 17.8 |
| E-S6 | EID | 7/5/2006 | 12.2 | 12.2 | 2.3 | 20.2 | 230 | 155 | 66.2 | 389 | 140 | 9 | <5 | 129 | 28.3 | 2.3 | 19.4 |
| E-S6 | EID | 7/19/2006 | 11.3 | 11.3 | 2.3 | 19.9 | 216 | 143 | 63.2 | 377 | 114 | 15 | <5 | 118 | 23.4 | 2.3 | 18.9 |
| E-S6 | EID | 8/16/2006 | 10.9 | 10.9 | 2.4 | 19.4 | 202 | 134 | 57.4 | 363 | 112 | 12 | <5 | 111 | 21 | 2.5 | 18.4 |
| E-S6 | EID | 8/30/2006 | 11.6 | 11.6 | 2.5 | 19.6 | 209 | 138 | 59.5 | 362 | 119 | 10 | <5 | 114 | 22.3 | 2.4 | 18.2 |
| E-S6 | EID | 6/20/2007 | 10.2 | 23.4 | 1.8 | 20.7 | 206 | 144 | 54.6 | 366 | 122 | 12 | <5 | 121 | 22.6 | 2 | 19.7 |
| E-S6 | EID | 7/11/2007 | 12.5 | 18.5 | 1.8 | 18.2 | 199 | 121 | 54.9 | 351 | 121 | 9 | <5 | 114 | 19.8 | 2.2 | 18.5 |
| E-S6 | EID | 8/8/2007 | 11.7 | 20.4 | 2.5 | 23.7 | 242 | 149 | 55.9 | 373 | 154 | <5 | <5 | 126 | 20.2 | 2.8 | 19.6 |
| E-S6 | EID | 8/22/2007 | 12.2 | 20 | 1.8 | 20.2 | 242 | 133 | 55.7 | 373 | 179 | <5 | <5 | 146 | 20.1 | 2.7 | 19 |
| LN-P1 | LNID | 7/10/2006 | 0.3 | 0.3 | 0.9 | 11.2 | 146 | 137 | 15.8 | 267 | 147 | <5 | <5 | 128 | 35.4 | 0.9 | 10.4 |
| LN-P1 | LNID | 7/24/2006 | 1 | 1 | 0.8 | 10.7 | 155 | 139 | 19.5 | 274 | 157 | <5 | <5 | 134 | 35.9 | 0.8 | 10.3 |
| LN-P1 | LNID | 8/8/2006 | 0.9 | 0.9 | 0.8 | 10.3 | 148 | 134 | 16.8 | 279 | 158 | <5 | <5 | 129 | 36.7 | 0.9 | 10.5 |
| LN-P1 | LNID | 8/21/2006 | 0.9 | 0.9 | 0.8 | 10.6 | 151 | 134 | 17.3 | 284 | 152 | 5 | <5 | 134 | 35.5 | 0.8 | 10.1 |
| LN-P1 | LNID | 6/27/2007 | 0.4 | 32.3 | 0.6 | 9.3 | 119 | 119 | 13.4 | 237 | 122 | <5 | <5 | 100 | 34.1 | 0.6 | 9.4 |
| LN-P1 | LNID | 7/16/2007 | 0.5 | 34.5 | 0.5 | 9.3 | 130 | 124 | 16 | 251 | 135 | <5 | <5 | 111 | 33.7 | 0.7 | 9.2 |
| LN-P1 | LNID | 8/13/2007 | 0.7 | 34 | 0.8 | 11.1 | 178 | 131 | 18.6 | 274 | 108 | 38 | <5 | 152 | 33.9 | 0.7 | 9.4 |
| LN-P1 | LNID | 8/27/2007 | 0.7 | 33.3 | 0.7 | 11.3 | 179 | 130 | 18.6 | 275 | 171 | <5 | <5 | 140 | 31.7 | 0.59 | 10.7 |
| LN-R1 | LNID | 7/10/2006 | 1.1 | 1.1 | 1.9 | 18.2 | 213 | 159 | 60.4 | 359 | 150 | <5 | <5 | 131 | 35.8 | 2.9 | 17.9 |
| LN-R1 | LNID | 7/24/2006 | 2 | 2 | 1.4 | 15.4 | 206 | 146 | 55.8 | 339 | 159 | <5 | <5 | 137 | 34.2 | 2.2 | 16 |
| LN-R1 | LNID | 8/8/2006 | 1.9 | 1.9 | 2.4 | 16.3 | 206 | 152 | 53.7 | 369 | 159 | <5 | <5 | 137 | 35 | 2.5 | 16.6 |
| LN-R1 | LNID | 8/21/2006 | 1.7 | 1.7 | 1.5 | 14 | 178 | 132 | 40.1 | 323 | 147 | <5 | <5 | 128 | 31 | 2.1 | 14.1 |
| LN-R1 | LNID | 6/27/2007 | 1.5 | 39.4 | 1.7 | 17.9 | 211 | 172 | 52.1 | 363 | 162 | <5 | <5 | 133 | 39.5 | 2.3 | 17.8 |
| LN-R1 | LNID | 7/16/2007 | 1.3 | 32.4 | 1.5 | 13.9 | 178 | 138 | 41.8 | 322 | 148 | <5 | <5 | 121 | 36.9 | 3.5 | 16.5 |
| LN-R1 | LNID | 8/13/2007 | 1 | 30.2 | 0.9 | 14.1 | 190 | 133 | 30.1 | 292 | 105 | 38 | <5 | 148 | 31.2 | 1.7 | 13 |
| LN-R1 | LNID | 8/27/2007 | 1.3 | 28.2 | 1.3 | 14 | 193 | 128 | 30.9 | 297 | 162 | <5 | <5 | 133 | 28.4 | 1.29 | 13.6 |
| LN-R2 | LNID | 7/10/2006 | 1.1 | 1.1 | 1.4 | 16.8 | 190 | 139 | 53.4 | 329 | 136 | <5 | <5 | 119 | 27.3 | 1.3 | 15.2 |
| LN-R2 | LNID | 7/24/2006 | 2 | 2 | 1.4 | 15 | 185 | 128 | 51.7 | 311 | 141 | <5 | <5 | 120 | 25.3 | 1.4 | 14.5 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-R2 | LNID | 8/8/2006 | 2.1 | 2.1 | 1.3 | 15.2 | 182 | 136 | 43.4 | 329 | 146 | <5 | <5 | 125 | 29.3 | 1.3 | 14.8 |
| LN-R2 | LNID | 8/21/2006 | 1.8 | 1.8 | 1.2 | 13.8 | 171 | 124 | 39.2 | 317 | 145 | <5 | <5 | 124 | 26.2 | 1.5 | 12.9 |
| LN-R2 | LNID | 6/27/2007 | 1.6 | 31.1 | 1.2 | 14.8 | 183 | 139 | 46.6 | 330 | 146 | <5 | <5 | 120 | 32.7 | 1.3 | 15.2 |
| LN-R2 | LNID | 7/16/2007 | 1.4 | 25.5 | 0.8 | 13.2 | 159 | 118 | 41.9 | 293 | 127 | <5 | <5 | 104 | 25.5 | 1.1 | 13.2 |
| LN-R2 | LNID | 8/13/2007 | 1.2 | 26.5 | 1.0 | 14.1 | 183 | 124 | 30.3 | 282 | 97 | 36 | <5 | 140 | 26.6 | 1.3 | 12.3 |
| LN-R2 | LNID | 8/27/2007 | 1.7 | 26.6 | 1.0 | 14.2 | 189 | 125 | 30.8 | 291 | 158 | <5 | <5 | 129 | 25 | 0.89 | 13.2 |
| LN-S1 | LNID | 7/10/2006 | 0.3 | 0.3 | 1.0 | 11.6 | 149 | 141 | 16.8 | 269 | 147 | <5 | <5 | 129 | 37.2 | 1.2 | 11 |
| LN-S1 | LNID | 7/24/2006 | 0.8 | 0.8 | 0.8 | 10.7 | 152 | 134 | 18.1 | 273 | 155 | <5 | <5 | 133 | 37.4 | 0.9 | 10.7 |
| LN-S1 | LNID | 8/8/2006 | 0.9 | 0.9 | 0.9 | 10.8 | 148 | 134 | 17 | 278 | 151 | <5 | <5 | 129 | 36.3 | 0.8 | 10.4 |
| LN-S1 | LNID | 8/21/2006 | 0.9 | 0.9 | 0.8 | 10.7 | 150 | 131 | 18.6 | 285 | 151 | 5 | <5 | 132 | 34.8 | 0.9 | 10.3 |
| LN-S1 | LNID | 6/27/2007 | 0.6 | 32.2 | 0.6 | 9.3 | 129 | 119 | 16.2 | 239 | 136 | <5 | <5 | 111 | 34.7 | 0.7 | 9.6 |
| LN-S1 | LNID | 7/16/2007 | 0.5 | 35 | 0.6 | 9.4 | 133 | 126 | 15.9 | 250 | 138 | <5 | <5 | 113 | 34.2 | 0.7 | 9.4 |
| LN-S1 | LNID | 8/13/2007 | 0.7 | 34 | 0.7 | 11 | 176 | 130 | 18.4 | 271 | 104 | 40 | <5 | 151 | 33.6 | 0.8 | 9.6 |
| LN-S1 | LNID | 8/27/2007 | 0.7 | 32.8 | 0.7 | 11.4 | 178 | 129 | 18.8 | 274 | 169 | <5 | <5 | 138 | 29.7 | 0.57 | 10.5 |
| LN-S2 | LNID | 7/10/2006 | 0.8 | 0.8 | 1.1 | 14.9 | 188 | 143 | 45.8 | 326 | 142 | 7 | <5 | 128 | 31.5 | 1.2 | 14 |
| LN-S2 | LNID | 7/24/2006 | 1.9 | 1.9 | 1.2 | 14.1 | 192 | 139 | 49.6 | 317 | 144 | 7 | <5 | 130 | 30.9 | 1.2 | 13.4 |
| LN-S2 | LNID | 8/8/2006 | 1.6 | 1.6 | 1.1 | 13.1 | 169 | 127 | 36.2 | 308 | 139 | 6 | <5 | 124 | 30 | 1.1 | 12.8 |
| LN-S2 | LNID | 8/21/2006 | 1.4 | 1.4 | 1.1 | 12.4 | 167 | 125 | 34.1 | 308 | 135 | 9 | <5 | 126 | 29.2 | 1.2 | 12 |
| LN-S2 | LNID | 6/27/2007 | 2 | 31.5 | 1.0 | 13.5 | 180 | 134 | 41.1 | 321 | 154 | <5 | <5 | 127 | 33.6 | 1 | 13.9 |
| LN-S2 | LNID | 7/16/2007 | 1.2 | 29.1 | 0.8 | 12 | 156 | 122 | 34.4 | 287 | 136 | <5 | <5 | 111 | 28.8 | 0.8 | 12.1 |
| LN-S2 | LNID | 8/13/2007 | 1 | 28.7 | 0.8 | 12.3 | 182 | 122 | 27 | 280 | 98 | 39 | <5 | 145 | 29.1 | 0.9 | 11 |
| LN-S2 | LNID | 8/27/2007 | 0.9 | 27 | 0.9 | 12.7 | 180 | 120 | 26.1 | 277 | 160 | <5 | <5 | 131 | 25.3 | 0.72 | 11.7 |
| LN-S3 | LNID | 7/10/2006 | 1.3 | 1.3 | 1.4 | 15.5 | 203 | 144 | 62 | 346 | 126 | 9 | <5 | 119 | 31.2 | 1.4 | 14.2 |
| LN-S3 | LNID | 7/24/2006 | 1.6 | 1.6 | 0.9 | 12.7 | 171 | 137 | 37.8 | 282 | 136 | 7 | <5 | 124 | 31.8 | 0.9 | 11.6 |
| LN-S3 | LNID | 8/8/2006 | 1.2 | 1.2 | 0.8 | 11.5 | 145 | 124 | 23.2 | 266 | 125 | 9 | <5 | 118 | 31.7 | 0.8 | 11.6 |
| LN-S3 | LNID | 8/21/2006 | 1.1 | 1.1 | 0.8 | 11 | 144 | 120 | 23.9 | 264 | 120 | 11 | <5 | 117 | 29.2 | 0.9 | 10.3 |
| LN-S3 | LNID | 6/27/2007 | 0.6 | 30.4 | 0.6 | 10.3 | 136 | 118 | 22.9 | 252 | 133 | <5 | <5 | 109 | 32.3 | 0.7 | 10.6 |
| LN-S3 | LNID | 7/16/2007 | 0.6 | 27.5 | 0.4 | 9.8 | 120 | 109 | 18.5 | 224 | 118 | <5 | <5 | 97 | 26.8 | 0.4 | 9.5 |
| LN-S3 | LNID | 8/13/2007 | 0.7 | 28.3 | 0.6 | 11 | 168 | 116 | 20.3 | 258 | 91 | 39 | <5 | 139 | 28.8 | 0.8 | 10 |
| LN-S3 | LNID | 8/27/2007 | 0.7 | 28.6 | 0.7 | 11.7 | 169 | 120 | 21.5 | 260 | 154 | <5 | <5 | 126 | 27 | 0.56 | 11 |
| LN-S4 | LNID | 7/10/2006 | 0.6 | 0.6 | 1.4 | 15.7 | 194 | 149 | 47.4 | 329 | 142 | 8 | <5 | 130 | 34.9 | 1.7 | 15.4 |
| LN-S4 | LNID | 7/24/2006 | 2.1 | 2.1 | 1.2 | 13.9 | 199 | 139 | 54.4 | 318 | 147 | 7 | <5 | 132 | 31.7 | 1.3 | 13.6 |
| LN-S4 | LNID | 8/8/2006 | 1.4 | 1.4 | 1.1 | 13.3 | 170 | 128 | 36.1 | 308 | 136 | 8 | <5 | 125 | 30.4 | 1.2 | 13 |
| LN-S4 | LNID | 8/21/2006 | 1.6 | 1.6 | 1.3 | 12.9 | 157 | 112 | 35.8 | 288 | 121 | 9 | <5 | 115 | 23.2 | 1.4 | 12.4 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S4 | LNID | 6/27/2007 | 1.2 | 32.5 | 1.2 | 13.9 | 180 | 138 | 40.4 | 326 | 154 | <5 | <5 | 126 | 36.5 | 1.8 | 15.2 |
| LN-S4 | LNID | 7/16/2007 | 1.1 | 29.9 | 0.8 | 12.2 | 157 | 125 | 34.3 | 289 | 135 | <5 | <5 | 111 | 29.1 | 1.1 | 12.3 |
| LN-S4 | LNID | 8/13/2007 | 1 | 28.9 | 0.8 | 12.9 | 183 | 125 | 27.3 | 282 | 100 | 38 | <5 | 146 | 29.6 | 1.2 | 11.7 |
| LN-S4 | LNID | 8/27/2007 | 1 | 27.1 | 0.9 | 12.9 | 183 | 121 | 26.3 | 282 | 159 | <5 | <5 | 130 | 26 | 0.75 | 12 |
| LN-S5 | LNID | 7/10/2006 | 0.6 | 0.6 | 0.9 | 14.9 | 158 | 113 | 46 | 276 | 94 | 13 | <5 | 99 | 20.1 | 0.9 | 13.6 |
| LN-S5 | LNID | 7/24/2006 | 1.9 | 1.9 | 1.1 | 14 | 166 | 107 | 53.7 | 270 | 98 | 12 | <5 | 100 | 18.8 | 1 | 13.1 |
| LN-S5 | LNID | 8/8/2006 | 1.5 | 1.5 | 1.1 | 13.4 | 151 | 106 | 37.8 | 274 | 104 | 11 | <5 | 104 | 21.2 | 1.1 | 12.9 |
| LN-S5 | LNID | 8/21/2006 | 1.5 | 1.5 | 1.1 | 12.7 | 168 | 126 | 34.5 | 309 | 137 | 9 | <5 | 126 | 29 | 1.2 | 12.1 |
| LN-S5 | LNID | 6/27/2007 | 1.2 | 26.8 | 0.9 | 13.5 | 165 | 123 | 40.1 | 296 | 135 | <5 | <5 | 113 | 29.2 | 1 | 14.2 |
| LN-S5 | LNID | 7/16/2007 | 1.1 | 19.5 | 0.6 | 12 | 139 | 98 | 37.1 | 255 | 112 | <5 | <5 | 92 | 20.1 | 0.7 | 12.3 |
| LN-S5 | LNID | 8/13/2007 | 1 | 22.6 | 0.9 | 13 | 167 | 110 | 27.9 | 257 | 73 | 43 | <5 | 132 | 23 | 0.9 | 11.4 |
| LN-S5 | LNID | 8/27/2007 | 1 | 23.3 | 1.0 | 13.3 | 172 | 113 | 26.9 | 265 | 149 | <5 | <5 | 122 | 22.1 | 0.81 | 12.4 |
| AEP-P1 | MID | 7/11/2006 | 0.2 | 0.2 | 0.4 | 9.1 | 102 | 100 | 6.5 | 190 | 113 | <5 | <5 | 98 | 23.8 | 0.6 | 8.5 |
| AEP-P1 | MID | 7/24/2006 | 0.3 | 0.3 | 0.4 | 8.8 | 104 | 101 | 6.9 | 191 | 118 | <5 | <5 | 101 | 24 | 0.5 | 8.2 |
| AEP-P1 | MID | 8/8/2006 | 0.3 | 0.3 | 0.4 | 8.8 | 100 | 96 | 6.3 | 195 | 114 | <5 | <5 | 99 | 23.7 | 0.5 | 8 |
| AEP-P1 | MID | 8/21/2006 | 0.4 | 0.4 | 0.4 | 8.6 | 100 | 96 | 6.4 | 197 | 116 | <5 | <5 | 98 | 23.1 | 0.5 | 8 |
| AEP-P1 | MID | 6/27/2007 | 0.2 | 23.6 | 0.3 | 8.2 | 91 | 93 | 5.4 | 174 | 106 | <5 | <5 | 87 | 23.4 | 0.4 | 8.1 |
| AEP-P1 | MID | 7/16/2007 | 0.2 | 22.9 | 0.3 | 7.8 | 89 | 89 | 5.7 | 172 | 104 | <5 | <5 | 85 | 20.8 | 0.3 | 7 |
| AEP-P1 | MID | 8/13/2007 | 0.2 | 21.7 | <0.5 | 8.79 | 126 | 90.4 | 6.2 | 194 | 75 | 35 | <5 | 121 | 23.3 | 0.4 | 8.3 |
| AEP-P1 | MID | 8/27/2007 | 0.4 | 21.7 | <0.5 | 9.28 | 127 | 92.4 | 7.1 | 196 | 133 | <5 | <5 | 109 | 23.3 | 0.4 | 8.1 |
| AEP-S1 | MID | 7/11/2006 | 0.1 | 0.1 | 0.4 | 9.5 | 106 | 104 | 6.8 | 196 | 114 | <5 | <5 | 101 | 24.6 | 0.6 | 9 |
| AEP-S1 | MID | 7/24/2006 | 0.5 | 0.5 | 0.4 | 9.3 | 110 | 105 | 7.8 | 197 | 119 | <5 | <5 | 104 | 25.5 | 0.5 | 9 |
| AEP-S1 | MID | 8/8/2006 | 0.4 | 0.4 | 0.4 | 9.2 | 105 | 100 | 7.4 | 202 | 116 | <5 | <5 | 102 | 24.7 | 0.5 | 8.6 |
| AEP-S1 | MID | 8/21/2006 | 0.4 | 0.4 | 0.4 | 8.9 | 106 | 98 | 7.7 | 205 | 119 | <5 | <5 | 104 | 24.2 | 0.6 | 8.6 |
| AEP-S1 | MID | 6/27/2007 | 0.2 | 30.7 | 0.3 | 10.6 | 102 | 120 | 5.8 | 178 | 107 | <5 | <5 | 88 | 23.5 | 0.3 | 8.6 |
| AEP-S1 | MID | 7/16/2007 | 0.2 | 23.8 | 0.3 | 8.2 | 93 | 93 | 6.4 | 177 | 106 | <5 | <5 | 86 | 21.3 | 0.4 | 7.4 |
| AEP-S1 | MID | 8/13/2007 | 0.2 | 22 | <0.5 | 9.02 | 131 | 92.1 | 7.1 | 202 | 79 | 36 | <5 | 125 | 24 | 0.5 | 8.6 |
| AEP-S1 | MID | 8/27/2007 | 0.3 | 22.9 | <0.5 | 9.98 | 137 | 98.3 | 8.2 | 210 | 140 | <5 | <5 | 115 | 25.5 | 0.5 | 9.2 |
| AEP-S2 | MID | 7/10/2006 | 0.2 | 0.2 | 0.5 | 10 | 108 | 105 | 8.2 | 199 | 116 | <5 | <5 | 101 | 24.6 | 0.6 | 9 |
| AEP-S2 | MID | 7/24/2006 | 0.4 | 0.4 | 0.4 | 9.3 | 109 | 104 | 8.6 | 197 | 120 | <5 | <5 | 103 | 25.4 | 0.6 | 9 |
| AEP-S2 | MID | 8/9/2006 | 0.4 | 0.4 | 0.5 | 10.1 | 110 | 106 | 8.2 | 205 | 118 | <5 | <5 | 103 | 24.8 | 0.5 | 9.2 |
| AEP-S2 | MID | 8/21/2006 | 0.4 | 0.4 | 0.4 | 9.2 | 108 | 98 | 8.3 | 208 | 117 | 6 | <5 | 106 | 23.5 | 0.6 | 8.6 |
| AEP-S2 | MID | 6/27/2007 | 0.2 | 22.8 | 0.4 | 8.2 | 89 | 91 | 5.9 | 182 | 101 | <5 | <5 | 84 | 23 | 0.5 | 8.3 |
| AEP-S2 | MID | 7/16/2007 | 0.2 | 22.5 | 0.3 | 8.1 | 92 | 90 | 6.4 | 178 | 107 | <5 | <5 | 87 | 23.4 | 0.5 | 8.4 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AEP-S2 | MID | 8/13/2007 | 0.3 | 22.5 | <0.5 | 9.45 | 130 | 95.1 | 7.2 | 200 | 77 | 37 | <5 | 124 | 23.9 | 0.4 | 8.8 |
| AEP-S2 | MID | 8/27/2007 | 0.3 | 22.5 | 0.6 | 10.5 | 137 | 99.4 | 8.5 | 211 | 141 | <5 | <5 | 115 | 21.8 | | 9.59 |
| M-P1 | MID | 7/10/2006 | 0.3 | 0.3 | 1.0 | 11 | 126 | 115 | 13.2 | 229 | 129 | <5 | <5 | 111 | 26.6 | 0.9 | 10 |
| M-P1 | MID | 7/24/2006 | 0.8 | 0.8 | 0.8 | 10.4 | 128 | 109 | 15.3 | 227 | 134 | <5 | <5 | 113 | 27.1 | 0.9 | 10.1 |
| M-P1 | MID | 8/9/2006 | 0.7 | 0.7 | 0.8 | 10.9 | 121 | 113 | 11.7 | 223 | 124 | <5 | <5 | 108 | 25.8 | 0.7 | 9.8 |
| M-P1 | MID | 8/21/2006 | 0.6 | 0.6 | 0.7 | 9.7 | 118 | 102 | 12.5 | 224 | 123 | 5 | <5 | 109 | 24.1 | 0.8 | 8.9 |
| M-P1 | MID | 6/27/2007 | 0.3 | 25.8 | 0.6 | 9.6 | 106 | 104 | 8.7 | 213 | 115 | <5 | <5 | 97 | 25.5 | 0.6 | 9.4 |
| M-P1 | MID | 7/16/2007 | 0.3 | 25.7 | 0.5 | 9.4 | 107 | 103 | 8.9 | 202 | 119 | <5 | <5 | 98 | 29.8 | 1.3 | 11.7 |
| M-P1 | MID | 8/13/2007 | 0.4 | 24.2 | <0.5 | 10.2 | 138 | 102 | 9.6 | 213 | 82 | 37 | <5 | 129 | 24.5 | 0.6 | 9.2 |
| M-P1 | MID | 8/27/2007 | 0.4 | 23.7 | 0.6 | 10.8 | 144 | 104 | 11.7 | 222 | 142 | <5 | <5 | 117 | 22.4 | | 9.99 |
| M-P2 | MID | 7/10/2006 | 0.4 | 0.4 | 2.0 | 12.8 | 151 | 129 | 24.2 | 275 | 142 | <5 | <5 | 122 | 30 | 2.2 | 11.9 |
| M-P2 | MID | 7/24/2006 | 1.2 | 1.2 | 1.3 | 11.8 | 150 | 128 | 23.3 | 263 | 150 | <5 | <5 | 123 | 31.1 | 1.5 | 11.8 |
| M-P2 | MID | 8/9/2006 | 0.9 | 0.9 | 1.0 | 12 | 137 | 124 | 17.4 | 250 | 131 | <5 | <5 | 116 | 28.2 | 1 | 10.8 |
| M-P2 | MID | 8/21/2006 | 0.8 | 0.8 | 0.7 | 11.1 | 134 | 113 | 19.4 | 249 | 119 | 10 | <5 | 115 | 26.3 | 0.9 | 10.4 |
| M-P2 | MID | 6/27/2007 | 0.5 | 28.1 | 1.4 | 10.8 | 122 | 115 | 15.6 | 239 | 123 | <5 | <5 | 101 | 27.8 | 1.5 | 10.6 |
| M-P2 | MID | 7/16/2007 | 0.6 | 27.4 | 0.7 | 9.9 | 116 | 109 | 10.8 | 216 | 127 | <5 | <5 | 104 | 25 | 0.6 | 9 |
| M-P2 | MID | 8/13/2007 | 0.5 | 25.4 | 0.6 | 10.9 | 155 | 108 | 14.6 | 239 | 91 | 37 | <5 | 137 | 26.1 | 0.6 | 9.8 |
| M-P2 | MID | 8/27/2007 | 0.5 | 25.7 | 0.8 | 12.4 | 161 | 115 | 16.4 | 247 | 153 | <5 | <5 | 125 | 23.4 | 0.54 | 10.9 |
| M-R1 | MID | 7/10/2006 | 2.3 | 2.3 | 3.3 | 32.7 | 555 | 252 | 292 | 821 | 184 | <5 | <5 | 157 | 52.3 | 3.9 | 34.1 |
| M-R1 | MID | 7/24/2006 | 1.8 | 1.8 | 1.7 | 19.4 | 339 | 181 | 144 | 518 | 177 | <5 | <5 | 147 | 38.9 | 1.8 | 19 |
| M-R1 | MID | 8/9/2006 | 1.4 | 1.4 | 1.3 | 19.2 | 302 | 177 | 114 | 497 | 160 | 5 | <5 | 140 | 37.5 | 1.3 | 17.5 |
| M-R1 | MID | 8/21/2006 | 2.1 | 2.1 | 1.2 | 24.3 | 457 | 220 | 209 | 724 | 193 | 10 | <5 | 175 | 45.2 | 1.4 | 23.4 |
| M-R1 | MID | 6/27/2007 | 0.8 | 31.8 | 1.2 | 14.8 | 187 | 140 | 51 | 343 | 139 | <5 | <5 | 116 | 32.8 | 1.8 | 15.4 |
| M-R1 | MID | 7/16/2007 | 0.8 | 31.4 | 1.0 | 12.4 | 165 | 129 | 33.6 | 297 | 148 | <5 | <5 | 122 | | | |
| M-R1 | MID | 8/13/2007 | 0.7 | 33.1 | 0.8 | 16 | 243 | 149 | 60.5 | 374 | 115 | 38 | <5 | 158 | 33.2 | 0.8 | 14.2 |
| M-R1 | MID | 8/27/2007 | 0.9 | 29.2 | 1.1 | 15.1 | 225 | 135 | 49.7 | 346 | 173 | <5 | <5 | 142 | 28.5 | 0.92 | 14.3 |
| MV-P1 | MVID | 7/11/2006 | 0.3 | 0.3 | 0.2 | 14.1 | 116 | 112 | 4.5 | 215 | 127 | 7 | <5 | 117 | 20.2 | 0.4 | 12.9 |
| MV-P1 | MVID | 7/24/2006 | 0.6 | 0.6 | 0.1 | 12.7 | 101 | 95 | 4.6 | 185 | 103 | 11 | <5 | 103 | 16.3 | 0.2 | 12.2 |
| MV-P1 | MVID | 8/8/2006 | 0.3 | 0.3 | 0.2 | 11.8 | 89 | 85 | 4.5 | 177 | 97 | 7 | <5 | 91 | 14.8 | 0.2 | 11.3 |
| MV-P1 | MVID | 8/21/2006 | 0.3 | 0.3 | 0.2 | 10.8 | 94 | 86 | 4.1 | 185 | 109 | 6 | <5 | 98 | 17.8 | 0.2 | 11.8 |
| MV-P1 | MVID | 6/27/2007 | 0.3 | 44.4 | 1.2 | 16.7 | 154 | 180 | 5.1 | 259 | 167 | <5 | <5 | 137 | 34.3 | 1 | 13.2 |
| MV-P1 | MVID | 7/16/2007 | 0.4 | 26.3 | 0.6 | 10 | 109 | 107 | 4.5 | 208 | 131 | <5 | <5 | 108 | 24.9 | 0.6 | 9.6 |
| MV-P1 | MVID | 8/13/2007 | 0.2 | 23.8 | 0.6 | 10.8 | 140 | 104 | 5 | 215 | 95 | 35 | <5 | 135 | 24.3 | 0.7 | 9.6 |
| MV-P1 | MVID | 8/27/2007 | 0.3 | 24.4 | 0.64 | 11.1 | 142 | 107 | 5.7 | 218 | 152 | <5 | <5 | 124 | 26.3 | 0.7 | 9.8 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MV-R1 | MVID | 7/11/2006 | 0.7 | 0.7 | 2.2 | 15.5 | 124 | 115 | 4.9 | 230 | 135 | 7 | <5 | 122 | 20.8 | 2.7 | 15.5 |
| MV-R1 | MVID | 7/24/2006 | 0.5 | 0.5 | 0.6 | 14.3 | 116 | 111 | 4.1 | 212 | 139 | <5 | <5 | 119 | 19.9 | 0.7 | 13.7 |
| MV-R1 | MVID | 8/8/2006 | 0.4 | 0.4 | 0.3 | 13.1 | 102 | 96 | 4.1 | 201 | 123 | <5 | <5 | 105 | 17.7 | 0.5 | 12.3 |
| MV-R1 | MVID | 8/21/2006 | 0.4 | 0.4 | 0.4 | 11.7 | 106 | 97 | 3.9 | 208 | 130 | <5 | <5 | 111 | 21.3 | 0.5 | 12.8 |
| MV-R1 | MVID | 6/27/2007 | 0.2 | 21.6 | 0.2 | 16.9 | 109 | 124 | 4.3 | 193 | 121 | <5 | <5 | 101 | 17.2 | 0.2 | 13.4 |
| MV-R1 | MVID | 7/16/2007 | 0.3 | 25.6 | 0.6 | 12.4 | 114 | 115 | 3.4 | 223 | 141 | <5 | <5 | 115 | 24.2 | 0.7 | 11.6 |
| MV-R1 | MVID | 8/13/2007 | 0.5 | 27.3 | 1.5 | 15.4 | 173 | 132 | 4 | 266 | 125 | 38 | <5 | 166 | 27.9 | 1.7 | 13.8 |
| MV-R1 | MVID | 8/27/2007 | 1.8 | 52.1 | 3.59 | 36.1 | 355 | 279 | 9.8 | 546 | 381 | <5 | <5 | 312 | 54.2 | 3.4 | 32.1 |
| R-P1 | RID | 7/10/2006 | 0.4 | 0.4 | 1.3 | 13 | 157 | 129 | 30.5 | 280 | 137 | <5 | <5 | 118 | 29.4 | 1.4 | 11.8 |
| R-P1 | RID | 7/24/2006 | 1.1 | 1.1 | 1.0 | 11.4 | 149 | 118 | 26.4 | 258 | 139 | <5 | <5 | 119 | 28.3 | 1.1 | 11 |
| R-P1 | RID | 8/9/2006 | 1.9 | 1.9 | 0.9 | 11.2 | 135 | 117 | 19.4 | 232 | 129 | <5 | <5 | 110 | 26.6 | 0.9 | 10 |
| R-P1 | RID | 8/21/2006 | 0.6 | 0.6 | 0.8 | 10.1 | 123 | 107 | 14.6 | 232 | 128 | <5 | <5 | 110 | 26.8 | 0.9 | 10.2 |
| R-P1 | RID | 6/27/2007 | 0.5 | 28.2 | 0.8 | 11 | 126 | 116 | 18.9 | 242 | 121 | <5 | <5 | 101 | 27 | 0.8 | 10.4 |
| R-P1 | RID | 7/16/2007 | 0.6 | 28.4 | 0.7 | 10.4 | 125 | 114 | 17.2 | 228 | 125 | <5 | <5 | 102 | 25.3 | 0.7 | 9.3 |
| R-P1 | RID | 8/13/2007 | 0.5 | 25.5 | 0.7 | 10.9 | 151 | 109 | 14.9 | 233 | 88 | 37 | <5 | 133 | 25.5 | 0.7 | 9.8 |
| R-P1 | RID | 8/27/2007 | 0.4 | 22.8 | 0.6 | 10.5 | 146 | 100 | 12 | 224 | 142 | <5 | <5 | 116 | 22.1 |  | 9.91 |
| R-R1 | RID | 7/10/2006 | 2.7 | 2.7 | 3.3 | 21.6 | 318 | 177 | 128 | 514 | 164 | <5 | <5 | 135 | 27.3 | 1.5 | 15.5 |
| R-R1 | RID | 7/24/2006 | 3.2 | 3.2 | 3.4 | 18 | 272 | 165 | 96.2 | 433 | 174 | <5 | <5 | 142 | 35.1 | 3.6 | 17.5 |
| R-R1 | RID | 8/9/2006 | 2.4 | 2.4 | 2.6 | 17.6 | 225 | 154 | 65.1 | 388 | 161 | <5 | <5 | 132 | 30.6 | 2.4 | 15.6 |
| R-R1 | RID | 8/21/2006 | 3.2 | 3.2 | 2.4 | 19.1 | 296 | 164 | 113 | 507 | 175 | <5 | <5 | 144 | 36.2 | 2.6 | 19 |
| R-R1 | RID | 6/27/2007 | 1.8 | 32 | 1.6 | 16.5 | 232 | 148 | 80.9 | 407 | 139 | <5 | <5 | 116 | 32.4 | 2.1 | 16.4 |
| R-R1 | RID | 7/16/2007 | 1.8 | 31.5 | 1.6 | 14 | 191 | 136 | 51.1 | 341 | 148 | <5 | <5 | 121 | 31.7 | 2.3 | 14.4 |
| R-R1 | RID | 8/13/2007 | 1.8 | 30.9 | 1.6 | 17 | 244 | 147 | 60.9 | 376 | 117 | 36 | <5 | 157 | 30.5 | 1.9 | 14.9 |
| R-R1 | RID | 8/27/2007 | 1.7 | 28.3 | 1.6 | 16 | 235 | 137 | 57 | 362 | 168 | <5 | <5 | 137 | 26.6 | 1.42 | 15.3 |
| R-R2 | RID | 7/10/2006 | 0.6 | 0.6 | 1.7 | 14.7 | 179 | 142 | 40 | 310 | 147 | <5 | <5 | 124 | 31.4 | 1.8 | 13.3 |
| R-R2 | RID | 7/24/2006 | 1.5 | 1.5 | 1.6 | 13 | 172 | 133 | 35.8 | 288 | 152 | <5 | <5 | 128 | 31.6 | 2.1 | 13 |
| R-R2 | RID | 8/9/2006 | 1 | 1 | 1.3 | 12.7 | 159 | 124 | 34.1 | 285 | 134 | <5 | <5 | 113 | 28.1 | 1.5 | 11.6 |
| R-R2 | RID | 8/21/2006 | 0.9 | 0.9 | 1.1 | 10.8 | 142 | 110 | 25.1 | 268 | 138 | <5 | <5 | 116 | 29.1 | 1.5 | 11.5 |
| R-R2 | RID | 6/27/2007 | 0.6 | 30.8 | 1.1 | 11.7 | 139 | 125 | 20.8 | 264 | 135 | <5 | <5 | 110 | 30 | 1.3 | 11.4 |
| R-R2 | RID | 7/16/2007 | 1 | 30 | 1.1 | 11.5 | 152 | 122 | 30.2 | 277 | 138 | <5 | <5 | 113 | 29.4 | 1.6 | 11.4 |
| R-R2 | RID | 8/13/2007 | 0.8 | 28.6 | 1.4 | 12.7 | 184 | 124 | 28.7 | 283 | 104 | 36 | <5 | 144 | 28.2 | 1.7 | 11.1 |
| R-R2 | RID | 8/27/2007 | 0.6 | 25.7 | 1.2 | 12.4 | 177 | 115 | 27.5 | 272 | 148 | <5 | <5 | 122 | 24.4 | 0.97 | 11.4 |
| SMC-P1 | SMRID | 7/4/2006 | 1.5 | 1.5 | 2.0 | 16 | 209 | 153 | 57.1 | 346 | 145 | 8 | <5 | 132 | 34.9 | 1.9 | 15.4 |
| SMC-P1 | SMRID | 7/17/2006 | 1.5 | 1.5 | 1.7 | 14.6 | 188 | 147 | 45.7 | 321 | 142 | 7 | <5 | 128 | 31.9 | 1.4 | 12.8 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-P1 | SMRID | 8/14/2006 | 1 | 1 | 1.2 | 12.5 | 151 | 124 | 26.8 | 276 | 130 | 6 | <5 | 117 | 28.4 | 1.2 | 11.5 |
| SMC-P1 | SMRID | 8/28/2006 | 0.8 | 0.8 | 1.2 | 11.7 | 140 | 108 | 23.3 | 255 | 128 | 7 | <5 | 117 | 27.4 | 1.2 | 11 |
| SMC-P1 | SMRID | 6/25/2007 | 0.8 | 27.2 | 0.8 | 11.1 | 145 | 114 | 30.3 | 274 | 128 | <5 | <5 | 109 | 29.7 | 1.2 | 12.1 |
| SMC-P1 | SMRID | 7/9/2007 | 0.9 | 43.6 | 1.1 | 15.9 | 191 | 174 | 33.7 | 284 | 175 | <5 | <5 | 143 | 29.7 | 1.3 | 11.8 |
| SMC-P1 | SMRID | 8/7/2007 | 0.9 | 30.9 | 1.1 | 14.3 | 178 | 136 | 28.2 | 274 | 151 | <5 | <5 | 124 | 27.9 | 1.2 | 11.4 |
| SMC-P1 | SMRID | 8/20/2007 | 0.8 | 27.2 | 0.8 | 11.6 | 169 | 116 | 24.4 | 260 | 161 | <5 | <5 | 132 | 27.1 | 1 | 11.1 |
| SMC-R1 | SMRID | 7/4/2006 | 3.3 | 3.3 | 3.0 | 18.7 | 237 | 157 | 77.1 | 380 | 148 | 7 | <5 | 134 | 31.4 | 3 | 17.9 |
| SMC-R1 | SMRID | 7/17/2006 | 2.9 | 2.9 | 3.3 | 18.8 | 221 | 159 | 63.9 | 376 | 144 | 7 | <5 | 130 | 29.5 | 2.5 | 16.7 |
| SMC-R1 | SMRID | 8/14/2006 | 2.4 | 2.4 | 2.9 | 17.6 | 211 | 142 | 65.1 | 357 | 116 | 16 | <5 | 121 | 27.2 | 2.7 | 16.5 |
| SMC-R1 | SMRID | 8/28/2006 | 3.1 | 3.1 | 3.8 | 19 | 224 | 148 | 67.7 | 382 | 128 | 16 | <5 | 132 | 28.2 | 3.5 | 18.2 |
| SMC-R1 | SMRID | 6/25/2007 | 2.7 | 36 | 3.4 | 21.6 | 265 | 179 | 88 | 444 | 167 | <5 | <5 | 145 | 35.4 | 3.6 | 20.4 |
| SMC-R1 | SMRID | 7/9/2007 | 2.6 | 44.3 | 3.3 | 25.3 | 279 | 215 | 80.6 | 410 | 200 | <5 | <5 | 164 | 33.7 | 3.2 | 20.2 |
| SMC-R1 | SMRID | 8/7/2007 | 2.4 | 30.4 | 3.0 | 21.9 | 257 | 166 | 73.1 | 396 | 166 | <5 | <5 | 136 | 29.4 | 3 | 18.5 |
| SMC-R1 | SMRID | 8/20/2007 | 2.9 | 29.4 | 2.9 | 19.9 | 265 | 155 | 81.9 | 408 | 182 | <5 | <5 | 149 | 28.6 | 3.3 | 19.3 |
| SMC-R2 | SMRID | 7/4/2006 | 6.6 | 6.6 | 6.4 | 27 | 356 | 192 | 140 | 525 | 131 | 34 | <5 | 165 | 31.6 | 5.8 | 25.8 |
| SMC-R2 | SMRID | 7/17/2006 | 3.3 | 3.3 | 3.7 | 20.3 | 236 | 157 | 78.4 | 384 | 112 | 22 | <5 | 128 | 27.4 | 3.1 | 17.9 |
| SMC-R2 | SMRID | 8/14/2006 | 4.4 | 4.4 | 5.0 | 21.9 | 278 | 152 | 92.8 | 447 | 61 | 56 | <5 | 143 | 24.7 | 5.2 | 20.7 |
| SMC-R2 | SMRID | 8/28/2006 | 4.7 | 4.7 | 5.6 | 21.5 | 256 | 140 | 86.5 | 426 | 59 | 51 | <5 | 134 | 20.8 | 5.6 | 20.5 |
| SMC-R2 | SMRID | 6/25/2007 | 3.9 | 27 | 4.9 | 25.3 | 294 | 172 | 104 | 479 | 140 | 20 | <5 | 148 | 26.4 | 4.9 | 24 |
| SMC-R2 | SMRID | 7/9/2007 | 3.6 | 25.9 | 4.4 | 28.8 | 289 | 183 | 102 | 425 | 101 | 38 | <5 | 146 | 20 | 4.2 | 24 |
| SMC-R2 | SMRID | 8/7/2007 | 3.7 | 24.8 | 5.0 | 27.6 | 298 | 176 | 97 | 458 | 87 | 40 | <5 | 138 | 23.8 | 5.1 | 22.8 |
| SMC-R2 | SMRID | 8/20/2007 | 3.9 | 22.6 | 4.2 | 22.7 | 296 | 150 | 96.3 | 455 | 86 | 53 | <5 | 159 | 22.6 | 4.7 | 21.6 |
| SMC-R3 | SMRID | 7/4/2006 | 3.6 | 3.6 | 4.0 | 20 | 249 | 157 | 89 | 405 | 136 | 12 | <5 | 131 | 29.6 | 3.5 | 18.9 |
| SMC-R3 | SMRID | 7/17/2006 | 5.2 | 5.2 | 6.4 | 26 | 314 | 182 | 111 | 498 | 67 | 58 | <5 | 152 | 27.6 | 5.2 | 23.3 |
| SMC-R3 | SMRID | 8/14/2006 | 3 | 3 | 3.6 | 18.5 | 224 | 137 | 76.7 | 375 | 98 | 23 | <5 | 120 | 26 | 3.5 | 17.8 |
| SMC-R3 | SMRID | 8/28/2006 | 3.9 | 3.9 | 4.5 | 20.4 | 246 | 154 | 81.1 | 410 | 118 | 23 | <5 | 135 | 28.2 | 4.3 | 20.2 |
| SMC-R3 | SMRID | 6/25/2007 | 1.9 | 32.7 | 2.1 | 16.8 | 211 | 151 | 56.5 | 358 | 156 | 5 | <5 | 137 | 32 | 2.2 | 16 |
| SMC-R3 | SMRID | 7/9/2007 | 1.8 | 40.8 | 2.3 | 19.8 | 225 | 183 | 50.5 | 337 | 189 | <5 | <5 | 155 | 31.2 | 2 | 16 |
| SMC-R3 | SMRID | 8/7/2007 | 1.9 | 28.9 | 2.1 | 18.7 | 218 | 149 | 51.9 | 336 | 161 | <5 | <5 | 132 | 27.7 | 2.2 | 15.7 |
| SMC-R3 | SMRID | 8/20/2007 | 3.7 | 26.5 | 4.0 | 23 | 294 | 161 | 107 | 453 | 82 | 46 | <5 | 144 | 26.2 | 4.4 | 22.1 |
| SMC-R4 | SMRID | 7/4/2006 | 2.1 | 2.1 | 2.0 | 16.3 | 211 | 156 | 58 | 362 | 148 | 6 | <5 | 131 | 34.8 | 2 | 15.7 |
| SMC-R4 | SMRID | 7/17/2006 | 1.5 | 1.5 | 1.8 | 15.1 | 191 | 150 | 46.8 | 325 | 143 | 7 | <5 | 128 | 31.9 | 1.6 | 13.7 |
| SMC-R4 | SMRID | 8/14/2006 | 1.1 | 1.1 | 1.3 | 12.9 | 155 | 123 | 30.6 | 277 | 129 | 7 | <5 | 117 | 27.8 | 1.4 | 12 |
| SMC-R4 | SMRID | 8/28/2006 | 0.9 | 0.9 | 1.3 | 12.5 | 152 | 124 | 27.2 | 275 | 137 | 5 | <5 | 121 | 29.2 | 1.3 | 12.2 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-R4 | SMRID | 6/25/2007 | 0.9 | 30.6 | 1.1 | 13 | 173 | 130 | 39.2 | 291 | 152 | <5 | <5 | 129 | 31.1 | 1.1 | 12.5 |
| SMC-R4 | SMRID | 7/9/2007 | 1 | 30.3 | 1.3 | 12.5 | 183 | 127 | 35.8 | 296 | 183 | <5 | <5 | 150 | 32.3 | 1.3 | 13 |
| SMC-R4 | SMRID | 8/20/2007 | 1 | 29.3 | 0.9 | 12 | 177 | 123 | 27.2 | 272 | 167 | <5 | <5 | 137 | 28.1 | 1.2 | 11.3 |
| SMC-S1 | SMRID | 7/4/2006 | 2.7 | 2.7 | 2.3 | 15.9 | 205 | 148 | 57.1 | 339 | 143 | 7 | <5 | 129 | 31.7 | 2.1 | 15.2 |
| SMC-S1 | SMRID | 7/17/2006 | 4.5 | 4.5 | 2.3 | 16.1 | 201 | 148 | 53.1 | 341 | 142 | 5 | <5 | 126 | 29.9 | 1.9 | 14.4 |
| SMC-S1 | SMRID | 8/14/2006 | 2 | 2 | 2.2 | 15.1 | 188 | 135 | 48.3 | 334 | 144 | <5 | <5 | 124 | 29.4 | 2 | 14.1 |
| SMC-S1 | SMRID | 8/28/2006 | 2 | 2 | 2.2 | 15.1 | 189 | 138 | 46.8 | 331 | 145 | 5 | <5 | 128 | 29.8 | 2.1 | 14.3 |
| SMC-S1 | SMRID | 6/25/2007 | 1.9 | 31.6 | 1.9 | 15.6 | 203 | 143 | 53.8 | 340 | 156 | <5 | <5 | 133 | 31.3 | 1.9 | 14.9 |
| SMC-S1 | SMRID | 7/9/2007 | 1.7 | 40.4 | 2.0 | 18.8 | 220 | 178 | 49.3 | 330 | 186 | <5 | <5 | 153 | 31.2 | 1.9 | 15.3 |
| SMC-S1 | SMRID | 8/7/2007 | 1.6 | 29.7 | 1.8 | 17.6 | 208 | 147 | 44.6 | 320 | 156 | <5 | <5 | 128 | 27.7 | 1.8 | 14.4 |
| SMC-S1 | SMRID | 8/20/2007 | 1.7 | 28.7 | 1.5 | 14.5 | 211 | 131 | 43.7 | 324 | 175 | <5 | <5 | 143 | 27.7 | 1.6 | 13.7 |
| SMC-S2 | SMRID | 7/4/2006 | 3.2 | 3.2 | 2.8 | 17.4 | 226 | 152 | 71.4 | 366 | 145 | 8 | <5 | 132 | 31.5 | 2.7 | 16.9 |
| SMC-S2 | SMRID | 7/17/2006 | 2.9 | 2.9 | 2.6 | 17.3 | 209 | 153 | 57.3 | 358 | 142 | 7 | <5 | 128 | 29.8 | 2.1 | 15.6 |
| SMC-S2 | SMRID | 8/14/2006 | 2.4 | 2.4 | 2.6 | 16.3 | 202 | 139 | 56.9 | 355 | 149 | <5 | <5 | 127 | 29.8 | 2.6 | 15.7 |
| SMC-S2 | SMRID | 8/28/2006 | 2.6 | 2.6 | 3.2 | 17.1 | 211 | 142 | 60.4 | 369 | 150 | 5 | <5 | 132 | 29.4 | 3 | 16.9 |
| SMC-S2 | SMRID | 6/25/2007 | 2.7 | 35.4 | 3.2 | 20.7 | 261 | 174 | 88.9 | 425 | 166 | <5 | <5 | 142 | 34.4 | 3.4 | 19.8 |
| SMC-S2 | SMRID | 7/9/2007 | 2.6 | 41.7 | 3.3 | 23.3 | 270 | 200 | 79.1 | 406 | 199 | <5 | <5 | 163 | 33.5 | 3.3 | 19.7 |
| SMC-S2 | SMRID | 8/7/2007 | 2.5 | 30 | 3.0 | 22.2 | 254 | 166 | 73.3 | 390 | 164 | <5 | <5 | 134 | 28.8 | 3 | 18 |
| SMC-S2 | SMRID | 8/20/2007 | 2.9 | 29.2 | 3.0 | 19.8 | 267 | 154 | 81.3 | 411 | 181 | <5 | <5 | 148 | 29.3 | 3.4 | 19.6 |
| SMC-S3 | SMRID | 7/4/2006 | 2.1 | 2.1 | 2.0 | 15.8 | 208 | 151 | 57.3 | 357 | 147 | 5 | <5 | 130 | 35.3 | 2.2 | 15.5 |
| SMC-S3 | SMRID | 7/17/2006 | 1.5 | 1.5 | 1.6 | 14.6 | 187 | 145 | 45.3 | 317 | 141 | 6 | <5 | 126 | 33.9 | 1.7 | 14.4 |
| SMC-S3 | SMRID | 8/14/2006 | 1 | 1 | 1.3 | 12.8 | 155 | 126 | 28.4 | 277 | 131 | 8 | <5 | 121 | 28.9 | 1.2 | 11.6 |
| SMC-S3 | SMRID | 8/28/2006 | 0.9 | 0.9 | 1.1 | 12.4 | 148 | 122 | 25.6 | 263 | 134 | <5 | <5 | 117 | 28.7 | 1.3 | 11.9 |
| SMC-S3 | SMRID | 6/25/2007 | 0.9 | 29.6 | 1.1 | 12.5 | 158 | 125 | 32.3 | 281 | 141 | <5 | <5 | 120 | 31.4 | 1.4 | 12.7 |
| SMC-S3 | SMRID | 8/7/2007 | 0.9 | 30.1 | 1.3 | 14.1 | 176 | 133 | 27.9 | 270 | 141 | <5 | <5 | 121 | 28.8 | 1.2 | 11.8 |
| SMC-S3 | SMRID | 8/20/2007 | 0.8 | 27.1 | 0.8 | 11.4 | 169 | 115 | 26.1 | 260 | 161 | <5 | <5 | 132 | 28.3 | 1.1 | 11.5 |
| SME-P1 | SMRID | 7/4/2006 | 2.1 | 2.1 | 2.5 | 16.2 | 209 | 149 | 60.7 | 346 | 138 | 7 | <5 | 125 | 31.3 | 2.4 | 14.8 |
| SME-P1 | SMRID | 7/17/2006 | 2.3 | 2.3 | 2.6 | 16.5 | 209 | 148 | 63.3 | 352 | 136 | 6 | <5 | 122 | 29.4 | 2.2 | 15 |
| SME-P1 | SMRID | 8/14/2006 | 1.9 | 1.9 | 2.3 | 15.2 | 182 | 124 | 52.5 | 319 | 115 | 11 | <5 | 112 | 24.5 | 2.2 | 14.2 |
| SME-P1 | SMRID | 8/28/2006 | 1.7 | 1.7 | 2.2 | 14.5 | 170 | 116 | 47.4 | 302 | 116 | 9 | <5 | 110 | 22.7 | 2.1 | 13.7 |
| SME-P1 | SMRID | 6/25/2007 | 1.4 | 23.9 | 1.1 | 15.5 | 181 | 124 | 57.4 | 306 | 123 | <5 | <5 | 108 | 24 | 1.3 | 15.1 |
| SME-P1 | SMRID | 7/9/2007 | 1.5 | 29.5 | 1.2 | 16.2 |  |  | 52 | 293 | 154 | <5 | <5 | 127 | 23.3 | 1.5 | 15.3 |
| SME-P1 | SMRID | 8/7/2007 | 1.3 | 24.6 | 1.6 | 16.8 | 187 | 131 | 41.1 | 287 | 114 | 12 | <5 | 113 | 24.1 | 1.7 | 13.8 |
| SME-P1 | SMRID | 8/20/2007 | 2.1 | 20.8 | 2.1 | 17.7 | 213 | 125 | 56 | 327 | 163 | <5 | <5 | 134 | 21.1 | 2.6 | 16.8 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SME-R1 | SMRID | 7/4/2006 | 3.8 | 30.8 | 4.0 | 18.7 | 231 | 154 | 70.1 | 388 | 150 | 7 | <5 | 134 | 31.1 | 4 | 18.7 |
| SME-R1 | SMRID | 7/17/2006 | 3.7 | 3.7 | 4.7 | 20.8 | 258 | 158 | 95.4 | 433 | 139 | 7 | <5 | 125 | 28.8 | 4.4 | 18.9 |
| SME-R1 | SMRID | 8/14/2006 | 3 | 3 | 3.5 | 16.5 | 204 | 122 | 70.1 | 354 | 102 | 13 | <5 | 105 | 22.7 | 3.6 | 16.3 |
| SME-R1 | SMRID | 8/28/2006 | 3.3 | 3.3 | 4.6 | 17.8 | 226 | 126 | 79.4 | 384 | 102 | 18 | <5 | 114 | 24.1 | 4.1 | 17.6 |
| SME-R1 | SMRID | 6/25/2007 | 2.7 | 29.9 | 3.3 | 19.7 | 229 | 156 | 60.9 | 383 | 168 | 5 | <5 | 147 | 29.6 | 3.5 | 19.2 |
| SME-R1 | SMRID | 7/9/2007 | 2.3 | 27.9 | 2.6 | 20.9 |  |  | 57 | 338 | 166 | 7 | <5 | 148 | 22.9 | 2.8 | 18.5 |
| SME-R1 | SMRID | 8/7/2007 | 2.3 | 18.8 | 2.7 | 21.4 | 214 | 135 | 57.8 | 329 | 105 | 14 | <5 | 110 | 18.6 | 2.9 | 17.3 |
| SME-R1 | SMRID | 8/20/2007 | 2.2 | 19.9 | 2.3 | 18.3 | 217 | 125 | 58.3 | 334 | 164 | <5 | <5 | 135 | 19.8 | 2.8 | 17.5 |
| SME-S1 | SMRID | 7/4/2006 | 2.8 | 2.8 | 3.8 | 17.4 | 217 | 154 | 59.8 | 363 | 142 | 11 | <5 | 135 | 32.4 | 3.6 | 16.6 |
| SME-S1 | SMRID | 7/17/2006 | 2.5 | 2.5 | 3.7 | 17.3 | 203 | 137 | 62.1 | 342 | 118 | 13 | <5 | 118 | 25.2 | 3.1 | 15.3 |
| SME-S1 | SMRID | 8/14/2006 | 2.7 | 2.7 | 3.3 | 15.7 | 188 | 116 | 60.7 | 321 | 74 | 25 | <5 | 103 | 20.8 | 3.5 | 14.9 |
| SME-S1 | SMRID | 8/28/2006 | 2.7 | 2.7 | 3.6 | 15.7 | 194 | 120 | 60.3 | 332 | 92 | 21 | <5 | 111 | 23.2 | 3.7 | 15.4 |
| SME-S1 | SMRID | 6/25/2007 | 2.7 | 29.6 | 3.1 | 19 | 225 | 152 | 60.5 | 378 | 164 | 7 | <5 | 145 | 30.2 | 3.4 | 18.9 |
| SME-S1 | SMRID | 7/9/2007 | 2.3 | 24.3 | 2.3 | 19.5 | 209 | 141 | 55.7 | 331 | 168 | <5 | <5 | 145 | 23.2 | 3 | 18.1 |
| SME-S1 | SMRID | 8/7/2007 | 2.1 | 20.7 | 2.6 | 21 | 212 | 138 | 55.9 | 326 | 103 | 19 | <5 | 116 | 21.2 | 2.7 | 17.3 |
| SME-S1 | SMRID | 8/20/2007 | 1.3 | 26.7 | 1.4 | 14 | 189 | 124 | 37.9 | 290 | 164 | <5 | <5 | 134 | 24.9 | 1.7 | 13.1 |
| SMW-P1 | SMRID | 7/4/2006 | 1.2 | 1.2 | 1.5 | 13.2 | 169 | 132 | 37.8 | 281 | 131 | 8 | <5 | 120 | 29.7 | 1.4 | 12.1 |
| SMW-P1 | SMRID | 7/17/2006 | 1 | 1 | 1.2 | 12.6 | 151 | 128 | 27.7 | 269 | 136 | <5 | <5 | 115 | 28 | 1 | 11 |
| SMW-P1 | SMRID | 8/14/2006 | 0.6 | 0.6 | 0.8 | 10.8 | 125 | 111 | 14.5 | 231 | 125 | <5 | <5 | 111 | 26.5 | 0.8 | 10 |
| SMW-P1 | SMRID | 8/28/2006 | 0.6 | 0.6 | 0.8 | 10.7 | 126 | 110 | 15.6 | 236 | 130 | <5 | <5 | 111 | 26.5 | 0.9 | 10.2 |
| SMW-P1 | SMRID | 6/25/2007 | 0.5 | 27 | 0.7 | 10.4 | 120 | 110 | 16 | 222 | 117 | <5 | <5 | 100 | 27 | 0.7 | 10.1 |
| SMW-P1 | SMRID | 7/9/2007 | 0.7 | 39 | 1.2 | 17.5 | 167 | 169 | 23.8 | 251 | 149 | <5 | <5 | 124 | 28 | 1 | 10.9 |
| SMW-P1 | SMRID | 8/7/2007 | 0.7 | 27.5 | 0.9 | 12.7 | 163 | 121 | 21 | 251 | 148 | <5 | <5 | 121 | 26.4 | 1 | 10.2 |
| SMW-P1 | SMRID | 8/20/2007 | 0.4 | 25.8 | <0.5 | 9.55 | 140 | 104 | 11.1 | 216 | 155 | <5 | <5 | 127 | 25.8 | 0.7 | 9.4 |
| SMW-R1 | SMRID | 7/4/2006 | 1.5 | 1.5 | 1.7 | 14.8 | 185 | 139 | 49.8 | 306 | 136 | 6 | <5 | 121 | 29.8 | 1.8 | 13.8 |
| SMW-R1 | SMRID | 7/17/2006 | 1.3 | 1.3 | 1.6 | 13.6 | 166 | 137 | 34.1 | 298 | 143 | <5 | <5 | 121 | 32 | 1.4 | 12.2 |
| SMW-R1 | SMRID | 8/14/2006 | 0.7 | 0.7 | 0.9 | 11.1 | 129 | 114 | 15.3 | 239 | 134 | <5 | <5 | 114 | 27.1 | 1 | 10.2 |
| SMW-R1 | SMRID | 8/28/2006 | 0.6 | 0.6 | 1.1 | 11.2 | 133 | 114 | 17.8 | 246 | 135 | <5 | <5 | 115 | 28.1 | 1.3 | 11.1 |
| SMW-R1 | SMRID | 6/25/2007 | 0.5 | 28.9 | 0.9 | 11.1 | 124 | 118 | 15.6 | 234 | 124 | <5 | <5 | 103 | 28.9 | 1 | 10.7 |
| SMW-R1 | SMRID | 7/9/2007 | 0.7 | 38.1 | 1.5 | 17.5 | 171 | 167 | 25.1 | 258 | 158 | <5 | <5 | 130 | 29.6 | 1.3 | 11.4 |
| SMW-R1 | SMRID | 8/7/2007 | 0.8 | 29.1 | 1.1 | 13.7 | 174 | 129 | 25.7 | 268 | 150 | <5 | <5 | 123 | 29.4 | 1.3 | 11.7 |
| SMW-R1 | SMRID | 8/20/2007 | 0.4 | 26.4 | 0.5 | 9.93 | 147 | 107 | 12.6 | 226 | 158 | <5 | <5 | 129 | 26.6 | 0.8 | 9.8 |
| SMW-R2 | SMRID | 7/4/2006 | 2.9 | 2.9 | 1.9 | 17.8 | 221 | 130 | 92.9 | 343 | 99 | 10 | <5 | 97 | 22.6 | 2 | 17.3 |
| SMW-R2 | SMRID | 7/17/2006 | 1 | 1 | 1.4 | 13.5 | 138 | 110 | 32.3 | 246 | 98 | 10 | <5 | 96 | 20.8 | 1.2 | 12.3 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMW-R2 | SMRID | 8/14/2006 | 0.6 | 0.6 | 1.2 | 12 | 120 | 103 | 16.8 | 224 | 114 | 5 | <5 | 102 | 21.5 | 1.2 | 11.2 |
| SMW-R2 | SMRID | 8/28/2006 | 0.7 | 0.7 | 1.2 | 11.4 | 115 | 93 | 17.2 | 217 | 110 | 6 | <5 | 100 | 20.7 | 1.2 | 11.2 |
| SMW-R2 | SMRID | 6/25/2007 | 0.5 | 16.2 | 0.5 | 11.1 | 97 | 86 | 17.6 | 183 | 79 | 6 | <5 | 75 | 17.3 | 0.7 | 11 |
| SMW-R2 | SMRID | 7/9/2007 | 0.7 | 26.8 | 1.2 | 17.6 | 141 | 139 | 23.6 | 211 | 114 | <5 | <5 | 101 | 19.8 | 1.1 | 11.6 |
| SMW-R2 | SMRID | 8/7/2007 | 0.8 | 20 | 1.1 | 13.1 | 150 | 104 | 22 | 231 | 132 | <5 | <5 | 108 | 21.2 | 1.3 | 11.5 |
| SMW-R2 | SMRID | 8/20/2007 | 0.8 | 21.9 | 0.9 | 11.8 | 153 | 103 | 20.4 | 236 | 153 | <5 | <5 | 125 | 22.7 | 1.2 | 11.4 |
| SMW-S1 | SMRID | 7/4/2006 | 1.3 | 1.3 | 1.3 | 13.2 | 175 | 131 | 43.5 | 290 | 133 | 6 | <5 | 120 | 30.1 | 1.6 | 12.8 |
| SMW-S1 | SMRID | 7/17/2006 | 1.1 | 1.1 | 1.3 | 12.9 | 159 | 131 | 31.7 | 282 | 137 | <5 | <5 | 117 | 29.3 | 1.3 | 11.7 |
| SMW-S1 | SMRID | 8/14/2006 | 0.7 | 0.7 | 0.8 | 10.8 | 126 | 112 | 14.7 | 232 | 125 | <5 | <5 | 110 | 26.8 | 0.9 | 10.3 |
| SMW-S1 | SMRID | 8/28/2006 | 0.7 | 0.7 | 0.9 | 10.9 | 130 | 111 | 17.3 | 240 | 131 | <5 | <5 | 112 | 27 | 1 | 10.5 |
| SMW-S1 | SMRID | 6/25/2007 | 0.5 | 27.2 | 0.7 | 10.7 | 124 | 112 | 18.6 | 231 | 119 | <5 | <5 | 100 | 27.4 | 0.7 | 10.3 |
| SMW-S1 | SMRID | 7/9/2007 | 0.7 | 36.7 | 1.3 | 17.2 | 165 | 162 | 23.7 | 247 | 152 | <5 | <5 | 125 | 28.2 | 1.1 | 11 |
| SMW-S1 | SMRID | 8/7/2007 | 0.9 | 28.2 | 1.0 | 13 | 177 | 124 | 28.7 | 273 | 147 | <5 | <5 | 120 | 28 | 1.2 | 11.4 |
| SMW-S1 | SMRID | 8/20/2007 | 0.4 | 25.6 | <0.5 | 9.6 | 141 | 103 | 11.1 | 217 | 154 | <5 | <5 | 126 | 26.3 | 0.7 | 9.4 |
| T-P1 | TID | 7/4/2006 | 2.2 | 2.2 | 1.9 | 15.6 | 218 | 153 | 67.2 | 348 | 146 | 6 | <5 | 131 | 34.3 | 1.8 | 14.9 |
| T-P1 | TID | 7/17/2006 | 1.5 | 1.5 | 1.7 | 14.6 | 187 | 148 | 45.9 | 328 | 144 | <5 | <5 | 126 | 32.3 | 1.4 | 13.3 |
| T-P1 | TID | 8/14/2006 | 1.1 | 1.1 | 1.2 | 12.4 | 156 | 126 | 28.3 | 283 | 138 | <5 | <5 | 120 | 29.1 | 1.2 | 11.6 |
| T-P1 | TID | 8/28/2006 | 0.8 | 0.8 | 1.2 | 11.8 | 144 | 120 | 23.2 | 259 | 134 | <5 | <5 | 117 | 27.8 | 1.2 | 11.2 |
| T-P1 | TID | 6/25/2007 | 0.8 | 30.9 | 1.1 | 12.5 | 154 | 129 | 32.3 | 279 | 130 | <5 | <5 | 110 | 30.8 | 1.1 | 12 |
| T-P1 | TID | 7/9/2007 | 1 | 39.2 | 1.6 | 19.5 | 191 | 178 | 34.5 | 285 | 160 | <5 | <5 | 135 | 30.5 | 1.2 | 12.4 |
| T-P1 | TID | 8/7/2007 | 0.9 | 28 | 1.0 | 12.8 | 178 | 123 | 28.2 | 274 | 152 | <5 | <5 | 125 | 28.1 | 1.1 | 11.2 |
| T-P1 | TID | 8/20/2007 | 0.7 | 27.6 | 0.8 | 11.3 | 168 | 115 | 23.6 | 258 | 163 | <5 | <5 | 134 | 27.5 | 1 | 10.7 |
| T-R1 | TID | 7/4/2006 | 6.8 | 6.8 | 3.9 | 32.2 | 421 | 198 | 218 | 643 | 97 | 21 | <5 | 114 | 26.2 | 3.4 | 31.7 |
| T-R1 | TID | 7/17/2006 | 6.4 | 6.4 | 4.4 | 30.1 | 419 | 186 | 222 | 626 | 76 | 30 | <5 | 112 | 23.1 | 3.2 | 27.2 |
| T-R1 | TID | 8/14/2006 | 3.7 | 3.7 | 3.1 | 22.6 | 281 | 156 | 110 | 481 | 152 | <5 | <5 | 128 | 25.1 | 3.1 | 21.5 |
| T-R1 | TID | 8/28/2006 | 3 | 3 | 2.7 | 21.1 | 258 | 155 | 88.3 | 198 | 157 | 6 | <5 | 139 | 24.4 | 2.8 | 21.3 |
| T-R1 | TID | 6/25/2007 | 4.7 | 31.1 | 3.0 | 26.4 | 343 | 186 | 153 | 538 | 149 | 5 | <5 | 130 | 30.5 | 3.3 | 25.3 |
| T-R1 | TID | 7/9/2007 | 3.1 | 30 | 2.3 | 25.7 | 299 | 181 | 112 | 458 | 170 | 7 | <5 | 150 | 23.7 | 2.3 | 20.8 |
| T-R1 | TID | 8/7/2007 | 1.5 | 21.4 | 1.7 | 18 | 200 | 128 | 48.1 | 307 | 128 | 8 | <5 | 119 | 20.9 | 2 | 14.8 |
| T-R1 | TID | 8/20/2007 | 1.5 | 22 | 1.6 | 16.3 | 203 | 122 | 48.6 | 313 | 161 | <5 | <5 | 132 | 21.9 | 1.9 | 15.8 |
| T-R2 | TID | 7/4/2006 | 3.8 | 3.8 | 2.7 | 18.4 | 208 | 122 | 81.2 | 345 | 92 | 11 | <5 | 94 | 18.3 | 2.6 | 18 |
| T-R2 | TID | 7/17/2006 | 4.4 | 4.4 | 3.4 | 19.7 | 227 | 131 | 90.1 | 371 | 85 | 18 | <5 | 101 | 18.3 | 2.8 | 17.3 |
| T-R2 | TID | 8/14/2006 | 2.7 | 2.7 | 2.5 | 17.5 | 201 | 127 | 65.9 | 351 | 117 | 8 | <5 | 109 | 22.1 | 2.4 | 16 |
| T-R2 | TID | 8/28/2006 | 2.1 | 2.1 | 2.1 | 15.7 | 180 | 116 | 53.8 | 231 | 112 | 11 | <5 | 110 | 26.5 | 2.1 | 15.1 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T-R2 | TID | 6/25/2007 | 1.9 | 20.4 | 1.5 | 16.9 | 181 | 121 | 65.8 | 307 | 97 | 7 | <5 | 90 | 19.9 | 1.7 | 16.1 |
| T-R2 | TID | 7/9/2007 | 1.8 | 20.8 | 1.3 | 18.5 | | | 58.8 | 290 | 115 | 8 | <5 | 108 | 16.3 | 1.5 | 14.7 |
| T-R2 | TID | 8/7/2007 | 1.8 | 17.2 | 1.6 | 15.9 | 183 | 108 | 45.2 | 281 | 114 | 7 | <5 | 106 | 17.1 | 1.6 | 14.2 |
| T-R2 | TID | 8/20/2007 | 1.6 | 17.8 | 1.4 | 14.4 | 176 | 104 | 41.5 | 271 | 145 | <5 | <5 | 119 | 18.4 | 1.7 | 14.1 |
| T-S1 | TID | 7/4/2006 | 1.9 | 1.9 | 1.8 | 15.6 | 215 | 152 | 63.9 | 346 | 145 | 7 | <5 | 131 | 34.4 | 1.9 | 14.8 |
| T-S1 | TID | 7/17/2006 | 1.3 | 1.3 | 1.7 | 14.4 | 187 | 146 | 45.2 | 324 | 143 | 6 | <5 | 127 | 32 | 1.4 | 13.2 |
| T-S1 | TID | 8/14/2006 | 0.9 | 0.9 | 1.2 | 12.4 | 152 | 123 | 27 | 277 | 137 | <5 | <5 | 119 | 28.9 | 1.3 | 11.4 |
| T-S1 | TID | 8/28/2006 | 0.9 | 0.9 | 1.1 | 12 | 145 | 121 | 23 | 232 | 135 | <5 | <5 | 119 | 26.8 | 1.2 | 11.2 |
| T-S1 | TID | 6/25/2007 | 0.8 | 30.5 | 1.1 | 12.5 | 155 | 128 | 31.4 | 274 | 134 | <5 | <5 | 115 | 31.3 | 1.1 | 12.7 |
| T-S1 | TID | 7/9/2007 | 0.9 | 39.8 | 1.6 | 19.7 | 191 | 181 | 33.9 | 285 | 160 | <5 | <5 | 135 | 30 | 1.3 | 12.1 |
| T-S1 | TID | 8/7/2007 | 0.8 | 28.1 | 1.0 | 13.3 | 178 | 125 | 28 | 274 | 150 | <5 | <5 | 123 | 28 | 1.1 | 11.2 |
| T-S1 | TID | 8/20/2007 | 0.7 | 27.8 | 0.8 | 11.6 | 168 | 117 | 23.8 | 259 | 162 | <5 | <5 | 133 | 27.9 | 1 | 11.1 |
| T-S2 | TID | 7/4/2006 | 5.6 | 5.6 | 3.5 | 25.9 | 332 | 154 | 161 | 539 | 77 | 25 | <5 | 105 | 19.9 | 3 | 25.3 |
| T-S2 | TID | 7/17/2006 | 6.4 | 6.4 | 4.3 | 28.9 | 396 | 178 | 207 | 600 | 55 | 38 | <5 | 108 | 22.3 | 3.4 | 25.7 |
| T-S2 | TID | 8/14/2006 | 3.5 | 3.5 | 3.0 | 21.4 | 268 | 147 | 105 | 464 | 139 | 5 | <5 | 122 | 24.1 | 3.1 | 20.9 |
| T-S2 | TID | 8/28/2006 | 2.9 | 2.9 | 2.9 | 20.2 | 242 | 146 | 80.4 | 197 | 138 | 12 | <5 | 134 | 23.1 | 2.8 | 19.2 |
| T-S2 | TID | 6/25/2007 | 4.6 | 30 | 3.0 | 25.9 | 327 | 182 | 134 | 525 | 139 | 13 | <5 | 135 | 30 | 3.1 | 25 |
| T-S2 | TID | 7/9/2007 | 2.9 | 30.6 | 2.4 | 24.9 | 287 | 179 | 105 | 434 | 145 | 16 | <5 | 146 | 22.9 | 2.3 | 19.7 |
| T-S2 | TID | 8/7/2007 | 1.6 | 20.2 | 1.8 | 18 | 198 | 125 | 49.4 | 304 | 111 | 13 | <5 | 113 | 19.7 | 2 | 14.9 |
| T-S2 | TID | 8/20/2007 | 3.3 | 18.9 | 1.8 | 16.7 | 200 | 116 | 50 | 307 | 158 | <5 | <5 | 130 | 19.6 | 2.1 | 16.1 |
| T-S3 | TID | 7/4/2006 | 3.7 | 3.7 | 3.3 | 18.6 | 205 | 118 | 82.3 | 337 | 72 | 17 | <5 | 88 | 17.2 | 2.9 | 17.9 |
| T-S3 | TID | 7/17/2006 | 4 | 4 | 3.3 | 19.2 | 221 | 127 | 88.3 | 362 | 72 | 23 | <5 | 98 | 17.7 | 2.7 | 17.1 |
| T-S3 | TID | 8/14/2006 | 2.5 | 2.5 | 2.3 | 16.8 | 196 | 122 | 64.4 | 344 | 112 | 9 | <5 | 108 | 21.2 | 2.4 | 15.7 |
| T-S3 | TID | 8/28/2006 | 2.1 | 2.1 | 2.1 | 15.4 | 177 | 118 | 49.9 | 232 | 116 | 10 | <5 | 112 | 26.8 | 2.1 | 14.8 |
| T-S3 | TID | 6/25/2007 | 1.8 | 15.8 | 1.6 | 16.6 | 168 | 108 | 62.5 | 292 | 77 | 10 | <5 | 81 | 16.2 | 1.6 | 16.2 |
| T-S3 | TID | 7/9/2007 | 1.5 | 18 | 1.3 | 17.9 | 188 | 145 | 56.7 | 270 | 91 | 15 | <5 | 100 | 14 | 1.3 | 14.5 |
| T-S3 | TID | 8/7/2007 | 1.7 | 15.5 | 1.8 | 17.1 | 172 | 109 | 42.9 | 264 | 95 | 13 | <5 | 100 | 15.3 | 2.1 | 14.3 |
| T-S3 | TID | 8/20/2007 | 1.5 | 14.4 | 1.5 | 13.8 | 165 | 92.8 | 37.4 | 254 | 139 | <5 | <5 | 114 | 15.1 | 1.8 | 14.2 |
| U-P1 | UID | 8/13/2007 | 0.1 | 26.8 | <0.5 | 11.7 | 147 | 115 | 6 | 226 | 96 | 36 | <5 | 139 | 25.8 | 0.4 | 10 |
| U-P1 | UID | 7/11/2006 | 0.1 | 0.1 | 0.3 | 9.9 | 103 | 103 | 5.5 | 194 | 117 | <5 | <5 | 102 | 23.9 | 0.5 | 9.4 |
| U-P1 | UID | 7/24/2006 | 0.2 | 0.2 | 0.3 | 10.3 | 113 | 109 | 6.2 | 205 | 129 | <5 | <5 | 112 | 25.3 | 0.4 | 9.8 |
| U-P1 | UID | 8/8/2006 | 0.3 | 0.3 | 0.3 | 11.5 | 120 | 116 | 6.8 | 231 | 136 | <5 | <5 | 119 | 27.3 | 0.4 | 10.9 |
| U-P1 | UID | 8/21/2006 | 0.4 | 0.4 | 0.3 | 11.2 | 122 | 115 | 6.8 | 236 | 140 | 5 | <5 | 123 | 26.7 | 0.5 | 10.4 |
| U-P1 | UID | 6/27/2007 | | 23.6 | 0.3 | 9.2 | 93 | 97 | 4.5 | 177 | 109 | <5 | <5 | 90 | 22.7 | 0.3 | 9 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U-P1 | UID | 7/16/2007 | | 22.2 | 0.3 | 8.5 | 91 | 90 | 4.6 | 178 | 111 | <5 | <5 | 91 | 20.8 | 0.2 | 7.9 |
| U-P1 | UID | 8/27/2007 | 0.3 | 25.5 | <0.5 | 12.1 | 151 | 114 | 7.1 | 232 | 163 | <5 | <5 | 134 | 26.3 | 0.3 | 10.4 |
| U-R1 | UID | 7/11/2006 | 0.2 | 0.2 | 1.2 | 13.2 | 128 | 122 | 15 | 224 | 99 | 18 | <5 | 112 | 29.7 | 2.2 | 13.9 |
| U-R1 | UID | 7/24/2006 | 0.4 | 0.4 | 1.2 | 12.1 | 128 | 119 | 13.2 | 274 | 131 | 6 | <5 | 117 | 35.9 | 2.5 | 14.5 |
| U-R1 | UID | 8/8/2006 | 0.4 | 0.4 | 0.7 | 12.4 | 123 | 114 | 10.8 | 231 | 116 | 14 | <5 | 118 | 28.8 | 1.4 | 12.9 |
| U-R1 | UID | 8/21/2006 | 0.4 | 0.4 | 0.6 | 12.1 | 124 | 113 | 12.7 | 232 | 105 | 19 | <5 | 117 | 26.3 | 0.8 | 12.7 |
| U-R1 | UID | 6/27/2007 | 0.2 | 24.3 | 0.7 | 11.6 | 109 | 108 | 9.5 | 200 | 112 | <5 | <5 | 99 | 26.1 | 1.4 | 12 |
| U-R1 | UID | 7/16/2007 | 0.2 | 24.8 | 0.6 | 10.3 | 104 | 104 | 7.1 | 198 | 120 | <5 | <5 | 98 | 27.3 | 1.5 | 11 |
| U-R1 | UID | 8/13/2007 | 0.3 | 23.6 | 0.7 | 12.1 | 148 | 109 | 12 | 228 | 73 | 45 | <5 | 135 | 26.6 | 1.2 | 11.7 |
| U-R1 | UID | 8/27/2007 | 0.6 | 23.8 | 0.81 | 12.3 | 149 | 110 | 12.7 | 229 | 149 | <5 | <5 | 122 | 28.4 | 1.3 | 12.2 |
| U-R2 | UID | 7/11/2006 | 0.3 | 0.3 | 1.5 | 14.1 | 137 | 127 | 17 | 249 | 132 | 6 | <5 | 119 | 26.5 | 1.8 | 13.3 |
| U-R2 | UID | 7/24/2006 | 0.4 | 0.4 | 0.8 | 11.9 | 125 | 117 | 11.1 | 222 | 132 | 6 | <5 | 118 | 26.4 | 1.1 | 11.7 |
| U-R2 | UID | 8/8/2006 | 0.5 | 0.5 | 0.6 | 11.9 | 121 | 113 | 9.9 | 228 | 118 | 12 | <5 | 116 | 26.1 | 0.8 | 11.1 |
| U-R2 | UID | 8/21/2006 | 0.4 | 0.4 | 0.7 | 12.6 | 133 | 120 | 13.6 | 250 | 128 | 12 | <5 | 124 | 26.7 | 0.9 | 12.1 |
| U-R2 | UID | 6/27/2007 | 0.2 | 29.6 | 0.8 | 13.9 | 119 | 131 | 10 | 210 | 125 | <5 | <5 | 102 | 25.8 | 1.5 | 12.6 |
| U-R2 | UID | 7/16/2007 | 0.1 | 25.5 | 0.6 | 10.4 | 105 | 107 | 6.8 | 202 | 121 | <5 | <5 | 99 | 23.7 | 1.1 | 9.7 |
| U-R2 | UID | 8/13/2007 | 0.2 | 24.3 | 0.6 | 12 | 152 | 110 | 11.1 | 234 | 90 | 39 | <5 | 139 | 25.7 | 0.9 | 11 |
| U-R2 | UID | 8/27/2007 | 0.5 | 23.9 | 0.74 | 12.2 | 150 | 110 | 12.3 | 230 | 151 | <5 | <5 | 124 | 25.4 | 0.7 | 10.7 |
| U-S1 | UID | 7/11/2006 | 0.2 | 0.2 | 0.7 | 11.2 | 114 | 110 | 10.6 | 209 | 119 | <5 | <5 | 105 | 24.5 | 0.9 | 10.8 |
| U-S1 | UID | 7/24/2006 | 0.3 | 0.3 | 0.4 | 10.3 | 109 | 101 | 8.7 | 199 | 117 | 6 | <5 | 106 | 23.8 | 0.4 | 9.7 |
| U-S1 | UID | 8/8/2006 | 0.3 | 0.3 | 0.4 | 10.9 | 111 | 105 | 7.4 | 214 | 123 | 5 | <5 | 110 | 24.2 | 0.5 | 10 |
| U-S1 | UID | 8/21/2006 | 0.3 | 0.3 | 0.5 | 10.7 | 110 | 102 | 8.2 | 213 | 121 | 6 | <5 | 109 | 23.1 | 0.6 | 10.4 |
| U-S1 | UID | 6/27/2007 | 0.2 | 28.9 | 0.3 | 12.7 | 106 | 124 | 7 | 184 | 108 | <5 | <5 | 91 | 21.7 | 0.3 | 9.8 |
| U-S1 | UID | 7/16/2007 | 0.1 | 22.1 | 0.3 | 9.1 | 93 | 93 | 5.7 | 180 | 109 | <5 | <5 | 89 | 20.7 | 0.3 | 8.2 |
| U-S1 | UID | 8/13/2007 | 0.2 | 21.4 | <0.5 | 9.95 | 129 | 94.4 | 7.4 | 199 | 73 | 38 | <5 | 124 | 21.9 | 0.5 | 8.8 |
| U-S1 | UID | 8/27/2007 | 0.3 | 21.1 | <0.5 | 10.3 | 130 | 95.1 | 8 | 200 | 135 | <5 | <5 | 110 | 22.4 | 0.5 | 8.8 |
| AEP-P2 | WID | 7/5/2006 | 6.4 | 6.4 | 0.8 | 14.4 | 190 | 153 | 43.7 | 323 | 145 | <5 | <5 | 126 | 38.6 | 0.8 | 14.2 |
| AEP-P2 | WID | 7/19/2006 | 13.1 | 13.1 | 1.7 | 15.8 | 220 | 137 | 75.4 | 381 | 109 | 5 | <5 | 98 | 27.6 | 1.7 | 15.4 |
| AEP-P2 | WID | 8/17/2006 | 7.4 | 7.4 | 1.1 | 16 | 210 | 163 | 55.3 | 368 | 143 | 6 | <5 | 126 | 37.8 | 1.1 | 14.7 |
| AEP-P2 | WID | 8/30/2006 | 5.9 | 5.9 | 0.9 | 14.6 | 192 | 161 | 46.7 | 422 | 149 | <5 | <5 | 125 | 39.3 | 0.8 | 13.4 |
| AEP-P2 | WID | 6/20/2007 | 41.2 | 53.8 | 6.4 | 35.2 | 587 | 279 | 268 | 921 | 131 | 17 | <5 | 136 | 50.7 | 5.5 | 31.9 |
| AEP-P2 | WID | 7/11/2007 | 6.3 | 34.7 | 0.8 | 13.3 | 185 | 141 | 45.1 | 328 | 150 | <5 | <5 | 123 | 36.5 | 0.9 | 13.4 |
| AEP-P2 | WID | 8/8/2007 | 5 | 38.9 | 0.8 | 16.7 | 215 | 166 | 41.4 | 331 | 164 | <5 | <5 | 135 | 36.6 | 0.8 | 13.4 |
| AEP-P2 | WID | 8/22/2007 | 6.6 | 36.8 | <0.5 | 14.7 | 242 | 152 | 50.7 | 372 | 193 | <5 | <5 | 158 | 39.8 | 1.1 | 15.2 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-P1 | WID | 7/5/2006 | 17.9 | 17.9 | 1.5 | 18.1 | 256 | 143 | 99.4 | 426 | 97 | 10 | <5 | 96 | 28.1 | 1.4 | 17.8 |
| W-P1 | WID | 7/19/2006 | 28.4 | 28.4 | 7.9 | 41.3 | 691 | 307 | 211 | 1070 | 375 | 27 | <5 | 352 | 53 | 7.4 | 39.9 |
| W-P1 | WID | 8/17/2006 | 10.1 | 10.1 | 1.2 | 16.9 | 213 | 146 | 64.5 | 372 | 121 | 8 | <5 | 112 | 29.4 | 1.2 | 15.5 |
| W-P1 | WID | 8/30/2006 | 9.6 | 9.6 | 1.3 | 17.2 | 227 | 155 | 70.9 | 197 | 143 | <5 | <5 | 122 | 25.4 | 1.4 | 16.5 |
| W-P1 | WID | 6/20/2007 | 59.1 | 40.8 | 3.7 | 26.9 | 440 | 213 | 154 | 759 | 136 | 11 | <5 | 129 | 36.3 | 3.4 | 23.4 |
| W-P1 | WID | 7/11/2007 | 51.5 | 27.5 | 2.4 | 23.3 | 401 | 165 | 155 | 667 | 132 | <5 | <5 | 110 | 28.6 | 2.8 | 23.2 |
| W-P1 | WID | 8/8/2007 | 8.1 | 35.9 | 1.4 | 18.6 | 235 | 166 | 51.4 | 362 | 162 | <5 | <5 | 133 | 33.4 | 1.3 | 14.9 |
| W-P1 | WID | 8/22/2007 | 9.8 | 35 | 0.8 | 16.3 | 268 | 155 | 62.6 | 413 | 195 | <5 | <5 | 160 | 36.4 | 1.6 | 16.2 |
| W-P2 | WID | 7/5/2006 | 20.4 | 20.4 | 1.8 | 16.3 | 263 | 151 | 93.8 | 440 | 122 | <5 | <5 | 108 | 34.8 | 1.7 | 16.3 |
| W-P2 | WID | 7/19/2006 | 12.9 | 12.9 | 1.6 | 17.2 | 248 | 150 | 85 | 431 | 128 | 5 | <5 | 113 | 30.6 | 1.6 | 16.8 |
| W-P2 | WID | 8/17/2006 | 6.4 | 6.4 | 1.0 | 14.7 | 191 | 151 | 49.3 | 337 | 136 | <5 | <5 | 118 | 34.9 | 1 | 13.3 |
| W-P2 | WID | 8/30/2006 | 7.9 | 7.9 | 1.2 | 15.1 | 211 | 160 | 57.9 | 278 | 153 | <5 | <5 | 126 | 36.3 | 1.2 | 13.9 |
| W-P2 | WID | 6/20/2007 | 65 | 46.2 | 4.2 | 25.2 | 469 | 219 | 167 | 801 | 133 | 11 | <5 | 127 | 42.6 | 3.8 | 22.2 |
| W-P2 | WID | 7/11/2007 | 41.3 | 36.3 | 2.5 | 20.6 | 366 | 175 | 136 | 598 | 133 | 6 | <5 | 119 | 36.6 | 2.8 | 20.2 |
| W-P2 | WID | 8/8/2007 | 6.1 | 35.5 | 1.1 | 16.2 | 222 | 155 | 44.2 | 341 | 162 | <5 | <5 | 133 | 34.9 | 1.1 | 13.7 |
| W-P2 | WID | 8/22/2007 | 7.6 | 37.4 | 0.6 | 15 | 246 | 155 | 52.3 | 378 | 195 | <5 | <5 | 160 | 38 | 1.3 | 15.1 |
| W-R2 | WID | 7/5/2006 | 23.2 | 23.2 | 6.5 | 27.6 | 656 | 230 | 304 | 945 | 240 | 7 | <5 | 209 | 48.6 | 6.1 | 27.6 |
| W-R2 | WID | 7/19/2006 | 7.5 | 7.5 | 1.1 | 13.8 | 191 | 159 | 39.8 | 336 | 145 | 5 | <5 | 127 | 38.8 | 1.2 | 13.1 |
| W-R2 | WID | 8/17/2006 | 10.1 | 10.1 | 2.9 | 19.8 | 351 | 178 | 132 | 575 | 169 | 6 | <5 | 150 | 37.1 | 3 | 17.7 |
| W-R2 | WID | 8/30/2006 | 12.5 | 12.5 | 2.4 | 20.6 | 368 | 178 | 142 | 368 | 172 | 9 | <5 | 156 | 37.8 | 2.5 | 19.6 |
| W-R2 | WID | 6/20/2007 | 50.8 | 66.6 | 7.0 | 43.3 | 909 | 345 | 425 | 1430 | 270 | 14 | <5 | 245 | 66.2 | 8 | 41.3 |
| W-R2 | WID | 7/11/2007 | 56.5 | 48 | 5.3 | 27.6 | 649 | 234 | 293 | 1090 | 145 | <5 | <5 | 119 | 45.2 | 6.7 | 26.7 |
| W-R2 | WID | 8/8/2007 | 12.9 | 37.7 | 2.5 | 23 | 333 | 189 | 90.1 | 512 | 206 | <5 | <5 | 169 | 37.9 | 3.2 | 19.8 |
| W-R2 | WID | 8/22/2007 | 10.7 | 35.9 | 1.5 | 19.3 | 326 | 169 | 91.5 | 501 | 211 | <5 | <5 | 173 | 36.3 | 2.5 | 19.4 |
| W-S1 | WID | 7/5/2006 | 19.8 | 19.8 | 1.6 | 18.3 | 264 | 142 | 104 | 433 | 99 | 8 | <5 | 94 | 27.3 | 1.6 | 17.7 |
| W-S1 | WID | 7/19/2006 | 14.6 | 14.6 | 1.6 | 17.4 | 237 | 142 | 84.5 | 411 | 103 | 10 | <5 | 102 | 27.1 | 1.7 | 17 |
| W-S1 | WID | 8/17/2006 | 9.1 | 9.1 | 1.1 | 16.5 | 204 | 144 | 60.5 | 361 | 126 | 6 | <5 | 112 | 29.3 | 1.2 | 14.9 |
| W-S1 | WID | 8/30/2006 | 10.3 | 10.3 | 1.4 | 17.9 | 232 | 155 | 76 | 284 | 138 | <5 | <5 | 119 | 35.5 | 1.3 | 16.7 |
| W-S1 | WID | 6/20/2007 | 34.1 | 42.4 | 4.6 | 28.2 | 381 | 222 | 104 | 642 | 167 | 19 | <5 | 168 | 38.5 | 4.3 | 24.3 |
| W-S1 | WID | 7/11/2007 | 47.6 | 29.1 | 2.5 | 24.4 | 402 | 173 | 155 | 663 | 127 | 8 | <5 | 118 | 30.5 | 2.9 | 24.3 |
| W-S1 | WID | 8/8/2007 | 10.1 | 34 | 1.3 | 18.1 | 242 | 159 | 57.9 | 373 | 160 | <5 | <5 | 131 | 32.9 | 1.5 | 15.3 |
| W-S1 | WID | 8/22/2007 | 12.8 | 33.8 | 0.8 | 17 | 276 | 154 | 67 | 425 | 106 | 36 | <5 | 148 | 35.6 | 1.6 | 16.9 |
| W-S2 | WID | 7/5/2006 | 21.4 | 21.4 | 2.1 | 19.5 | 289 | 153 | 113 | 470 | 116 | 7 | <5 | 106 | 29.1 | 1.9 | 18.4 |
| W-S2 | WID | 7/19/2006 | 13 | 13 | 1.4 | 17 | 221 | 132 | 82.2 | 379 | 88 | 11 | <5 | 90 | 24.2 | 1.3 | 16 |

**Appendix 3.2.** Major ion and salinity concentrations in the 80 irrigation district study sites.

| Site ID | IrrDis | DATE | Cl mg $L^{-1}$ | Ca mg $L^{-1}$ | K mg $L^{-1}$ | Mg mg $L^{-1}$ | TDS mg $L^{-1}$ | Hard mg $L^{-1}$ | SO4 mg $L^{-1}$ | EC uS $cm^{-1}$ | HCO3 mg $L^{-1}$ | CO3 mg $L^{-1}$ | OH mg $L^{-1}$ | Alk mg $L^{-1}$ | TotCa mg $L^{-1}$ | TotK mg $L^{-1}$ | TotMg mg $L^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-S2 | WID | 8/17/2006 | 13.4 | 13.4 | 1.5 | 17.3 | 230 | 149 | 69.3 | 399 | 123 | 10 | <5 | 118 | 31.5 | 1.5 | 15.9 |
| W-S2 | WID | 8/30/2006 | 15 | 15 | 1.8 | 19 | 254 | 163 | 80.2 | 433 | 137 | 8 | <5 | 125 | 27.3 | 1.8 | 17.3 |
| W-S2 | WID | 6/20/2007 | 52.4 | 39.3 | 4.0 | 26.8 | 435 | 208 | 141 | 748 | 177 | 6 | <5 | 156 | 36.3 | 3.7 | 24.1 |
| W-S2 | WID | 7/11/2007 | 60.5 | 28.7 | 2.5 | 23.8 | 412 | 170 | 172 | 743 | 82 | <5 | <5 | 67 | 28.6 | 3.1 | 24.6 |
| W-S2 | WID | 8/8/2007 | 8.4 | 37.3 | 1.3 | 19.2 | 244 | 172 | 53.6 | 376 | 168 | <5 | <5 | 138 | 34.3 | 1.4 | 15.5 |
| W-S2 | WID | 8/22/2007 | 11.2 | 33.7 | 0.8 | 16.6 | 270 | 153 | 64.9 | 415 | 191 | <5 | <5 | 156 | 36.1 | 1.8 | 17 |
| W-S3 | WID | 7/5/2006 | 21.5 | 21.5 | 2.0 | 18.6 | 323 | 153 | 127 | 519 | 129 | 7 | <5 | 118 | 31 | 2 | 17.9 |
| W-S3 | WID | 7/19/2006 | 11.5 | 11.5 | 1.5 | 15.6 | 224 | 152 | 68.7 | 389 | 130 | 5 | <5 | 116 | 34.2 | 1.5 | 15 |
| W-S3 | WID | 8/17/2006 | 7.2 | 7.2 | 1.2 | 17.3 | 249 | 161 | 78.9 | 426 | 158 | <5 | <5 | 133 | 36.7 | 1.4 | 16.2 |
| W-S3 | WID | 8/30/2006 | 8.6 | 8.6 | 1.3 | 16.5 | 230 | 155 | 71.6 | 199 | 149 | <5 | <5 | 125 | 24.6 | 1.3 | 15.5 |
| W-S3 | WID | 6/20/2007 | 38.7 | 66.7 | 8.6 | 42.7 | 977 | 342 | 467 | 1480 | 278 | 6 | <5 | 238 | 59.7 | 8.8 | 37.2 |
| W-S3 | WID | 7/11/2007 | 49.7 | 40.5 | 2.8 | 23.2 | 416 | 197 | 173 | 749 | 104 | <5 | <5 | 85 | 38.6 | 3.4 | 22.7 |
| W-S3 | WID | 8/8/2007 | 7.4 | 34.7 | 1.4 | 18.2 | 245 | 162 | 56.1 | 377 | 164 | <5 | <5 | 135 | 33.3 | 1.5 | 14.7 |
| W-S3 | WID | 8/22/2007 | 9.2 | 34.4 | 0.9 | 17.4 | 275 | 158 | 68.8 | 423 | 208 | <5 | <5 | 170 | 35.5 | 1.6 | 16.4 |
| W-S4 | WID | 7/5/2006 | 20.8 | 20.8 | 1.8 | 16 | 246 | 127 | 97 | 417 | 88 | 7 | <5 | 83 | 24.7 | 1.8 | 15.4 |
| W-S4 | WID | 7/19/2006 | 5.2 | 5.2 | 0.7 | 13.7 | 177 | 149 | 41.2 | 316 | 137 | <5 | <5 | 119 | 36 | 0.8 | 13.4 |
| W-S4 | WID | 8/17/2006 | 5.5 | 5.5 | 0.9 | 14.6 | 178 | 140 | 48.4 | 316 | 125 | <5 | <5 | 109 | 31.3 | 0.9 | 13.5 |
| W-S4 | WID | 8/30/2006 | 8.3 | 8.3 | 1.4 | 15.8 | 210 | 152 | 63.2 | 514 | 136 | <5 | <5 | 115 | 27.3 | 1.2 | 14.4 |
| W-S4 | WID | 6/20/2007 | 35.6 | 54 | 11.6 | 33.2 | 719 | 272 | 327 | 1130 | 230 | <5 | <5 | 196 | 51.3 | 12.9 | 30.7 |
| W-S4 | WID | 7/11/2007 | 57 | 39 | 3.1 | 24.2 | 434 | 197 | 186 | 748 | 91 | <5 | <5 | 75 | 37.4 | 3.5 | 23.4 |
| W-S4 | WID | 8/8/2007 | 7.6 | 31.2 | 1.5 | 17.6 | 228 | 150 | 52.4 | 351 | 152 | <5 | <5 | 124 | 30 | 1.6 | 14.9 |
| W-S4 | WID | 8/22/2007 | 8 | 33.4 | 0.7 | 15.1 | 247 | 146 | 57.8 | 380 | 182 | <5 | <5 | 149 | 34.8 | 1.4 | 15.2 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-P1 | AID | 7/11/2006 | 0 | 0.0588 | 0 | 0 | 0 | 0 | 0.2156 | 0 | 0 |
| A-P1 | AID | 7/24/2006 | 0 | 0.0426 | 0 | 0 | 0 | 0 | 0.0947 | 0 | 0 |
| A-P1 | AID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0697 | 0 | 0 |
| A-P1 | AID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A-P1 | AID | 6/27/2007 | 0 | 0.05 | 0 | 0 | 0 | 0 | 0.142 | 0 | 0 |
| A-P1 | AID | 7/16/2007 | 0 | 0.0871 | 0 | 0 | 0 | 0 | 0.1149 | 0 | 0 |
| A-P1 | AID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0226 | 0 | 0 |
| A-P1 | AID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A-R1 | AID | 7/11/2006 | 0 | 0.0646 | 0 | 0 | 0 | 0 | 0.2047 | 0 | 0 |
| A-R1 | AID | 7/24/2006 | 0 | 0.0357 | 0 | 0 | 0 | 0 | 0.1013 | 0 | 0 |
| A-R1 | AID | 8/8/2006 | 0 | 0.0226 | 0 | 0 | 0 | 0 | 0.0665 | 0 | 0 |
| A-R1 | AID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A-R1 | AID | 6/27/2007 | 0 | 0.0535 | 0 | 0 | 0 | 0 | 0.166 | 0 | 0 |
| A-R1 | AID | 7/16/2007 | 0 | 0.0435 | 0 | 0 | 0 | 0 | 0.2117 | 0 | 0 |
| A-R1 | AID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0376 | 0 | 0 |
| A-R1 | AID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0311 | 0 | 0 |
| AEP-P3 | BRID | 7/5/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P3 | BRID | 7/19/2006 | 0 | 0 | 0.0311 | 0 | 0 | 0 | 0.0635 | 0 | 0 |
| AEP-P3 | BRID | 8/17/2006 | 0 | 0 | 0.0285 | 0 | 0 | 0 | 0.0742 | 0 | 0 |
| AEP-P3 | BRID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.051 | 0 | 0 |
| AEP-P3 | BRID | 6/20/2007 | 0 | 0 | 0.1042 | 0 | 0 | 0 | 0.0503 | 0 | 0 |
| AEP-P3 | BRID | 7/11/2007 | 0 | 0 | 0.1197 | 0 | 0 | 0 | 0.0127 | 0 | 0 |
| AEP-P3 | BRID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P3 | BRID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0254 | 0 | 0 |
| AEP-S3 | BRID | 7/10/2006 | 0 | 0.0129 | 0 | 0 | 0 | 0 | 0.1467 | 0 | 0 |
| AEP-S3 | BRID | 7/24/2006 | 0 | 0.0163 | 0 | 0.0423 | 0 | 0 | 0.1386 | 0 | 0 |
| AEP-S3 | BRID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S3 | BRID | 8/21/2006 | 0 | 0.0154 | 0 | 0 | 0 | 0 | 0.1288 | 0 | 0 |
| AEP-S3 | BRID | 6/27/2007 | 0 | 0 | 0 | 0.0194 | 0 | 0 | 0.1037 | 0 | 0 |
| AEP-S3 | BRID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1319 | 0 | 0 |
| AEP-S3 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1165 | 0 | 0 |
| AEP-S3 | BRID | 8/27/2007 | 0 | 0 | 0 | 0.0263 | 0 | 0 | 0.1025 | 0 | 0 |
| BR-P1 | BRID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.105 | 0 | 0 |
| BR-P1 | BRID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-P1 | BRID | 7/24/2006 | 0 | 0.0159 | 0 | 0.074 | 0 | 0 | 0.1482 | 0 | 0 |
| BR-P1 | BRID | 8/21/2006 | 0 | 0.011 | 0 | 0 | 0 | 0 | 0.1116 | 0 | 0 |
| BR-P1 | BRID | 6/27/2007 | 0 | 0 | 0 | 0.0473 | 0 | 0 | 0.1155 | 0 | 0 |
| BR-P1 | BRID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0924 | 0 | 0 |
| BR-P1 | BRID | 8/13/2007 | 0 | 0 | 0 | 0.0316 | 0 | 0 | 0.0951 | 0 | 0 |
| BR-P1 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0895 | 0 | 0 |
| BR-R1 | BRID | 7/10/2006 | 0 | 0.0127 | 0 | 0.0348 | 0 | 0 | 0.1317 | 0 | 0 |
| BR-R1 | BRID | 7/24/2006 | 0 | 0.0248 | 0 | 0.0521 | 0 | 0 | 0.1505 | 0 | 0 |
| BR-R1 | BRID | 8/8/2006 | 0 | 0 | 0 | 0.0478 | 0 | 0 | 0.121 | 0 | 0 |
| BR-R1 | BRID | 8/21/2006 | 0 | 0.0124 | 0 | 0 | 0 | 0 | 0.1034 | 0 | 0 |
| BR-R1 | BRID | 6/27/2007 | 0 | 0 | 0 | 0.0449 | 0 | 0 | 0.136 | 0 | 0 |
| BR-R1 | BRID | 7/16/2007 | 0 | 0 | 0 | 0.0482 | 0 | 0 | 0.079 | 0 | 0 |
| BR-R1 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1331 | 0 | 0 |
| BR-R1 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0922 | 0 | 0 |
| BR-R2 | BRID | 7/10/2006 | 0 | 0.0299 | 0 | 0.0757 | 0.0125 | 0 | 0.1949 | 0 | 0 |
| BR-R2 | BRID | 7/24/2006 | 0 | 0.0392 | 0 | 0.2881 | 0.0765 | 0.2317 | 0.4229 | 0 | 0 |
| BR-R2 | BRID | 8/8/2006 | 0 | 0.0245 | 0 | 0 | 0 | 0 | 0.1186 | 0 | 0 |
| BR-R2 | BRID | 8/21/2006 | 0.0245 | 0.0339 | 0 | 0.0382 | 0 | 0 | 0.1433 | 0 | 0 |
| BR-R2 | BRID | 6/27/2007 | 0.0211 | 0 | 0 | 0.0894 | 0.0326 | 0.2336 | 0.5917 | 0 | 0 |
| BR-R2 | BRID | 7/16/2007 | 0 | 0.069 | 0 | 0 | 0.0526 | 0 | 0.4331 | 0 | 0 |
| BR-R2 | BRID | 8/13/2007 | 0 | 0.0228 | 0 | 0.0345 | 0 | 0 | 0.0989 | 0 | 0 |
| BR-R2 | BRID | 8/27/2007 | 0 | 0.077 | 0 | 0 | 0 | 0 | 0.1912 | 0 | 0 |
| BR-R3 | BRID | 8/21/2006 | 0.06 | 0.1061 | 0 | 0.2242 | 0 | 0 | 0.3038 | 0 | 0 |
| BR-R3 | BRID | 7/10/2006 | 0 | 0.177 | 0 | 0 | 0.032 | 0 | 0.4437 | 0 | 0 |
| BR-R3 | BRID | 7/24/2006 | 0 | 0.0931 | 0 | 0.0403 | 0 | 0 | 0.3457 | 0 | 0 |
| BR-R3 | BRID | 8/8/2006 | 0 | 0.0536 | 0 | 0 | 0 | 0 | 0.1987 | 0 | 0 |
| BR-R3 | BRID | 6/27/2007 | 0 | 0.0147 | 0 | 0.0259 | 0.036 | 0 | 0.1548 | 0 | 0 |
| BR-R3 | BRID | 7/16/2007 | 0 | 0.023 | 0 | 0 | 0 | 0 | 0.1443 | 0 | 0 |
| BR-R3 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0913 | 0 | 0 |
| BR-R3 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0984 | 0 | 0 |
| BR-R4 | BRID | 7/10/2006 | 0 | 0.0523 | 0 | 0 | 0 | 0 | 0.1709 | 0 | 0 |
| BR-R4 | BRID | 7/24/2006 | 0 | 0.0467 | 0 | 0 | 0.0332 | 0 | 0.1599 | 0 | 0 |
| BR-R4 | BRID | 8/8/2006 | 0 | 0.0379 | 0 | 0 | 0.0372 | 0 | 0.2438 | 0 | 0 |
| BR-R4 | BRID | 8/21/2006 | 0 | 0.202 | 0 | 0 | 0 | 0 | 0.7677 | 0 | 0 |
| BR-R4 | BRID | 6/27/2007 | 0 | 0.0233 | 0 | 0 | 0 | 0 | 0.2289 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-R4 | BRID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0357 | 0 | 0 |
| BR-R4 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0429 | 0 | 0 |
| BR-R4 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0336 | 0 | 0 |
| BR-R5 | BRID | 7/10/2006 | 0 | 0.2831 | 0 | 0 | 0 | 0 | 1.2839 | 0 | 0 |
| BR-R5 | BRID | 7/24/2006 | 0 | 0.0648 | 0 | 0.05 | 0 | 0 | 0.3171 | 0 | 0 |
| BR-R5 | BRID | 8/8/2006 | 0 | 0.0661 | 0 | 0.0547 | 0 | 0 | 0.3222 | 0 | 0 |
| BR-R5 | BRID | 8/21/2006 | 0 | 0.0512 | 0 | 0.0417 | 0 | 0 | 0.2293 | 0 | 0 |
| BR-R5 | BRID | 6/27/2007 | 0.0187 | 0.0206 | 0.0977 | 0.0377 | 0 | 0 | 0.1681 | 0 | 0 |
| BR-R5 | BRID | 7/16/2007 | 0 | 0.0125 | 0 | 0 | 0 | 0 | 0.1037 | 0 | 0 |
| BR-R5 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0957 | 0 | 0 |
| BR-R5 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0916 | 0 | 0 |
| BR-R6 | BRID | 6/27/2007 | 0.0205 | 0 | 0 | 0.0438 | 0 | 0 | 0.6254 | 0 | 0 |
| BR-R6 | BRID | 7/16/2007 | 0 | 0 | 0 | 0.0225 | 0 | 0 | 0.0813 | 0 | 0 |
| BR-R6 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0752 | 0 | 0 |
| BR-R6 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0913 | 0 | 0 |
| BR-S1 | BRID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.107 | 0 | 0 |
| BR-S1 | BRID | 7/24/2006 | 0 | 0.0125 | 0 | 0.0313 | 0 | 0 | 0.1243 | 0 | 0 |
| BR-S1 | BRID | 8/8/2006 | 0 | 0 | 0 | 0.0472 | 0 | 0 | 0.1495 | 0 | 0 |
| BR-S1 | BRID | 8/21/2006 | 0 | 0 | 0 | 0.0455 | 0 | 0 | 0.1128 | 0 | 0 |
| BR-S1 | BRID | 6/27/2007 | 0 | 0 | 0 | 0.0315 | 0 | 0 | 0.1083 | 0 | 0 |
| BR-S1 | BRID | 7/16/2007 | 0 | 0 | 0 | 0.0252 | 0 | 0 | 0.0715 | 0 | 0 |
| BR-S1 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.084 | 0 | 0 |
| BR-S1 | BRID | 8/27/2007 | 0 | 0 | 0 | 0.0306 | 0 | 0 | 0.0858 | 0 | 0 |
| BR-S2 | BRID | 7/10/2006 | 0 | 0.0368 | 0.0163 | 0 | 0 | 0 | 0.1513 | 0 | 0 |
| BR-S2 | BRID | 7/24/2006 | 0 | 0.0479 | 0 | 0.0501 | 0.0422 | 0 | 0.2219 | 0 | 0 |
| BR-S2 | BRID | 8/8/2006 | 0 | 0.0452 | 0 | 0.0474 | 0 | 0 | 0.2848 | 0 | 0 |
| BR-S2 | BRID | 8/21/2006 | 0.0394 | 0.0302 | 0 | 0.0425 | 0 | 0 | 0.165 | 0 | 0 |
| BR-S2 | BRID | 6/27/2007 | 0 | 0.0564 | 0 | 0.0277 | 0.027 | 0 | 0.1478 | 0 | 0 |
| BR-S2 | BRID | 7/16/2007 | 0.0225 | 0.044 | 0 | 0.0368 | 0 | 0 | 0.184 | 0 | 0 |
| BR-S2 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0686 | 0 | 0 |
| BR-S2 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1007 | 0 | 0 |
| BR-S3 | BRID | 7/10/2006 | 0 | 0.0187 | 0 | 0.0494 | 0 | 0 | 0.1347 | 0 | 0 |
| BR-S3 | BRID | 7/24/2006 | 0 | 0.0156 | 0 | 0.0715 | 0 | 0 | 0.1379 | 0 | 0 |
| BR-S3 | BRID | 8/8/2006 | 0 | 0.0172 | 0 | 0.0693 | 0 | 0 | 0.155 | 0 | 0 |
| BR-S3 | BRID | 8/21/2006 | 0 | 0.0121 | 0 | 0.0501 | 0 | 0 | 0.1132 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-S3 | BRID | 6/27/2007 | 0 | 0 | 0 | 0.0435 | 0 | 0 | 0.1288 | 0 | 0 |
| BR-S3 | BRID | 7/16/2007 | 0 | 0 | 0 | 0.0379 | 0 | 0 | 0.1008 | 0 | 0 |
| BR-S3 | BRID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0966 | 0 | 0 |
| BR-S3 | BRID | 8/27/2007 | 0 | 0 | 0 | 0.0286 | 0 | 0 | 0.0969 | 0 | 0 |
| BR-S4 | BRID | 7/10/2006 | 0 | 0.0271 | 0 | 0.0477 | 0 | 0 | 0.2159 | 0 | 0 |
| BR-S4 | BRID | 7/24/2006 | 0 | 0.024 | 0 | 0.066 | 0 | 0 | 0.1578 | 0 | 0 |
| BR-S4 | BRID | 8/8/2006 | 0 | 0 | 0 | 0.0637 | 0 | 0 | 0.1305 | 0 | 0 |
| BR-S4 | BRID | 8/21/2006 | 0 | 0 | 0 | 0.0508 | 0 | 0 | 0.1093 | 0 | 0 |
| BR-S4 | BRID | 6/27/2007 | 0.0181 | 0 | 0 | 0.042 | 0 | 0 | 0.0992 | 0 | 0 |
| BR-S4 | BRID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0788 | 0 | 0 |
| BR-S4 | BRID | 8/13/2007 | 0 | 0 | 0 | 0.034 | 0 | 0 | 0.0957 | 0 | 0 |
| BR-S4 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0993 | 0 | 0 |
| BR-S5 | BRID | 7/10/2006 | 0 | 0.1227 | 0.0138 | 0 | 0.0182 | 0 | 0.5266 | 0 | 0 |
| BR-S5 | BRID | 7/24/2006 | 0 | 0.0917 | 0 | 0.0469 | 0 | 0 | 0.4113 | 0 | 0 |
| BR-S5 | BRID | 8/8/2006 | 0 | 0.0352 | 0 | 0.0412 | 0 | 0 | 0.2635 | 0 | 0 |
| BR-S5 | BRID | 8/21/2006 | 0 | 0.0485 | 0 | 0.0393 | 0 | 0 | 0.2127 | 0 | 0 |
| BR-S5 | BRID | 6/27/2007 | 0 | 0 | 0 | 0.0335 | 0.0209 | 0 | 0.1402 | 0 | 0 |
| BR-S5 | BRID | 7/16/2007 | 0 | 0.0144 | 0 | 0 | 0 | 0 | 0.1056 | 0 | 0 |
| BR-S5 | BRID | 8/13/2007 | 0 | 0 | 0 | 0.0266 | 0 | 0 | 0.0781 | 0 | 0 |
| BR-S5 | BRID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0877 | 0 | 0 |
| E-P1 | EID | 7/5/2006 | 0 | 0.0215 | 0 | 0 | 0 | 0 | 0.0524 | 0 | 0 |
| E-P1 | EID | 7/19/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.035 | 0 | 0 |
| E-P1 | EID | 8/16/2006 | 0 | 0.0217 | 0.0711 | 0 | 0 | 0 | 0.2026 | 0 | 0 |
| E-P1 | EID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0713 | 0 | 0 |
| E-P1 | EID | 6/20/2007 | 0 | 0.3249 | 0.0452 | 0 | 0 | 0 | 0.0826 | 0 | 0 |
| E-P1 | EID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0259 | 0 | 0 |
| E-P1 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-P1 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-R1 | EID | 7/5/2006 | 0 | 0.5589 | 0.0125 | 0 | 0 | 0 | 0.0526 | 0 | 0 |
| E-R1 | EID | 7/19/2006 | 0 | 0.0787 | 0 | 0 | 0 | 0 | 0.062 | 0 | 0 |
| E-R1 | EID | 8/16/2006 | 0 | 0.0616 | 0 | 0 | 0 | 0 | 0.0635 | 0 | 0 |
| E-R1 | EID | 8/30/2006 | 0 | 1.8799 | 0 | 0 | 0 | 0 | 0.0743 | 0 | 0 |
| E-R1 | EID | 6/20/2007 | 0 | 1.0857 | 0 | 0 | 0 | 0 | 0.8191 | 0 | 0 |
| E-R1 | EID | 7/11/2007 | 0 | 2.0695 | 0 | 0.0239 | 0 | 0 | 0.073 | 0 | 0 |
| E-R1 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0507 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R1 | EID | 8/22/2007 | 0 | 0.0552 | 0 | 0 | 0 | 0 | 0.0557 | 0 | 0 |
| E-R2 | EID | 7/5/2006 | 0 | 0.1817 | 0 | 0 | 0.022 | 0 | 0.1436 | 0 | 0 |
| E-R2 | EID | 7/19/2006 | 0 | 0.618 | 0 | 0 | 0 | 0 | 0.0951 | 0 | 0 |
| E-R2 | EID | 8/16/2006 | 0 | 0.0539 | 0 | 0 | 0 | 0 | 0.0445 | 0 | 0 |
| E-R2 | EID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.047 | 0 | 0 |
| E-R2 | EID | 6/20/2007 | 0 | 0.0595 | 0 | 0.0289 | 0 | 0 | 0.0756 | 0 | 0 |
| E-R2 | EID | 7/11/2007 | 0 | 0.1543 | 0 | 0 | 0 | 0 | 0.0588 | 0 | 0 |
| E-R2 | EID | 8/8/2007 | 0 | 0.1217 | 0 | 0 | 0 | 0 | 0.0452 | 0 | 0 |
| E-R2 | EID | 8/22/2007 | 0 | 0.3789 | 0 | 0 | 0 | 0 | 0.0886 | 0 | 0 |
| E-R3 | EID | 8/16/2006 | 0 | 0.08 | 0.0293 | 0 | 0 | 0 | 0.0821 | 0 | 0 |
| E-R3 | EID | 7/5/2006 | 0 | 0.0351 | 0 | 0.0519 | 0 | 0 | 0.1017 | 0 | 0 |
| E-R3 | EID | 7/19/2006 | 0 | 0 | 0.0211 | 0.0139 | 0 | 0 | 0.0547 | 0 | 0 |
| E-R3 | EID | 8/30/2006 | 0 | 0.048 | 0 | 0 | 0 | 0 | 0.0846 | 0 | 0 |
| E-R3 | EID | 6/20/2007 | 0 | 0.0934 | 0.0561 | 0.022 | 0 | 0 | 0.08 | 0 | 0 |
| E-R3 | EID | 7/11/2007 | 0 | 0.0252 | 0 | 0.0546 | 0 | 0 | 0.0972 | 0 | 0 |
| E-R3 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0228 | 0 | 0 |
| E-R3 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0275 | 0 | 0 |
| E-R4 | EID | 7/5/2006 | 0 | 0.0144 | 0 | 0 | 0 | 0 | 0.0327 | 0 | 0 |
| E-R4 | EID | 7/19/2006 | 0.0056 | 0.0159 | 0 | 0 | 0 | 0 | 0.0462 | 0 | 0 |
| E-R4 | EID | 8/16/2006 | 0 | 0.0163 | 0 | 0 | 0 | 0 | 0.0402 | 0 | 0 |
| E-R4 | EID | 8/30/2006 | 0 | 0.02 | 0 | 0 | 0 | 0 | 0.0441 | 0 | 0 |
| E-R4 | EID | 6/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0367 | 0 | 0 |
| E-R4 | EID | 7/11/2007 | 0 | 0.2955 | 0 | 0.0214 | 0 | 0 | 0.058 | 0 | 0 |
| E-R4 | EID | 8/8/2007 | 0 | 0.0153 | 0 | 0 | 0 | 0 | 0.0442 | 0 | 0 |
| E-R4 | EID | 8/22/2007 | 0 | 0.0271 | 0 | 0 | 0 | 0 | 0.038 | 0 | 0 |
| E-R5 | EID | 7/5/2006 | 0 | 0.0141 | 0 | 0 | 0 | 0.024 | 0.0835 | 0 | 0 |
| E-R5 | EID | 7/19/2006 | 0 | 0.7763 | 0 | 0 | 0 | 0 | 0.0464 | 0 | 0 |
| E-R5 | EID | 8/16/2006 | 0.0043 | 0.0352 | 0 | 0 | 0 | 0 | 0.0362 | 0 | 0 |
| E-R5 | EID | 8/30/2006 | 0 | 0.0199 | 0 | 0 | 0 | 0 | 0.0547 | 0 | 0 |
| E-R5 | EID | 6/20/2007 | 0 | 0.0177 | 0 | 0 | 0 | 0 | 0.0404 | 0 | 0 |
| E-R5 | EID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0393 | 0 | 0 |
| E-R5 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-R5 | EID | 8/22/2007 | 0 | 0.0552 | 0 | 0 | 0 | 0 | 0.0407 | 0 | 0 |
| E-S1 | EID | 7/5/2006 | 0 | 0.0482 | 0 | 0 | 0 | 0 | 0.0724 | 0 | 0 |
| E-S1 | EID | 7/19/2006 | 0 | 0.0456 | 0 | 0 | 0 | 0 | 0.0686 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S1 | EID | 8/16/2006 | 0 | 0.0237 | 0 | 0 | 0 | 0 | 0.0571 | 0 | 0 |
| E-S1 | EID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0904 | 0 | 0 |
| E-S1 | EID | 6/20/2007 | 0 | 0.0617 | 0.0419 | 0 | 0 | 0 | 0.0713 | 0 | 0 |
| E-S1 | EID | 7/11/2007 | 0 | 0.0268 | 0 | 0.0203 | 0 | 0 | 0.0715 | 0 | 0 |
| E-S1 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0537 | 0 | 0 |
| E-S1 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0482 | 0 | 0 |
| E-S2 | EID | 7/5/2006 | 0.0101 | 0.1301 | 0 | 0.0372 | 0 | 0 | 0.0714 | 0 | 0 |
| E-S2 | EID | 7/19/2006 | 0 | 0.0549 | 0 | 0 | 0 | 0 | 0.038 | 0 | 0 |
| E-S2 | EID | 8/16/2006 | 0 | 0.0296 | 0.1136 | 0 | 0 | 0 | 0.369 | 0 | 0 |
| E-S2 | EID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0535 | 0 | 0 |
| E-S2 | EID | 6/20/2007 | 0 | 0 | 0.0702 | 0.0212 | 0 | 0 | 0.0959 | 0 | 0 |
| E-S2 | EID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0299 | 0 | 0 |
| E-S2 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-S2 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-S3 | EID | 7/5/2006 | 0 | 0.0426 | 0 | 0.0458 | 0 | 0 | 0.0783 | 0 | 0 |
| E-S3 | EID | 7/19/2006 | 0 | 0.0141 | 0.0121 | 0.0126 | 0 | 0 | 0.0673 | 0 | 0 |
| E-S3 | EID | 8/16/2006 | 0 | 0.0218 | 0.03 | 0 | 0 | 0 | 0.0696 | 0 | 0 |
| E-S3 | EID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0729 | 0 | 0 |
| E-S3 | EID | 6/20/2007 | 0 | 0.0469 | 0.0437 | 0 | 0 | 0 | 0.0826 | 0 | 0 |
| E-S3 | EID | 7/11/2007 | 0 | 0 | 0 | 0.0452 | 0 | 0 | 0.084 | 0 | 0 |
| E-S3 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0371 | 0 | 0 |
| E-S3 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0343 | 0 | 0 |
| E-S4 | EID | 7/5/2006 | 0 | 0.0213 | 0 | 0 | 0 | 0 | 0.0391 | 0 | 0 |
| E-S4 | EID | 7/19/2006 | 0 | 0.0139 | 0.0109 | 0 | 0 | 0 | 0.0473 | 0 | 0 |
| E-S4 | EID | 8/16/2006 | 0 | 0.0325 | 0 | 0 | 0 | 0 | 0.0439 | 0 | 0 |
| E-S4 | EID | 8/30/2006 | 0 | 0.0217 | 0 | 0 | 0 | 0 | 0.0631 | 0 | 0 |
| E-S4 | EID | 6/20/2007 | 0 | 0.0211 | 0 | 0 | 0 | 0 | 0.0336 | 0 | 0 |
| E-S4 | EID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0529 | 0 | 0 |
| E-S4 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.049 | 0 | 0 |
| E-S4 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0544 | 0 | 0 |
| E-S5 | EID | 7/5/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0505 | 0 | 0 |
| E-S5 | EID | 7/19/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0473 | 0 | 0 |
| E-S5 | EID | 8/16/2006 | 0 | 0.0114 | 0 | 0 | 0 | 0 | 0.053 | 0 | 0 |
| E-S5 | EID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0569 | 0 | 0 |
| E-S5 | EID | 6/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0431 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S5 | EID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0406 | 0 | 0 |
| E-S5 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0406 | 0 | 0 |
| E-S5 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0399 | 0 | 0 |
| E-S6 | EID | 7/5/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0336 | 0 | 0 |
| E-S6 | EID | 7/19/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0323 | 0 | 0 |
| E-S6 | EID | 8/16/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0321 | 0 | 0 |
| E-S6 | EID | 8/30/2006 | 0 | 0.0311 | 0.0311 | 0 | 0 | 0 | 0.0424 | 0 | 0 |
| E-S6 | EID | 6/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0328 | 0 | 0 |
| E-S6 | EID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0448 | 0 | 0 |
| E-S6 | EID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-S6 | EID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0425 | 0 | 0 |
| LN-P1 | LNID | 7/10/2006 | 0 | 0 | 0.0117 | 0 | 0 | 0 | 0.0237 | 0 | 0 |
| LN-P1 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-P1 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-P1 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-P1 | LNID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-P1 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-P1 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-P1 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-R1 | LNID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0591 | 0 | 0 |
| LN-R1 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1181 | 0 | 0 |
| LN-R1 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0976 | 0 | 0 |
| LN-R1 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0893 | 0 | 0 |
| LN-R1 | LNID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0711 | 0 | 0 |
| LN-R1 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0741 | 0 | 0 |
| LN-R1 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0313 | 0 | 0 |
| LN-R1 | LNID | 8/27/2007 | 0 | 0.0226 | 0 | 0 | 0 | 0 | 0.0658 | 0 | 0 |
| LN-R2 | LNID | 7/10/2006 | 0 | 0.0428 | 0 | 0.0357 | 0 | 0 | 0.3544 | 0.0507 | 0 |
| LN-R2 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1017 | 0 | 0 |
| LN-R2 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1178 | 0 | 0 |
| LN-R2 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0987 | 0 | 0 |
| LN-R2 | LNID | 6/27/2007 | 0 | 0 | 0 | 0.0363 | 0 | 0.0255 | 0.0947 | 0 | 0 |
| LN-R2 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0298 | 0 | 0 |
| LN-R2 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0229 | 0 | 0 |
| LN-R2 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0249 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S1 | LNID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0293 | 0 | 0 |
| LN-S1 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-S1 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-S1 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0245 | 0 | 0 |
| LN-S1 | LNID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0244 | 0 | 0 |
| LN-S1 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0247 | 0 | 0 |
| LN-S1 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-S1 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-S2 | LNID | 7/10/2006 | 0 | 0 | 0 | 0.0372 | 0 | 0 | 0.158 | 0 | 0 |
| LN-S2 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1222 | 0 | 0 |
| LN-S2 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0872 | 0 | 0 |
| LN-S2 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0954 | 0 | 0 |
| LN-S2 | LNID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0708 | 0 | 0 |
| LN-S2 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0349 | 0 | 0 |
| LN-S2 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0328 | 0 | 0 |
| LN-S2 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0237 | 0 | 0 |
| LN-S3 | LNID | 7/10/2006 | 0 | 0.0588 | 0 | 0.0746 | 0 | 0 | 0.2632 | 0 | 0 |
| LN-S3 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0331 | 0 | 0 |
| LN-S3 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-S3 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0943 | 0 | 0 |
| LN-S3 | LNID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0338 | 0 | 0 |
| LN-S3 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0478 | 0 | 0 |
| LN-S3 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LN-S3 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0281 | 0 | 0 |
| LN-S4 | LNID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.153 | 0 | 0 |
| LN-S4 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.124 | 0 | 0 |
| LN-S4 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1081 | 0 | 0 |
| LN-S4 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0736 | 0 | 0 |
| LN-S4 | LNID | 6/27/2007 | 0 | 0 | 0 | 0.019 | 0 | 0 | 0.0753 | 0 | 0 |
| LN-S4 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0432 | 0 | 0 |
| LN-S4 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0312 | 0 | 0 |
| LN-S4 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0268 | 0 | 0 |
| LN-S5 | LNID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1535 | 0 | 0 |
| LN-S5 | LNID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1162 | 0 | 0 |
| LN-S5 | LNID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0974 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S5 | LNID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0941 | 0 | 0 |
| LN-S5 | LNID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0717 | 0 | 0 |
| LN-S5 | LNID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0594 | 0 | 0 |
| LN-S5 | LNID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0489 | 0 | 0 |
| LN-S5 | LNID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0316 | 0 | 0 |
| AEP-P1 | MID | 7/11/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0221 | 0 | 0 |
| AEP-P1 | MID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P1 | MID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P1 | MID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P1 | MID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0494 | 0 | 0 |
| AEP-P1 | MID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P1 | MID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P1 | MID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S1 | MID | 7/11/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S1 | MID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0303 | 0 | 0 |
| AEP-S1 | MID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S1 | MID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S1 | MID | 6/27/2007 | 0 | 0.1359 | 0 | 0 | 0 | 0 | 0.5261 | 0 | 0 |
| AEP-S1 | MID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S1 | MID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S1 | MID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S2 | MID | 7/10/2006 | 0 | 0 | 0.0243 | 0 | 0 | 0 | 0.0383 | 0 | 0 |
| AEP-S2 | MID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0279 | 0 | 0 |
| AEP-S2 | MID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S2 | MID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S2 | MID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S2 | MID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S2 | MID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-S2 | MID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-P1 | MID | 7/10/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0535 | 0 | 0 |
| M-P1 | MID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-P1 | MID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0545 | 0 | 0 |
| M-P1 | MID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-P1 | MID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.078 | 0 | 0 |
| M-P1 | MID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0335 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M-P1 | MID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0341 | 0 | 0 |
| M-P1 | MID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0248 | 0 | 0 |
| M-P2 | MID | 7/10/2006 | 0 | 0 | 0 | 0.0498 | 0 | 0 | 0.0412 | 0 | 0 |
| M-P2 | MID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-P2 | MID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0427 | 0 | 0 |
| M-P2 | MID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0422 | 0 | 0 |
| M-P2 | MID | 6/27/2007 | 0 | 0 | 0 | 0.0229 | 0 | 0 | 0.1259 | 0 | 0 |
| M-P2 | MID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0257 | 0 | 0 |
| M-P2 | MID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0271 | 0 | 0 |
| M-P2 | MID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-R1 | MID | 7/10/2006 | 0 | 0.1837 | 0 | 0.0917 | 0.0151 | 0.0123 | 0.0796 | 0 | 0 |
| M-R1 | MID | 7/24/2006 | 0 | 0.0176 | 0 | 0.0255 | 0 | 0 | 0.0443 | 0 | 0 |
| M-R1 | MID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0459 | 0 | 0 |
| M-R1 | MID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-R1 | MID | 6/27/2007 | 0 | 0 | 0 | 0.1207 | 0.013 | 0.0614 | 0.0898 | 0 | 0 |
| M-R1 | MID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0528 | 0 | 0 |
| M-R1 | MID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M-R1 | MID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-P1 | MVID | 7/11/2006 | 0 |  | 0 | 0 | 0 | 0 | 0.0456 | 0 | 0 |
| MV-P1 | MVID | 7/24/2006 | 0 | 0.0126 | 0 | 0 | 0 | 0 | 0.062 | 0 | 0 |
| MV-P1 | MVID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-P1 | MVID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-P1 | MVID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0561 | 0 | 0 |
| MV-P1 | MVID | 7/16/2007 | 0 | 0.0124 | 0 | 0 | 0 | 0 | 0.0468 | 0 | 0 |
| MV-P1 | MVID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-P1 | MVID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-R1 | MVID | 7/11/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0455 | 0 | 0 |
| MV-R1 | MVID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0421 | 0 | 0 |
| MV-R1 | MVID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0453 | 0 | 0 |
| MV-R1 | MVID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-R1 | MVID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0482 | 0 | 0 |
| MV-R1 | MVID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0422 | 0 | 0 |
| MV-R1 | MVID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MV-R1 | MVID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0291 | 0 | 0.1718 |
| R-P1 | RID | 7/10/2006 | 0 | 0.0127 | 0 | 0.0487 | 0 | 0 | 0.1106 | 0 | 0 |

**Appendix 3.3.** Concentrations (μg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R-P1 | RID | 7/24/2006 | 0 | 0.0125 | 0 | 0 | 0 | 0 | 0.0614 | 0 | 0 |
| R-P1 | RID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0434 | 0 | 0 |
| R-P1 | RID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0521 | 0 | 0 |
| R-P1 | RID | 6/27/2007 | 0 | 0.0266 | 0 | 0 | 0 | 0 | 0.1638 | 0 | 0 |
| R-P1 | RID | 7/16/2007 | 0 | 0 | 0 | 0.0177 | 0 | 0 | 0.067 | 0 | 0 |
| R-P1 | RID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0473 | 0 | 0 |
| R-P1 | RID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0251 | 0 | 0 |
| R-R1 | RID | 7/10/2006 | 0 | 0.0272 | 0 | 0.0643 | 0.0235 | 0 | 0.272 | 0 | 0 |
| R-R1 | RID | 7/24/2006 | 0 | 0 | 0 | 0.0696 | 0 | 0 | 0.1005 | 0 | 0 |
| R-R1 | RID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1486 | 0 | 0 |
| R-R1 | RID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2832 | 0 | 0 |
| R-R1 | RID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4775 | 0 | 0 |
| R-R1 | RID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1133 | 0 | 0 |
| R-R1 | RID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0895 | 0 | 0 |
| R-R1 | RID | 8/27/2007 | 0 | 0.0558 | 0 | 0 | 0 | 0 | 0.6345 | 0 | 0 |
| R-R2 | RID | 7/10/2006 | 0 | 0.0195 | 0 | 0 | 0.0142 | 0 | 0.1449 | 0 | 0 |
| R-R2 | RID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0819 | 0 | 0 |
| R-R2 | RID | 8/9/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0961 | 0 | 0 |
| R-R2 | RID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R-R2 | RID | 6/27/2007 | 0 | 0.0168 | 0 | 0 | 0 | 0 | 0.136 | 0 | 0 |
| R-R2 | RID | 7/16/2007 | 0 | 0.0179 | 0 | 0 | 0 | 0 | 0.2387 | 0 | 0 |
| R-R2 | RID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0508 | 0 | 0 |
| R-R2 | RID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0342 | 0 | 0 |
| SMC-P1 | SMRID | 7/4/2006 | 0 | 0.0975 | 0 | 0.1147 | 0.0372 | 0 | 0.7893 | 0 | 0 |
| SMC-P1 | SMRID | 7/17/2006 | 0 | 0.0441 | 0 | 0.1216 | 0.0174 | 0 | 0.1751 | 0 | 0 |
| SMC-P1 | SMRID | 8/14/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0886 | 0 | 0 |
| SMC-P1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0678 | 0 | 0 |
| SMC-P1 | SMRID | 6/25/2007 | 0 | 0.0884 | 0 | 0.5897 | 0 | 0 | 0.1063 | 0 | 0 |
| SMC-P1 | SMRID | 7/9/2007 | 0 | 0.0324 | 0 | 0.0933 | 0 | 0 | 0.1134 | 0 | 0 |
| SMC-P1 | SMRID | 8/7/2007 | 0 | 0.0188 | 0 | 0 | 0 | 0 | 0.1483 | 0 | 0 |
| SMC-P1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0237 | 0 | 0 | 0.0662 | 0 | 0 |
| SMC-R1 | SMRID | 7/4/2006 | 0 | 0 | 0 | 0.0405 | 0 | 0 | 0.1505 | 0 | 0 |
| SMC-R1 | SMRID | 7/17/2006 | 0 | 0.0237 | 0 | 0 | 0 | 0 | 0.1739 | 0 | 0 |
| SMC-R1 | SMRID | 8/14/2006 | 0 | 0.3098 | 0 | 0 | 0 | 0 | 37.384 | 0 | 0 |
| SMC-R1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0.0314 | 0 | 0 | 0.1468 | 0 | 0 |

**Appendix 3.3.** Concentrations (μg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-R1 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.0362 | 0.014 | 0 | 0.0907 | 0 | 0 |
| SMC-R1 | SMRID | 7/9/2007 | 0 | 0 | 0 | 0.0652 | 0 | 0 | 0.0852 | 0 | 0 |
| SMC-R1 | SMRID | 8/7/2007 | 0 | 0 | 0 | 0.0869 | 0 | 0 | 0.0783 | 0 | 0 |
| SMC-R1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0627 | 0 | 0 | 0.0983 | 0 | 0 |
| SMC-R2 | SMRID | 7/4/2006 | 0 | 0.0283 | 0 | 0.0409 | 0.024 | 0 | 0.1782 | 0 | 0 |
| SMC-R2 | SMRID | 7/17/2006 | 0 | 0 | 0 | 0.0534 | 0 | 0 | 0.1916 | 0 | 0 |
| SMC-R2 | SMRID | 8/14/2006 | 0 | 0 | 0 | 0.0345 | 0 | 0 | 0.1754 | 0 | 0 |
| SMC-R2 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1152 | 0 | 0 |
| SMC-R2 | SMRID | 6/25/2007 | 0 | 0.0537 | 0 | 0.0789 | 0 | 0 | 0.2629 | 0 | 0 |
| SMC-R2 | SMRID | 7/9/2007 | 0 | 0.0383 | 0 | 0.0754 | 0.0202 | 0 | 0.1556 | 0 | 0 |
| SMC-R2 | SMRID | 8/7/2007 | 0 | 0 | 0 | 0.0769 | 0 | 0 | 0.0874 | 0 | 0 |
| SMC-R2 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.1132 | 0 | 0 | 0.0864 | 0 | 0 |
| SMC-R3 | SMRID | 7/4/2006 | 0 | 0 | 0 | 0.0382 | 0 | 0 | 0.0773 | 0 | 0 |
| SMC-R3 | SMRID | 7/17/2006 | 0 | 0.0204 | 0 | 0 | 0 | 0 | 0.1068 | 0 | 0 |
| SMC-R3 | SMRID | 8/14/2006 | 0 | 0.0127 | 0 | 0.0399 | 0 | 0 | 0.1125 | 0 | 0 |
| SMC-R3 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0.0246 | 0 | 0 | 0.0918 | 0 | 0 |
| SMC-R3 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.0537 | 0 | 0 | 0.1254 | 0 | 0 |
| SMC-R3 | SMRID | 7/9/2007 | 0 | 0 | 0 | 0.0468 | 0 | 0 | 0.0798 | 0 | 0 |
| SMC-R3 | SMRID | 8/7/2007 | 0 | 0.4599 | 0 | 0.1069 | 0 | 0 | 0.0908 | 0 | 0 |
| SMC-R3 | SMRID | 8/20/2007 | 0 | 0.0572 | 0 | 0.0434 | 0 | 0 | 0.0659 | 0 | 0 |
| SMC-R4 | SMRID | 7/4/2006 | 0 | 0.0453 | 0 | 0.126 | 0.0318 | 0 | 0.2293 | 0 | 0 |
| SMC-R4 | SMRID | 7/17/2006 | 0 | 0 | 0 | 0.0451 | 0.0176 | 0 | 0.1366 | 0 | 0 |
| SMC-R4 | SMRID | 8/14/2006 | 0 | 0.0176 | 0 | 0.0311 | 0 | 0 | 0.1086 | 0 | 0 |
| SMC-R4 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.064 | 0 | 0 |
| SMC-R4 | SMRID | 6/25/2007 | 0 | 0.0532 | 0 | 0.8728 | 0 | 0 | 0.2164 | 0 | 0 |
| SMC-R4 | SMRID | 7/9/2007 | 0 | 0.0279 | 0 | 0.1339 | 0 | 0 | 0.126 | 0 | 0 |
| SMC-R4 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0227 | 0 | 0 | 0.0854 | 0 | 0 |
| SMC-S1 | SMRID | 7/4/2006 | 0 | 0.0108 | 0.0425 | 0.0521 | 0 | 0 | 0.0916 | 0 | 0 |
| SMC-S1 | SMRID | 7/17/2006 | 0 | 0.0243 | 0 | 0.0546 | 0 | 0 | 0.1042 | 0 | 0 |
| SMC-S1 | SMRID | 8/14/2006 | 0 | 0.0226 | 0 | 0.0492 | 0 | 0 | 0.1376 | 0 | 0 |
| SMC-S1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0.0403 | 0 | 0 | 0.0954 | 0 | 0 |
| SMC-S1 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.0591 | 0 | 0 | 0.0795 | 0 | 0 |
| SMC-S1 | SMRID | 7/9/2007 | 0 | 0.0194 | 0 | 0.0755 | 0 | 0 | 0.0721 | 0 | 0 |
| SMC-S1 | SMRID | 8/7/2007 | 0 | 0.0131 | 0 | 0.0606 | 0 | 0 | 0.0926 | 0 | 0 |
| SMC-S1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0588 | 0 | 0 | 0.0886 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-S2 | SMRID | 7/4/2006 | 0 | 0 | 0 | 0.0247 | 0 | 0 | 0.0422 | 0 | 0 |
| SMC-S2 | SMRID | 7/17/2006 | 0 | 0.0258 | 0 | 0.0483 | 0.0134 | 0 | 0.1006 | 0 | 0 |
| SMC-S2 | SMRID | 8/14/2006 | 0 | 0.0133 | 0 | 0.0434 | 0 | 0 | 0.1149 | 0 | 0 |
| SMC-S2 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0.0284 | 0 | 0 | 0.0897 | 0 | 0 |
| SMC-S2 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.0475 | 0 | 0 | 0.089 | 0 | 0 |
| SMC-S2 | SMRID | 7/9/2007 | 0 | 0 | 0 | 0.0558 | 0 | 0 | 0.0663 | 0 | 0 |
| SMC-S2 | SMRID | 8/7/2007 | 0 | 0 | 0 | 0.0583 | 0 | 0 | 0.0797 | 0 | 0 |
| SMC-S2 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0492 | 0 | 0 | 0.0784 | 0 | 0 |
| SMC-S3 | SMRID | 7/4/2006 | 0 | 0.0525 | 0 | 0.134 | 0.0386 | 0 | 0.4825 | 0 | 0 |
| SMC-S3 | SMRID | 7/17/2006 | 0 | 0.1165 | 0 | 0.4874 | 0.0205 | 0 | 0.1579 | 0 | 0 |
| SMC-S3 | SMRID | 8/14/2006 | 0 | 0.0118 | 0 | 0.0327 | 0 | 0 | 0.0819 | 0 | 0 |
| SMC-S3 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0633 | 0 | 0 |
| SMC-S3 | SMRID | 6/25/2007 | 0 | 0.0592 | 0 | 0.6181 | 0 | 0 | 0.1113 | 0 | 0 |
| SMC-S3 | SMRID | 8/7/2007 | 0 | 0.0203 | 0 | 0.035 | 0 | 0 | 0.1596 | 0 | 0 |
| SMC-S3 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0342 | 0 | 0 | 0.0793 | 0 | 0 |
| SME-P1 | SMRID | 7/4/2006 | 0 | 0.0187 | 0 | 0.0803 | 0.0256 | 0 | 0.3769 | 0 | 0 |
| SME-P1 | SMRID | 7/17/2006 | 0 | 0.0323 | 0 | 0.1009 | 0.0257 | 0 | 0.4363 | 0 | 0 |
| SME-P1 | SMRID | 8/14/2006 | 0 | 0.0359 | 0 | 0.0779 | 0 | 0 | 0.3814 | 0 | 0 |
| SME-P1 | SMRID | 8/28/2006 | 0 | 0.025 | 0 | 0.0506 | 0 | 0 | 0.2585 | 0 | 0 |
| SME-P1 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.0964 | 0.0195 | 0 | 0.129 | 0 | 0 |
| SME-P1 | SMRID | 7/9/2007 | 0 | 0.0255 | 0 | 0.2969 | 0 | 0 | 0.1483 | 0 | 0 |
| SME-P1 | SMRID | 8/7/2007 | 0 | 0.0221 | 0 | 0.1747 | 0 | 0 | 0.1682 | 0 | 0 |
| SME-P1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.104 | 0 | 0 | 0.1407 | 0 | 0 |
| SME-R1 | SMRID | 7/4/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2765 | 0 | 0 |
| SME-R1 | SMRID | 7/17/2006 | 0 | 0 | 0 | 0 | 0.0123 | 0 | 0.2045 | 0 | 0 |
| SME-R1 | SMRID | 8/14/2006 | 0 | 0.0274 | 0 | 0 | 0 | 0 | 0.411 | 0 | 0 |
| SME-R1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0.0228 | 0 | 0 | 0.2138 | 0 | 0 |
| SME-R1 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.2503 | 0 | 0 | 0.1239 | 0 | 0 |
| SME-R1 | SMRID | 7/9/2007 | 0 | 0 | 0 | 0.1954 | 0 | 0 | 0.1046 | 0 | 0 |
| SME-R1 | SMRID | 8/7/2007 | 0 | 0.0313 | 0 | 0.1609 | 0 | 0 | 0.2701 | 0 | 0 |
| SME-R1 | SMRID | 8/20/2007 | 0 | 0.0325 | 0 | 0.1538 | 0 | 0 | 0.2415 | 0 | 0 |
| SME-S1 | SMRID | 7/4/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1081 | 0 | 0 |
| SME-S1 | SMRID | 7/17/2006 | 0 |  | 0 | 0.0289 | 0.0208 | 0 | 0.3185 | 0 | 0 |
| SME-S1 | SMRID | 8/14/2006 | 0 | 0.0218 | 0 | 0.045 | 0 | 0 | 0.3752 | 0 | 0 |
| SME-S1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0.0272 | 0 | 0 | 0.1944 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SME-S1 | SMRID | 6/25/2007 | 0 | 0 | 0 | 0.2377 | 0 | 0 | 0.1195 | 0 | 0 |
| SME-S1 | SMRID | 7/9/2007 | 0 | 0 | 0 | 0.2016 | 0 | 0 | 0.1131 | 0 | 0 |
| SME-S1 | SMRID | 8/7/2007 | 0 | 0 | 0 | 0.1699 | 0 | 0 | 0.1712 | 0 | 0 |
| SME-S1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0959 | 0 | 0 | 0.084 | 0 | 0 |
| SMW-P1 | SMRID | 7/4/2006 | 0 | 0 | 0 | 0.0432 | 0.0302 | 0.0147 | 0.1182 | 0 | 0 |
| SMW-P1 | SMRID | 7/17/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0769 | 0 | 0 |
| SMW-P1 | SMRID | 8/14/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0494 | 0 | 0 |
| SMW-P1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0556 | 0 | 0 |
| SMW-P1 | SMRID | 6/25/2007 | 0 | 0.0166 | 0 | 0 | 0 | 0 | 0.1084 | 0 | 0 |
| SMW-P1 | SMRID | 7/9/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0772 | 0 | 0 |
| SMW-P1 | SMRID | 8/7/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0751 | 0 | 0 |
| SMW-P1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0356 | 0 | 0 |
| SMW-R1 | SMRID | 7/4/2006 | 0 | 0.1385 | 0 | 0.5692 | 0.0612 | 0.0171 | 0.2962 | 0 | 0 |
| SMW-R1 | SMRID | 7/17/2006 | 0 | 0.025 | 0 | 0.0617 | 0 | 0 | 0.1179 | 0 | 0 |
| SMW-R1 | SMRID | 8/14/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0596 | 0 | 0 |
| SMW-R1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0461 | 0 | 0 |
| SMW-R1 | SMRID | 6/25/2007 | 0 | 0.0705 | 0 | 0.3232 | 0 | 0 | 0.1138 | 0 | 0 |
| SMW-R1 | SMRID | 7/9/2007 | 0 | 0.2163 | 0 | 0.2306 | 0 | 0 | 1.23 | 0 | 0 |
| SMW-R1 | SMRID | 8/7/2007 | 0 | 0.0331 | 0 | 0 | 0 | 0 | 0.1611 | 0 | 0 |
| SMW-R1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0297 | 0 | 0 |
| SMW-R2 | SMRID | 7/4/2006 | 0 | 0 | 0 | 1.3912 | 0.0904 | 0 | 2.2397 | 0 | 0 |
| SMW-R2 | SMRID | 7/17/2006 | 0 | 0.0738 | 0 | 0.0968 | 0 | 0 | 0.2872 | 0 | 0 |
| SMW-R2 | SMRID | 8/14/2006 | 0 | 0.0283 | 0 | 0 | 0 | 0 | 0.1119 | 0 | 0 |
| SMW-R2 | SMRID | 8/28/2006 | 0 | 0.0153 | 0 | 0 | 0 | 0 | 0.0711 | 0 | 0 |
| SMW-R2 | SMRID | 6/25/2007 | 0 | 0.0983 | 0 | 0.3978 | 0 | 0 | 0.1455 | 0 | 0 |
| SMW-R2 | SMRID | 7/9/2007 | 0 | 0.158 | 0 | 0.6049 | 0 | 0 | 0.5834 | 0 | 0 |
| SMW-R2 | SMRID | 8/7/2007 | 0 | 0.0288 | 0 | 0.0287 | 0 | 0 | 0.2064 | 0 | 0 |
| SMW-R2 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0.0327 | 0 | 0 | 0.1003 | 0 | 0 |
| SMW-S1 | SMRID | 7/4/2006 | 0 | 0.1166 | 0 | 0.0858 | 0.055 | 0.0295 | 1.7654 | 0 | 0 |
| SMW-S1 | SMRID | 7/17/2006 | 0 | 0.011 | 0 | 0 | 0 | 0 | 0.0747 | 0 | 0 |
| SMW-S1 | SMRID | 8/14/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2305 | 0 | 0 |
| SMW-S1 | SMRID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0427 | 0 | 0 |
| SMW-S1 | SMRID | 6/25/2007 | 0 | 0.0294 | 0 | 0 | 0 | 0 | 0.1753 | 0 | 0 |
| SMW-S1 | SMRID | 7/9/2007 | 0 | 0.0199 | 0 | 0 | 0 | 0 | 0.0703 | 0 | 0 |
| SMW-S1 | SMRID | 8/7/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0815 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SMW-S1 | SMRID | 8/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0277 | 0 | 0 |
| T-P1 | TID | 7/4/2006 | 0 | 0.0248 | 0 | 0.0995 | 0.0372 | 0 | 0.1523 | 0 | 0 |
| T-P1 | TID | 7/17/2006 | 0 | 0.0469 | 0 | 0.137 | 0.0173 | 0 | 0.1947 | 0 | 0 |
| T-P1 | TID | 8/14/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0973 | 0 | 0 |
| T-P1 | TID | 8/28/2006 | 0 | 0 | 0 | 0.025 | 0 | 0 | 0.0594 | 0 | 0 |
| T-P1 | TID | 6/25/2007 | 0 | 0.0269 | 0 | 0.1294 | 0 | 0 | 0.0923 | 0 | 0 |
| T-P1 | TID | 7/9/2007 | 0 | 0.0222 | 0 | 0.0419 | 0 | 0 | 0.1101 | 0 | 0 |
| T-P1 | TID | 8/7/2007 | 0 | 0 | 0 | 0.0279 | 0 | 0 | 0.1338 | 0 | 0 |
| T-P1 | TID | 8/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0609 | 0 | 0 |
| T-R1 | TID | 7/4/2006 | 0 | 0.0314 | 0.024 | 0.0733 | 0.0817 | 0 | 0.2526 | 0 | 0 |
| T-R1 | TID | 7/17/2006 | 0 | 0.0521 | 0 | 0.0607 | 0.0421 | 0 | 0.408 | 0 | 0 |
| T-R1 | TID | 8/14/2006 | 0 | 0.033 | 0 | 0 | 0 | 0 | 0.2122 | 0 | 0 |
| T-R1 | TID | 8/28/2006 | 0 | 0.0275 | 0 | 0.0265 | 0 | 0 | 0.1227 | 0 | 0 |
| T-R1 | TID | 6/25/2007 | 0 | 0.0146 | 0 | 0.0709 | 0 | 0 | 0.1539 | 0 | 0 |
| T-R1 | TID | 7/9/2007 | 0 | 0.0594 | 0 | 0.1144 | 0 | 0 | 0.3584 | 0 | 0 |
| T-R1 | TID | 8/7/2007 | 0 | 0.0121 | 0 | 0.0328 | 0 | 0 | 0.1033 | 0 | 0 |
| T-R1 | TID | 8/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1162 | 0 | 0 |
| T-R2 | TID | 7/4/2006 | 0 | 0.1361 | 0.0463 | 0.2371 | 0.0415 | 0 | 0.7557 | 0 | 0 |
| T-R2 | TID | 7/17/2006 | 0 | 0.1012 | 0 | 0.1261 | 0.0351 | 0 | 0.7218 | 0 | 0 |
| T-R2 | TID | 8/14/2006 | 0 | 0.0414 | 0 | 0.0593 | 0 | 0 | 0.3114 | 0 | 0 |
| T-R2 | TID | 8/28/2006 | 0 | 0.0309 | 0 | 0.0358 | 0 | 0 | 0.1647 | 0 | 0 |
| T-R2 | TID | 6/25/2007 | 0 | 0.0837 | 0 | 0.1973 | 0 | 0 | 0.4393 | 0 | 0 |
| T-R2 | TID | 7/9/2007 | 0 | 0.1014 | 0 | 0.1204 | 0 | 0 | 0.6291 | 0 | 0 |
| T-R2 | TID | 8/7/2007 | 0 | 0.0738 | 0 | 0.0449 | 0 | 0 | 0.5868 | 0 | 0 |
| T-R2 | TID | 8/20/2007 | 0 | 0.1136 | 0 | 0.0325 | 0 | 0 | 0.7473 | 0 | 0 |
| T-S1 | TID | 7/4/2006 | 0 | 0.0443 | 0 | 0.1145 | 0.0377 | 0 | 0.3312 | 0 | 0 |
| T-S1 | TID | 7/17/2006 | 0 | 0.057 | 0 | 0.1591 | 0.0203 | 0 | 0.1923 | 0 | 0 |
| T-S1 | TID | 8/14/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1024 | 0 | 0 |
| T-S1 | TID | 8/28/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0 | 0 |
| T-S1 | TID | 6/25/2007 | 0 | 0.0571 | 0 | 0.384 | 0 | 0 | 0.1194 | 0 | 0 |
| T-S1 | TID | 7/9/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| T-S1 | TID | 8/7/2007 | 0 | 0 | 0 | 0.0256 | 0 | 0 | 0.1446 | 0 | 0 |
| T-S1 | TID | 8/20/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.065 | 0 | 0 |
| T-S2 | TID | 7/4/2006 | 0 | 0.0238 | 0 | 0.0684 | 0.0762 | 0 | 0.2071 | 0 | 0 |
| T-S2 | TID | 7/17/2006 | 0 | 0.0479 | 0 | 0.0635 | 0.0446 | 0 | 0.3675 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T-S2 | TID | 8/14/2006 | 0.0141 | 0.0317 | 0 | 0.047 | 0 | 0 | 0.2062 | 0 | 0 |
| T-S2 | TID | 8/28/2006 | 0 | 0.0226 | 0.0852 | 0 | 0 | 0 | 0.1345 | 0 | 0 |
| T-S2 | TID | 6/25/2007 | 0 | 0 | 0 | 0.0704 | 0.0287 | 0 | 0.1273 | 0 | 0 |
| T-S2 | TID | 7/9/2007 | 0 | 0.0545 | 0 | 0.1325 | 0.0238 | 0 | 0.3267 | 0 | 0 |
| T-S2 | TID | 8/7/2007 | 0 | 0 | 0 | 0.0385 | 0 | 0 | 0.0774 | 0 | 0 |
| T-S2 | TID | 8/20/2007 | 0 | 0 | 0 | 0.0276 | 0 | 0 | 0.0863 | 0 | 0 |
| T-S3 | TID | 7/4/2006 | 0 | 0.1172 | 0.1111 | 0.2569 | 0.0466 | 0 | 0.6342 | 0 | 0 |
| T-S3 | TID | 7/17/2006 | 0 | 0.1101 | 0.026 | 0.1378 | 0.0372 | 0 | 0.7952 | 0 | 0 |
| T-S3 | TID | 8/14/2006 | 0 | 0.0413 | 0 | 0.0529 | 0.0129 | 0 | 0.2803 | 0 | 0 |
| T-S3 | TID | 8/28/2006 | 0 | 0.0236 | 0 | 0 | 0 | 0 | 0.1392 | 0 | 0 |
| T-S3 | TID | 6/25/2007 | 0 | 0.0672 | 0 | 0.1211 | 0.0246 | 0 | 0.419 | 0 | 0 |
| T-S3 | TID | 7/9/2007 | 0 | 0.1069 | 0 | 0.1321 | 0 | 0 | 0.6983 | 0 | 0 |
| T-S3 | TID | 8/7/2007 | 0 | 0.0526 | 0 | 0.0378 | 0 | 0 | 0.4474 | 0 | 0 |
| T-S3 | TID | 8/20/2007 | 0 | 0.024 | 0 | 0.0293 | 0 | 0 | 0.2771 | 0 | 0 |
| U-P1 | UID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 7/11/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 7/24/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 6/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-P1 | UID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-R1 | UID | 7/11/2006 | 0 | 0.1296 | 0.0072 | 0.0083 | 0.0035 | 0 | 0.1117 | 0 | 0 |
| U-R1 | UID | 7/24/2006 | 0 | 0.2262 | 0 | 0 | 0 | 0 | 0.0945 | 0 | 0 |
| U-R1 | UID | 8/8/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-R1 | UID | 8/21/2006 | 0 | 0.0229 | 0 | 0 | 0 | 0 | 0.0445 | 0 | 0 |
| U-R1 | UID | 6/27/2007 | 0 | 0.0429 | 0 | 0 | 0 | 0 | 0.2803 | 0 | 0 |
| U-R1 | UID | 7/16/2007 | 0 | 0.1129 | 0 | 0 | 0 | 0 | 0.6183 | 0 | 0 |
| U-R1 | UID | 8/13/2007 | 0 | 0.1439 | 0 | 0 | 0 | 0 | 0.338 | 0 | 0 |
| U-R1 | UID | 8/27/2007 | 0 | 0.0393 | 0 | 0 | 0 | 0 | 0.1179 | 0 | 0 |
| U-R2 | UID | 7/11/2006 | 0 | 0.2221 | 0 | 0 | 0 | 0 | 0.178 | 0 | 0 |
| U-R2 | UID | 7/24/2006 | 0 | 0.0829 | 0 | 0 | 0 | 0 | 0.0908 | 0 | 0 |
| U-R2 | UID | 8/8/2006 | 0 | 0.0401 | 0 | 0 | 0 | 0 | 0.0535 | 0 | 0 |
| U-R2 | UID | 8/21/2006 | 0 | 0.0242 | 0 | 0 | 0 | 0 | 0.039 | 0 | 0 |
| U-R2 | UID | 6/27/2007 | 0 | 0.1068 | 0 | 0 | 0 | 0 | 0.3785 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-R2 | UID | 7/16/2007 | 0 | 0.0264 | 0 | 0 | 0 | 0 | 0.0869 | 0 | 0 |
| U-R2 | UID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0486 | 0 | 0 |
| U-R2 | UID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0693 | 0 | 0 |
| U-S1 | UID | 7/11/2006 | 0 | 0.1139 | 0 | 0 | 0 | 0 | 0.1084 | 0 | 0 |
| U-S1 | UID | 7/24/2006 | 0 | 0.0468 | 0 | 0 | 0 | 0 | 0.0646 | 0 | 0 |
| U-S1 | UID | 8/8/2006 | 0 | 0.0217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-S1 | UID | 8/21/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-S1 | UID | 6/27/2007 | 0 | 0.0913 | 0 | 0 | 0 | 0 | 0.3163 | 0 | 0 |
| U-S1 | UID | 7/16/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0471 | 0 | 0 |
| U-S1 | UID | 8/13/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| U-S1 | UID | 8/27/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEP-P2 | WID | 7/5/2006 | 0 | 0 | 0.0347 | 0 | 0 | 0 | 0.0247 | 0 | 0 |
| AEP-P2 | WID | 7/19/2006 | 0 | 0.0158 | 0.0637 | 0 | 0 | 0 | 0.1451 | 0 | 0 |
| AEP-P2 | WID | 8/17/2006 | 0 | 0.0325 | 0.0968 | 0 | 0 | 0 | 0.2461 | 0 | 0 |
| AEP-P2 | WID | 8/30/2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0.037 | 0 | 0 |
| AEP-P2 | WID | 6/20/2007 | 0.025 | 0.4643 | 2.3315 | 0.0709 | 0.0495 | 0.0372 | 1.3879 | 0 | 0.0686 |
| AEP-P2 | WID | 7/11/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0528 | 0 | 0 |
| AEP-P2 | WID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0392 | 0 | 0 |
| AEP-P2 | WID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0397 | 0 | 0 |
| W-P1 | WID | 7/5/2006 | 0 | 0.0795 | 0.1434 | 0.1075 | 0 | 0 | 0.4038 | 0 | 0 |
| W-P1 | WID | 7/19/2006 | 0 | 0.0559 | 0.155 | 0 | 0.022 | 0 | 0.3915 | 0 | 0 |
| W-P1 | WID | 8/17/2006 | 0 | 0.0352 | 0.0475 | 0 | 0 | 0 | 0.2072 | 0 | 0 |
| W-P1 | WID | 8/30/2006 | 0 | 0.0354 | 0.1158 | 0 | 0 | 0 | 0.1976 | 0 | 0 |
| W-P1 | WID | 6/20/2007 | 0 | 0.1046 | 0.6709 | 0.1212 | 0 | 0 | 1.3612 | 0 | 0 |
| W-P1 | WID | 7/11/2007 | 0 | 0.0735 | 0.2741 | 0.0736 | 0 | 0 | 0.6863 | 0 | 0 |
| W-P1 | WID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0992 | 0 | 0 |
| W-P1 | WID | 8/22/2007 | 0 | 0.1111 | 0 | 0 | 0 | 0 | 0.4103 | 0 | 0 |
| W-P2 | WID | 7/5/2006 | 0 | 0.0657 | 0.2392 | 0.082 | 0 | 0 | 0.5348 | 0 | 0 |
| W-P2 | WID | 7/19/2006 | 0 | 0.0732 | 0.2396 | 0.0368 | 0 | 0 | 0.5206 | 0 | 0 |
| W-P2 | WID | 8/17/2006 | 0 | 0.0539 | 0.0892 | 0 | 0 | 0 | 0.2948 | 0 | 0 |
| W-P2 | WID | 8/30/2006 | 0 | 0.0521 | 0.1021 | 0 | 0 | 0 | 0.2648 | 0 | 0 |
| W-P2 | WID | 6/20/2007 | 0 | 0.1171 | 0.8516 | 0.0586 | 0 | 0 | 1.7564 | 0 | 0.0505 |
| W-P2 | WID | 7/11/2007 | 0 | 0.1043 | 0.4447 | 0.0562 | 0 | 0 | 0.8352 | 0 | 0 |
| W-P2 | WID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0884 | 0 | 0 |
| W-P2 | WID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1203 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W-R2 | WID | 7/5/2006 | 0 | 0.0543 | 0 | 0.1559 | 0.0198 | 0.0646 | 0.2042 | 0 | 0 |
| W-R2 | WID | 7/19/2006 | 0 | 0.2376 | 0.0385 | 0 | 0 | 0 | 0.4913 | 0 | 0 |
| W-R2 | WID | 8/17/2006 | 0 | 0.0524 | 0 | 0 | 0 | 0 | 0.1095 | 0 | 0 |
| W-R2 | WID | 8/30/2006 | 0 | 0.0267 | 0.0389 | 0 | 0 | 0 | 0.1325 | 0 | 0 |
| W-R2 | WID | 6/20/2007 | 0 | 0.0745 | 0.098 | 0.1492 | 0.0201 | 0.055 | 1.2815 | 0 | 0.0532 |
| W-R2 | WID | 7/11/2007 | 0.021 | 0.4193 | 0.0803 | 0.0452 | 0 | 0.0673 | 0.3227 | 0 | 0 |
| W-R2 | WID | 8/8/2007 | 0 | 0.1562 | 0 | 0 | 0 | 0 | 0.2163 | 0 | 0 |
| W-R2 | WID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0537 | 0 | 0 |
| W-S1 | WID | 7/5/2006 | 0 | 0.08 | 0.1398 | 0.1154 | 0 | 0 | 0.3753 | 0 | 0 |
| W-S1 | WID | 7/19/2006 | 0 | 0.1124 | 0.1658 | 0.0469 | 0 | 0 | 0.5316 | 0 | 0 |
| W-S1 | WID | 8/17/2006 | 0 | 0.0268 | 0.0443 | 0 | 0 | 0 | 0.1767 | 0 | 0 |
| W-S1 | WID | 8/30/2006 | 0 | 0.0337 | 0.0615 | 0 | 0 | 0 | 0.1908 | 0 | 0 |
| W-S1 | WID | 6/20/2007 | 0 | 0.1155 | 0.2962 | 0.1555 | 0.0402 | 0.0259 | 0.9852 | 0 | 0.0392 |
| W-S1 | WID | 7/11/2007 | 0 | 0.0774 | 0.2922 | 0.0614 | 0.0284 | 0 | 0.6572 | 0 | 0 |
| W-S1 | WID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1221 | 0 | 0 |
| W-S1 | WID | 8/22/2007 | 0 | 0.1064 | 0 | 0 | 0 | 0 | 0.3666 | 0 | 0 |
| W-S2 | WID | 7/5/2006 | 0 | 0.0847 | 0.0975 | 0.1058 | 0 | 0 | 0.3255 | 0 | 0.0252 |
| W-S2 | WID | 7/19/2006 | 0 | 0.066 | 0.1253 | 0.0435 | 0 | 0 | 0.4288 | 0 | 0 |
| W-S2 | WID | 8/17/2006 | 0 | 0.0155 | 0 | 0 | 0 | 0 | 0.1247 | 0 | 0 |
| W-S2 | WID | 8/30/2006 | 0 | 0.0515 | 0.0387 | 0 | 0 | 0 | 0.1987 | 0 | 0 |
| W-S2 | WID | 6/20/2007 | 0 | 0.3378 | 0.2432 | 0.0819 | 0 | 0 | 0.8768 | 0 | 0.0465 |
| W-S2 | WID | 7/11/2007 | 0 | 0.0827 | 0.2403 | 0.0774 | 0 | 0 | 0.5975 | 0 | 0 |
| W-S2 | WID | 8/8/2007 | 0 | 0.0244 | 0 | 0 | 0 | 0 | 0.113 | 0 | 0 |
| W-S2 | WID | 8/22/2007 | 0 | 0.079 | 0 | 0 | 0 | 0 | 0.2794 | 0 | 0 |
| W-S3 | WID | 7/5/2006 | 0 | 0.0725 | 0.1658 | 0.0796 | 0 | 0 | 0.5968 | 0 | 0.0228 |
| W-S3 | WID | 7/19/2006 | 0 | 0.0669 | 0.1637 | 0 | 0 | 0 | 0.4011 | 0 | 0 |
| W-S3 | WID | 8/17/2006 | 0 | 0.0261 | 0.0445 | 0 | 0 | 0 | 0.1554 | 0 | 0 |
| W-S3 | WID | 8/30/2006 | 0 | 0.0417 | 0.0683 | 0 | 0 | 0 | 0.2284 | 0 | 0 |
| W-S3 | WID | 6/20/2007 | 0 | 0.0272 | 0.1686 | 1.767 | 0.0347 | 0.0212 | 0.4414 | 0 | 0.0541 |
| W-S3 | WID | 7/11/2007 | 0 | 0.0704 | 0.394 | 0.046 | 0 | 0 | 0.6455 | 0 | 0 |
| W-S3 | WID | 8/8/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0809 | 0 | 0 |
| W-S3 | WID | 8/22/2007 | 0 | 6.7333 | 0 | 0 | 0 | 0 | 18.616 | 0 | 0 |
| W-S4 | WID | 7/5/2006 | 0 | 0.0584 | 0.1854 | 0 | 0 | 0 | 0.4775 | 0 | 0 |
| W-S4 | WID | 7/19/2006 | 0 | 0.075 | 0.1702 | 0 | 0 | 0 | 0.4494 | 0 | 0 |
| W-S4 | WID | 8/17/2006 | 0 | 0.0191 | 0.035 | 0 | 0 | 0 | 0.1426 | 0 | 0 |

**Appendix 3.3.** Concentrations (µg $L^{-1}$) of the nine pesticides detected in the 80 irrigation district study sites.

| CLIENTID | ID | SMPDATE | Clopyralid | Dicamba | Mecoprop | MCPA | Dichlorprop | Bromoxynil | 2,4-D | Triallate | Picloram |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W-S4 | WID | 8/30/2006 | 0 | 0.0534 | 0.0883 | 0 | 0 | 0 | 0.2419 | 0 | 0 |
| W-S4 | WID | 6/20/2007 | 0.051 | 0.0203 | 0.1534 | 0.9016 | 0.0307 | 0.0921 | 6.0368 | 0 | 0.1334 |
| W-S4 | WID | 7/11/2007 | 0.0134 | 0 | 0.4293 | 0.0462 | 0 | 0 | 9.8247 | 0 | 0 |
| W-S4 | WID | 8/8/2007 | 0 | 0.0349 | 0 | 0 | 0 | 0 | 0.4959 | 0 | 0 |
| W-S4 | WID | 8/22/2007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1218 | 0 | 0 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-P1 | AID | 7/11/2006 | 0.713 | 1.14 | 0.0015 | 0.15 | 0.151 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0011 |
| A-P1 | AID | 7/24/2006 | 0.973 | 1.43 | 0.0017 | 0.15 | 0.161 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0006 | 0.0011 |
| A-P1 | AID | 8/8/2006 | 0.794 | 1.08 | 0.0015 | <0.05 | 0.100 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | 0.0009 |
| A-P1 | AID | 8/21/2006 | 0.564 | 0.86 | 0.0012 | <0.05 | 0.106 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | 0.0008 |
| A-P1 | AID | 6/27/2007 | 0.428 | 0.43 | 0.0012 | <0.05 | 0.127 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| A-P1 | AID | 7/16/2007 | 0.757 | 1.20 | 0.0013 | <0.05 | 0.136 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| A-P1 | AID | 8/13/2007 | 0.249 | 0.37 | 0.0013 | <0.05 | 0.132 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| A-P1 | AID | 8/27/2007 | 0.264 | 0.32 | 0.0013 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| A-R1 | AID | 7/11/2006 | 0.481 | 0.83 | 0.0017 | 0.15 | 0.151 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0009 |
| A-R1 | AID | 7/24/2006 | 0.432 | 0.60 | 0.0018 | 0.14 | 0.153 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0008 |
| A-R1 | AID | 8/8/2006 | 0.315 | 0.48 | 0.0014 | 0.08 | 0.097 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0006 |
| A-R1 | AID | 8/21/2006 | 0.288 | 0.43 | 0.0013 | <0.05 | 0.100 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0007 |
| A-R1 | AID | 6/27/2007 | 0.253 | 0.33 | 0.0014 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| A-R1 | AID | 7/16/2007 | 0.305 | 0.47 | 0.0015 | <0.05 | 0.124 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| A-R1 | AID | 8/13/2007 | 0.167 | 0.24 | 0.0013 | <0.05 | 0.124 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| A-R1 | AID | 8/27/2007 | 0.233 | 0.35 | 0.0012 | <0.05 | 0.123 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| AEP-P3 | BRID | 7/5/2006 | 0.097 | 0.18 | 0.0004 | 0.12 | 0.094 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0006 |
| AEP-P3 | BRID | 7/19/2006 | 0.694 | 1.00 | 0.0032 | <0.05 | 0.063 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0004 | 0.0014 |
| AEP-P3 | BRID | 8/17/2006 | 0.048 | 0.09 | <0.0004 | <0.05 | 0.045 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0010 |
| AEP-P3 | BRID | 8/30/2006 | 0.036 | 0.07 | <0.0004 | <0.05 | 0.046 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| AEP-P3 | BRID | 6/20/2007 | 1.96 | 2.74 | 0.0011 | <0.05 | 0.105 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0015 | <0.0004 |
| AEP-P3 | BRID | 7/11/2007 | 0.074 | 0.12 | <0.0004 | <0.05 | 0.045 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| AEP-P3 | BRID | 8/8/2007 | 0.055 | 0.08 | <0.0004 | <0.05 | 0.042 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| AEP-P3 | BRID | 8/22/2007 | 0.041 | 0.06 | <0.0004 | <0.05 | 0.045 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| AEP-S3 | BRID | 7/10/2006 | 0.1 | 0.06 | 0.0010 | 0.15 | 0.094 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0009 |
| AEP-S3 | BRID | 7/24/2006 | 0.075 | 0.13 | 0.0012 | 0.10 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| AEP-S3 | BRID | 8/8/2006 | 0.058 | 0.08 | 0.0011 | <0.05 | 0.060 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0007 |
| AEP-S3 | BRID | 8/21/2006 | 0.05 | 0.06 | 0.0013 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| AEP-S3 | BRID | 6/27/2007 | 0.143 | 0.10 | 0.0008 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | 0.011 | 0.001 | <0.0001 | <0.0004 |
| AEP-S3 | BRID | 7/16/2007 | 0.06 | 0.07 | 0.0009 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| AEP-S3 | BRID | 8/13/2007 | 0.121 | 0.17 | 0.0013 | <0.05 | 0.060 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-S3 | BRID | 8/27/2007 | 0.047 | <0.10 | <0.0020 | <0.20 | 0.054 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-P1 | BRID | 7/10/2006 | 0.044 | <0.01 | <0.0004 | 0.18 | 0.111 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0007 |
| BR-P1 | BRID | 8/8/2006 | 0.04 | 0.06 | 0.0013 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-P1 | BRID | 7/24/2006 | 0.053 | 0.11 | 0.0012 | 0.21 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0008 |
| BR-P1 | BRID | 8/21/2006 | 0.024 | 0.03 | 0.0013 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| BR-P1 | BRID | 6/27/2007 | 0.106 | 0.04 | 0.0013 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | <0.0004 |
| BR-P1 | BRID | 7/16/2007 | 0.017 | 0.01 | 0.0012 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-P1 | BRID | 8/13/2007 | 0.015 | <0.01 | 0.0011 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| BR-P1 | BRID | 8/27/2007 | | <0.10 | <0.0020 | <0.20 | 0.0551 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-R1 | BRID | 7/10/2006 | 0.055 | <0.01 | 0.0014 | 0.17 | 0.106 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0009 |
| BR-R1 | BRID | 7/24/2006 | 0.074 | 0.09 | 0.0014 | 0.18 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0011 |
| BR-R1 | BRID | 8/8/2006 | 0.035 | 0.03 | 0.0014 | <0.05 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| BR-R1 | BRID | 8/21/2006 | 0.023 | 0.02 | 0.0013 | <0.05 | 0.065 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| BR-R1 | BRID | 6/27/2007 | 0.052 | 0.03 | 0.0013 | <0.05 | 0.054 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| BR-R1 | BRID | 7/16/2007 | 0.055 | 0.03 | 0.0016 | <0.05 | 0.065 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-R1 | BRID | 8/13/2007 | 0.027 | 0.03 | 0.0011 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0006 | 0.0009 |
| BR-R1 | BRID | 8/27/2007 | | <0.10 | <0.0020 | <0.20 | 0.0526 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-R2 | BRID | 7/10/2006 | 1.61 | 1.53 | 0.0027 | 0.18 | 0.131 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0009 | 0.0009 |
| BR-R2 | BRID | 7/24/2006 | 0.401 | 0.28 | 0.0025 | 0.19 | 0.131 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0002 | 0.0007 |
| BR-R2 | BRID | 8/8/2006 | 0.466 | 0.54 | 0.0020 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0009 |
| BR-R2 | BRID | 8/21/2006 | 0.339 | 0.34 | 0.0020 | <0.05 | 0.079 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0011 |
| BR-R2 | BRID | 6/27/2007 | 1.42 | 1.45 | 0.0028 | <0.05 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0007 | <0.0004 |
| BR-R2 | BRID | 7/16/2007 | 0.693 | 0.68 | 0.0022 | <0.05 | 0.079 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | <0.0004 |
| BR-R2 | BRID | 8/13/2007 | 0.406 | 0.42 | 0.0020 | <0.05 | 0.075 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | <0.0004 |
| BR-R2 | BRID | 8/27/2007 | 0.197 | 0.11 | 0.0025 | <0.20 | 0.0651 | <0.010 | <0.0010 | <0.0020 | <0.010 | 0.0023 | <0.0020 | <0.0020 |
| BR-R3 | BRID | 8/21/2006 | 0.822 | 0.94 | 0.0026 | 0.05 | 0.06 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0009 |
| BR-R3 | BRID | 7/10/2006 | 0.246 | 0.16 | 0.0032 | 0.18 | 0.086 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0002 | 0.0008 |
| BR-R3 | BRID | 7/24/2006 | 0.435 | 0.41 | 0.0025 | 0.15 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0011 |
| BR-R3 | BRID | 8/8/2006 | 0.291 | 0.38 | 0.0022 | <0.05 | 0.043 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| BR-R3 | BRID | 6/27/2007 | 0.237 | 0.24 | 0.0022 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0074 |
| BR-R3 | BRID | 7/16/2007 | 0.392 | 0.38 | 0.0027 | <0.05 | 0.065 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | <0.0004 |
| BR-R3 | BRID | 8/13/2007 | 0.733 | 0.89 | 0.0021 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | <0.0004 |
| BR-R3 | BRID | 8/27/2007 | 0.435 | 0.35 | 0.0027 | <0.20 | 0.0733 | <0.010 | <0.0010 | <0.0020 | <0.010 | 0.0029 | <0.0020 | <0.0020 |
| BR-R4 | BRID | 7/10/2006 | 0.13 | 0.02 | 0.0024 | 0.18 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0006 |
| BR-R4 | BRID | 7/24/2006 | 0.118 | 0.10 | 0.0023 | 0.14 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0015 |
| BR-R4 | BRID | 8/8/2006 | 0.09 | 0.07 | 0.0019 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0010 |
| BR-R4 | BRID | 8/21/2006 | 0.093 | 0.08 | 0.0020 | <0.05 | 0.06 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0005 |
| BR-R4 | BRID | 6/27/2007 | 0.122 | 0.07 | 0.0014 | <0.05 | 0.049 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-R4 | BRID | 7/16/2007 | 0.098 | 0.07 | 0.0019 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| BR-R4 | BRID | 8/13/2007 | 0.065 | 0.05 | 0.0017 | <0.05 | 0.06 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| BR-R4 | BRID | 8/27/2007 | 0.067 | <0.10 | 0.0032 | <0.20 | 0.0625 | <0.010 | <0.0010 | <0.0020 | <0.010 | 0.0030 | <0.0020 | <0.0020 |
| BR-R5 | BRID | 7/10/2006 | 0.034 | <0.01 | <0.0004 | 0.17 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0010 |
| BR-R5 | BRID | 7/24/2006 | 0.04 | <0.01 | 0.0017 | 0.14 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0008 |
| BR-R5 | BRID | 8/8/2006 | 0.019 | 0.02 | 0.0018 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| BR-R5 | BRID | 8/21/2006 | 0.038 | 0.03 | 0.0021 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| BR-R5 | BRID | 6/27/2007 | 0.059 | 0.11 | 0.0014 | <0.05 | 0.039 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| BR-R5 | BRID | 7/16/2007 | 0.034 | 0.04 | 0.0015 | <0.05 | 0.065 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-R5 | BRID | 8/13/2007 | 0.023 | 0.02 | 0.0017 | <0.05 | 0.053 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | <0.0004 |
| BR-R5 | BRID | 8/27/2007 |  | <0.10 | 0.0023 | <0.20 | 0.0534 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-R6 | BRID | 6/27/2007 | 0.123 | 0.09 | 0.0012 | <0.05 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-R6 | BRID | 7/16/2007 | 0.112 | 0.08 | 0.0017 | <0.05 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| BR-R6 | BRID | 8/13/2007 | 0.144 | 0.15 | 0.0013 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| BR-R6 | BRID | 8/27/2007 | 0.13 | <0.10 | <0.0020 | <0.20 | 0.053 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-S1 | BRID | 7/10/2006 | 0.041 | <0.01 | <0.0004 | 0.16 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0010 |
| BR-S1 | BRID | 7/24/2006 | 0.048 | 0.09 | 0.0011 | 0.19 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | <0.0001 | 0.0008 |
| BR-S1 | BRID | 8/8/2006 | 0.031 | 0.04 | 0.0013 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| BR-S1 | BRID | 8/21/2006 | 0.032 | 0.03 | 0.0013 | <0.05 | 0.063 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0006 |
| BR-S1 | BRID | 6/27/2007 | 0.082 | 0.06 | 0.0011 | <0.05 | 0.073 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S1 | BRID | 7/16/2007 | 0.022 | 0.02 | 0.0013 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S1 | BRID | 8/13/2007 | 0.018 | 0.02 | 0.0014 | <0.05 | 0.063 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| BR-S1 | BRID | 8/27/2007 |  | <0.10 | <0.0020 | <0.20 | 0.0509 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-S2 | BRID | 7/10/2006 | 0.265 | 0.19 | 0.0031 | 0.20 | 0.126 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0007 |
| BR-S2 | BRID | 7/24/2006 | 0.102 | 0.14 | 0.0056 | 0.17 | 0.115 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0001 | 0.0007 |
| BR-S2 | BRID | 8/8/2006 | 0.084 | 0.09 | 0.0066 | <0.05 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0007 |
| BR-S2 | BRID | 8/21/2006 | 0.208 | 0.23 | 0.0091 | <0.05 | 0.086 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| BR-S2 | BRID | 6/27/2007 | 0.142 | 0.12 | 0.0029 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | <0.0004 |
| BR-S2 | BRID | 7/16/2007 | 0.092 | 0.09 | 0.0044 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| BR-S2 | BRID | 8/13/2007 | 0.285 | 0.36 | 0.0058 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0012 |
| BR-S2 | BRID | 8/27/2007 | 0.184 | 0.16 | 0.0084 | <0.20 | 0.0737 | <0.010 | <0.0010 | <0.0020 | <0.010 | 0.0029 | <0.0020 | <0.0020 |
| BR-S3 | BRID | 7/10/2006 | 0.24 | 0.21 | 0.0014 | 0.17 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0011 |
| BR-S3 | BRID | 7/24/2006 | 0.284 | 0.39 | 0.0015 | 0.15 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0014 |
| BR-S3 | BRID | 8/8/2006 | 0.104 | 0.09 | 0.0016 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| BR-S3 | BRID | 8/21/2006 | 0.074 | 0.08 | 0.0018 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-S3 | BRID | 6/27/2007 | 0.129 | 0.13 | 0.0015 | <0.05 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0007 | <0.0004 |
| BR-S3 | BRID | 7/16/2007 | 0.139 | 0.14 | 0.0014 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| BR-S3 | BRID | 8/13/2007 | 0.064 | 0.06 | 0.0011 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S3 | BRID | 8/27/2007 | 0.044 | <0.10 | 0.0024 | <0.20 | 0.0533 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | 0.0043 |
| BR-S4 | BRID | 7/10/2006 | 0.307 | 0.24 | 0.0014 | 0.18 | 0.115 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0010 |
| BR-S4 | BRID | 7/24/2006 | 0.354 | 0.40 | 0.0013 | 0.13 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0010 |
| BR-S4 | BRID | 8/8/2006 | 0.093 | 0.11 | 0.0013 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| BR-S4 | BRID | 8/21/2006 | 0.07 | 0.06 | 0.0018 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| BR-S4 | BRID | 6/27/2007 | 0.093 | 0.09 | 0.0014 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S4 | BRID | 7/16/2007 | 0.135 | 0.14 | 0.0014 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| BR-S4 | BRID | 8/13/2007 | 0.03 | 0.03 | 0.0012 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S4 | BRID | 8/27/2007 |  | <0.10 | <0.0020 | <0.20 | 0.054 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| BR-S5 | BRID | 7/10/2006 | 0.052 | <0.01 | <0.0004 | 0.21 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0010 |
| BR-S5 | BRID | 7/24/2006 | 0.044 | 0.02 | 0.0016 | 0.17 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0007 |
| BR-S5 | BRID | 8/8/2006 | 0.03 | 0.03 | 0.0021 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| BR-S5 | BRID | 8/21/2006 | 0.046 | 0.05 | 0.0020 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| BR-S5 | BRID | 6/27/2007 | 0.096 | 0.10 | 0.0020 | <0.05 | 0.053 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| BR-S5 | BRID | 7/16/2007 | 0.021 | 0.02 | 0.0018 | <0.05 | 0.057 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S5 | BRID | 8/13/2007 | 0.061 | 0.07 | 0.0019 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| BR-S5 | BRID | 8/27/2007 | 0.039 | <0.10 | 0.0031 | <0.20 | 0.071 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| E-P1 | EID | 7/5/2006 | 0.492 | 0.66 | 0.0008 | 0.15 | 0.098 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.006 | 0.0005 | 0.0007 |
| E-P1 | EID | 7/19/2006 | 0.269 | 0.32 | 0.0007 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0006 |
| E-P1 | EID | 8/16/2006 | 0.101 | 0.13 | 0.0005 | <0.05 | 0.052 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0009 |
| E-P1 | EID | 8/30/2006 | 0.158 | 0.19 | 0.0005 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0010 |
| E-P1 | EID | 6/20/2007 | 2.22 | 2.71 | 0.0013 | <0.05 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0014 | <0.0004 |
| E-P1 | EID | 7/11/2007 | 0.218 | 0.29 | 0.0006 | <0.05 | 0.047 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| E-P1 | EID | 8/8/2007 | 0.237 | 0.23 | 0.0007 | <0.05 | 0.051 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | <0.0004 |
| E-P1 | EID | 8/22/2007 | 0.29 | 0.49 | 0.0006 | <0.05 | 0.052 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| E-R1 | EID | 7/5/2006 | 0.06 | 0.08 | 0.0013 | 0.14 | 0.102 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| E-R1 | EID | 7/19/2006 | 0.046 | 0.04 | 0.0011 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| E-R1 | EID | 8/16/2006 | 0.068 | 0.05 | 0.0015 | <0.05 | 0.052 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| E-R1 | EID | 8/30/2006 | 0.043 | 0.03 | 0.0015 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0011 |
| E-R1 | EID | 6/20/2007 | 0.06 | 0.03 | 0.0012 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| E-R1 | EID | 7/11/2007 | 0.067 | 0.05 | 0.0016 | <0.05 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R1 | EID | 8/8/2007 | 0.025 | 0.01 | 0.0016 | <0.05 | 0.053 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R1 | EID | 8/22/2007 | 0.018 | 0.01 | 0.0014 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0004 |
| E-R2 | EID | 7/5/2006 | 0.139 | 0.13 | 0.0026 | 0.14 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0010 |
| E-R2 | EID | 7/19/2006 | 0.541 | 0.53 | 0.0016 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | 0.0007 |
| E-R2 | EID | 8/16/2006 | 0.172 | 0.11 | 0.0012 | <0.05 | 0.06 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| E-R2 | EID | 8/30/2006 | 0.304 | 0.30 | 0.0012 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0012 |
| E-R2 | EID | 6/20/2007 | 0.113 | 0.06 | 0.0015 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| E-R2 | EID | 7/11/2007 | 0.711 | 0.74 | 0.0016 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| E-R2 | EID | 8/8/2007 | 0.357 | 0.34 | 0.0013 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | <0.0004 |
| E-R2 | EID | 8/22/2007 | 0.244 | 0.23 | 0.0011 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| E-R3 | EID | 8/16/2006 | 0.035 | 0.01 | 0.0020 | <0.05 | 0.049 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| E-R3 | EID | 7/5/2006 | 0.084 | 0.06 | 0.0015 | 0.14 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0006 |
| E-R3 | EID | 7/19/2006 | 0.047 | 0.02 | 0.0011 | <0.05 | 0.052 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| E-R3 | EID | 8/30/2006 | 0.024 | 0.01 | 0.0009 | <0.05 | 0.057 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| E-R3 | EID | 6/20/2007 | 0.054 | <0.01 | 0.0012 | <0.05 | 0.047 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R3 | EID | 7/11/2007 | 0.073 | 0.02 | 0.0013 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | <0.0004 |
| E-R3 | EID | 8/8/2007 | 0.061 | 0.02 | 0.0011 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R3 | EID | 8/22/2007 | 0.042 | 0.01 | 0.0010 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R4 | EID | 7/5/2006 | 0.331 | 0.42 | 0.0027 | 0.16 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| E-R4 | EID | 7/19/2006 | 0.197 | 0.21 | 0.0014 | <0.05 | 0.078 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.008 | 0.0001 | 0.0008 |
| E-R4 | EID | 8/16/2006 | 0.106 | 0.12 | 0.0012 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| E-R4 | EID | 8/30/2006 | 0.125 | 0.13 | 0.0013 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0013 |
| E-R4 | EID | 6/20/2007 | 0.248 | 0.17 | 0.0016 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| E-R4 | EID | 7/11/2007 | 0.122 | 0.13 | 0.0010 | <0.05 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R4 | EID | 8/8/2007 | 0.2 | 0.23 | 0.0011 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| E-R4 | EID | 8/22/2007 | 0.134 | 0.17 | 0.0011 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0022 | 0.0005 |
| E-R5 | EID | 7/5/2006 | 0.042 | 0.05 | 0.0010 | 0.14 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0006 |
| E-R5 | EID | 7/19/2006 | 0.02 | <0.01 | 0.0008 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| E-R5 | EID | 8/16/2006 | 0.022 | 0.02 | 0.0010 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| E-R5 | EID | 8/30/2006 | 0.037 | 0.03 | 0.0011 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| E-R5 | EID | 6/20/2007 | 0.042 | <0.01 | 0.0008 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R5 | EID | 7/11/2007 | 0.029 | 0.03 | 0.0010 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R5 | EID | 8/8/2007 | 0.017 | 0.01 | 0.0010 | <0.05 | 0.06 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-R5 | EID | 8/22/2007 | 0.013 | <0.01 | 0.0010 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0005 |
| E-S1 | EID | 7/5/2006 | 0.06 | 0.10 | 0.0011 | 0.13 | 0.106 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | <0.0001 | 0.0010 |
| E-S1 | EID | 7/19/2006 | 0.044 | 0.08 | 0.0013 | <0.05 | 0.063 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.021 | <0.0001 | 0.0006 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S1 | EID | 8/16/2006 | 0.045 | 0.04 | 0.0017 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| E-S1 | EID | 8/30/2006 | 0.117 | 0.08 | 0.0016 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| E-S1 | EID | 6/20/2007 | 0.057 | 0.04 | 0.0013 | <0.05 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S1 | EID | 7/11/2007 | 0.032 | 0.03 | 0.0014 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| E-S1 | EID | 8/8/2007 | 0.06 | 0.05 | 0.0021 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S1 | EID | 8/22/2007 | 0.083 | 0.09 | 0.0019 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S2 | EID | 7/5/2006 | 0.13 | 0.20 | 0.0008 | 0.15 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| E-S2 | EID | 7/19/2006 | 0.262 | 0.32 | 0.0007 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0011 |
| E-S2 | EID | 8/16/2006 | 0.097 | 0.10 | 0.0006 | <0.05 | 0.052 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| E-S2 | EID | 8/30/2006 | 0.092 | 0.11 | 0.0011 | <0.05 | 0.053 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| E-S2 | EID | 6/20/2007 | 0.182 | 0.22 | 0.0005 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| E-S2 | EID | 7/11/2007 | 0.174 | 0.24 | 0.0006 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| E-S2 | EID | 8/8/2007 | 0.153 | 0.16 | 0.0006 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| E-S2 | EID | 8/22/2007 | 0.119 | 0.15 | 0.0005 | <0.05 | 0.049 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| E-S3 | EID | 7/5/2006 | 0.05 | 0.06 | 0.0010 | 0.13 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| E-S3 | EID | 7/19/2006 | 0.045 | 0.04 | 0.0013 | <0.05 | 0.042 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| E-S3 | EID | 8/16/2006 | 0.062 | 0.06 | 0.0019 | <0.05 | 0.054 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| E-S3 | EID | 8/30/2006 | 0.065 | 0.05 | 0.0010 | <0.05 | 0.054 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| E-S3 | EID | 6/20/2007 | 0.07 | 0.07 | 0.0009 | <0.05 | 0.045 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S3 | EID | 7/11/2007 | 0.095 | 0.08 | 0.0013 | <0.05 | 0.044 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S3 | EID | 8/8/2007 | 0.15 | 0.11 | 0.0015 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| E-S3 | EID | 8/22/2007 | 0.155 | 0.13 | 0.0011 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S4 | EID | 7/5/2006 | 0.078 | 0.12 | 0.0009 | 0.15 | 0.111 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0014 |
| E-S4 | EID | 7/19/2006 | 0.086 | 0.10 | 0.0010 | <0.05 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| E-S4 | EID | 8/16/2006 | 0.038 | 0.05 | 0.0012 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| E-S4 | EID | 8/30/2006 | 0.039 | 0.05 | 0.0011 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| E-S4 | EID | 6/20/2007 | 0.049 | 0.07 | 0.0008 | <0.05 | 0.073 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S4 | EID | 7/11/2007 | 0.039 | 0.06 | 0.0009 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S4 | EID | 8/8/2007 | 0.047 | 0.06 | 0.0011 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S4 | EID | 8/22/2007 | 0.089 | 0.12 | 0.0017 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | 0.009 | <0.001 | <0.0001 | <0.0004 |
| E-S5 | EID | 7/5/2006 | 0.042 | 0.06 | 0.0009 | 0.15 | 0.102 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0008 |
| E-S5 | EID | 7/19/2006 | 0.03 | 0.02 | 0.0010 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0012 |
| E-S5 | EID | 8/16/2006 | 0.039 | 0.04 | 0.0013 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | <0.0001 | 0.0008 |
| E-S5 | EID | 8/30/2006 | 0.035 | 0.03 | 0.0012 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| E-S5 | EID | 6/20/2007 | 0.036 | 0.03 | 0.0007 | <0.05 | 0.073 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S5 | EID | 7/11/2007 | 0.021 | 0.02 | 0.0010 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S5 | EID | 8/8/2007 | 0.027 | 0.02 | 0.0012 | <0.05 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| E-S5 | EID | 8/22/2007 | 0.017 | <0.01 | 0.0014 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0004 |
| E-S6 | EID | 7/5/2006 | 0.062 | 0.08 | 0.0016 | 0.15 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0002 | 0.0010 |
| E-S6 | EID | 7/19/2006 | 0.077 | 0.09 | 0.0023 | <0.05 | 0.065 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0014 |
| E-S6 | EID | 8/16/2006 | 0.083 | 0.09 | 0.0032 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0010 |
| E-S6 | EID | 8/30/2006 | 0.224 | 0.26 | 0.0032 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0012 |
| E-S6 | EID | 6/20/2007 | 0.024 | 0.02 | 0.0017 | <0.05 | 0.061 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| E-S6 | EID | 7/11/2007 | 0.05 | 0.06 | 0.0036 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| E-S6 | EID | 8/8/2007 | 0.114 | 0.10 | 0.0062 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| E-S6 | EID | 8/22/2007 | 0.1 | 0.09 | 0.0065 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-P1 | LNID | 7/10/2006 | 0.347 | 0.54 | 0.0004 | 0.14 | 0.138 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0006 |
| LN-P1 | LNID | 7/24/2006 | 0.222 | 0.34 | 0.0004 | 0.16 | 0.145 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0008 |
| LN-P1 | LNID | 8/8/2006 | 0.11 | 0.16 | <0.0004 | <0.05 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| LN-P1 | LNID | 8/21/2006 | 0.072 | 0.13 | <0.0004 | <0.05 | 0.101 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| LN-P1 | LNID | 6/27/2007 | 0.267 | 0.39 | <0.0004 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| LN-P1 | LNID | 7/16/2007 | 0.134 | 0.23 | <0.0004 | <0.05 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| LN-P1 | LNID | 8/13/2007 | 0.094 | 0.17 | <0.0004 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-P1 | LNID | 8/27/2007 | 0.096 | 0.14 | <0.0020 | <0.20 | 0.0909 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| LN-R1 | LNID | 7/10/2006 | 4.73 | 5.29 | 0.0030 | 0.16 | 0.179 | <0.001 | <0.0002 | 0.002 | 0.008 | 0.006 | 0.0024 | 0.0009 |
| LN-R1 | LNID | 7/24/2006 | 3.11 | 3.26 | 0.0030 | 0.19 | 0.172 | <0.001 | <0.0002 | <0.002 | 0.005 | 0.007 | 0.0016 | 0.0008 |
| LN-R1 | LNID | 8/8/2006 | 0.945 | 0.97 | 0.0029 | <0.05 | 0.094 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0005 | 0.0012 |
| LN-R1 | LNID | 8/21/2006 | 2.61 | 3.23 | 0.0038 | <0.05 | 0.118 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0014 | 0.0007 |
| LN-R1 | LNID | 6/27/2007 | 3.3 | 3.10 | 0.0025 | <0.05 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0016 | <0.0004 |
| LN-R1 | LNID | 7/16/2007 | 6.32 | 7.42 | 0.0038 | <0.05 | 0.179 | <0.001 | <0.0002 | 0.003 | 0.009 | 0.007 | 0.0033 | 0.0005 |
| LN-R1 | LNID | 8/13/2007 | 1.94 | 2.75 | 0.0025 | <0.05 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0010 | <0.0004 |
| LN-R1 | LNID | 8/27/2007 | 1.47 | 1.52 | 0.0028 | <0.20 | 0.103 | <0.010 | <0.0010 | <0.0020 | <0.010 | 0.0023 | <0.0020 | <0.0020 |
| LN-R2 | LNID | 7/10/2006 | 0.478 | 0.62 | 0.0020 | 0.17 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0009 |
| LN-R2 | LNID | 7/24/2006 | 0.373 | 0.44 | 0.0023 | 0.24 | 0.123 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0003 | 0.0008 |
| LN-R2 | LNID | 8/8/2006 | 0.226 | 0.23 | 0.0023 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0007 |
| LN-R2 | LNID | 8/21/2006 | 0.283 | 0.35 | 0.0028 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| LN-R2 | LNID | 6/27/2007 | 0.491 | 0.58 | 0.0018 | <0.05 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | <0.0004 |
| LN-R2 | LNID | 7/16/2007 | 0.341 | 0.42 | 0.0020 | <0.05 | 0.076 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| LN-R2 | LNID | 8/13/2007 | 0.338 | 0.45 | 0.0018 | <0.05 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| LN-R2 | LNID | 8/27/2007 | 0.294 | 0.22 | 0.0020 | <0.20 | 0.0825 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S1 | LNID | 7/10/2006 | 0.898 | 1.28 | 0.0006 | 0.13 | 0.148 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0011 |
| LN-S1 | LNID | 7/24/2006 | 0.3 | 0.43 | 0.0005 | 0.13 | 0.133 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0012 |
| LN-S1 | LNID | 8/8/2006 | 0.164 | 0.26 | <0.0004 | <0.05 | 0.097 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0010 |
| LN-S1 | LNID | 8/21/2006 | 0.092 | 0.15 | <0.0004 | <0.05 | 0.104 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0009 |
| LN-S1 | LNID | 6/27/2007 | 0.315 | 0.41 | 0.0005 | <0.05 | 0.097 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| LN-S1 | LNID | 7/16/2007 | 0.256 | 0.42 | <0.0004 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| LN-S1 | LNID | 8/13/2007 | 0.103 | 0.17 | <0.0004 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-S1 | LNID | 8/27/2007 | 0.079 | 0.10 | <0.0020 | <0.20 | 0.0876 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| LN-S2 | LNID | 7/10/2006 | 0.116 | 0.18 | 0.0015 | 0.14 | 0.111 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0010 |
| LN-S2 | LNID | 7/24/2006 | 0.107 | 0.16 | 0.0023 | 0.17 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0009 |
| LN-S2 | LNID | 8/8/2006 | 0.085 | 0.13 | 0.0030 | <0.05 | 0.078 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| LN-S2 | LNID | 8/21/2006 | 0.131 | 0.18 | 0.0038 | <0.05 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| LN-S2 | LNID | 6/27/2007 | 0.125 | 0.18 | 0.0014 | <0.05 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| LN-S2 | LNID | 7/16/2007 | 0.053 | 0.10 | 0.0013 | <0.05 | 0.082 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| LN-S2 | LNID | 8/13/2007 | 0.196 | 0.30 | 0.0021 | <0.05 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| LN-S2 | LNID | 8/27/2007 | 0.12 | 0.13 | 0.0027 | <0.20 | 0.0857 | <0.010 | <0.0010 | <0.0020 | <0.010 | 0.0027 | <0.0020 | <0.0020 |
| LN-S3 | LNID | 7/10/2006 | 0.078 | 0.13 | 0.0012 | 0.15 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| LN-S3 | LNID | 7/24/2006 | 0.077 | 0.12 | 0.0008 | 0.18 | 0.134 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0001 | 0.0006 |
| LN-S3 | LNID | 8/8/2006 | 0.044 | 0.06 | 0.0007 | <0.05 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| LN-S3 | LNID | 8/21/2006 | 0.038 | 0.05 | 0.0006 | <0.05 | 0.087 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| LN-S3 | LNID | 6/27/2007 | 0.091 | 0.12 | 0.0007 | <0.05 | 0.087 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-S3 | LNID | 7/16/2007 | 0.04 | 0.05 | 0.0005 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-S3 | LNID | 8/13/2007 | 0.038 | 0.04 | 0.0006 | <0.05 | 0.087 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-S3 | LNID | 8/27/2007 | 0.034 | <0.10 | <0.0020 | <0.20 | 0.0791 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| LN-S4 | LNID | 7/10/2006 | 1.38 | 1.80 | 0.0019 | 0.15 | 0.131 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0007 | 0.0011 |
| LN-S4 | LNID | 7/24/2006 | 0.482 | 0.53 | 0.0022 | 0.14 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0006 |
| LN-S4 | LNID | 8/8/2006 | 0.225 | 0.32 | 0.0029 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0007 |
| LN-S4 | LNID | 8/21/2006 | 0.123 | 0.14 | 0.0033 | <0.05 | 0.073 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| LN-S4 | LNID | 6/27/2007 | 2.82 | 2.99 | 0.0023 | <0.05 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0014 | <0.0004 |
| LN-S4 | LNID | 7/16/2007 | 0.71 | 0.88 | 0.0015 | <0.05 | 0.094 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0004 | <0.0004 |
| LN-S4 | LNID | 8/13/2007 | 0.45 | 0.77 | 0.0023 | <0.05 | 0.103 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| LN-S4 | LNID | 8/27/2007 | 0.205 | 0.20 | 0.0025 | <0.20 | 0.0848 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| LN-S5 | LNID | 7/10/2006 | 0.13 | 0.21 | 0.0015 | 0.16 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| LN-S5 | LNID | 7/24/2006 | 0.083 | 0.11 | 0.0019 | 0.15 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0007 |
| LN-S5 | LNID | 8/8/2006 | 0.09 | 0.12 | 0.0024 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S5 | LNID | 8/21/2006 | 0.213 | 0.31 | 0.0036 | <0.05 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| LN-S5 | LNID | 6/27/2007 | 0.418 | 0.49 | 0.0016 | <0.05 | 0.076 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| LN-S5 | LNID | 7/16/2007 | 0.144 | 0.22 | 0.0015 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| LN-S5 | LNID | 8/13/2007 | 0.162 | 0.20 | 0.0022 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| LN-S5 | LNID | 8/27/2007 | 0.175 | 0.13 | 0.0026 | <0.20 | 0.0753 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| AEP-P1 | MID | 7/11/2006 | 0.073 | 0.14 | <0.0004 | 0.21 | 0.156 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| AEP-P1 | MID | 7/24/2006 | 0.058 | 0.05 | 0.0005 | 0.13 | 0.165 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| AEP-P1 | MID | 8/8/2006 | 0.042 | 0.07 | 0.0004 | <0.05 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0006 |
| AEP-P1 | MID | 8/21/2006 | 0.025 | 0.05 | 0.0004 | <0.05 | 0.126 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| AEP-P1 | MID | 6/27/2007 | 0.114 | 0.20 | <0.0004 | <0.05 | 0.106 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-P1 | MID | 7/16/2007 | 0.054 | 0.11 | <0.0004 | <0.05 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-P1 | MID | 8/13/2007 | 0.026 | 0.03 | <0.0004 | <0.05 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-P1 | MID | 8/27/2007 | 0.097 | 0.12 | 0.0005 | <0.05 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-S1 | MID | 7/11/2006 | 0.197 | 0.32 | <0.0004 | 0.17 | 0.161 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0010 |
| AEP-S1 | MID | 7/24/2006 | 0.113 | 0.12 | 0.0005 | 0.13 | 0.157 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0006 |
| AEP-S1 | MID | 8/8/2006 | 0.065 | 0.11 | 0.0004 | 0.06 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| AEP-S1 | MID | 8/21/2006 | 0.087 | 0.15 | 0.0004 | <0.05 | 0.13 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| AEP-S1 | MID | 6/27/2007 | 0.22 | 0.33 | 0.0005 | <0.05 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| AEP-S1 | MID | 7/16/2007 | 0.07 | 0.11 | <0.0004 | <0.05 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-S1 | MID | 8/13/2007 | 0.046 | 0.07 | 0.0004 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-S1 | MID | 8/27/2007 | 0.118 | 0.18 | 0.0005 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| AEP-S2 | MID | 7/10/2006 | 0.239 | 0.39 | 0.0005 | 0.16 | 0.155 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0008 |
| AEP-S2 | MID | 7/24/2006 | 0.24 | 0.17 | 0.0006 | 0.19 | 0.167 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0006 |
| AEP-S2 | MID | 8/9/2006 | 0.109 | 0.18 | 0.0006 | 0.16 | 0.119 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| AEP-S2 | MID | 8/21/2006 | 0.077 | 0.12 | 0.0005 | <0.05 | 0.125 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| AEP-S2 | MID | 6/27/2007 | 0.305 | 0.52 | 0.0005 | <0.05 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| AEP-S2 | MID | 7/16/2007 | 0.034 | 0.05 | 0.0005 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-S2 | MID | 8/13/2007 | 0.051 | 0.04 | 0.0004 | <0.05 | 0.125 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| AEP-S2 | MID | 8/27/2007 | 0.196 | 0.30 | <0.0020 | <0.20 | 0.126 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| M-P1 | MID | 7/10/2006 | 0.096 | 0.17 | 0.0006 | 0.18 | 0.149 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0006 |
| M-P1 | MID | 7/24/2006 | 0.092 | 0.04 | 0.0006 | 0.11 | 0.144 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| M-P1 | MID | 8/9/2006 | 0.077 | 0.14 | 0.0006 | 0.05 | 0.113 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0007 |
| M-P1 | MID | 8/21/2006 | 0.064 | 0.11 | 0.0006 | <0.05 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.083 | 0.0001 | 0.0006 |
| M-P1 | MID | 6/27/2007 | 0.255 | 0.45 | 0.0005 | <0.05 | 0.113 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| M-P1 | MID | 7/16/2007 | 0.838 | 1.00 | 0.0020 | <0.05 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0006 | 0.0006 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M-P1 | MID | 8/13/2007 | 0.11 | 0.19 | 0.0005 | <0.05 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| M-P1 | MID | 8/27/2007 | 0.063 | <0.10 | <0.0020 | <0.20 | 0.118 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| M-P2 | MID | 7/10/2006 | 0.271 | 0.26 | 0.0012 | 0.16 | 0.129 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| M-P2 | MID | 7/24/2006 | 0.201 | 0.12 | 0.0012 | 0.18 | 0.152 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0008 |
| M-P2 | MID | 8/9/2006 | 0.189 | 0.20 | 0.0009 | <0.05 | 0.108 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0006 |
| M-P2 | MID | 8/21/2006 | 0.154 | 0.14 | 0.0008 | <0.05 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0007 |
| M-P2 | MID | 6/27/2007 | 0.349 | 0.43 | 0.0009 | <0.05 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0013 | <0.0004 |
| M-P2 | MID | 7/16/2007 | 0.184 | 0.16 | 0.0011 | <0.05 | 0.106 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| M-P2 | MID | 8/13/2007 | 0.177 | 0.13 | 0.0007 | <0.05 | 0.113 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| M-P2 | MID | 8/27/2007 | 0.128 | 0.11 | <0.0020 | <0.20 | 0.111 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| M-R1 | MID | 7/10/2006 | 2.85 | 3.62 | 0.0023 | 0.22 | 0.156 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0017 | 0.0010 |
| M-R1 | MID | 7/24/2006 | 0.858 | 0.91 | 0.0018 | 0.14 | 0.132 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0007 |
| M-R1 | MID | 8/9/2006 | 0.372 | 0.57 | 0.0013 | 0.49 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0007 |
| M-R1 | MID | 8/21/2006 | 0.194 | 0.23 | 0.0013 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| M-R1 | MID | 6/27/2007 | 2.19 | 3.41 | 0.0016 | <0.05 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0012 | <0.0004 |
| M-R1 | MID | 7/16/2007 |  | 0.02 | <0.0004 | <0.05 |  | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| M-R1 | MID | 8/13/2007 | 0.148 | 0.19 | 0.0010 | <0.05 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| M-R1 | MID | 8/27/2007 | 0.308 | 0.30 | <0.0020 | <0.20 | 0.105 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | 0.0041 | <0.0020 |
| MV-P1 | MVID | 7/11/2006 | 0.174 | 0.10 | 0.0012 | 0.14 | 0.13 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| MV-P1 | MVID | 7/24/2006 | 0.136 | 0.04 | 0.0011 | 0.14 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0007 |
| MV-P1 | MVID | 8/8/2006 | 0.067 | 0.04 | 0.0011 | <0.05 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| MV-P1 | MVID | 8/21/2006 | 0.061 | 0.03 | 0.0012 | <0.05 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0005 |
| MV-P1 | MVID | 6/27/2007 | 0.114 | 0.10 | 0.0009 | <0.05 | 0.167 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| MV-P1 | MVID | 7/16/2007 | 0.116 | 0.08 | 0.0014 | <0.05 | 0.143 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| MV-P1 | MVID | 8/13/2007 | 0.108 | 0.11 | 0.0010 | <0.05 | 0.139 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| MV-P1 | MVID | 8/27/2007 | 0.11 | 0.10 | 0.0009 | <0.05 | 0.134 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| MV-R1 | MVID | 7/11/2006 | 1.23 | 1.71 | 0.0023 | 0.16 | 0.141 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0007 | 0.0014 |
| MV-R1 | MVID | 7/24/2006 | 0.753 | 0.78 | 0.0017 | 0.19 | 0.143 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0006 |
| MV-R1 | MVID | 8/8/2006 | 0.559 | 0.71 | 0.0013 | <0.05 | 0.081 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0006 |
| MV-R1 | MVID | 8/21/2006 | 0.424 | 0.54 | 0.0010 | <0.05 | 0.101 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0008 |
| MV-R1 | MVID | 6/27/2007 | 0.19 | 0.16 | 0.0012 | <0.05 | 0.077 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| MV-R1 | MVID | 7/16/2007 | 0.318 | 0.29 | 0.0013 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0007 |
| MV-R1 | MVID | 8/13/2007 | 0.23 | 0.20 | 0.0011 | <0.05 | 0.129 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| MV-R1 | MVID | 8/27/2007 | 0.73 | 0.08 | 0.0016 | <0.05 | 0.217 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0006 |
| R-P1 | RID | 7/10/2006 | 0.241 | 0.31 | 0.0008 | 0.16 | 0.148 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R-P1 | RID | 7/24/2006 | 0.183 | 0.13 | 0.0008 | 0.17 | 0.155 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0006 |
| R-P1 | RID | 8/9/2006 | 0.139 | 0.22 | 0.0007 | <0.05 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0007 |
| R-P1 | RID | 8/21/2006 | 0.098 | 0.14 | 0.0007 | <0.05 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| R-P1 | RID | 6/27/2007 | 0.125 | 0.21 | 0.0006 | <0.05 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| R-P1 | RID | 7/16/2007 | 0.114 | 0.15 | 0.0008 | <0.05 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| R-P1 | RID | 8/13/2007 | 0.166 | 0.18 | 0.0008 | <0.05 | 0.119 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| R-P1 | RID | 8/27/2007 | 0.085 | 0.14 | <0.0020 | <0.20 | 0.118 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| R-R1 | RID | 7/10/2006 | 0.454 | 0.45 | 0.0020 | 0.17 | 0.108 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0010 |
| R-R1 | RID | 7/24/2006 | 1.26 | 1.28 | 0.0025 | 0.20 | 0.153 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0008 | 0.0008 |
| R-R1 | RID | 8/9/2006 | 0.507 | 0.73 | 0.0020 | <0.05 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0011 |
| R-R1 | RID | 8/21/2006 | 0.653 | 0.87 | 0.0019 | <0.05 | 0.098 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0008 |
| R-R1 | RID | 6/27/2007 | 1.55 | 2.38 | 0.0019 | <0.05 | 0.105 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0009 | <0.0004 |
| R-R1 | RID | 7/16/2007 | 2.04 | 2.55 | 0.0021 | <0.05 | 0.126 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0012 | <0.0004 |
| R-R1 | RID | 8/13/2007 | 1.09 | 1.65 | 0.0017 | <0.05 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0006 | <0.0004 |
| R-R1 | RID | 8/27/2007 | 0.612 | 0.69 | <0.0020 | <0.20 | 0.104 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| R-R2 | RID | 7/10/2006 | 1.16 | 1.62 | 0.0014 | <0.05 | 0.115 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0006 | <0.0004 |
| R-R2 | RID | 7/24/2006 | 1.79 | 2.19 | 0.0015 | 0.14 | 0.167 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0009 | 0.0007 |
| R-R2 | RID | 8/9/2006 | 0.999 | 1.42 | 0.0013 | <0.05 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0008 |
| R-R2 | RID | 8/21/2006 | 1.01 | 1.28 | 0.0011 | <0.05 | 0.126 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0008 |
| R-R2 | RID | 6/27/2007 | 0.56 | 0.87 | 0.0010 | <0.05 | 0.118 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| R-R2 | RID | 7/16/2007 | 1.63 | 2.37 | 0.0014 | <0.05 | 0.136 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0010 | <0.0004 |
| R-R2 | RID | 8/13/2007 | 0.722 | 1.05 | 0.0012 | <0.05 | 0.125 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | <0.0004 |
| R-R2 | RID | 8/27/2007 | 0.571 | 0.78 | <0.0020 | <0.20 | 0.118 | <0.010 | <0.0010 | <0.0020 | <0.010 | <0.0020 | <0.0020 | <0.0020 |
| SMC-P1 | SMRID | 7/4/2006 | 0.357 | 0.44 | 0.0011 | 0.25 | 0.135 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0007 |
| SMC-P1 | SMRID | 7/17/2006 | 0.363 | 0.38 | 0.0010 | <0.05 | 0.104 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| SMC-P1 | SMRID | 8/14/2006 | 0.111 | 0.13 | 0.0009 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0011 |
| SMC-P1 | SMRID | 8/28/2006 | 0.102 | 0.05 | 0.0009 | <0.05 | 0.105 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| SMC-P1 | SMRID | 6/25/2007 | 0.25 | 0.37 | 0.0007 | <0.05 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| SMC-P1 | SMRID | 7/9/2007 | 0.323 | 0.36 | 0.0007 | <0.05 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | <0.0004 |
| SMC-P1 | SMRID | 8/7/2007 | 0.151 | 0.19 | 0.0008 | <0.05 | 0.101 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| SMC-P1 | SMRID | 8/20/2007 | 0.084 | 0.07 | 0.0008 | <0.05 | 0.108 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R1 | SMRID | 7/4/2006 | 0.164 | 0.22 | 0.0017 | 0.16 | 0.126 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0007 |
| SMC-R1 | SMRID | 7/17/2006 | 0.186 | 0.25 | 0.0034 | <0.05 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0009 |
| SMC-R1 | SMRID | 8/14/2006 | 0.057 | 0.06 | 0.0020 | <0.05 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0011 |
| SMC-R1 | SMRID | 8/28/2006 | 0.049 | 0.04 | 0.0020 | <0.05 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0013 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-R1 | SMRID | 6/25/2007 | 0.141 | 0.16 | 0.0013 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R1 | SMRID | 7/9/2007 | 0.091 | 0.06 | 0.0014 | <0.05 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R1 | SMRID | 8/7/2007 | 0.178 | 0.18 | 0.0020 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| SMC-R1 | SMRID | 8/20/2007 | 0.178 | 0.18 | 0.0025 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMC-R2 | SMRID | 7/4/2006 | 0.037 | 0.05 | 0.0028 | 0.15 | 0.06 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0006 |
| SMC-R2 | SMRID | 7/17/2006 | 0.065 | 0.07 | 0.0016 | <0.05 | 0.075 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| SMC-R2 | SMRID | 8/14/2006 | 0.04 | 0.05 | 0.0032 | <0.05 | 0.076 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| SMC-R2 | SMRID | 8/28/2006 | 0.063 | 0.07 | 0.0031 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| SMC-R2 | SMRID | 6/25/2007 | 0.03 | 0.02 | 0.0020 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R2 | SMRID | 7/9/2007 | 0.026 | 0.01 | 0.0021 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMC-R2 | SMRID | 8/7/2007 | 0.026 | 0.03 | 0.0030 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R2 | SMRID | 8/20/2007 | 0.106 | 0.11 | 0.0030 | <0.05 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R3 | SMRID | 7/4/2006 | 0.108 | 0.14 | 0.0018 | 0.14 | 0.113 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| SMC-R3 | SMRID | 7/17/2006 | 0.055 | 0.08 | 0.0800 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| SMC-R3 | SMRID | 8/14/2006 | 0.075 | 0.08 | 0.0024 | <0.05 | 0.078 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0010 |
| SMC-R3 | SMRID | 8/28/2006 | 0.092 | 0.09 | 0.0028 | <0.05 | 0.086 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | <0.0001 | 0.0011 |
| SMC-R3 | SMRID | 6/25/2007 | 0.095 | 0.10 | 0.0013 | <0.05 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R3 | SMRID | 7/9/2007 | 0.087 | 0.06 | 0.0014 | <0.05 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R3 | SMRID | 8/7/2007 | 0.068 | 0.07 | 0.0017 | <0.05 | 0.087 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R3 | SMRID | 8/20/2007 | 0.096 | 0.08 | 0.0031 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-R4 | SMRID | 7/4/2006 | 0.197 | 0.21 | 0.0011 | 0.17 | 0.146 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0007 |
| SMC-R4 | SMRID | 7/17/2006 | 0.397 | 0.32 | 0.0011 | 0.17 | 0.142 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0006 | 0.0007 |
| SMC-R4 | SMRID | 8/14/2006 | 0.206 | 0.24 | 0.0008 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0010 |
| SMC-R4 | SMRID | 8/28/2006 | 0.359 | 0.37 | 0.0009 | <0.05 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0010 |
| SMC-R4 | SMRID | 6/25/2007 | 0.189 | 0.23 | 0.0007 | <0.05 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMC-R4 | SMRID | 7/9/2007 | 0.334 | 0.29 | 0.0009 | <0.05 | 0.114 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| SMC-R4 | SMRID | 8/20/2007 | 0.323 | 0.39 | 0.0007 | <0.05 | 0.113 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0005 |
| SMC-S1 | SMRID | 7/4/2006 | 0.041 | 0.07 | 0.0013 | 0.14 | 0.127 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0005 |
| SMC-S1 | SMRID | 7/17/2006 | 0.024 | 0.04 | 0.0014 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| SMC-S1 | SMRID | 8/14/2006 | 0.026 | 0.03 | 0.0016 | <0.05 | 0.094 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| SMC-S1 | SMRID | 8/28/2006 | 0.039 | 0.03 | 0.0300 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| SMC-S1 | SMRID | 6/25/2007 | 0.024 | 0.03 | 0.0013 | <0.05 | 0.099 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-S1 | SMRID | 7/9/2007 | 0.026 | 0.02 | 0.0013 | <0.05 | 0.099 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-S1 | SMRID | 8/7/2007 | 0.025 | 0.03 | 0.0015 | <0.05 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| SMC-S1 | SMRID | 8/20/2007 | 0.019 | 0.02 | 0.0020 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-S2 | SMRID | 7/4/2006 | 0.104 | 0.16 | 0.0015 | 0.14 | 0.126 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| SMC-S2 | SMRID | 7/17/2006 | 0.066 | 0.13 | 0.0015 | <0.05 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| SMC-S2 | SMRID | 8/14/2006 | 0.037 | 0.03 | 0.0018 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0014 |
| SMC-S2 | SMRID | 8/28/2006 | 0.036 | 0.02 | 0.0200 | <0.05 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0033 |
| SMC-S2 | SMRID | 6/25/2007 | 0.068 | 0.08 | 0.0014 | <0.05 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | <0.0004 |
| SMC-S2 | SMRID | 7/9/2007 | 0.051 | 0.04 | 0.0015 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-S2 | SMRID | 8/7/2007 | 0.056 | 0.07 | 0.0020 | <0.05 | 0.093 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-S2 | SMRID | 8/20/2007 | 0.059 | 0.04 | 0.0025 | <0.05 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMC-S3 | SMRID | 7/4/2006 | 0.924 | 0.88 | 0.0013 | 0.14 | 0.149 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0006 | 0.0008 |
| SMC-S3 | SMRID | 7/17/2006 | 0.719 | 0.79 | 0.0011 | 0.11 | 0.141 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0007 |
| SMC-S3 | SMRID | 8/14/2006 | 0.189 | 0.22 | 0.0009 | <0.05 | 0.104 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| SMC-S3 | SMRID | 8/28/2006 | 0.2 | 0.21 | 0.0010 | <0.05 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| SMC-S3 | SMRID | 6/25/2007 | 0.932 | 1.21 | 0.0010 | <0.05 | 0.118 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0008 |
| SMC-S3 | SMRID | 8/7/2007 | 0.323 | 0.30 | 0.0009 | <0.05 | 0.108 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| SMC-S3 | SMRID | 8/20/2007 | 0.25 | 0.30 | 0.0009 | <0.05 | 0.106 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| SME-P1 | SMRID | 7/4/2006 | 0.092 | 0.14 | 0.0014 | 0.15 | 0.118 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0007 |
| SME-P1 | SMRID | 7/17/2006 | 0.072 | 0.08 | 0.0020 | <0.05 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0007 |
| SME-P1 | SMRID | 8/14/2006 | 0.088 | 0.10 | 0.0025 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| SME-P1 | SMRID | 8/28/2006 | 0.123 | 0.19 | 0.0028 | <0.05 | 0.081 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| SME-P1 | SMRID | 6/25/2007 | 0.047 | 0.06 | 0.0010 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SME-P1 | SMRID | 7/9/2007 | 0.057 | 0.07 | 0.0015 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SME-P1 | SMRID | 8/7/2007 | 0.129 | 0.18 | 0.0021 | <0.05 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SME-P1 | SMRID | 8/20/2007 | 0.649 | 0.72 | 0.0032 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| SME-R1 | SMRID | 7/4/2006 | 0.241 | 0.26 | 0.0032 | 0.16 | 0.108 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0006 |
| SME-R1 | SMRID | 7/17/2006 | 2.44 | 2.84 | 0.0047 | <0.05 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0015 | 0.0007 |
| SME-R1 | SMRID | 8/14/2006 | 0.914 | 0.96 | 0.0070 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0011 |
| SME-R1 | SMRID | 8/28/2006 | 0.558 | 0.83 | 0.0071 | <0.05 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0010 |
| SME-R1 | SMRID | 6/25/2007 | 0.202 | 0.16 | 0.0022 | <0.05 | 0.075 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| SME-R1 | SMRID | 7/9/2007 | 0.197 | 0.15 | 0.0029 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| SME-R1 | SMRID | 8/7/2007 | 0.536 | 0.66 | 0.0043 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | <0.0004 |
| SME-R1 | SMRID | 8/20/2007 | 0.723 | 0.69 | 0.0030 | <0.05 | 0.082 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| SME-S1 | SMRID | 7/4/2006 | 0.245 | 0.31 | 0.0031 | 0.14 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0008 |
| SME-S1 | SMRID | 7/17/2006 | 0.433 | 0.46 | 0.0049 | <0.05 | 0.073 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0007 |
| SME-S1 | SMRID | 8/14/2006 | 0.64 | 0.69 | 0.0073 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0010 |
| SME-S1 | SMRID | 8/28/2006 | 1.11 | 1.67 | 0.0071 | <0.05 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0006 | 0.0010 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SME-S1 | SMRID | 6/25/2007 | 0.365 | 0.26 | 0.0028 | <0.05 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | <0.0004 |
| SME-S1 | SMRID | 7/9/2007 | 0.39 | 0.31 | 0.0034 | <0.05 | 0.063 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| SME-S1 | SMRID | 8/7/2007 | 0.414 | 0.42 | 0.0043 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| SME-S1 | SMRID | 8/20/2007 | 0.102 | 0.11 | 0.0018 | <0.05 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMW-P1 | SMRID | 7/4/2006 | 0.37 | 0.49 | 0.0009 | 0.15 | 0.145 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0008 |
| SMW-P1 | SMRID | 7/17/2006 | 0.272 | 0.26 | 0.0008 | <0.05 | 0.111 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0011 |
| SMW-P1 | SMRID | 8/14/2006 | 0.168 | 0.24 | 0.0007 | <0.05 | 0.104 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0005 |
| SMW-P1 | SMRID | 8/28/2006 | 0.129 | 0.08 | 0.0007 | <0.05 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0008 |
| SMW-P1 | SMRID | 6/25/2007 | 0.147 | 0.19 | 0.0005 | <0.05 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| SMW-P1 | SMRID | 7/9/2007 | 0.217 | 0.34 | 0.0007 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMW-P1 | SMRID | 8/7/2007 | 0.218 | 0.29 | 0.0007 | <0.05 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| SMW-P1 | SMRID | 8/20/2007 | 0.146 | 0.15 | 0.0006 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMW-R1 | SMRID | 7/4/2006 | 0.509 | 0.62 | 0.0012 | 0.15 | 0.14 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0007 |
| SMW-R1 | SMRID | 7/17/2006 | 0.737 | 0.70 | 0.0011 | <0.05 | 0.127 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0007 |
| SMW-R1 | SMRID | 8/14/2006 | 0.375 | 0.47 | 0.0008 | <0.05 | 0.112 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0008 |
| SMW-R1 | SMRID | 8/28/2006 | 0.733 | 1.22 | 0.0008 | <0.05 | 0.133 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | 0.0009 |
| SMW-R1 | SMRID | 6/25/2007 | 0.778 | 0.96 | 0.0009 | <0.05 | 0.135 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| SMW-R1 | SMRID | 7/9/2007 | 0.571 | 0.77 | 0.0009 | <0.05 | 0.123 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | <0.0004 |
| SMW-R1 | SMRID | 8/7/2007 | 0.335 | 0.42 | 0.0008 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| SMW-R1 | SMRID | 8/20/2007 | 0.24 | 0.26 | 0.0006 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| SMW-R2 | SMRID | 7/4/2006 | 0.333 | 0.40 | 0.0027 | 0.15 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0008 |
| SMW-R2 | SMRID | 7/17/2006 | 0.552 | 0.49 | 0.0017 | <0.05 | 0.09 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | 0.0007 |
| SMW-R2 | SMRID | 8/14/2006 | 0.15 | 0.17 | 0.0011 | <0.05 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0007 |
| SMW-R2 | SMRID | 8/28/2006 | 0.276 | 0.42 | 0.0011 | <0.05 | 0.099 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| SMW-R2 | SMRID | 6/25/2007 | 0.66 | 0.74 | 0.0010 | <0.05 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | <0.0004 |
| SMW-R2 | SMRID | 7/9/2007 | 0.763 | 0.97 | 0.0012 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0004 | 0.0010 |
| SMW-R2 | SMRID | 8/7/2007 | 0.459 | 0.46 | 0.0011 | <0.05 | 0.092 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| SMW-R2 | SMRID | 8/20/2007 | 0.181 | 0.14 | 0.0010 | <0.05 | 0.099 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMW-S1 | SMRID | 7/4/2006 | 0.444 | 0.58 | 0.0009 | 0.15 | 0.148 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | 0.0008 |
| SMW-S1 | SMRID | 7/17/2006 | 0.354 | 0.45 | 0.0008 | <0.05 | 0.113 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0005 |
| SMW-S1 | SMRID | 8/14/2006 | 0.234 | 0.38 | 0.0009 | 0.06 | 0.12 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| SMW-S1 | SMRID | 8/28/2006 | 0.16 | 0.14 | 0.0007 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0010 |
| SMW-S1 | SMRID | 6/25/2007 | 0.2 | 0.27 | 0.0005 | <0.05 | 0.118 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| SMW-S1 | SMRID | 7/9/2007 | 0.268 | 0.42 | 0.0007 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| SMW-S1 | SMRID | 8/7/2007 | 0.355 | 0.45 | 0.0009 | <0.05 | 0.115 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMW-S1 | SMRID | 8/20/2007 | 0.171 | 0.16 | 0.0006 | <0.05 | 0.124 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| T-P1 | TID | 7/4/2006 | 0.09 | 0.15 | 0.0010 | 0.15 | 0.128 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0007 |
| T-P1 | TID | 7/17/2006 | 0.069 | 0.09 | 0.0008 | <0.05 | 0.101 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0015 |
| T-P1 | TID | 8/14/2006 | 0.083 | 0.12 | 0.0009 | <0.05 | 0.095 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| T-P1 | TID | 8/28/2006 | 0.073 | 0.12 | 0.0009 | <0.05 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| T-P1 | TID | 6/25/2007 | 0.136 | 0.17 | 0.0006 | <0.05 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-P1 | TID | 7/9/2007 | 0.145 | 0.19 | 0.0007 | <0.05 | 0.1 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-P1 | TID | 8/7/2007 | 0.075 | 0.09 | 0.0008 | <0.05 | 0.101 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-P1 | TID | 8/20/2007 | 0.059 | 0.06 | 0.0010 | <0.05 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-R1 | TID | 7/4/2006 | 0.165 | 0.14 | 0.0023 | 0.24 | 0.072 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| T-R1 | TID | 7/17/2006 | 0.095 | 0.07 | 0.0026 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0014 |
| T-R1 | TID | 8/14/2006 | 0.169 | 0.14 | 0.0021 | <0.05 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0007 |
| T-R1 | TID | 8/28/2006 | 0.134 | 0.12 | 0.0018 | <0.05 | 0.086 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0013 |
| T-R1 | TID | 6/25/2007 | 0.318 | 0.12 | 0.0016 | <0.05 | 0.081 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| T-R1 | TID | 7/9/2007 | 0.111 | 0.09 | 0.0019 | <0.05 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-R1 | TID | 8/7/2007 | 0.125 | 0.12 | 0.0020 | <0.05 | 0.1 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| T-R1 | TID | 8/20/2007 | 0.157 | 0.10 | 0.0019 | <0.05 | 0.107 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| T-R2 | TID | 7/4/2006 | 0.096 | 0.11 | 0.0021 | 0.23 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0006 |
| T-R2 | TID | 7/17/2006 | 0.171 | 0.19 | 0.0022 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0008 |
| T-R2 | TID | 8/14/2006 | 0.559 | 0.45 | 0.0024 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0011 |
| T-R2 | TID | 8/28/2006 | 0.057 | 0.06 | 0.0022 | <0.05 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | <0.0001 | 0.0008 |
| T-R2 | TID | 6/25/2007 | 0.212 | 0.25 | 0.0013 | <0.05 | 0.077 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| T-R2 | TID | 7/9/2007 | 0.068 | 0.06 | 0.0011 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | <0.0004 |
| T-R2 | TID | 8/7/2007 | 0.039 | 0.03 | 0.0018 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| T-R2 | TID | 8/20/2007 | 0.052 | 0.03 | 0.0019 | <0.05 | 0.073 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| T-S1 | TID | 7/4/2006 | 0.333 | 0.40 | 0.0010 | 0.15 | 0.133 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0002 | 0.0007 |
| T-S1 | TID | 7/17/2006 | 0.16 | 0.06 | 0.0009 | <0.05 | 0.104 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0007 |
| T-S1 | TID | 8/14/2006 | 0.078 | 0.11 | 0.0009 | <0.05 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| T-S1 | TID | 8/28/2006 | 0.087 | 0.14 | 0.0009 | <0.05 | 0.11 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| T-S1 | TID | 6/25/2007 | 0.263 | 0.27 | 0.0006 | <0.05 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| T-S1 | TID | 7/9/2007 | 0.178 | 0.21 | 0.0007 | <0.05 | 0.102 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0005 |
| T-S1 | TID | 8/7/2007 | 0.116 | 0.14 | 0.0007 | <0.05 | 0.102 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S1 | TID | 8/20/2007 | 0.067 | 0.08 | 0.0009 | <0.05 | 0.109 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S2 | TID | 7/4/2006 | 0.04 | 0.06 | 0.0019 | 0.16 | 0.069 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | 0.0008 |
| T-S2 | TID | 7/17/2006 | 0.052 | 0.06 | 0.0025 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T-S2 | TID | 8/14/2006 | 0.049 | 0.04 | 0.0021 | <0.05 | 0.083 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| T-S2 | TID | 8/28/2006 | 0.104 | 0.12 | 0.0019 | <0.05 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| T-S2 | TID | 6/25/2007 | 0.052 | 0.05 | 0.0017 | <0.05 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S2 | TID | 7/9/2007 | 0.067 | 0.07 | 0.0019 | <0.05 | 0.085 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S2 | TID | 8/7/2007 | 0.038 | 0.04 | 0.0021 | <0.05 | 0.096 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S2 | TID | 8/20/2007 | 0.077 | 0.07 | 0.0020 | <0.05 | 0.089 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S3 | TID | 7/4/2006 | 0.037 | 0.06 | 0.0017 | 0.22 | 0.082 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0008 |
| T-S3 | TID | 7/17/2006 | 0.013 | 0.01 | 0.0021 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| T-S3 | TID | 8/14/2006 | 0.028 | 0.03 | 0.0025 | <0.05 | 0.071 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | 0.0009 |
| T-S3 | TID | 8/28/2006 | 0.026 | 0.02 | 0.0021 | <0.05 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0008 |
| T-S3 | TID | 6/25/2007 | 0.12 | 0.22 | 0.0010 | <0.05 | 0.067 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S3 | TID | 7/9/2007 | 0.019 | 0.02 | 0.0009 | <0.05 | 0.058 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| T-S3 | TID | 8/7/2007 | 0.067 | 0.05 | 0.0019 | <0.05 | 0.063 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0025 |
| T-S3 | TID | 8/20/2007 | 0.043 | 0.53 | 0.0023 | <0.05 | 0.065 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0001 | <0.0004 |
| U-P1 | UID | 8/13/2007 | 0.027 | 0.04 | <0.0004 | <0.05 | 0.151 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| U-P1 | UID | 7/11/2006 | 0.11 | 0.19 | <0.0004 | 0.13 | 0.154 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| U-P1 | UID | 7/24/2006 | 0.055 | 0.03 | 0.0004 | 0.08 | 0.16 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| U-P1 | UID | 8/8/2006 | 0.038 | 0.04 | <0.0004 | <0.05 | 0.151 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| U-P1 | UID | 8/21/2006 | 0.04 | 0.06 | <0.0004 | <0.05 | 0.16 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0010 |
| U-P1 | UID | 6/27/2007 | 0.125 | 0.18 | <0.0004 | <0.05 | 0.115 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| U-P1 | UID | 7/16/2007 | 0.044 | 0.07 | <0.0004 | <0.05 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| U-P1 | UID | 8/27/2007 | 0.025 | 0.02 | <0.0004 | <0.05 | 0.149 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| U-R1 | UID | 7/11/2006 | 2.6 | 3.68 | 0.0011 | 0.17 | 0.186 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0016 | 0.0013 |
| U-R1 | UID | 7/24/2006 | 4.83 | 6.17 | 0.0022 | <0.05 | 0.196 | <0.001 | <0.0002 | <0.002 | 0.007 | 0.005 | 0.0028 | 0.0012 |
| U-R1 | UID | 8/8/2006 | 1.84 | 2.46 | 0.0014 | <0.05 | 0.141 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0010 | 0.0006 |
| U-R1 | UID | 8/21/2006 | 0.412 | 0.60 | 0.0011 | <0.05 | 0.111 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0008 |
| U-R1 | UID | 6/27/2007 | 2.24 | 3.67 | 0.0014 | <0.05 | 0.129 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0012 | 0.0013 |
| U-R1 | UID | 7/16/2007 | 2.57 | 3.31 | 0.0016 | <0.05 | 0.159 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0016 | <0.0004 |
| U-R1 | UID | 8/13/2007 | 1.19 | 1.66 | 0.0012 | <0.05 | 0.13 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0007 | 0.0005 |
| U-R1 | UID | 8/27/2007 | 1.49 | 1.89 | 0.0011 | <0.05 | 0.142 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0010 | <0.0004 |
| U-R2 | UID | 7/11/2006 | 0.684 | 1.30 | 0.0009 | 0.19 | 0.154 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0004 | 0.0010 |
| U-R2 | UID | 7/24/2006 | 0.642 | 0.75 | 0.0012 | 0.19 | 0.171 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0007 |
| U-R2 | UID | 8/8/2006 | 0.197 | 0.34 | 0.0009 | <0.05 | 0.121 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0006 |
| U-R2 | UID | 8/21/2006 | 0.132 | 0.27 | 0.0009 | <0.05 | 0.128 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0009 |
| U-R2 | UID | 6/27/2007 | 2.06 | 2.94 | 0.0012 | <0.05 | 0.128 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0010 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U-R2 | UID | 7/16/2007 | 1.14 | 1.82 | 0.0012 | <0.05 | 0.131 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0006 | <0.0004 |
| U-R2 | UID | 8/13/2007 | 0.211 | 0.30 | 0.0008 | <0.05 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| U-R2 | UID | 8/27/2007 | 0.214 | 0.35 | 0.0009 | <0.05 | 0.116 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| U-S1 | UID | 7/11/2006 | 0.082 | 0.13 | 0.0005 | 0.17 | 0.159 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0013 |
| U-S1 | UID | 7/24/2006 | 0.056 | 0.04 | 0.0006 | 0.14 | 0.167 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0006 |
| U-S1 | UID | 8/8/2006 | 0.04 | 0.05 | 0.0005 | <0.05 | 0.127 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0007 |
| U-S1 | UID | 8/21/2006 | 0.033 | 0.04 | 0.0005 | <0.05 | 0.122 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0009 |
| U-S1 | UID | 6/27/2007 | 0.077 | 0.10 | 0.0006 | <0.05 | 0.115 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0004 |
| U-S1 | UID | 7/16/2007 | 0.056 | 0.07 | 0.0004 | <0.05 | 0.117 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| U-S1 | UID | 8/13/2007 | 0.075 | 0.12 | 0.0005 | <0.05 | 0.119 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | <0.0004 |
| U-S1 | UID | 8/27/2007 | 0.085 | 0.13 | 0.0005 | <0.05 | 0.119 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0004 | <0.0004 |
| AEP-P2 | WID | 7/5/2006 | 0.207 | 0.25 | 0.0005 | 0.13 | 0.077 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0005 | 0.0009 |
| AEP-P2 | WID | 7/19/2006 | 0.234 | 0.28 | 0.0013 | <0.05 | 0.047 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0007 |
| AEP-P2 | WID | 8/17/2006 | 0.176 | 0.18 | 0.0005 | <0.05 | 0.04 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0005 | 0.0013 |
| AEP-P2 | WID | 8/30/2006 | 0.119 | 0.16 | <0.0004 | <0.05 | 0.042 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | 0.0006 |
| AEP-P2 | WID | 6/20/2007 | 0.309 | 0.33 | 0.0016 | 0.06 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0005 | 0.0006 |
| AEP-P2 | WID | 7/11/2007 | 0.109 | 0.12 | 0.0006 | <0.05 | 0.04 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| AEP-P2 | WID | 8/8/2007 | 0.089 | 0.09 | <0.0004 | <0.05 | 0.04 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0003 | <0.0004 |
| AEP-P2 | WID | 8/22/2007 | 0.061 | 0.06 | <0.0004 | <0.05 | 0.041 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0006 |
| W-P1 | WID | 7/5/2006 | 0.128 | 0.18 | 0.0009 | 0.13 | 0.075 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| W-P1 | WID | 7/19/2006 | 0.446 | 0.54 | 0.0072 | 0.05 | 0.091 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0010 |
| W-P1 | WID | 8/17/2006 | 0.123 | 0.15 | 0.0011 | <0.05 | 0.039 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0009 |
| W-P1 | WID | 8/30/2006 | 0.286 | 0.45 | 0.0011 | <0.05 | 0.054 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0011 |
| W-P1 | WID | 6/20/2007 | 0.061 | 0.06 | 0.0015 | <0.05 | 0.027 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| W-P1 | WID | 7/11/2007 | 0.079 | 0.09 | 0.0016 | <0.05 | 0.038 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | <0.0001 | <0.0004 |
| W-P1 | WID | 8/8/2007 | 0.079 | 0.08 | 0.0009 | <0.05 | 0.043 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |
| W-P1 | WID | 8/22/2007 | 0.138 | 0.15 | 0.0010 | <0.05 | 0.051 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0005 |
| W-P2 | WID | 7/5/2006 | 0.178 | 0.22 | 0.0010 | 0.09 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| W-P2 | WID | 7/19/2006 | 0.325 | 0.37 | 0.0012 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0009 |
| W-P2 | WID | 8/17/2006 | 0.062 | 0.07 | 0.0006 | <0.05 | 0.039 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0011 |
| W-P2 | WID | 8/30/2006 | 0.09 | 0.11 | 0.0007 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0009 |
| W-P2 | WID | 6/20/2007 | 0.106 | 0.09 | 0.0013 | <0.05 | 0.049 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | <0.0004 |
| W-P2 | WID | 7/11/2007 | 0.115 | 0.14 | 0.0013 | <0.05 | 0.043 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | <0.0004 |
| W-P2 | WID | 8/8/2007 | 0.127 | 0.14 | 0.0007 | <0.05 | 0.042 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| W-P2 | WID | 8/22/2007 | 0.159 | 0.20 | 0.0007 | <0.05 | 0.047 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-R2 | WID | 7/5/2006 | 1.59 | 1.72 | 0.0047 | 0.18 | 0.119 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.008 | 0.0009 | 0.0014 |
| W-R2 | WID | 7/19/2006 | 0.069 | 0.06 | <0.0004 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0012 |
| W-R2 | WID | 8/17/2006 | 0.64 | 0.85 | 0.0019 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0004 | 0.0011 |
| W-R2 | WID | 8/30/2006 | 0.636 | 0.79 | 0.0019 | <0.05 | 0.07 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0011 |
| W-R2 | WID | 6/20/2007 | 0.535 | 0.75 | 0.0033 | 0.07 | 0.08 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.004 | 0.0003 | <0.0004 |
| W-R2 | WID | 7/11/2007 | 2.06 | 3.01 | 0.0047 | 0.05 | 0.088 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.005 | 0.0010 | 0.0004 |
| W-R2 | WID | 8/8/2007 | 1.67 | 1.73 | 0.0027 | <0.05 | 0.074 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0009 | 0.0007 |
| W-R2 | WID | 8/22/2007 | 0.832 | 1.02 | 0.0018 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0004 | 0.0006 |
| W-S1 | WID | 7/5/2006 | 0.462 | 0.65 | 0.0013 | 0.12 | 0.077 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0003 | 0.0008 |
| W-S1 | WID | 7/19/2006 | 0.244 | 0.29 | 0.0015 | <0.05 | 0.046 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| W-S1 | WID | 8/17/2006 | 0.126 | 0.17 | 0.0010 | <0.05 | 0.043 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | 0.0012 |
| W-S1 | WID | 8/30/2006 | 0.188 | 0.30 | 0.0010 | <0.05 | 0.054 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0012 |
| W-S1 | WID | 6/20/2007 | 0.935 | 1.30 | 0.0020 | <0.05 | 0.095 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0006 | <0.0004 |
| W-S1 | WID | 7/11/2007 | 0.187 | 0.23 | 0.0017 | <0.05 | 0.046 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0009 |
| W-S1 | WID | 8/8/2007 | 0.24 | 0.24 | 0.0009 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| W-S1 | WID | 8/22/2007 | 0.191 | 0.19 | 0.0009 | <0.05 | 0.056 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0020 |
| W-S2 | WID | 7/5/2006 | 0.458 | 0.59 | 0.0018 | 0.09 | 0.079 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.013 | 0.0006 | 0.0008 |
| W-S2 | WID | 7/19/2006 | 0.278 | 0.28 | 0.0012 | <0.05 | 0.039 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0018 |
| W-S2 | WID | 8/17/2006 | 0.287 | 0.35 | 0.0011 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0008 |
| W-S2 | WID | 8/30/2006 | 0.305 | 0.30 | 0.0012 | <0.05 | 0.068 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0009 |
| W-S2 | WID | 6/20/2007 | 0.106 | 0.09 | 0.0018 | <0.05 | 0.053 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0001 | <0.0004 |
| W-S2 | WID | 7/11/2007 | 0.23 | 0.30 | 0.0021 | <0.05 | 0.054 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0011 | <0.0004 |
| W-S2 | WID | 8/8/2007 | 0.275 | 0.27 | 0.0009 | <0.05 | 0.053 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | <0.0004 |
| W-S2 | WID | 8/22/2007 | 0.891 | 0.93 | 0.0010 | <0.05 | 0.064 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0007 | 0.0004 |
| W-S3 | WID | 7/5/2006 | 0.341 | 0.39 | 0.0016 | 0.15 | 0.094 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.005 | 0.0003 | 0.0009 |
| W-S3 | WID | 7/19/2006 | 0.116 | 0.09 | 0.0011 | <0.05 | 0.041 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0001 | 0.0007 |
| W-S3 | WID | 8/17/2006 | 0.397 | 0.43 | 0.0009 | <0.05 | 0.059 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0013 |
| W-S3 | WID | 8/30/2006 | 0.415 | 0.41 | 0.0008 | <0.05 | 0.066 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0012 |
| W-S3 | WID | 6/20/2007 | 0.771 | 0.87 | 0.0023 | 0.06 | 0.084 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0005 | <0.0004 |
| W-S3 | WID | 7/11/2007 | 0.303 | 0.41 | 0.0017 | <0.05 | 0.057 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0003 | <0.0004 |
| W-S3 | WID | 8/8/2007 | 0.396 | 0.52 | 0.0010 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0003 | 0.0009 |
| W-S3 | WID | 8/22/2007 | 0.307 | 0.36 | 0.0009 | <0.05 | 0.05 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | <0.0004 |
| W-S4 | WID | 7/5/2006 | 0.25 | 0.36 | 0.0015 | 0.11 | 0.076 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0009 |
| W-S4 | WID | 7/19/2006 | 0.249 | 0.27 | 0.0005 | <0.05 | 0.038 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0006 | 0.0007 |
| W-S4 | WID | 8/17/2006 | 0.175 | 0.23 | 0.0007 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0002 | 0.0013 |

**Appendix 3.4.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation study sties.

| CLIENTID | ID | SMPDATE | Fe | Al | As | B | Ba | Be | Cd | Co | Cr | Cu | Pb | Sb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-S4 | WID | 8/30/2006 | 0.192 | 0.17 | 0.0007 | <0.05 | 0.062 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.001 | 0.0002 | 0.0011 |
| W-S4 | WID | 6/20/2007 | 1.23 | 1.60 | 0.0031 | <0.05 | 0.097 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.003 | 0.0007 | <0.0004 |
| W-S4 | WID | 7/11/2007 | 0.181 | 0.24 | 0.0020 | <0.05 | 0.055 | <0.001 | <0.0002 | <0.002 | <0.005 | 0.002 | 0.0002 | 0.0005 |
| W-S4 | WID | 8/8/2007 | 0.094 | 0.11 | 0.0009 | <0.05 | 0.044 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | <0.0001 | 0.0005 |
| W-S4 | WID | 8/22/2007 | 0.107 | 0.13 | 0.0008 | <0.05 | 0.048 | <0.001 | <0.0002 | <0.002 | <0.005 | <0.001 | 0.0001 | <0.0004 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-P1 | AID | 7/11/2006 | 0.032 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.043 | <0.0001 | 0.0005 | 0.003 | 0.018 |
| A-P1 | AID | 7/24/2006 | 0.031 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.067 | <0.0001 | 0.0004 | 0.004 | 0.021 |
| A-P1 | AID | 8/8/2006 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.022 | <0.0001 | 0.0004 | 0.003 | 0.006 |
| A-P1 | AID | 8/21/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.017 | <0.0001 | 0.0003 | 0.003 | 0.006 |
| A-P1 | AID | 6/27/2007 | 0.029 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.011 | <0.0001 | 0.0005 | 0.002 | 0.023 |
| A-P1 | AID | 7/16/2007 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.029 | <0.0001 | 0.0004 | 0.003 | 0.008 |
| A-P1 | AID | 8/13/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.008 | <0.0001 | 0.0003 | 0.001 | 0.005 |
| A-P1 | AID | 8/27/2007 | 0.020 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.006 | <0.0001 | 0.0003 | 0.001 | 0.004 |
| A-R1 | AID | 7/11/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.035 | <0.0001 | 0.0006 | 0.003 | 0.014 |
| A-R1 | AID | 7/24/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.050 | <0.0001 | 0.0004 | 0.002 | 0.016 |
| A-R1 | AID | 8/8/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.014 | <0.0001 | 0.0004 | 0.002 | 0.013 |
| A-R1 | AID | 8/21/2006 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.011 | <0.0001 | 0.0004 | 0.002 | 0.009 |
| A-R1 | AID | 6/27/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.008 | <0.0001 | 0.0005 | 0.002 | 0.016 |
| A-R1 | AID | 7/16/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.015 | 0.0001 | 0.0003 | 0.002 | 0.007 |
| A-R1 | AID | 8/13/2007 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.0004 | <0.001 | 0.012 |
| A-R1 | AID | 8/27/2007 | 0.007 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.006 | <0.0001 | 0.0004 | 0.001 | 0.005 |
| AEP-P3 | BRID | 7/5/2006 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.033 | <0.0001 | 0.0007 | <0.001 | 0.016 |
| AEP-P3 | BRID | 7/19/2006 | 0.047 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0010 | <0.05 | 0.022 | <0.0001 | 0.0018 | 0.005 | 0.012 |
| AEP-P3 | BRID | 8/17/2006 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | 0.026 |
| AEP-P3 | BRID | 8/30/2006 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | 0.007 |
| AEP-P3 | BRID | 6/20/2007 | 0.039 | <0.0004 | <0.0002 | <0.01 | 0.004 | 0.0007 | <0.05 | 0.054 | <0.0001 | 0.0009 | 0.006 | 0.015 |
| AEP-P3 | BRID | 7/11/2007 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0005 | <0.001 | 0.006 |
| AEP-P3 | BRID | 8/8/2007 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| AEP-P3 | BRID | 8/22/2007 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | 0.036 |
| AEP-S3 | BRID | 7/10/2006 | 0.015 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.027 | <0.0001 | 0.0013 | <0.001 | 0.009 |
| AEP-S3 | BRID | 7/24/2006 | 0.008 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0010 | <0.05 | 0.022 | <0.0001 | 0.0012 | 0.001 | 0.006 |
| AEP-S3 | BRID | 8/8/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.002 | <0.0001 | 0.0011 | <0.001 | 0.008 |
| AEP-S3 | BRID | 8/21/2006 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0011 | <0.001 | 0.007 |
| AEP-S3 | BRID | 6/27/2007 | 0.018 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0012 | <0.001 | 0.004 |
| AEP-S3 | BRID | 7/16/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0013 | <0.001 | 0.007 |
| AEP-S3 | BRID | 8/13/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.003 | <0.0001 | 0.0012 | <0.001 | 0.010 |
| AEP-S3 | BRID | 8/27/2007 | 0.016 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0009 | <0.020 | <0.10 |
| BR-P1 | BRID | 7/10/2006 | 0.008 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0004 | <0.05 | 0.027 | <0.0001 | 0.0019 | <0.001 | 0.009 |
| BR-P1 | BRID | 8/8/2006 | 0.009 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0016 | <0.001 | <0.004 |
| BR-P1 | BRID | 7/24/2006 | 0.005 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0009 | <0.05 | 0.039 | <0.0001 | 0.0018 | 0.001 | 0.009 |
| BR-P1 | BRID | 8/21/2006 | 0.009 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0009 | <0.05 | 0.001 | <0.0001 | 0.0016 | <0.001 | <0.004 |
| BR-P1 | BRID | 6/27/2007 | 0.008 | <0.0004 | <0.0002 | 0.01 | 0.003 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0019 | <0.001 | <0.004 |
| BR-P1 | BRID | 7/16/2007 | 0.002 | <0.0004 | <0.0002 | 0.01 | 0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0017 | <0.001 | 0.006 |
| BR-P1 | BRID | 8/13/2007 | 0.004 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0010 | <0.05 | <0.001 | <0.0001 | 0.0017 | <0.001 | 0.006 |
| BR-P1 | BRID | 8/27/2007 | 0.007 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0015 | <0.020 | <0.10 |
| BR-R1 | BRID | 7/10/2006 | 0.012 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | 0.028 | <0.0001 | 0.0017 | <0.001 | 0.011 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-R1 | BRID | 7/24/2006 | 0.019 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0009 | <0.05 | 0.034 | <0.0001 | 0.0017 | <0.001 | 0.009 |
| BR-R1 | BRID | 8/8/2006 | 0.006 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0015 | <0.001 | 0.006 |
| BR-R1 | BRID | 8/21/2006 | 0.006 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.0015 | <0.001 | <0.004 |
| BR-R1 | BRID | 6/27/2007 | 0.004 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0010 | <0.05 | <0.001 | <0.0001 | 0.0016 | <0.001 | 0.006 |
| BR-R1 | BRID | 7/16/2007 | 0.037 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0012 | <0.05 | 0.001 | <0.0001 | 0.0016 | <0.001 | 0.005 |
| BR-R1 | BRID | 8/13/2007 | 0.004 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0010 | <0.05 | <0.001 | <0.0001 | 0.0017 | <0.001 | 0.029 |
| BR-R1 | BRID | 8/27/2007 | 0.005 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0015 | <0.020 | <0.10 |
| BR-R2 | BRID | 7/10/2006 | 0.073 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0007 | <0.05 | 0.056 | <0.0001 | 0.002 | 0.005 | 0.018 |
| BR-R2 | BRID | 7/24/2006 | 0.084 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0010 | <0.05 | 0.043 | <0.0001 | 0.0018 | 0.002 | 0.012 |
| BR-R2 | BRID | 8/8/2006 | 0.032 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0010 | <0.05 | 0.013 | <0.0001 | 0.0014 | 0.002 | 0.007 |
| BR-R2 | BRID | 8/21/2006 | 0.025 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | 0.008 | <0.0001 | 0.0013 | 0.001 | 0.011 |
| BR-R2 | BRID | 6/27/2007 | 0.059 | <0.0004 | <0.0002 | 0.02 | 0.005 | 0.0009 | <0.05 | 0.040 | <0.0001 | 0.0023 | 0.005 | 0.030 |
| BR-R2 | BRID | 7/16/2007 | 0.037 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0011 | <0.05 | 0.014 | <0.0001 | 0.0018 | 0.003 | 0.008 |
| BR-R2 | BRID | 8/13/2007 | 0.025 | <0.0004 | <0.0002 | 0.01 | 0.003 | 0.0007 | <0.05 | 0.013 | <0.0001 | 0.0016 | 0.002 | 0.011 |
| BR-R2 | BRID | 8/27/2007 | 0.02 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0016 | <0.020 | <0.10 |
| BR-R3 | BRID | 8/21/2006 | 0.062 | <0.0004 | <0.0002 | 0.04 | <0.002 | 0.0007 | <0.05 | 0.027 | 0.0001 | 0.0027 | 0.002 | 0.007 |
| BR-R3 | BRID | 7/10/2006 | 0.028 | <0.0004 | <0.0002 | 0.04 | <0.002 | 0.0009 | <0.05 | 0.036 | <0.0001 | 0.0024 | 0.002 | 0.016 |
| BR-R3 | BRID | 7/24/2006 | 0.045 | <0.0004 | <0.0002 | 0.03 | 0.002 | 0.0018 | <0.05 | 0.039 | 0.0001 | 0.0021 | 0.002 | 0.009 |
| BR-R3 | BRID | 8/8/2006 | 0.026 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0008 | <0.05 | 0.010 | <0.0001 | 0.002 | 0.002 | <0.004 |
| BR-R3 | BRID | 6/27/2007 | 0.023 | <0.0004 | <0.0002 | 0.03 | 0.003 | 0.0007 | <0.05 | 0.007 | <0.0001 | 0.0021 | 0.001 | 0.006 |
| BR-R3 | BRID | 7/16/2007 | 0.037 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0015 | <0.05 | 0.009 | <0.0001 | 0.0022 | 0.002 | 0.006 |
| BR-R3 | BRID | 8/13/2007 | 0.048 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0010 | <0.05 | 0.025 | <0.0001 | 0.0023 | 0.003 | 0.010 |
| BR-R3 | BRID | 8/27/2007 | 0.047 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0023 | <0.020 | <0.10 |
| BR-R4 | BRID | 7/10/2006 | 0.049 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | 0.026 | <0.0001 | 0.0008 | 0.001 | 0.011 |
| BR-R4 | BRID | 7/24/2006 | 0.032 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.029 | <0.0001 | 0.0006 | 0.001 | 0.011 |
| BR-R4 | BRID | 8/8/2006 | 0.033 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0007 | <0.05 | 0.003 | <0.0001 | 0.0007 | 0.001 | 0.006 |
| BR-R4 | BRID | 8/21/2006 | 0.045 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | 0.005 |
| BR-R4 | BRID | 6/27/2007 | 0.031 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.001 | <0.001 | 0.011 |
| BR-R4 | BRID | 7/16/2007 | 0.036 | <0.0004 | <0.0002 | 0.02 | 0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.001 | <0.001 | 0.005 |
| BR-R4 | BRID | 8/13/2007 | 0.01 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0009 | <0.001 | 0.006 |
| BR-R4 | BRID | 8/27/2007 | 0.034 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0008 | <0.020 | 0.15 |
| BR-R5 | BRID | 7/10/2006 | 0.011 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0006 | <0.05 | 0.024 | <0.0001 | 0.0017 | <0.001 | 0.026 |
| BR-R5 | BRID | 7/24/2006 | 0.013 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0018 | <0.05 | 0.025 | <0.0001 | 0.0016 | <0.001 | 0.009 |
| BR-R5 | BRID | 8/8/2006 | 0.011 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0015 | 0.001 | <0.004 |
| BR-R5 | BRID | 8/21/2006 | 0.033 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.001 | <0.0001 | 0.0016 | <0.001 | <0.004 |
| BR-R5 | BRID | 6/27/2007 | 0.005 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0009 | <0.05 | 0.002 | <0.0001 | 0.0016 | <0.001 | 0.024 |
| BR-R5 | BRID | 7/16/2007 | 0.007 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0012 | <0.05 | <0.001 | <0.0001 | 0.0019 | <0.001 | 0.005 |
| BR-R5 | BRID | 8/13/2007 | 0.005 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0009 | <0.05 | <0.001 | <0.0001 | 0.0018 | <0.001 | 0.009 |
| BR-R5 | BRID | 8/27/2007 | 0.007 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0016 | <0.020 | <0.10 |
| BR-R6 | BRID | 6/27/2007 | 0.011 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0019 | <0.001 | <0.004 |
| BR-R6 | BRID | 7/16/2007 | 0.017 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0017 | <0.001 | 0.006 |
| BR-R6 | BRID | 8/13/2007 | 0.015 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0013 | <0.05 | 0.003 | <0.0001 | 0.0017 | <0.001 | 0.013 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR-R6 | BRID | 8/27/2007 | 0.016 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0015 | <0.020 | <0.10 |
| BR-S1 | BRID | 7/10/2006 | 0.007 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.027 | <0.0001 | 0.0013 | <0.001 | 0.011 |
| BR-S1 | BRID | 7/24/2006 | 0.007 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0007 | <0.05 | 0.037 | <0.0001 | 0.0013 | <0.001 | 0.009 |
| BR-S1 | BRID | 8/8/2006 | 0.01 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.002 | <0.0001 | 0.0014 | <0.001 | <0.004 |
| BR-S1 | BRID | 8/21/2006 | 0.009 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.001 | <0.0001 | 0.0016 | <0.001 | 0.005 |
| BR-S1 | BRID | 6/27/2007 | 0.008 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | 0.0003 | 0.0014 | <0.001 | <0.004 |
| BR-S1 | BRID | 7/16/2007 | 0.008 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0014 | <0.05 | <0.001 | <0.0001 | 0.0017 | <0.001 | 0.005 |
| BR-S1 | BRID | 8/13/2007 | 0.006 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0012 | <0.05 | <0.001 | <0.0001 | 0.0018 | <0.001 | 0.009 |
| BR-S1 | BRID | 8/27/2007 | 0.002 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0015 | <0.020 | <0.10 |
| BR-S2 | BRID | 7/10/2006 | 0.056 | <0.0004 | <0.0002 | 0.05 | 0.002 | 0.0005 | <0.05 | 0.035 | <0.0001 | 0.0013 | 0.002 | 0.016 |
| BR-S2 | BRID | 7/24/2006 | 0.02 | <0.0004 | <0.0002 | 0.04 | 0.002 | 0.0017 | <0.05 | 0.036 | 0.0001 | 0.0013 | 0.003 | 0.008 |
| BR-S2 | BRID | 8/8/2006 | 0.015 | <0.0004 | <0.0002 | 0.03 | <0.002 | 0.0007 | <0.05 | 0.004 | <0.0001 | 0.0016 | 0.005 | 0.006 |
| BR-S2 | BRID | 8/21/2006 | 0.03 | <0.0004 | <0.0002 | 0.03 | <0.002 | 0.0009 | <0.05 | 0.007 | 0.0001 | 0.0015 | 0.005 | <0.004 |
| BR-S2 | BRID | 6/27/2007 | 0.045 | <0.0004 | <0.0002 | 0.03 | 0.003 | 0.0005 | <0.05 | 0.004 | <0.0001 | 0.0016 | 0.002 | 0.005 |
| BR-S2 | BRID | 7/16/2007 | 0.022 | <0.0004 | 0.0003 | 0.03 | 0.002 | 0.0007 | <0.05 | 0.002 | 0.0003 | 0.0015 | 0.002 | 0.004 |
| BR-S2 | BRID | 8/13/2007 | 0.031 | <0.0004 | 0.0002 | 0.03 | 0.002 | 0.0012 | <0.05 | 0.010 | <0.0001 | 0.0017 | 0.003 | 0.016 |
| BR-S2 | BRID | 8/27/2007 | 0.031 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0019 | <0.020 | <0.10 |
| BR-S3 | BRID | 7/10/2006 | 0.022 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0007 | <0.05 | 0.035 | <0.0001 | 0.002 | 0.001 | 0.016 |
| BR-S3 | BRID | 7/24/2006 | 0.014 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0010 | <0.05 | 0.039 | <0.0001 | 0.0019 | 0.002 | 0.008 |
| BR-S3 | BRID | 8/8/2006 | 0.012 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0017 | 0.001 | <0.004 |
| BR-S3 | BRID | 8/21/2006 | 0.01 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0009 | <0.05 | 0.002 | <0.0001 | 0.0016 | 0.001 | <0.004 |
| BR-S3 | BRID | 6/27/2007 | 0.014 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0007 | <0.05 | 0.004 | <0.0001 | 0.0018 | <0.001 | 0.004 |
| BR-S3 | BRID | 7/16/2007 | 0.011 | <0.0004 | <0.0002 | 0.01 | 0.003 | 0.0015 | <0.05 | 0.005 | <0.0001 | 0.0019 | <0.001 | 0.005 |
| BR-S3 | BRID | 8/13/2007 | 0.007 | <0.0004 | 0.0006 | 0.01 | <0.002 | 0.0014 | <0.05 | 0.002 | 0.0001 | 0.0018 | <0.001 | 0.013 |
| BR-S3 | BRID | 8/27/2007 | 0.008 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0015 | <0.020 | <0.10 |
| BR-S4 | BRID | 7/10/2006 | 0.024 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0007 | <0.05 | 0.031 | <0.0001 | 0.002 | 0.001 | 0.011 |
| BR-S4 | BRID | 7/24/2006 | 0.017 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0007 | <0.05 | 0.033 | <0.0001 | 0.0019 | 0.002 | 0.010 |
| BR-S4 | BRID | 8/8/2006 | 0.01 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0016 | 0.001 | <0.004 |
| BR-S4 | BRID | 8/21/2006 | 0.01 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0016 | <0.001 | 0.004 |
| BR-S4 | BRID | 6/27/2007 | 0.014 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0008 | <0.05 | 0.004 | <0.0001 | 0.0018 | <0.001 | 0.005 |
| BR-S4 | BRID | 7/16/2007 | 0.011 | <0.0004 | <0.0002 | 0.01 | 0.003 | 0.0011 | <0.05 | 0.003 | <0.0001 | 0.002 | <0.001 | 0.005 |
| BR-S4 | BRID | 8/13/2007 | 0.004 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0014 | <0.05 | <0.001 | <0.0001 | 0.0019 | <0.001 | 0.005 |
| BR-S4 | BRID | 8/27/2007 | 0.003 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | 0.0073 | <0.020 | <0.0020 | 0.0017 | <0.020 | <0.10 |
| BR-S5 | BRID | 7/10/2006 | 0.021 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | 0.029 | <0.0001 | 0.0015 | <0.001 | 0.015 |
| BR-S5 | BRID | 7/24/2006 | 0.009 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0016 | <0.05 | 0.031 | 0.0001 | 0.0016 | 0.001 | 0.011 |
| BR-S5 | BRID | 8/8/2006 | 0.022 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | <0.001 | <0.0001 | 0.0015 | 0.001 | <0.004 |
| BR-S5 | BRID | 8/21/2006 | 0.024 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | <0.0001 | 0.0015 | <0.001 | <0.004 |
| BR-S5 | BRID | 6/27/2007 | 0.038 | <0.0004 | <0.0002 | 0.02 | 0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0015 | <0.001 | 0.005 |
| BR-S5 | BRID | 7/16/2007 | 0.018 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0008 | <0.05 | <0.001 | <0.0001 | 0.0017 | <0.001 | 0.004 |
| BR-S5 | BRID | 8/13/2007 | 0.024 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0013 | <0.05 | 0.002 | <0.0001 | 0.0017 | 0.001 | 0.006 |
| BR-S5 | BRID | 8/27/2007 | 0.029 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0015 | <0.020 | <0.10 |
| E-P1 | EID | 7/5/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.038 | 0.0002 | 0.0008 | 0.002 | 0.028 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-P1 | EID | 7/19/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.007 | <0.0001 | 0.0007 | 0.001 | <0.004 |
| E-P1 | EID | 8/16/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | 0.005 |
| E-P1 | EID | 8/30/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.005 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-P1 | EID | 6/20/2007 | 0.045 | <0.0004 | <0.0002 | <0.01 | 0.004 | 0.0008 | <0.05 | 0.029 | 0.0006 | 0.0009 | 0.007 | 0.031 |
| E-P1 | EID | 7/11/2007 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.008 | <0.0001 | 0.0006 | <0.001 | 0.006 |
| E-P1 | EID | 8/8/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.005 | <0.0001 | 0.0007 | <0.001 | 0.019 |
| E-P1 | EID | 8/22/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.011 | 0.0002 | 0.0007 | <0.001 | 0.021 |
| E-R1 | EID | 7/5/2006 | 0.012 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.030 | <0.0001 | 0.0008 | <0.001 | 0.008 |
| E-R1 | EID | 7/19/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.001 | <0.0001 | 0.0007 | <0.001 | 0.005 |
| E-R1 | EID | 8/16/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| E-R1 | EID | 8/30/2006 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-R1 | EID | 6/20/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.001 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| E-R1 | EID | 7/11/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | 0.004 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | 0.004 |
| E-R1 | EID | 8/8/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | 0.005 |
| E-R1 | EID | 8/22/2007 | 0.01 | <0.0004 | 0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | 0.007 |
| E-R2 | EID | 7/5/2006 | 0.043 | <0.0004 | <0.0002 | 0.03 | 0.003 | 0.0006 | <0.05 | 0.028 | <0.0001 | 0.0013 | 0.001 | 0.043 |
| E-R2 | EID | 7/19/2006 | 0.072 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0008 | <0.05 | 0.013 | <0.0001 | 0.0011 | 0.002 | 0.010 |
| E-R2 | EID | 8/16/2006 | 0.044 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.004 | <0.0001 | 0.001 | <0.001 | <0.004 |
| E-R2 | EID | 8/30/2006 | 0.036 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0007 | <0.05 | 0.007 | <0.0001 | 0.0014 | 0.002 | 0.020 |
| E-R2 | EID | 6/20/2007 | 0.02 | <0.0004 | <0.0002 | 0.02 | 0.004 | 0.0006 | <0.05 | 0.001 | <0.0001 | 0.0013 | <0.001 | 0.012 |
| E-R2 | EID | 7/11/2007 | 0.044 | <0.0004 | <0.0002 | 0.01 | 0.004 | <0.0004 | <0.05 | 0.020 | <0.0001 | 0.001 | 0.002 | 0.011 |
| E-R2 | EID | 8/8/2007 | 0.053 | <0.0004 | 0.0002 | 0.01 | 0.003 | 0.0012 | <0.05 | 0.008 | <0.0001 | 0.001 | 0.001 | 0.010 |
| E-R2 | EID | 8/22/2007 | 0.025 | <0.0004 | <0.0002 | 0.01 | 0.003 | <0.0004 | <0.05 | 0.004 | 0.0003 | 0.0011 | <0.001 | 0.019 |
| E-R3 | EID | 8/16/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | 0.008 |
| E-R3 | EID | 7/5/2006 | 0.035 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.033 | 0.0003 | 0.0008 | <0.001 | 0.019 |
| E-R3 | EID | 7/19/2006 | 0.035 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | 0.021 |
| E-R3 | EID | 8/30/2006 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-R3 | EID | 6/20/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | 0.008 |
| E-R3 | EID | 7/11/2007 | 0.034 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | 0.006 |
| E-R3 | EID | 8/8/2007 | 0.034 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| E-R3 | EID | 8/22/2007 | 0.022 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| E-R4 | EID | 7/5/2006 | 0.042 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.042 | <0.0001 | 0.0007 | 0.002 | 0.010 |
| E-R4 | EID | 7/19/2006 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.006 | <0.0001 | 0.0008 | 0.001 | 0.016 |
| E-R4 | EID | 8/16/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-R4 | EID | 8/30/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0008 | 0.001 | <0.004 |
| E-R4 | EID | 6/20/2007 | 0.029 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.0007 | <0.001 | 0.011 |
| E-R4 | EID | 7/11/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | 0.006 |
| E-R4 | EID | 8/8/2007 | 0.01 | <0.0004 | 0.0003 | <0.01 | <0.002 | 0.0013 | <0.05 | 0.005 | 0.0002 | 0.0008 | <0.001 | 0.008 |
| E-R4 | EID | 8/22/2007 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.005 | 0.0001 | 0.0008 | <0.001 | 0.019 |
| E-R5 | EID | 7/5/2006 | 0.017 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.030 | 0.0003 | 0.001 | <0.001 | 0.015 |
| E-R5 | EID | 7/19/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.007 |
| E-R5 | EID | 8/16/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.001 | <0.0001 | 0.0007 | <0.001 | 0.041 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-R5 | EID | 8/30/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| E-R5 | EID | 6/20/2007 | 0.026 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | 0.016 |
| E-R5 | EID | 7/11/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.005 |
| E-R5 | EID | 8/8/2007 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | 0.005 |
| E-R5 | EID | 8/22/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.007 |
| E-S1 | EID | 7/5/2006 | 0.014 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.029 | 0.0001 | 0.0007 | <0.001 | 0.012 |
| E-S1 | EID | 7/19/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | 0.006 |
| E-S1 | EID | 8/16/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| E-S1 | EID | 8/30/2006 | 0.029 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0006 | 0.001 | <0.004 |
| E-S1 | EID | 6/20/2007 | 0.05 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | 0.0001 | 0.0007 | <0.001 | 0.007 |
| E-S1 | EID | 7/11/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | 0.005 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0007 | <0.001 | 0.006 |
| E-S1 | EID | 8/8/2007 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | <0.0001 | 0.0007 | <0.001 | 0.008 |
| E-S1 | EID | 8/22/2007 | 0.018 | <0.0004 | 0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | 0.015 |
| E-S2 | EID | 7/5/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.032 | 0.0001 | 0.0008 | <0.001 | 0.011 |
| E-S2 | EID | 7/19/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.006 | <0.0001 | 0.0007 | 0.001 | 0.006 |
| E-S2 | EID | 8/16/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.004 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S2 | EID | 8/30/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S2 | EID | 6/20/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.009 | <0.0001 | 0.0006 | <0.001 | 0.014 |
| E-S2 | EID | 7/11/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.0006 | <0.001 | 0.005 |
| E-S2 | EID | 8/8/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.010 | <0.0001 | 0.0006 | <0.001 | 0.009 |
| E-S2 | EID | 8/22/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | 0.0021 | 0.0006 | <0.001 | 0.016 |
| E-S3 | EID | 7/5/2006 | 0.018 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.032 | 0.0002 | 0.0008 | <0.001 | 0.013 |
| E-S3 | EID | 7/19/2006 | 0.03 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| E-S3 | EID | 8/16/2006 | 0.028 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | 0.008 |
| E-S3 | EID | 8/30/2006 | 0.032 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | 0.004 |
| E-S3 | EID | 6/20/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.004 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S3 | EID | 7/11/2007 | 0.042 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | 0.007 |
| E-S3 | EID | 8/8/2007 | 0.085 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| E-S3 | EID | 8/22/2007 | 0.057 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0009 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | 0.022 |
| E-S4 | EID | 7/5/2006 | 0.008 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.032 | 0.0003 | 0.0008 | <0.001 | 0.011 |
| E-S4 | EID | 7/19/2006 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S4 | EID | 8/16/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S4 | EID | 8/30/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S4 | EID | 6/20/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | 0.021 |
| E-S4 | EID | 7/11/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| E-S4 | EID | 8/8/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| E-S4 | EID | 8/22/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.003 | 0.0001 | 0.0007 | 0.004 | 0.009 |
| E-S5 | EID | 7/5/2006 | 0.009 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.028 | 0.0003 | 0.0009 | <0.001 | 0.012 |
| E-S5 | EID | 7/19/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| E-S5 | EID | 8/16/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | 0.014 |
| E-S5 | EID | 8/30/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.001 | <0.0001 | 0.0008 | <0.001 | 0.005 |
| E-S5 | EID | 6/20/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | <0.001 | 0.0002 | 0.0009 | <0.001 | 0.007 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-S5 | EID | 7/11/2007 | 0.013 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0010 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.007 |
| E-S5 | EID | 8/8/2007 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| E-S5 | EID | 8/22/2007 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.009 |
| E-S6 | EID | 7/5/2006 | 0.016 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.029 | 0.0003 | 0.0008 | 0.001 | 0.012 |
| E-S6 | EID | 7/19/2006 | 0.019 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0007 | 0.002 | 0.005 |
| E-S6 | EID | 8/16/2006 | 0.021 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | 0.0006 | 0.0007 | 0.002 | 0.007 |
| E-S6 | EID | 8/30/2006 | 0.041 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.005 | <0.0001 | 0.0007 | 0.003 | 0.005 |
| E-S6 | EID | 6/20/2007 | 0.015 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | 0.014 |
| E-S6 | EID | 7/11/2007 | 0.051 | <0.0004 | <0.0002 | 0.01 | 0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0006 | 0.001 | 0.007 |
| E-S6 | EID | 8/8/2007 | 0.191 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.008 | 0.0001 | 0.0007 | 0.002 | 0.007 |
| E-S6 | EID | 8/22/2007 | 0.108 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0007 | 0.002 | 0.007 |
| LN-P1 | LNID | 7/10/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.038 | <0.0001 | 0.0004 | 0.002 | 0.010 |
| LN-P1 | LNID | 7/24/2006 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.040 | <0.0001 | 0.0004 | 0.001 | 0.011 |
| LN-P1 | LNID | 8/8/2006 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.004 | <0.0001 | 0.0004 | <0.001 | <0.004 |
| LN-P1 | LNID | 8/21/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.003 | <0.0001 | 0.0004 | <0.001 | <0.004 |
| LN-P1 | LNID | 6/27/2007 | 0.007 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0004 | 0.001 | 0.022 |
| LN-P1 | LNID | 7/16/2007 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0019 | <0.05 | 0.005 | <0.0001 | 0.0003 | <0.001 | 0.006 |
| LN-P1 | LNID | 8/13/2007 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.005 | <0.0001 | 0.0004 | <0.001 | 0.006 |
| LN-P1 | LNID | 8/27/2007 | 0.004 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0003 | <0.020 | <0.10 |
| LN-R1 | LNID | 7/10/2006 | 0.148 | <0.0004 | <0.0002 | 0.02 | 0.006 | 0.0008 | <0.05 | 0.141 | 0.0001 | 0.0015 | 0.013 | 0.024 |
| LN-R1 | LNID | 7/24/2006 | 0.095 | <0.0004 | <0.0002 | 0.02 | 0.004 | 0.0008 | <0.05 | 0.110 | <0.0001 | 0.001 | 0.009 | 0.020 |
| LN-R1 | LNID | 8/8/2006 | 0.049 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.036 | <0.0001 | 0.0011 | 0.004 | 0.005 |
| LN-R1 | LNID | 8/21/2006 | 0.094 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0007 | <0.05 | 0.098 | <0.0001 | 0.0009 | 0.008 | 0.014 |
| LN-R1 | LNID | 6/27/2007 | 0.099 | <0.0004 | <0.0002 | 0.01 | 0.005 | 0.0005 | <0.05 | 0.068 | <0.0001 | 0.0014 | 0.009 | 0.036 |
| LN-R1 | LNID | 7/16/2007 | 0.17 | <0.0004 | <0.0002 | 0.01 | 0.009 | 0.0008 | <0.05 | 0.137 | <0.0001 | 0.0012 | 0.018 | 0.056 |
| LN-R1 | LNID | 8/13/2007 | 0.072 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0014 | <0.05 | 0.094 | <0.0001 | 0.0008 | 0.007 | 0.012 |
| LN-R1 | LNID | 8/27/2007 | 0.072 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | 0.032 | <0.0020 | 0.0007 | <0.020 | <0.10 |
| LN-R2 | LNID | 7/10/2006 | 0.03 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.043 | <0.0001 | 0.001 | 0.003 | 0.010 |
| LN-R2 | LNID | 7/24/2006 | 0.027 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.048 | <0.0001 | 0.0009 | 0.002 | 0.010 |
| LN-R2 | LNID | 8/8/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.006 | <0.0001 | 0.0008 | 0.001 | <0.004 |
| LN-R2 | LNID | 8/21/2006 | 0.029 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.011 | <0.0001 | 0.0008 | 0.002 | <0.004 |
| LN-R2 | LNID | 6/27/2007 | 0.023 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.014 | <0.0001 | 0.0011 | 0.002 | 0.027 |
| LN-R2 | LNID | 7/16/2007 | 0.023 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.011 | <0.0001 | 0.0008 | 0.002 | 0.005 |
| LN-R2 | LNID | 8/13/2007 | 0.022 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.012 | <0.0001 | 0.0006 | 0.001 | 0.011 |
| LN-R2 | LNID | 8/27/2007 | 0.023 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0006 | <0.020 | <0.10 |
| LN-S1 | LNID | 7/10/2006 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.044 | <0.0001 | 0.0004 | 0.003 | 0.011 |
| LN-S1 | LNID | 7/24/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.034 | <0.0001 | 0.0004 | 0.001 | 0.013 |
| LN-S1 | LNID | 8/8/2006 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.006 | <0.0001 | 0.0004 | <0.001 | <0.004 |
| LN-S1 | LNID | 8/21/2006 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.0005 | <0.001 | 0.005 |
| LN-S1 | LNID | 6/27/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.006 | <0.0001 | 0.0004 | 0.001 | 0.015 |
| LN-S1 | LNID | 7/16/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0017 | <0.05 | 0.008 | <0.0001 | 0.0003 | 0.001 | 0.005 |
| LN-S1 | LNID | 8/13/2007 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.005 | <0.0001 | 0.0004 | <0.001 | 0.020 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LN-S1 | LNID | 8/27/2007 | 0.004 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0004 | <0.020 | <0.10 |
| LN-S2 | LNID | 7/10/2006 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.030 | <0.0001 | 0.0007 | 0.001 | 0.008 |
| LN-S2 | LNID | 7/24/2006 | 0.018 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.036 | <0.0001 | 0.0006 | 0.001 | 0.010 |
| LN-S2 | LNID | 8/8/2006 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0006 | 0.001 | <0.004 |
| LN-S2 | LNID | 8/21/2006 | 0.048 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.004 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| LN-S2 | LNID | 6/27/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.005 | <0.0001 | 0.0008 | <0.001 | 0.020 |
| LN-S2 | LNID | 7/16/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0018 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | 0.007 |
| LN-S2 | LNID | 8/13/2007 | 0.022 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0014 | <0.05 | 0.008 | <0.0001 | 0.0005 | 0.001 | 0.007 |
| LN-S2 | LNID | 8/27/2007 | 0.054 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0004 | <0.020 | <0.10 |
| LN-S3 | LNID | 7/10/2006 | 0.023 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0013 | <0.05 | 0.027 | <0.0001 | 0.001 | 0.001 | 0.009 |
| LN-S3 | LNID | 7/24/2006 | 0.014 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0011 | <0.05 | 0.038 | <0.0001 | 0.0008 | <0.001 | 0.011 |
| LN-S3 | LNID | 8/8/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| LN-S3 | LNID | 8/21/2006 | 0.007 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| LN-S3 | LNID | 6/27/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | 0.022 |
| LN-S3 | LNID | 7/16/2007 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0017 | <0.05 | 0.001 | <0.0001 | 0.0004 | <0.001 | <0.004 |
| LN-S3 | LNID | 8/13/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | <0.0001 | 0.0005 | <0.001 | 0.013 |
| LN-S3 | LNID | 8/27/2007 | 0.006 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0004 | <0.020 | <0.10 |
| LN-S4 | LNID | 7/10/2006 | 0.044 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.062 | <0.0001 | 0.0009 | 0.005 | 0.013 |
| LN-S4 | LNID | 7/24/2006 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.039 | <0.0001 | 0.0007 | 0.002 | 0.010 |
| LN-S4 | LNID | 8/8/2006 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0006 | 0.001 | <0.004 |
| LN-S4 | LNID | 8/21/2006 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| LN-S4 | LNID | 6/27/2007 | 0.055 | <0.0004 | <0.0002 | <0.01 | 0.004 | <0.0004 | <0.05 | 0.060 | <0.0001 | 0.001 | 0.008 | 0.023 |
| LN-S4 | LNID | 7/16/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.022 | <0.0001 | 0.0006 | 0.003 | 0.007 |
| LN-S4 | LNID | 8/13/2007 | 0.032 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.022 | <0.0001 | 0.0005 | 0.002 | 0.006 |
| LN-S4 | LNID | 8/27/2007 | 0.025 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0004 | <0.020 | <0.10 |
| LN-S5 | LNID | 7/10/2006 | 0.011 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.037 | <0.0001 | 0.0008 | 0.001 | 0.008 |
| LN-S5 | LNID | 7/24/2006 | 0.013 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.031 | <0.0001 | 0.0007 | 0.001 | 0.008 |
| LN-S5 | LNID | 8/8/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0006 | 0.001 | <0.004 |
| LN-S5 | LNID | 8/21/2006 | 0.036 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.007 | <0.0001 | 0.0006 | 0.001 | 0.006 |
| LN-S5 | LNID | 6/27/2007 | 0.018 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0006 | <0.05 | 0.008 | <0.0001 | 0.0008 | 0.002 | 0.019 |
| LN-S5 | LNID | 7/16/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.005 | <0.0001 | 0.0006 | 0.001 | 0.005 |
| LN-S5 | LNID | 8/13/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.010 | <0.0001 | 0.0005 | <0.001 | 0.005 |
| LN-S5 | LNID | 8/27/2007 | 0.026 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0004 | <0.020 | <0.10 |
| AEP-P1 | MID | 7/11/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.036 | <0.0001 | 0.0003 | <0.001 | 0.015 |
| AEP-P1 | MID | 7/24/2006 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.033 | <0.0001 | 0.0003 | <0.001 | 0.008 |
| AEP-P1 | MID | 8/8/2006 | 0.001 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0002 | <0.001 | 0.004 |
| AEP-P1 | MID | 8/21/2006 | 0.001 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.002 | <0.0001 | 0.0002 | <0.001 | <0.004 |
| AEP-P1 | MID | 6/27/2007 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.0002 | <0.001 | 0.021 |
| AEP-P1 | MID | 7/16/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0002 | <0.001 | 0.006 |
| AEP-P1 | MID | 8/13/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0002 | <0.001 | <0.004 |
| AEP-P1 | MID | 8/27/2007 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0002 | <0.001 | <0.004 |
| AEP-S1 | MID | 7/11/2006 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.034 | <0.0001 | 0.0003 | 0.001 | 0.026 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AEP-S1 | MID | 7/24/2006 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.031 | <0.0001 | 0.0003 | <0.001 | 0.011 |
| AEP-S1 | MID | 8/8/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0003 | <0.001 | 0.008 |
| AEP-S1 | MID | 8/21/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.003 | <0.0001 | 0.0002 | <0.001 | <0.004 |
| AEP-S1 | MID | 6/27/2007 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0002 | <0.001 | 0.026 |
| AEP-S1 | MID | 7/16/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0002 | <0.001 | <0.004 |
| AEP-S1 | MID | 8/13/2007 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0003 | <0.001 | 0.006 |
| AEP-S1 | MID | 8/27/2007 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.005 | <0.0001 | 0.0003 | <0.001 | 0.010 |
| AEP-S2 | MID | 7/10/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.032 | <0.0001 | 0.0003 | 0.001 | 0.008 |
| AEP-S2 | MID | 7/24/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.040 | <0.0001 | 0.0003 | 0.001 | 0.008 |
| AEP-S2 | MID | 8/9/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.0003 | <0.001 | <0.004 |
| AEP-S2 | MID | 8/21/2006 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0003 | <0.001 | <0.004 |
| AEP-S2 | MID | 6/27/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.010 | <0.0001 | 0.0002 | 0.001 | 0.020 |
| AEP-S2 | MID | 7/16/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.001 | <0.0001 | 0.0004 | <0.001 | 0.004 |
| AEP-S2 | MID | 8/13/2007 | 0.005 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | <0.001 | <0.0001 | 0.0003 | <0.001 | 0.005 |
| AEP-S2 | MID | 8/27/2007 | 0.008 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0003 | <0.020 | <0.10 |
| M-P1 | MID | 7/10/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.031 | <0.0001 | 0.0006 | <0.001 | 0.008 |
| M-P1 | MID | 7/24/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.028 | <0.0001 | 0.0005 | <0.001 | 0.009 |
| M-P1 | MID | 8/9/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.004 | <0.0001 | 0.0004 | <0.001 | 0.118 |
| M-P1 | MID | 8/21/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.002 | <0.0001 | 0.0004 | <0.001 | 0.019 |
| M-P1 | MID | 6/27/2007 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.008 | <0.0001 | 0.0004 | 0.001 | 0.004 |
| M-P1 | MID | 7/16/2007 | 0.037 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0007 | <0.05 | 0.023 | <0.0001 | 0.0009 | 0.004 | 0.006 |
| M-P1 | MID | 8/13/2007 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.005 | <0.0001 | 0.0004 | <0.001 | 0.020 |
| M-P1 | MID | 8/27/2007 | 0.004 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0004 | <0.020 | <0.10 |
| M-P2 | MID | 7/10/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.034 | <0.0001 | 0.0009 | 0.002 | 0.014 |
| M-P2 | MID | 7/24/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.042 | <0.0001 | 0.0006 | 0.001 | 0.009 |
| M-P2 | MID | 8/9/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.006 | <0.0001 | 0.0005 | <0.001 | <0.004 |
| M-P2 | MID | 8/21/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| M-P2 | MID | 6/27/2007 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.013 | 0.0006 | 0.0006 | 0.002 | 0.026 |
| M-P2 | MID | 7/16/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.005 | <0.0001 | 0.0004 | 0.001 | 0.004 |
| M-P2 | MID | 8/13/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.004 | <0.0001 | 0.0005 | <0.001 | 0.011 |
| M-P2 | MID | 8/27/2007 | 0.006 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0005 | <0.020 | <0.10 |
| M-R1 | MID | 7/10/2006 | 0.107 | <0.0004 | <0.0002 | 0.02 | 0.004 | 0.0031 | <0.05 | 0.094 | 0.0001 | 0.0041 | 0.009 | 0.018 |
| M-R1 | MID | 7/24/2006 | 0.033 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0020 | <0.05 | 0.050 | <0.0001 | 0.0019 | 0.004 | 0.011 |
| M-R1 | MID | 8/9/2006 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0017 | <0.05 | 0.018 | <0.0001 | 0.0017 | 0.002 | 0.005 |
| M-R1 | MID | 8/21/2006 | 0.011 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0030 | <0.05 | 0.005 | <0.0001 | 0.0031 | 0.001 | <0.004 |
| M-R1 | MID | 6/27/2007 | 0.063 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0007 | <0.05 | 0.056 | <0.0001 | 0.0013 | 0.008 | 0.025 |
| M-R1 | MID | 7/16/2007 |  | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 |  | <0.001 | <0.004 |
| M-R1 | MID | 8/13/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.005 | <0.0001 | 0.0012 | <0.001 | 0.015 |
| M-R1 | MID | 8/27/2007 | 0.016 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0009 | <0.020 | <0.10 |
| MV-P1 | MVID | 7/11/2006 | 0.144 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.027 | <0.0001 | 0.0004 | <0.001 | 0.017 |
| MV-P1 | MVID | 7/24/2006 | 0.063 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.033 | <0.0001 | 0.0003 | <0.001 | 0.015 |
| MV-P1 | MVID | 8/8/2006 | 0.03 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0003 | <0.001 | 0.009 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MV-P1 | MVID | 8/21/2006 | 0.041 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.001 | <0.0001 | 0.0002 | <0.001 | 0.016 |
| MV-P1 | MVID | 6/27/2007 | 0.044 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0004 | <0.001 | 0.021 |
| MV-P1 | MVID | 7/16/2007 | 0.111 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0003 | <0.001 | 0.004 |
| MV-P1 | MVID | 8/13/2007 | 0.036 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.003 | <0.0001 | 0.0003 | <0.001 | 0.007 |
| MV-P1 | MVID | 8/27/2007 | 0.038 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.002 | <0.0001 | 0.0003 | <0.001 | <0.004 |
| MV-R1 | MVID | 7/11/2006 | 0.037 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.055 | <0.0001 | 0.0007 | 0.005 | 0.018 |
| MV-R1 | MVID | 7/24/2006 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.052 | <0.0001 | 0.0004 | 0.003 | 0.012 |
| MV-R1 | MVID | 8/8/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.012 | <0.0001 | 0.0003 | 0.002 | 0.011 |
| MV-R1 | MVID | 8/21/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.011 | <0.0001 | 0.0003 | 0.002 | 0.008 |
| MV-R1 | MVID | 6/27/2007 | 0.007 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.004 | <0.0001 | 0.0005 | 0.001 | 0.016 |
| MV-R1 | MVID | 7/16/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0003 | <0.001 | 0.005 |
| MV-R1 | MVID | 8/13/2007 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.005 | <0.0001 | 0.0004 | <0.001 | 0.006 |
| MV-R1 | MVID | 8/27/2007 | 0.107 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0007 | <0.05 | 0.003 | <0.0001 | 0.0014 | <0.001 | 0.010 |
| R-P1 | RID | 7/10/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.034 | <0.0001 | 0.0008 | 0.001 | 0.012 |
| R-P1 | RID | 7/24/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.039 | <0.0001 | 0.0006 | <0.001 | 0.008 |
| R-P1 | RID | 8/9/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.005 | <0.0001 | 0.0005 | <0.001 | <0.004 |
| R-P1 | RID | 8/21/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.0005 | <0.001 | 0.007 |
| R-P1 | RID | 6/27/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0005 | <0.001 | 0.016 |
| R-P1 | RID | 7/16/2007 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0015 | <0.05 | 0.004 | <0.0001 | 0.0005 | 0.002 | 0.005 |
| R-P1 | RID | 8/13/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.005 | <0.0001 | 0.0004 | <0.001 | 0.007 |
| R-P1 | RID | 8/27/2007 | 0.008 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0003 | <0.020 | <0.10 |
| R-R1 | RID | 7/10/2006 | 0.029 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.037 | <0.0001 | 0.001 | 0.003 | 0.012 |
| R-R1 | RID | 7/24/2006 | 0.093 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0010 | <0.05 | 0.070 | <0.0001 | 0.0014 | 0.005 | 0.014 |
| R-R1 | RID | 8/9/2006 | 0.045 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.023 | <0.0001 | 0.0012 | 0.003 | 0.007 |
| R-R1 | RID | 8/21/2006 | 0.032 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0013 | <0.05 | 0.031 | <0.0001 | 0.0016 | 0.003 | 0.004 |
| R-R1 | RID | 6/27/2007 | 0.052 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0012 | <0.05 | 0.060 | <0.0001 | 0.0014 | 0.006 | 0.022 |
| R-R1 | RID | 7/16/2007 | 0.072 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0007 | <0.05 | 0.053 | <0.0001 | 0.0011 | 0.006 | 0.013 |
| R-R1 | RID | 8/13/2007 | 0.036 | <0.0004 | 0.0004 | <0.01 | 0.002 | 0.0091 | <0.05 | 0.035 | 0.0002 | 0.0011 | 0.004 | 0.010 |
| R-R1 | RID | 8/27/2007 | 0.029 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0009 | <0.020 | <0.10 |
| R-R2 | RID | 7/10/2006 | 0.034 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.023 | <0.0001 | 0.001 | 0.004 | 0.005 |
| R-R2 | RID | 7/24/2006 | 0.048 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0007 | <0.05 | 0.074 | <0.0001 | 0.0009 | 0.006 | 0.015 |
| R-R2 | RID | 8/9/2006 | 0.029 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.032 | <0.0001 | 0.0008 | 0.004 | 0.005 |
| R-R2 | RID | 8/21/2006 | 0.037 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.023 | <0.0001 | 0.0007 | 0.003 | 0.006 |
| R-R2 | RID | 6/27/2007 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.016 | <0.0001 | 0.0007 | 0.003 | 0.018 |
| R-R2 | RID | 7/16/2007 | 0.04 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0008 | <0.05 | 0.046 | <0.0001 | 0.0008 | 0.006 | 0.011 |
| R-R2 | RID | 8/13/2007 | 0.024 | <0.0004 | 0.0003 | <0.01 | <0.002 | 0.0016 | <0.05 | 0.024 | 0.0004 | 0.0007 | 0.003 | 0.009 |
| R-R2 | RID | 8/27/2007 | 0.017 | <0.00020 | <0.00005 | <0.10 | <0.010 | <0.020 | <0.0020 | <0.020 | <0.0020 | 0.0006 | <0.020 | <0.10 |
| SMC-P1 | SMRID | 7/4/2006 | 0.021 | <0.0004 | <0.0002 | 0.01 | 0.009 | 0.0008 | <0.05 | 0.036 | <0.0001 | 0.0012 | 0.002 | 0.014 |
| SMC-P1 | SMRID | 7/17/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.011 | <0.0001 | 0.001 | 0.002 | 0.015 |
| SMC-P1 | SMRID | 8/14/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| SMC-P1 | SMRID | 8/28/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| SMC-P1 | SMRID | 6/25/2007 | 0.018 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.009 | <0.0001 | 0.0008 | 0.001 | 0.022 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-P1 | SMRID | 7/9/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.009 | <0.0001 | 0.001 | 0.001 | 0.007 |
| SMC-P1 | SMRID | 8/7/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.006 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| SMC-P1 | SMRID | 8/20/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | 0.010 |
| SMC-R1 | SMRID | 7/4/2006 | 0.027 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.034 | 0.0001 | 0.0011 | 0.001 | 0.011 |
| SMC-R1 | SMRID | 7/17/2006 | 0.026 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.001 | 0.001 | <0.004 |
| SMC-R1 | SMRID | 8/14/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.002 | <0.0001 | 0.0009 | 0.001 | 0.006 |
| SMC-R1 | SMRID | 8/28/2006 | 0.018 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| SMC-R1 | SMRID | 6/25/2007 | 0.019 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.0012 | <0.001 | 0.018 |
| SMC-R1 | SMRID | 7/9/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0012 | <0.001 | 0.005 |
| SMC-R1 | SMRID | 8/7/2007 | 0.023 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.003 | <0.0001 | 0.001 | 0.001 | <0.004 |
| SMC-R1 | SMRID | 8/20/2007 | 0.036 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.001 | <0.001 | 0.006 |
| SMC-R2 | SMRID | 7/4/2006 | 0.017 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.028 | 0.0001 | 0.0011 | 0.002 | 0.009 |
| SMC-R2 | SMRID | 7/17/2006 | 0.031 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0009 | 0.001 | 0.007 |
| SMC-R2 | SMRID | 8/14/2006 | 0.039 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0009 | 0.002 | 0.010 |
| SMC-R2 | SMRID | 8/28/2006 | 0.041 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0009 | 0.002 | <0.004 |
| SMC-R2 | SMRID | 6/25/2007 | 0.036 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.001 | <0.001 | <0.004 |
| SMC-R2 | SMRID | 7/9/2007 | 0.015 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | <0.001 | <0.0001 | 0.001 | 0.001 | <0.004 |
| SMC-R2 | SMRID | 8/7/2007 | 0.083 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0007 | 0.001 | <0.004 |
| SMC-R2 | SMRID | 8/20/2007 | 0.087 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.0008 | 0.001 | 0.007 |
| SMC-R3 | SMRID | 7/4/2006 | 0.023 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.028 | 0.0001 | 0.0011 | 0.001 | 0.008 |
| SMC-R3 | SMRID | 7/17/2006 | 0.024 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0009 | 0.002 | <0.004 |
| SMC-R3 | SMRID | 8/14/2006 | 0.021 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.003 | <0.0001 | 0.0009 | 0.001 | 0.008 |
| SMC-R3 | SMRID | 8/28/2006 | 0.029 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0009 | 0.001 | 0.006 |
| SMC-R3 | SMRID | 6/25/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.001 | <0.001 | <0.004 |
| SMC-R3 | SMRID | 7/9/2007 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.001 | <0.001 | 0.005 |
| SMC-R3 | SMRID | 8/7/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| SMC-R3 | SMRID | 8/20/2007 | 0.038 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.001 | <0.001 | 0.010 |
| SMC-R4 | SMRID | 7/4/2006 | 0.017 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.041 | <0.0001 | 0.0013 | 0.001 | 0.018 |
| SMC-R4 | SMRID | 7/17/2006 | 0.016 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.037 | <0.0001 | 0.0011 | 0.002 | 0.016 |
| SMC-R4 | SMRID | 8/14/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.006 | <0.0001 | 0.0008 | 0.001 | 0.006 |
| SMC-R4 | SMRID | 8/28/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.012 | <0.0001 | 0.0007 | 0.002 | 0.004 |
| SMC-R4 | SMRID | 6/25/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.006 | <0.0001 | 0.0009 | <0.001 | 0.008 |
| SMC-R4 | SMRID | 7/9/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.007 | <0.0001 | 0.001 | 0.001 | 0.005 |
| SMC-R4 | SMRID | 8/20/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.013 | <0.0001 | 0.0007 | <0.001 | 0.011 |
| SMC-S1 | SMRID | 7/4/2006 | 0.01 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.029 | 0.0001 | 0.0011 | <0.001 | 0.009 |
| SMC-S1 | SMRID | 7/17/2006 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | 0.005 |
| SMC-S1 | SMRID | 8/14/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0009 | <0.001 | 0.007 |
| SMC-S1 | SMRID | 8/28/2006 | 0.023 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| SMC-S1 | SMRID | 6/25/2007 | 0.018 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | 0.011 |
| SMC-S1 | SMRID | 7/9/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | <0.001 | <0.0001 | 0.001 | <0.001 | <0.004 |
| SMC-S1 | SMRID | 8/7/2007 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| SMC-S1 | SMRID | 8/20/2007 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.007 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMC-S2 | SMRID | 7/4/2006 | 0.016 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.030 | 0.0001 | 0.0011 | 0.001 | 0.008 |
| SMC-S2 | SMRID | 7/17/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.0009 | 0.001 | 0.020 |
| SMC-S2 | SMRID | 8/14/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.001 | <0.0001 | 0.0009 | <0.001 | 0.006 |
| SMC-S2 | SMRID | 8/28/2006 | 0.023 | <0.0004 | 0.0020 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0008 | <0.001 | 0.009 |
| SMC-S2 | SMRID | 6/25/2007 | 0.025 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.007 | <0.0001 | 0.0011 | <0.001 | 0.009 |
| SMC-S2 | SMRID | 7/9/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0012 | <0.001 | 0.004 |
| SMC-S2 | SMRID | 8/7/2007 | 0.023 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | <0.001 | <0.0001 | 0.001 | <0.001 | <0.004 |
| SMC-S2 | SMRID | 8/20/2007 | 0.051 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | 0.027 |
| SMC-S3 | SMRID | 7/4/2006 | 0.036 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.055 | <0.0001 | 0.0013 | 0.003 | 0.029 |
| SMC-S3 | SMRID | 7/17/2006 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.041 | <0.0001 | 0.001 | 0.003 | 0.022 |
| SMC-S3 | SMRID | 8/14/2006 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.006 | <0.0001 | 0.0007 | 0.001 | 0.007 |
| SMC-S3 | SMRID | 8/28/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.006 | <0.0001 | 0.0006 | 0.001 | <0.004 |
| SMC-S3 | SMRID | 6/25/2007 | 0.039 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0006 | <0.05 | 0.029 | <0.0001 | 0.0009 | 0.003 | 0.027 |
| SMC-S3 | SMRID | 8/7/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.008 | <0.0001 | 0.0008 | <0.001 | 0.004 |
| SMC-S3 | SMRID | 8/20/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.006 | <0.0001 | 0.0007 | <0.001 | 0.009 |
| SME-P1 | SMRID | 7/4/2006 | 0.022 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.028 | <0.0001 | 0.0012 | <0.001 | 0.011 |
| SME-P1 | SMRID | 7/17/2006 | 0.034 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0011 | <0.001 | 0.005 |
| SME-P1 | SMRID | 8/14/2006 | 0.046 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.0009 | 0.001 | <0.004 |
| SME-P1 | SMRID | 8/28/2006 | 0.055 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.001 | 0.001 | <0.004 |
| SME-P1 | SMRID | 6/25/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0011 | <0.001 | 0.019 |
| SME-P1 | SMRID | 7/9/2007 | 0.056 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0011 | 0.001 | <0.004 |
| SME-P1 | SMRID | 8/7/2007 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0009 | <0.001 | 0.007 |
| SME-P1 | SMRID | 8/20/2007 | 0.104 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.025 | <0.0001 | 0.001 | 0.003 | 0.009 |
| SME-R1 | SMRID | 7/4/2006 | 0.063 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | 0.030 | 0.0001 | 0.0011 | 0.002 | 0.011 |
| SME-R1 | SMRID | 7/17/2006 | 0.205 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0008 | <0.05 | 0.059 | <0.0001 | 0.0014 | 0.007 | 0.017 |
| SME-R1 | SMRID | 8/14/2006 | 0.068 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.022 | <0.0001 | 0.0011 | 0.005 | 0.007 |
| SME-R1 | SMRID | 8/28/2006 | 0.048 | <0.0004 | <0.0002 | 0.02 | <0.002 | <0.0004 | <0.05 | 0.018 | <0.0001 | 0.0013 | 0.006 | 0.006 |
| SME-R1 | SMRID | 6/25/2007 | 0.047 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0004 | <0.05 | 0.007 | <0.0001 | 0.0011 | <0.001 | 0.025 |
| SME-R1 | SMRID | 7/9/2007 | 0.095 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.006 | <0.0001 | 0.001 | <0.001 | 0.007 |
| SME-R1 | SMRID | 8/7/2007 | 0.09 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0012 | <0.05 | 0.010 | <0.0001 | 0.001 | 0.003 | 0.009 |
| SME-R1 | SMRID | 8/20/2007 | 0.105 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.020 | <0.0001 | 0.001 | 0.002 | 0.011 |
| SME-S1 | SMRID | 7/4/2006 | 0.048 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.028 | 0.0001 | 0.0011 | 0.002 | 0.009 |
| SME-S1 | SMRID | 7/17/2006 | 0.09 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.018 | <0.0001 | 0.001 | 0.002 | 0.005 |
| SME-S1 | SMRID | 8/14/2006 | 0.063 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.019 | <0.0001 | 0.0009 | 0.005 | 0.004 |
| SME-S1 | SMRID | 8/28/2006 | 0.085 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.042 | <0.0001 | 0.0011 | 0.007 | 0.005 |
| SME-S1 | SMRID | 6/25/2007 | 0.155 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.009 | <0.0001 | 0.0012 | <0.001 | 0.009 |
| SME-S1 | SMRID | 7/9/2007 | 0.221 | <0.0004 | 0.0005 | <0.01 | 0.002 | <0.0004 | <0.05 | 0.007 | 0.0004 | 0.0011 | 0.002 | <0.004 |
| SME-S1 | SMRID | 8/7/2007 | 0.105 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.006 | <0.0001 | 0.0009 | 0.002 | 0.004 |
| SME-S1 | SMRID | 8/20/2007 | 0.04 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0008 | <0.001 | 0.006 |
| SMW-P1 | SMRID | 7/4/2006 | 0.017 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.036 | <0.0001 | 0.0008 | 0.002 | 0.012 |
| SMW-P1 | SMRID | 7/17/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0007 | 0.001 | <0.004 |
| SMW-P1 | SMRID | 8/14/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0004 | <0.001 | <0.004 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SMW-P1 | SMRID | 8/28/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0005 | <0.001 | <0.004 |
| SMW-P1 | SMRID | 6/25/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.005 | <0.0001 | 0.0005 | <0.001 | 0.016 |
| SMW-P1 | SMRID | 7/9/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.013 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| SMW-P1 | SMRID | 8/7/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.006 | <0.0001 | 0.0006 | <0.001 | 0.009 |
| SMW-P1 | SMRID | 8/20/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0004 | <0.001 | 0.013 |
| SMW-R1 | SMRID | 7/4/2006 | 0.024 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.042 | <0.0001 | 0.001 | 0.002 | 0.015 |
| SMW-R1 | SMRID | 7/17/2006 | 0.029 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.017 | <0.0001 | 0.0008 | 0.002 | 0.009 |
| SMW-R1 | SMRID | 8/14/2006 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.011 | <0.0001 | 0.0005 | 0.002 | <0.004 |
| SMW-R1 | SMRID | 8/28/2006 | 0.025 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.026 | <0.0001 | 0.0006 | 0.003 | 0.005 |
| SMW-R1 | SMRID | 6/25/2007 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.028 | <0.0001 | 0.0007 | 0.003 | 0.017 |
| SMW-R1 | SMRID | 7/9/2007 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.020 | <0.0001 | 0.0007 | 0.002 | 0.006 |
| SMW-R1 | SMRID | 8/7/2007 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.009 | <0.0001 | 0.0013 | 0.001 | 0.006 |
| SMW-R1 | SMRID | 8/20/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.008 | <0.0001 | 0.0005 | <0.001 | 0.010 |
| SMW-R2 | SMRID | 7/4/2006 | 0.031 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.034 | <0.0001 | 0.0012 | 0.003 | 0.012 |
| SMW-R2 | SMRID | 7/17/2006 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.013 | <0.0001 | 0.0008 | 0.003 | 0.005 |
| SMW-R2 | SMRID | 8/14/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0005 | 0.001 | <0.004 |
| SMW-R2 | SMRID | 8/28/2006 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.009 | <0.0001 | 0.0005 | 0.001 | <0.004 |
| SMW-R2 | SMRID | 6/25/2007 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.024 | <0.0001 | 0.0007 | 0.003 | 0.022 |
| SMW-R2 | SMRID | 7/9/2007 | 0.025 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.022 | <0.0001 | 0.0007 | 0.002 | 0.007 |
| SMW-R2 | SMRID | 8/7/2007 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.010 | <0.0001 | 0.0006 | 0.001 | 0.006 |
| SMW-R2 | SMRID | 8/20/2007 | 0.018 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0005 | <0.001 | 0.012 |
| SMW-S1 | SMRID | 7/4/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.040 | <0.0001 | 0.0009 | 0.002 | 0.011 |
| SMW-S1 | SMRID | 7/17/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.008 | <0.0001 | 0.0007 | 0.001 | 0.016 |
| SMW-S1 | SMRID | 8/14/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0013 | <0.05 | 0.011 | 0.0004 | 0.0005 | 0.002 | <0.004 |
| SMW-S1 | SMRID | 8/28/2006 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0005 | <0.001 | <0.004 |
| SMW-S1 | SMRID | 6/25/2007 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.006 | <0.0001 | 0.0005 | 0.001 | 0.006 |
| SMW-S1 | SMRID | 7/9/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.009 | <0.0001 | 0.0006 | <0.001 | 0.005 |
| SMW-S1 | SMRID | 8/7/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.010 | <0.0001 | 0.0007 | 0.001 | 0.005 |
| SMW-S1 | SMRID | 8/20/2007 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0005 | <0.001 | 0.016 |
| T-P1 | TID | 7/4/2006 | 0.008 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.029 | <0.0001 | 0.0012 | 0.001 | 0.012 |
| T-P1 | TID | 7/17/2006 | 0.007 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0009 | <0.001 | 0.006 |
| T-P1 | TID | 8/14/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| T-P1 | TID | 8/28/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| T-P1 | TID | 6/25/2007 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.005 | <0.0001 | 0.0008 | <0.001 | 0.005 |
| T-P1 | TID | 7/9/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.004 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| T-P1 | TID | 8/7/2007 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | 0.008 |
| T-P1 | TID | 8/20/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | 0.0002 | 0.0006 | <0.001 | 0.009 |
| T-R1 | TID | 7/4/2006 | 0.035 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0008 | <0.05 | 0.026 | <0.0001 | 0.002 | 0.002 | 0.012 |
| T-R1 | TID | 7/17/2006 | 0.024 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0011 | <0.05 | 0.002 | <0.0001 | 0.0015 | 0.002 | 0.010 |
| T-R1 | TID | 8/14/2006 | 0.05 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.003 | <0.0001 | 0.001 | 0.001 | 0.004 |
| T-R1 | TID | 8/28/2006 | 0.028 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.001 | <0.001 | 0.006 |
| T-R1 | TID | 6/25/2007 | 0.027 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.003 | <0.0001 | 0.0015 | <0.001 | 0.010 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T-R1 | TID | 7/9/2007 | 0.032 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0016 | 0.001 | 0.009 |
| T-R1 | TID | 8/7/2007 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.004 | <0.0001 | 0.001 | 0.002 | 0.007 |
| T-R1 | TID | 8/20/2007 | 0.033 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0009 | 0.001 | 0.016 |
| T-R2 | TID | 7/4/2006 | 0.042 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.027 | <0.0001 | 0.0013 | 0.001 | 0.009 |
| T-R2 | TID | 7/17/2006 | 0.031 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | 0.006 | <0.0001 | 0.0011 | 0.002 | 0.008 |
| T-R2 | TID | 8/14/2006 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.012 | <0.0001 | 0.0009 | 0.002 | 0.004 |
| T-R2 | TID | 8/28/2006 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0008 | <0.001 | <0.004 |
| T-R2 | TID | 6/25/2007 | 0.026 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.005 | <0.0001 | 0.0011 | <0.001 | 0.015 |
| T-R2 | TID | 7/9/2007 | 0.028 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.002 | <0.0001 | 0.0012 | <0.001 | <0.004 |
| T-R2 | TID | 8/7/2007 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | 0.006 |
| T-R2 | TID | 8/20/2007 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | 0.044 |
| T-S1 | TID | 7/4/2006 | 0.019 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.034 | <0.0001 | 0.0012 | 0.002 | 0.012 |
| T-S1 | TID | 7/17/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.001 | <0.001 | 0.013 |
| T-S1 | TID | 8/14/2006 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | <0.004 |
| T-S1 | TID | 8/28/2006 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0006 | <0.001 | 0.005 |
| T-S1 | TID | 6/25/2007 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.009 | <0.0001 | 0.0008 | 0.001 | <0.004 |
| T-S1 | TID | 7/9/2007 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.004 | <0.0001 | 0.0009 | <0.001 | 0.006 |
| T-S1 | TID | 8/7/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.003 | <0.0001 | 0.0007 | <0.001 | 0.004 |
| T-S1 | TID | 8/20/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0006 | <0.001 | 0.011 |
| T-S2 | TID | 7/4/2006 | 0.02 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0005 | <0.05 | 0.028 | 0.0001 | 0.0011 | 0.001 | 0.018 |
| T-S2 | TID | 7/17/2006 | 0.026 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0011 | <0.05 | 0.001 | <0.0001 | 0.0013 | 0.002 | 0.006 |
| T-S2 | TID | 8/14/2006 | 0.056 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | <0.0001 | 0.0009 | 0.001 | <0.004 |
| T-S2 | TID | 8/28/2006 | 0.034 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0008 | 0.001 | <0.004 |
| T-S2 | TID | 6/25/2007 | 0.026 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0006 | <0.05 | 0.001 | <0.0001 | 0.0013 | <0.001 | 0.010 |
| T-S2 | TID | 7/9/2007 | 0.042 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0014 | <0.05 | 0.002 | <0.0001 | 0.0014 | 0.001 | <0.004 |
| T-S2 | TID | 8/7/2007 | 0.025 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.001 | <0.0001 | 0.0008 | 0.002 | 0.006 |
| T-S2 | TID | 8/20/2007 | 0.048 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0007 | <0.001 | 0.010 |
| T-S3 | TID | 7/4/2006 | 0.019 | <0.0004 | <0.0002 | 0.01 | 0.004 | 0.0005 | <0.05 | 0.026 | <0.0001 | 0.0011 | 0.001 | 0.010 |
| T-S3 | TID | 7/17/2006 | 0.02 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.0009 | <0.001 | 0.008 |
| T-S3 | TID | 8/14/2006 | 0.034 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | <0.001 | <0.0001 | 0.0008 | <0.001 | 0.006 |
| T-S3 | TID | 8/28/2006 | 0.031 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0007 | <0.001 | <0.004 |
| T-S3 | TID | 6/25/2007 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.001 | <0.001 | 0.017 |
| T-S3 | TID | 7/9/2007 | 0.009 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.001 | <0.001 | <0.004 |
| T-S3 | TID | 8/7/2007 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0013 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | 0.004 |
| T-S3 | TID | 8/20/2007 | 0.018 | <0.0004 | <0.0002 | <0.01 | 0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0006 | <0.001 | 0.065 |
| U-P1 | UID | 8/13/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | <0.0001 | 0.0003 | <0.001 | 0.004 |
| U-P1 | UID | 7/11/2006 | 0.003 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.024 | <0.0001 | 0.0003 | <0.001 | 0.010 |
| U-P1 | UID | 7/24/2006 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.020 | <0.0001 | 0.0003 | <0.001 | 0.008 |
| U-P1 | UID | 8/8/2006 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0003 | <0.001 | 0.005 |
| U-P1 | UID | 8/21/2006 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.001 | <0.0001 | 0.0003 | <0.001 | 0.005 |
| U-P1 | UID | 6/27/2007 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.004 | <0.0001 | 0.0002 | <0.001 | 0.016 |
| U-P1 | UID | 7/16/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | <0.001 | <0.0001 | 0.0002 | <0.001 | 0.008 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U-P1 | UID | 8/27/2007 | 0.002 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | <0.001 | <0.0001 | 0.0003 | <0.001 | 0.005 |
| U-R1 | UID | 7/11/2006 | 0.067 | <0.0004 | <0.0002 | 0.01 | 0.003 | <0.0004 | <0.05 | 0.126 | <0.0001 | 0.0007 | 0.009 | 0.024 |
| U-R1 | UID | 7/24/2006 | 0.125 | <0.0004 | <0.0002 | <0.01 | 0.005 | 0.0004 | <0.05 | 0.098 | 0.0001 | 0.0007 | 0.014 | 0.022 |
| U-R1 | UID | 8/8/2006 | 0.048 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.045 | <0.0001 | 0.0006 | 0.007 | 0.012 |
| U-R1 | UID | 8/21/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.014 | <0.0001 | 0.0006 | 0.002 | 0.009 |
| U-R1 | UID | 6/27/2007 | 0.064 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0005 | <0.05 | 0.058 | <0.0001 | 0.0006 | 0.009 | 0.025 |
| U-R1 | UID | 7/16/2007 | 0.066 | <0.0004 | <0.0002 | <0.01 | 0.004 | 0.0006 | <0.05 | 0.049 | <0.0001 | 0.0005 | 0.008 | 0.015 |
| U-R1 | UID | 8/13/2007 | 0.037 | <0.0004 | 0.0004 | <0.01 | 0.002 | 0.0004 | <0.05 | 0.027 | 0.0005 | 0.0006 | 0.004 | 0.011 |
| U-R1 | UID | 8/27/2007 | 0.045 | <0.0004 | <0.0002 | <0.01 | 0.004 | 0.0006 | <0.05 | 0.059 | <0.0001 | 0.0006 | 0.006 | 0.013 |
| U-R2 | UID | 7/11/2006 | 0.019 | <0.0004 | <0.0002 | 0.01 | <0.002 | <0.0004 | <0.05 | 0.048 | <0.0001 | 0.0006 | 0.004 | 0.021 |
| U-R2 | UID | 7/24/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.057 | <0.0001 | 0.0005 | 0.003 | 0.013 |
| U-R2 | UID | 8/8/2006 | 0.007 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0005 | 0.001 | 0.013 |
| U-R2 | UID | 8/21/2006 | 0.006 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.005 | <0.0001 | 0.0005 | 0.001 | 0.009 |
| U-R2 | UID | 6/27/2007 | 0.035 | <0.0004 | <0.0002 | <0.01 | 0.003 | 0.0004 | <0.05 | 0.044 | <0.0001 | 0.0005 | 0.007 | 0.037 |
| U-R2 | UID | 7/16/2007 | 0.025 | <0.0004 | <0.0002 | <0.01 | 0.002 | <0.0004 | <0.05 | 0.039 | <0.0001 | 0.0004 | 0.004 | 0.012 |
| U-R2 | UID | 8/13/2007 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.006 | <0.0001 | 0.0004 | 0.001 | 0.012 |
| U-R2 | UID | 8/27/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.007 | <0.0001 | 0.0004 | 0.002 | 0.005 |
| U-S1 | UID | 7/11/2006 | 0.052 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.033 | <0.0001 | 0.0004 | <0.001 | 0.014 |
| U-S1 | UID | 7/24/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.035 | <0.0001 | 0.0004 | <0.001 | 0.009 |
| U-S1 | UID | 8/8/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0004 | <0.001 | 0.006 |
| U-S1 | UID | 8/21/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.002 | <0.0001 | 0.0004 | <0.001 | 0.011 |
| U-S1 | UID | 6/27/2007 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.003 | <0.0001 | 0.0003 | <0.001 | 0.034 |
| U-S1 | UID | 7/16/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0013 | <0.05 | 0.001 | <0.0001 | 0.0003 | <0.001 | 0.005 |
| U-S1 | UID | 8/13/2007 | 0.011 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.003 | <0.0001 | 0.0003 | <0.001 | 0.006 |
| U-S1 | UID | 8/27/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | <0.0004 | <0.05 | 0.002 | <0.0001 | 0.0003 | <0.001 | <0.004 |
| AEP-P2 | WID | 7/5/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.034 | <0.0001 | 0.0009 | <0.001 | 0.015 |
| AEP-P2 | WID | 7/19/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0012 | <0.05 | 0.006 | <0.0001 | 0.0011 | 0.002 | <0.004 |
| AEP-P2 | WID | 8/17/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.004 | <0.0001 | 0.001 | <0.001 | 0.006 |
| AEP-P2 | WID | 8/30/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.002 | <0.0001 | 0.0008 | 0.001 | 0.005 |
| AEP-P2 | WID | 6/20/2007 | 0.054 | <0.0004 | <0.0002 | 0.02 | 0.003 | 0.0023 | <0.05 | 0.009 | <0.0001 | 0.0053 | 0.002 | 0.028 |
| AEP-P2 | WID | 7/11/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | 0.007 |
| AEP-P2 | WID | 8/8/2007 | 0.008 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0015 | <0.05 | 0.002 | <0.0001 | 0.0008 | <0.001 | 0.021 |
| AEP-P2 | WID | 8/22/2007 | 0.006 | <0.0004 | 0.0003 | <0.01 | <0.002 | 0.0008 | <0.05 | <0.001 | 0.0002 | 0.0009 | <0.001 | 0.008 |
| W-P1 | WID | 7/5/2006 | 0.011 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0013 | <0.05 | 0.037 | <0.0001 | 0.0015 | 0.001 | 0.012 |
| W-P1 | WID | 7/19/2006 | 0.039 | <0.0004 | <0.0002 | 0.03 | 0.003 | 0.0012 | <0.05 | 0.014 | <0.0001 | 0.0023 | 0.006 | <0.004 |
| W-P1 | WID | 8/17/2006 | 0.025 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.005 | <0.0001 | 0.0009 | 0.001 | 0.006 |
| W-P1 | WID | 8/30/2006 | 0.031 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.009 | <0.0001 | 0.0011 | 0.002 | <0.004 |
| W-P1 | WID | 6/20/2007 | 0.012 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0013 | <0.05 | 0.002 | <0.0001 | 0.0024 | <0.001 | 0.021 |
| W-P1 | WID | 7/11/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.003 | <0.0001 | 0.002 | <0.001 | <0.004 |
| W-P1 | WID | 8/8/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.004 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| W-P1 | WID | 8/22/2007 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.003 | <0.0001 | 0.0011 | <0.001 | <0.004 |
| W-P2 | WID | 7/5/2006 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0015 | <0.05 | 0.028 | <0.0001 | 0.0013 | 0.001 | 0.011 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-P2 | WID | 7/19/2006 | 0.018 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.008 | <0.0001 | 0.0012 | 0.002 | <0.004 |
| W-P2 | WID | 8/17/2006 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.004 | <0.0001 | 0.0007 | <0.001 | 0.062 |
| W-P2 | WID | 8/30/2006 | 0.024 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.004 | <0.0001 | 0.0008 | 0.001 | <0.004 |
| W-P2 | WID | 6/20/2007 | 0.02 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0014 | <0.05 | 0.002 | <0.0001 | 0.0024 | <0.001 | 0.013 |
| W-P2 | WID | 7/11/2007 | 0.015 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.003 | <0.0001 | 0.0019 | <0.001 | 0.006 |
| W-P2 | WID | 8/8/2007 | 0.02 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.003 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| W-P2 | WID | 8/22/2007 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.004 | <0.0001 | 0.001 | <0.001 | 0.007 |
| W-R2 | WID | 7/5/2006 | 0.14 | <0.0004 | <0.0002 | 0.03 | 0.005 | 0.0010 | <0.05 | 0.057 | 0.0003 | 0.0029 | 0.008 | 0.022 |
| W-R2 | WID | 7/19/2006 | 0.004 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.001 | <0.0001 | 0.0006 | <0.001 | 0.004 |
| W-R2 | WID | 8/17/2006 | 0.036 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0008 | <0.05 | 0.023 | 0.0002 | 0.0016 | 0.004 | 0.006 |
| W-R2 | WID | 8/30/2006 | 0.051 | <0.0004 | <0.0002 | 0.02 | <0.002 | 0.0010 | <0.05 | 0.023 | <0.0001 | 0.0016 | 0.004 | 0.005 |
| W-R2 | WID | 6/20/2007 | 0.038 | <0.0004 | <0.0002 | 0.05 | 0.006 | 0.0015 | <0.05 | 0.019 | <0.0001 | 0.0052 | 0.004 | 0.013 |
| W-R2 | WID | 7/11/2007 | 0.093 | <0.0004 | <0.0002 | 0.03 | 0.007 | <0.0004 | <0.05 | 0.062 | <0.0001 | 0.0026 | 0.009 | 0.013 |
| W-R2 | WID | 8/8/2007 | 0.077 | <0.0004 | <0.0002 | 0.01 | 0.004 | 0.0010 | <0.05 | 0.032 | <0.0001 | 0.0017 | 0.006 | 0.048 |
| W-R2 | WID | 8/22/2007 | 0.038 | <0.0004 | 0.0003 | <0.01 | 0.003 | 0.0009 | <0.05 | 0.025 | 0.0015 | 0.0016 | 0.003 | 0.009 |
| W-S1 | WID | 7/5/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.044 | <0.0001 | 0.0016 | 0.003 | 0.013 |
| W-S1 | WID | 7/19/2006 | 0.018 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.007 | <0.0001 | 0.0014 | 0.002 | <0.004 |
| W-S1 | WID | 8/17/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0004 | <0.05 | 0.004 | <0.0001 | 0.0009 | <0.001 | <0.004 |
| W-S1 | WID | 8/30/2006 | 0.016 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.008 | <0.0001 | 0.0012 | 0.002 | <0.004 |
| W-S1 | WID | 6/20/2007 | 0.046 | <0.0004 | <0.0002 | 0.01 | 0.003 | 0.0013 | <0.05 | 0.043 | <0.0001 | 0.004 | 0.003 | 0.026 |
| W-S1 | WID | 7/11/2007 | 0.015 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0008 | <0.05 | 0.007 | <0.0001 | 0.0021 | <0.001 | 0.005 |
| W-S1 | WID | 8/8/2007 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.006 | <0.0001 | 0.001 | <0.001 | <0.004 |
| W-S1 | WID | 8/22/2007 | 0.015 | <0.0004 | 0.0003 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.006 | <0.0001 | 0.0011 | <0.001 | 0.005 |
| W-S2 | WID | 7/5/2006 | 0.028 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.034 | 0.0002 | 0.0019 | 0.003 | 0.020 |
| W-S2 | WID | 7/19/2006 | 0.014 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.006 | <0.0001 | 0.0013 | 0.002 | 0.005 |
| W-S2 | WID | 8/17/2006 | 0.025 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0008 | <0.05 | 0.009 | 0.0002 | 0.0012 | 0.002 | 0.005 |
| W-S2 | WID | 8/30/2006 | 0.028 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.009 | <0.0001 | 0.0014 | 0.002 | <0.004 |
| W-S2 | WID | 6/20/2007 | 0.018 | <0.0004 | <0.0002 | 0.01 | 0.002 | 0.0011 | <0.05 | 0.003 | <0.0001 | 0.0028 | 0.001 | 0.010 |
| W-S2 | WID | 7/11/2007 | 0.021 | <0.0004 | 0.0002 | 0.01 | 0.002 | 0.0005 | <0.05 | 0.009 | <0.0001 | 0.0021 | 0.002 | 0.005 |
| W-S2 | WID | 8/8/2007 | 0.021 | <0.0004 | 0.0003 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.006 | 0.0001 | 0.0011 | 0.001 | 0.004 |
| W-S2 | WID | 8/22/2007 | 0.04 | <0.0004 | <0.0002 | <0.01 | 0.002 | 0.0010 | <0.05 | 0.020 | 0.0002 | 0.0013 | 0.003 | 0.010 |
| W-S3 | WID | 7/5/2006 | 0.026 | <0.0004 | <0.0002 | 0.01 | <0.002 | 0.0007 | <0.05 | 0.046 | 0.0002 | 0.0015 | 0.002 | 0.010 |
| W-S3 | WID | 7/19/2006 | 0.019 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0011 | <0.05 | 0.003 | <0.0001 | 0.001 | 0.001 | <0.004 |
| W-S3 | WID | 8/17/2006 | 0.021 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.010 | 0.0002 | 0.0009 | 0.002 | 0.006 |
| W-S3 | WID | 8/30/2006 | 0.027 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.013 | <0.0001 | 0.001 | 0.002 | <0.004 |
| W-S3 | WID | 6/20/2007 | 0.05 | <0.0004 | <0.0002 | 0.02 | 0.004 | 0.0015 | <0.05 | 0.019 | 0.0001 | 0.0036 | 0.003 | 0.023 |
| W-S3 | WID | 7/11/2007 | 0.023 | <0.0004 | 0.0004 | 0.01 | 0.003 | 0.0009 | <0.05 | 0.011 | 0.0001 | 0.0022 | 0.002 | 0.007 |
| W-S3 | WID | 8/8/2007 | 0.022 | <0.0004 | 0.0003 | <0.01 | <0.002 | 0.0009 | <0.05 | 0.012 | <0.0001 | 0.001 | 0.001 | 0.005 |
| W-S3 | WID | 8/22/2007 | 0.017 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0010 | <0.05 | 0.007 | <0.0001 | 0.0011 | 0.001 | 0.204 |
| W-S4 | WID | 7/5/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.037 | 0.0002 | 0.0013 | 0.002 | 0.008 |
| W-S4 | WID | 7/19/2006 | 0.012 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.005 | <0.0001 | 0.0007 | 0.001 | 0.005 |
| W-S4 | WID | 8/17/2006 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0005 | <0.05 | 0.009 | 0.0001 | 0.0008 | <0.001 | 0.005 |

**Appendix 3.5.** Metal concentrations (mg $L^{-1}$) in the 80 irrigation district study sites.

| CLIENTID | ID | DATE | Mn | Ag | Hg | Li | Ni | Se | Sn | Ti | Tl | U | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-S4 | WID | 8/30/2006 | 0.018 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0006 | <0.05 | 0.007 | <0.0001 | 0.001 | 0.001 | <0.004 |
| W-S4 | WID | 6/20/2007 | 0.035 | <0.0004 | <0.0002 | 0.01 | 0.004 | 0.0012 | <0.05 | 0.033 | <0.0001 | 0.002 | 0.004 | 0.028 |
| W-S4 | WID | 7/11/2007 | 0.012 | <0.0004 | <0.0002 | 0.01 | 0.003 | 0.0008 | <0.05 | 0.004 | <0.0001 | 0.002 | 0.002 | 0.047 |
| W-S4 | WID | 8/8/2007 | 0.01 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0014 | <0.05 | 0.003 | <0.0001 | 0.001 | <0.001 | 0.005 |
| W-S4 | WID | 8/22/2007 | 0.013 | <0.0004 | <0.0002 | <0.01 | <0.002 | 0.0007 | <0.05 | 0.002 | <0.0001 | 0.0011 | <0.001 | <0.004 |

**Appendix 4.** Median, Minimum, and Maximum Values for Selected Variables By Irrigation District and Site Type

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Aetna Irrigation District Primary site samples (n=8) and Return Flow site samples (n=8).

| | | Primary | | | Secondary | Return | | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | 0.025 | bd0.02 | 0.04 | | 0.02 | bd0.02 | 0.03 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | | bd0.01 | bd0.01 | 0.01 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | 0.06 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | bd0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | bd0.05 |
| **TKN** | mg $L^{-1}$ | 0.3 | 0.1 | 0.6 | | 0.3 | 0.2 | 0.4 |
| **TN** | mg $L^{-1}$ | 0.3 | 0.1 | 0.6 | | 0.35 | 0.2 | 0.46 |
| **TDS** | mg $L^{-1}$ | 116 | 99 | 141 | | 123.5 | 104 | 143 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 207 | 195 | 229 | | 216.5 | 204 | 237 |
| **SAR** | | 0.194 | 0.105 | 0.345 | | 0.241 | 0.124 | 0.339 |
| **Hardness** | mg $L^{-1}$ | 104 | 92 | 119 | | 106.5 | 95 | 153 |
| **$Cl^-$** | mg $L^{-1}$ | 0.4 | 0.2 | 0.5 | | 0.4 | 0.2 | 1.3 |
| **Total $Na^+$** | mg $L^{-1}$ | 4 | 2 | 6 | | 4 | 2 | 6 |
| **Total $K^+$** | mg $L^{-1}$ | 0.75 | 0.5 | 0.9 | | 0.8 | 0.4 | 1 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 22.05 | 17.5 | 23.9 | | 22.25 | 18.5 | 24.1 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 12.8 | 10.4 | 14.1 | | 12.8 | 10.3 | 14.6 |
| **Alkalinity** | mg $L^{-1}$ | 116 | 101 | 136 | | 121 | 106 | 133 |
| **$HCO_3^-$** | mg $L^{-1}$ | 127 | 97 | 141 | | 139.5 | 97 | 151 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 4.75 | 4.5 | 5.6 | | 4.95 | 4.5 | 7.9 |
| **Total coliforms** | MPN $100mL^{-1}$ | 1390 | 201 | >2420 | | 1160 | 201 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 99 | 40 | 272 | | 103.5 | 19 | 219 |
| **Total Suspended Solids** | mg $L^{-1}$ | 10.5 | bd3 | 22 | | 3 | bd3 | 4 |

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Bow River Irrigation District Primary site samples (n=16), Secondary site samples (n=40) and Return Flow site samples (n=44).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | 0.13 | bd0.02 | bd0.02 | 0.29 | 0.05 | bd0.02 | 0.15 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.08 | bd0.01 | bd0.01 | 0.17 | 0.01 | bd0.01 | 0.1 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.91 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.5 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.06 | bd0.05 | bd0.05 | 0.08 | bd0.05 | bd0.05 | bd0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.07 | bd0.05 | bd0.05 | 0.05 | bd0.05 | bd0.05 | 0.29 |
| **TKN** | mg $L^{-1}$ | 0.3 | bd0.1 | 0.6 | 0.5 | bd0.1 | 5.3 | 0.6 | 0.3 | 1.8 |
| **TN** | mg $L^{-1}$ | 0.51 | 0.3 | 1.11 | 0.5 | bd0.1 | 5.38 | 0.6 | 0.3 | 2.3 |
| **TDS** | mg $L^{-1}$ | 368 | 170 | 424 | 388 | 285 | 558 | 409 | 343 | 607 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 616 | 303 | 699 | 623.5 | 487 | 797 | 650 | 555 | 945 |
| **SAR** | | 1.61 | 0.26 | 2.63 | 1.88 | 0.93 | 2.99 | 1.95 | 1.73 | 2.68 |
| **Hardness** | mg $L^{-1}$ | 190 | 140 | 231 | 189.5 | 164 | 251 | 203 | 166 | 272 |
| **$Cl^-$** | mg $L^{-1}$ | 11.60 | 5.2 | 17.3 | 12.9 | 7.4 | 20.7 | 14.2 | 10.5 | 20.7 |
| **Total $Na^+$** | mg $L^{-1}$ | 49.5 | 6 | 67 | 51.5 | 27.9 | 89.1 | 54.85 | 42 | 91 |
| **Total $K^+$** | mg $L^{-1}$ | 3.3 | 1.1 | 4.2 | 4.0 | 1.87 | 10.3 | 4.55 | 3.28 | 7.2 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 42.6 | 37.1 | 49 | 36.75 | 21.8 | 47.2 | 35.95 | 22.7 | 53.6 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 22.1 | 11.9 | 27.1 | 24.3 | 18.5 | 36.3 | 26.1 | 19.5 | 38.8 |
| **Alkalinity** | mg $L^{-1}$ | 154 | 119 | 181 | 144 | 98 | 178 | 153 | 103 | 197 |
| **$HCO_3^-$** | mg $L^{-1}$ | 178 | 137 | 206 | 156 | 44 | 206 | 173.5 | 81 | 231 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 142 | 32.8 | 167 | 151.5 | 104 | 301 | 165.5 | 130 | 305 |
| **Total coliforms** | MPN $100mL^{-1}$ | 796 | 99 | >2420 | 841 | 50 | >2420 | >2420 | 201 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 15 | 1 | 687 | 9.5 | <1 | 248 | 111.5 | 3 | 980 |
| **Total Suspended Solids** | mg $L^{-1}$ | bd3 | bd3 | 14 | 3 | bd3 | 17 | 3.5 | bd3 | 31 |

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Eastern Irrigation District Primary site samples (n=8), Secondary site samples (n=48) and Return Flow site samples (n=40).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | 0.1 | bd0.02 | bd0.02 | 0.17 | bd0.02 | bd0.02 | 0.11 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.01 | bd0.01 | bd0.01 | 0.07 | bd0.01 | bd0.01 | 0.03 |
| **$NO_3$-N** | mg $L^{-1}$ | 0.365 | 0.19 | 0.56 | bd0.05 | bd0.05 | 0.52 | bd0.05 | bd0.05 | 0.07 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.09 | bd0.05 | bd0.05 | 0.31 | bd0.05 | bd0.05 | 0.11 |
| **TKN** | mg $L^{-1}$ | 0.15 | 0.1 | 2.5 | 0.3 | 0.1 | 2.1 | 0.3 | 0.1 | 0.7 |
| **TN** | mg $L^{-1}$ | 0.66 | 0.29 | 2.77 | 0.365 | 0.1 | 2.1 | 0.3 | 0.1 | 0.7 |
| **TDS** | mg $L^{-1}$ | 203.5 | 186 | 226 | 207 | 168 | 246 | 219.5 | 169 | 301 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 348 | 330 | 363 | 360 | 269 | 391 | 361.5 | 205 | 488 |
| **SAR** | | 0.477 | 0.348 | 0.676 | 0.653 | 0.330 | 1.031 | 0.685 | 0.403 | 1.541 |
| **Hardness** | mg $L^{-1}$ | 156 | 142 | 165 | 149 | 120 | 169 | 149 | 113 | 189 |
| **$Cl^-$** | mg $L^{-1}$ | 6.9 | 4.7 | 9.3 | 8.65 | 4.7 | 12.5 | 8.7 | 0.4 | 10.5 |
| **Total $Na^+$** | mg $L^{-1}$ | 11.5 | 10 | 13 | 14 | 9 | 24 | 16 | 11 | 33 |
| **Total $K^+$** | mg $L^{-1}$ | 1.6 | 1.1 | 2.3 | 1.9 | 1.1 | 2.8 | 1.9 | 1.2 | 2.9 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 37.85 | 35.6 | 45.2 | 32.35 | 19.8 | 40.4 | 31.55 | 19.1 | 43.8 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 13.9 | 12.6 | 14.3 | 15.9 | 12.3 | 19.7 | 16.05 | 13.5 | 18.9 |
| **Alkalinity** | mg $L^{-1}$ | 131 | 121 | 167 | 122 | 98 | 150 | 120 | 84 | 166 |
| **$HCO_3^-$** | mg $L^{-1}$ | 151.5 | 135 | 203 | 140 | 106 | 183 | 141 | 78 | 202 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 46.3 | 38.3 | 51 | 53.2 | 35.9 | 80.1 | 54.5 | 41.3 | 114 |
| **Total coliforms** | MPN 100$mL^{-1}$ | 507 | 240 | >2420 | 596 | 68 | >2420 | 1990 | 201 | >2420 |
| ***E. coli*** | MPN 100$mL^{-1}$ | 15 | 5 | 196 | 6 | 0.5 | 197 | 57.5 | 4 | >2420 |
| **Total Suspended Solids** | mg $L^{-1}$ | 3.5 | bd3 | 11 | bd3 | bd3 | 12 | bd3 | bd3 | 11 |

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Lethbridge Northern Irrigation District Primary site samples (n=8), Secondary site samples (n=40) and Return Flow site samples (n=16).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | bd0.02 | bd0.02 | bd0.02 | 0.05 | 0.075 | 0.03 | 0.19 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.01 | 0.01 | bd0.01 | 0.04 |
| **$NO_3$-N** | mg $L^{-1}$ | 0.065 | bd0.05 | 0.14 | bd0.05 | bd0.05 | 0.1 | bd0.05 | bd0.05 | bd0.05 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.06 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **TKN** | mg $L^{-1}$ | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.7 | 0.55 | 0.3 | 0.9 |
| **TN** | mg $L^{-1}$ | 0.135 | 0.1 | 0.29 | 0.3 | 0.1 | 0.7 | 0.55 | 0.3 | 0.9 |
| **TDS** | mg $L^{-1}$ | 149.5 | 119 | 179 | 167.5 | 120 | 203 | 187 | 159 | 213 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 274 | 237 | 284 | 279 | 224 | 346 | 322.5 | 282 | 369 |
| **SAR** | | 0.217 | 0.119 | 0.329 | 0.463 | 0.121 | 1.053 | 0.704 | 0.366 | 0.969 |
| **Hardness** | mg $L^{-1}$ | 132.5 | 119 | 139 | 125 | 98 | 149 | 134.5 | 118 | 172 |
| **$Cl^-$** | mg $L^{-1}$ | 0.7 | 0.3 | 1 | 1 | 0.3 | 2.1 | 1.55 | 1 | 2.1 |
| **Total $Na^+$** | mg $L^{-1}$ | 4.5 | 3 | 5 | 9 | 3 | 19 | 15.5 | 8.8 | 19 |
| **Total $K^+$** | mg $L^{-1}$ | 0.75 | 0.59 | 0.9 | 0.9 | 0.4 | 1.8 | 1.45 | 0.89 | 3.5 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 34.75 | 31.7 | 36.7 | 29.65 | 18.8 | 37.4 | 30.15 | 25 | 39.5 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 10.2 | 9.2 | 10.7 | 12 | 9.4 | 15.4 | 14.65 | 12.3 | 17.9 |
| **Alkalinity** | mg $L^{-1}$ | 131.5 | 100 | 152 | 126 | 92 | 151 | 128.5 | 104 | 148 |
| **$HCO_3^-$** | mg $L^{-1}$ | 149.5 | 108 | 171 | 136 | 73 | 169 | 146.5 | 97 | 162 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 17.05 | 13.4 | 19.5 | 31 | 15.9 | 62 | 42.65 | 30.1 | 60.4 |
| **Total coliforms** | MPN 100$mL^{-1}$ | 437.5 | 99 | 1120 | 728.5 | 111 | >2420 | >2420 | 201 | >2420 |
| ***E. coli*** | MPN 100$mL^{-1}$ | 22 | 4 | 161 | 16 | 0.5 | 261 | 195 | 70 | >2420 |
| **Total Suspended Solids** | mg $L^{-1}$ | 4 | bd3 | 9 | 4 | bd3 | 56 | 18 | 5 | 164 |

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Magrath Irrigation District Primary site samples including AEP-P1 (n=24), Secondary site samples including AEP-S1 and AEP-S2 (n=16) and Return Flow site samples (n=8).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | 0.01 | bd0.02 | 0.13 | bd0.02 | bd0.02 | bd0.02 | 0.05 | 0.03 | 0.1 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.04 | bd0.01 | bd0.01 | bd0.01 | 0.02 | 0.01 | 0.04 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.28 | bd0.05 | bd0.05 | 0.09 | 0.1075 | bd0.05 | 0.46 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.06 | bd0.05 | bd0.05 | bd0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **TKN** | mg $L^{-1}$ | 0.10 | 0.1 | 0.9 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.7 |
| **TN** | mg $L^{-1}$ | 0.19 | 0.1 | 0.9 | 0.1 | 0.1 | 0.23 | 0.445 | 0.1 | 1.16 |
| **TDS** | mg $L^{-1}$ | 124 | 89 | 161 | 108 | 89 | 137 | 272.5 | 165 | 555 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 219 | 172 | 275 | 199.5 | 177 | 211 | 435.5 | 297 | 821 |
| **SAR** | | 0.174 | 0.045 | 0.492 | 0.124 | 0.045 | 0.21 | 2.010 | 0.664 | 3.012 |
| **Hardness** | mg $L^{-1}$ | 104 | 89 | 129 | 98.8 | 90 | 120 | 163 | 129 | 252 |
| **$Cl^-$** | mg $L^{-1}$ | 0.4 | 0.2 | 1.2 | 0.3 | bd0.1 | 0.5 | 1.15 | 0.7 | 2.3 |
| **Total $Na^+$** | mg $L^{-1}$ | 4.0 | 1 | 11 | 2 | 1 | 3 | 40 | 16.4 | 88 |
| **Total $K^+$** | mg $L^{-1}$ | 0.6 | 0.30 | 2.2 | 0.5 | 0.3 | 0.6 | 1.4 | 0.8 | 3.9 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 24.8 | 20.8 | 31.1 | 24.1 | 21.3 | 25.5 | 37.5 | 28.5 | 52.3 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 9.6 | 7.0 | 11.9 | 8.7 | 7.4 | 9.6 | 17.5 | 14.2 | 34.1 |
| **Alkalinity** | mg $L^{-1}$ | 109 | 85 | 137 | 103 | 84 | 125 | 144.5 | 116 | 175 |
| **$HCO_3^-$** | mg $L^{-1}$ | 121 | 75 | 153 | 116 | 77 | 141 | 166.5 | 115 | 193 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 11.2 | 5.4 | 24.2 | 7.6 | 5.8 | 8.6 | 87.25 | 33.6 | 292 |
| **Total coliforms** | MPN $100mL^{-1}$ | 524 | 21 | >2420 | 310 | 112 | >2420 | >2420 | 201 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 6 | bd1 | 921 | 17.5 | 2 | 124 | 116 | 14 | 816 |
| **Total Suspended Solids** | mg $L^{-1}$ | bd3 | bd3 | 8 | 3 | bd3 | 6 | 11 | bd3 | 69 |

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Mountain View Irrigation District Primary site samples (n=8) and Return Flow site samples (n=8).

| | | Primary | | | Secondary | Return Flow | | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | 0.03 | bd0.02 | 0.04 | | 0.03 | bd0.02 | 0.07 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.01 | | bd0.01 | bd0.01 | 0.01 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | 0.06 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | 0.09 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | bd0.05 |
| **TKN** | mg $L^{-1}$ | 0.45 | 0.3 | 0.9 | | 0.5 | 0.3 | 0.9 |
| **TN** | mg $L^{-1}$ | 0.45 | 0.3 | 0.9 | | 0.5 | 0.3 | 0.9 |
| **TDS** | mg $L^{-1}$ | 112.5 | 89 | 154 | | 115 | 102 | 355 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 211.5 | 177 | 259 | | 217.5 | 193 | 546 |
| **SAR** | | 0.169 | 0.083 | 0.296 | | 0.203 | 0.102 | 0.376 |
| **Hardness** | mg $L^{-1}$ | 105.5 | 85 | 180 | | 115 | 96 | 279 |
| **$Cl^-$** | mg $L^{-1}$ | 0.3 | 0.2 | 0.6 | | 0.45 | 0.2 | 1.8 |
| **Total $Na^+$** | mg $L^{-1}$ | 3 | 2 | 5 | | 4 | 2 | 7 |
| **Total $K^+$** | mg $L^{-1}$ | 0.5 | bd0.5 | 1 | | 0.7 | bd0.5 | 3.4 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 22.25 | 14.8 | 34.3 | | 21.05 | 17.2 | 54.2 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 11.55 | 9.6 | 13.2 | | 13.55 | 11.6 | 32.1 |
| **Alkalinity** | mg $L^{-1}$ | 112.5 | 91 | 137 | | 117 | 101 | 312 |
| **$HCO_3^-$** | mg $L^{-1}$ | 118 | 95 | 167 | | 132.5 | 121 | 381 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 4.55 | 4.1 | 5.7 | | 4.1 | 3.4 | 9.8 |
| **Total coliforms** | MPN $100mL^{-1}$ | 674.5 | 201 | 2420 | | 1985 | 145 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 0.75 | <1 | 4 | | 137 | 62 | 517 |
| **Total Suspended Solids** | mg $L^{-1}$ | 3 | bd3 | 6 | | 6 | bd3 | 23 |

**Appendix 4.1** Median, minimums and maximums for nutrient, bacteria, physical and ionic variables for the Raymond Irrigation District Primary site samples (n=8) and Return Flow site samples (n=16).

| | | ----------Primary---------- | | | ----------Secondary--------- | ----------Return Flow---------- | | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | 0.03 | | 0.085 | 0.05 | 0.27 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | | 0.035 | 0.01 | 0.2 |
| **$NO_3$-N** | mg $L^{-1}$ | 0.0375 | bd0.05 | 0.54 | | bd0.05 | bd0.05 | 0.08 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.1 | | bd0.05 | bd0.05 | 0.06 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | | bd0.05 | bd0.05 | 0.09 |
| **TKN** | mg $L^{-1}$ | 0.1 | 0.1 | 0.3 | | 0.3 | 0.2 | 0.9 |
| **TN** | mg $L^{-1}$ | 0.15 | 0.1 | 0.74 | | 0.35 | 0.2 | 0.9 |
| **TDS** | mg $L^{-1}$ | 140.5 | 123 | 157 | | 187.5 | 139 | 318 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 232.5 | 224 | 280 | | 325.5 | 264 | 514 |
| **SAR** | | 0.291 | 0.179 | 0.618 | | 0.808 | 0.317 | 2.384 |
| **Hardness** | mg $L^{-1}$ | 115 | 100 | 129 | | 136.5 | 110 | 177 |
| **$Cl^-$** | mg $L^{-1}$ | 0.55 | 0.4 | 1.9 | | 1.6 | 0.6 | 3.2 |
| **Total $Na^+$** | mg $L^{-1}$ | 5 | 3.4 | 10 | | 15 | 7 | 40 |
| **Total $K^+$** | mg $L^{-1}$ | 0.9 | 0.7 | 1.4 | | 1.75 | 0.97 | 3.6 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 26.7 | 22.1 | 29.4 | | 30.25 | 24.4 | 36.2 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 10.1 | 9.3 | 11.8 | | 13.85 | 11.1 | 19 |
| **Alkalinity** | mg $L^{-1}$ | 113 | 101 | 133 | | 126 | 110 | 157 |
| **$HCO_3^-$** | mg $L^{-1}$ | 128.5 | 88 | 142 | | 147.5 | 104 | 175 |
| **$SO_4^{-2}$** | mg $L^{-1}$ | 18.05 | 12 | 30.5 | | 45.55 | 20.8 | 128 |
| **Total coliforms** | MPN 100$mL^{-1}$ | 786 | 118 | 1730 | | 2420 | 201 | >2420 |
| ***E. coli*** | MPN 100$mL^{-1}$ | 15.5 | 5 | 36 | | 266 | 77 | 1990 |
| **Total Suspended Solids** | mg $L^{-1}$ | 4.5 | bd3 | 9 | | 19.5 | 4 | 40 |

**Appendix 4.1.** Median, minimum and maximum values for nutrient, bacteria, physical and ionic variables for the St. Mary River Irrigation District Primary site samples (n=24), secondary site samples (n=39) and Return Flow site samples (n=55).

| | | ----------Primary---------- | | | ----------Secondary--------- | | | ----------Return Flow---------- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | 0.11 | 0.02 | bd0.02 | 0.18 | 0.03 | bd0.02 | 0.54 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.01 | bd0.01 | bd0.01 | 0.05 | bd0.01 | bd0.01 | 0.11 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.25 | bd0.05 | bd0.05 | 0.26 | bd0.05 | bd0.05 | 0.14 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.06 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.06 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.05 | bd0.05 | bd0.05 | 0.16 |
| **TKN** | mg $L^{-1}$ | 0.25 | 0.1 | 1.4 | 0.4 | 0.1 | 1.4 | 0.5 | 0.1 | 5 |
| **TN** | mg $L^{-1}$ | 0.25 | 0.1 | 1.4 | 0.4 | 0.1 | 1.4 | 0.5 | 0.1 | 5 |
| **TDS** | mg $L^{-1}$ | 169 | 120 | 213 | 201 | 124 | 270 | 217.5 | 97 | 356 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 278.5 | 216 | 352 | 330 | 217 | 425 | 354 | 183 | 525 |
| **Sodium Adsorption Ratio** | | 0.568 | 0.134 | 1.017 | 0.749 | 0.130 | 1.214 | 0.810 | 0.136 | 1.909 |
| **Hardness** | mg $L^{-1}$ | 124 | 104 | 174 | 138 | 103 | 200 | 145 | 86 | 215 |
| **Cl-** | mg $L^{-1}$ | 1 | 0.4 | 2.3 | 2 | 0.4 | 4.5 | 2.3 | 0.4 | 6.6 |
| **Total $Na^+$** | mg $L^{-1}$ | 10 | 3 | 19 | 16 | 3 | 24 | 20 | 3 | 42 |
| **Total $K^+$** | mg $L^{-1}$ | 1.25 | 0.7 | 2.6 | 1.9 | 0.7 | 3.7 | 2.7 | 0.7 | 5.8 |
| **Total $Ca2^+$** | mg $L^{-1}$ | 27.25 | 21.1 | 34.9 | 29.3 | 20.8 | 35.3 | 27.8 | 17.3 | 35.4 |
| **Total $Mg2^+$** | mg $L^{-1}$ | 11.95 | 9.4 | 16.8 | 14.4 | 9.4 | 19.8 | 16.7 | 9.8 | 25.8 |
| **Alkalinity** | mg $L^{-1}$ | 120.5 | 100 | 143 | 127 | 100 | 163 | 130 | 75 | 165 |
| **$HCO3^-$** | mg $L^{-1}$ | 136 | 114 | 175 | 145 | 74 | 199 | 136 | 59 | 200 |
| **$SO4^{-2}$** | mg $L^{-1}$ | 32 | 11.1 | 63.3 | 49.3 | 11.1 | 88.9 | 58.3 | 12.6 | 140 |
| **Total coliforms** | MPN $100mL^{-1}$ | 668 | 210 | >2420 | 866 | 148 | >2420 | >2420 | 56 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 8.5 | <1 | 68 | 12 | <1 | 326 | 84 | <1 | >2420 |
| **Total Suspended Solids** | mg $L^{-1}$ | 4.5 | bd3 | 22 | 6 | bd3 | 32 | 8 | bd3 | 67 |

**Appendix 4.1.** Median, minimum and maximum values for nutrient, bacteria, physical and ionic variables for the Taber Irrigation District Primary site samples (n=8), secondary site samples (n=24) and Return Flow site samples (n=16).

| | | ----------Primary---------- | | | ----------Secondary--------- | | | ----------Return Flow---------- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | bd0.02 | 0.025 | bd0.02 | 0.1 | 0.04 | bd0.02 | 0.07 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.03 | bd0.01 | bd0.01 | 0.03 |
| **$NO_3$+$NO_2$-N** | mg $L^{-1}$ | 0.03 | 0.025 | 0.035 | 0.03 | 0.025 | 0.035 | 0.03 | 0.025 | 0.035 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.05 | bd0.05 | bd0.05 | 0.07 |
| **TKN** | mg $L^{-1}$ | 0.1 | 0.1 | 0.3 | 0.6 | 0.1 | 1.1 | 0.6 | 0.4 | 0.9 |
| **TN** | mg $L^{-1}$ | 0.1 | 0.1 | 0.3 | 0.6 | 0.1 | 1.1 | 0.6 | 0.4 | 0.9 |
| **TDS** | mg $L^{-1}$ | 173 | 144 | 218 | 193.5 | 145 | 396 | 208 | 176 | 421 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 281 | 258 | 348 | 298 | 197 | 600 | 329 | 198 | 643 |
| **Sodium Adsorption Ratio** | | 0.522 | 0.276 | 0.905 | 0.846 | 0.281 | 2.407 | 1.282 | 0.574 | 2.464 |
| **Hardness** | mg $L^{-1}$ | 127.5 | 115 | 178 | 126 | 92.8 | 182 | 128 | 104 | 198 |
| **Cl-** | mg $L^{-1}$ | 0.95 | 0.7 | 2.2 | 1.85 | 0.7 | 6.4 | 2.85 | 1.5 | 6.8 |
| **Total $Na^+$** | mg $L^{-1}$ | 9.5 | 7 | 17 | 18 | 7 | 57 | 23.5 | 14 | 62 |
| **Total $K^+$** | mg $L^{-1}$ | 1.2 | 1 | 1.8 | 2.05 | 1 | 3.4 | 2.35 | 1.5 | 3.4 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 29.8 | 27.5 | 34.3 | 23 | 14 | 34.4 | 22 | 16.3 | 30.5 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 11.8 | 10.7 | 14.9 | 14.85 | 11.1 | 25.7 | 16.7 | 14.1 | 31.7 |
| **Alkalinity** | mg $L^{-1}$ | 125.5 | 110 | 135 | 117 | 81 | 146 | 113 | 90 | 150 |
| **$HCO_3^-$** | mg $L^{-1}$ | 145 | 130 | 163 | 136 | 55 | 162 | 116 | 76 | 170 |
| **$SO4^{-2}$** | mg $L^{-1}$ | 30.3 | 23.2 | 67.2 | 53.35 | 23 | 207 | 73.55 | 41.5 | 222 |
| **Total coliforms** | MPN $100mL^{-1}$ | 1113 | 99 | >2420 | 1640 | 154 | >2420 | >2420 | 201 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 108.5 | 1 | 649 | 42 | 4 | 770 | 33 | 7 | 179 |
| **Total Suspended Solids** | mg $L^{-1}$ | bd3 | bd3 | 5 | 3 | bd3 | 9 | 3 | bd3 | 6 |

**Appendix 4.1.** Median, minimum and maximum values for nutrient, bacteria, physical and ionic variables for the United Irrigation District Primary site samples (n=8), secondary site samples (n=8) and Return Flow site samples (n=16).

| | | ----------Primary---------- | | | ----------Secondary--------- | | | ----------Return Flow---------- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | bd0.02 | bd0.02 | bd0.02 | bd0.02 | bd0.02 | 0.03 | 0.06 | 0.03 | 0.13 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.01 | 0.02 | 0.01 | 0.03 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.1 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.07 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.1 | bd0.05 | bd0.05 | bd0.05 |
| **TKN** | mg $L^{-1}$ | 0.1 | 0.1 | 0.1 | 0.15 | 0.1 | 0.3 | 0.3 | 0.2 | 0.5 |
| **TN** | mg $L^{-1}$ | 0.1 | 0.1 | 0.2 | 0.15 | 0.1 | 0.3 | 0.3 | 0.2 | 0.57 |
| **TDS** | mg $L^{-1}$ | 116.5 | 91 | 151 | 110.5 | 93 | 130 | 126.5 | 104 | 152 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 215.5 | 177 | 236 | 199.5 | 180 | 214 | 228.5 | 198 | 274 |
| **Sodium Adsorption Ratio** | | 0.073 | 0.045 | 0.136 | 0.113 | 0.083 | 0.195 | 0.159 | 0.086 | 0.292 |
| **Hardness** | mg $L^{-1}$ | 111.5 | 90 | 116 | 101.5 | 93 | 124 | 113 | 104 | 131 |
| **$Cl^-$** | mg $L^{-1}$ | 0.25 | bd0.1 | 0.4 | 0.25 | bd0.1 | 0.3 | 0.35 | bd0.1 | 0.6 |
| **Total $Na^+$** | mg $L^{-1}$ | 1.5 | 1 | 2 | 2 | 1 | 3 | 3 | 2 | 5 |
| **Total $K^+$** | mg $L^{-1}$ | 0.4 | bd0.5 | 0.5 | 0.5 | bd0.5 | 0.9 | 1.25 | 0.7 | 2.5 |
| **Total $Ca^{2+}$** | mg $L^{-1}$ | 25.55 | 20.8 | 27.3 | 22.75 | 20.7 | 24.5 | 26.45 | 23.7 | 35.9 |
| **Total $Mg^{2+}$** | mg $L^{-1}$ | 9.9 | 7.9 | 10.9 | 9.75 | 8.2 | 10.8 | 12.05 | 9.7 | 14.5 |
| **Alkalinity** | mg $L^{-1}$ | 115.5 | 90 | 139 | 107.5 | 89 | 124 | 117.5 | 98 | 139 |
| **$HCO_3^-$** | mg $L^{-1}$ | 123 | 96 | 163 | 118 | 73 | 135 | 120.5 | 73 | 151 |
| **$SO4^{-2}$** | mg $L^{-1}$ | 6.1 | 4.5 | 7.1 | 7.7 | 5.7 | 10.6 | 11.55 | 6.8 | 17 |
| **Total coliforms** | MPN $100mL^{-1}$ | 169.5 | 51 | 579 | 430 | 120 | >2420 | >2420 | 201 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 37.5 | 4 | 141 | 3.5 | 0.5 | 9 | 90 | 16 | 579 |
| **Total Suspended Solids** | mg $L^{-1}$ | bd3 | bd3 | 3 | bd3 | bd3 | 4 | 25.5 | bd3 | 109 |

**Appendix 4.1.** Median, minimum and maximum values for nutrient, bacteria, physical and ionic variables for the Western Irrigation District Primary site samples (n=16), secondary site samples (n=32) and Return Flow site samples (n=8).

| | | ----------Primary---------- | | | ----------Secondary--------- | | | ----------Return Flow---------- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **TP** | mg $L^{-1}$ | 0.02 | bd0.02 | 0.33 | 0.03 | bd0.02 | 0.49 | 0.09 | bd0.02 | 0.31 |
| **DRP** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.24 | bd0.01 | bd0.01 | 0.31 | bd0.01 | bd0.01 | 0.14 |
| **$NO_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.40 | bd0.05 | bd0.05 | 2.78 | bd0.05 | bd0.05 | 0.56 |
| **$NO_2$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | bd0.05 | 0.05 |
| **$NH_3$-N** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.07 | bd0.05 | bd0.05 | 0.11 | bd0.05 | bd0.05 | bd0.05 |
| **TKN** | mg $L^{-1}$ | 0.30 | 0.10 | 1.7 | 0.4 | 0.2 | 2.0 | 0.55 | 0.1 | 1.3 |
| **TN** | mg $L^{-1}$ | 0.30 | 0.10 | 2.1 | 0.4 | 0.2 | 4.0 | 0.63 | 0.4 | 1.7 |
| **TDS** | mg $L^{-1}$ | 238.5 | 185 | 691 | 248 | 177 | 977 | 359.5 | 191 | 909 |
| **Electrical Conductivity** | µS $cm^{-1}$ | 379.5 | 197 | 1070 | 420 | 199 | 1480 | 543.5 | 336 | 1430 |
| **Sodium Adsorption Ratio** | | 0.84 | 0.32 | 3.87 | 1.18 | 0.42 | 5.23 | 2.51 | 0.46 | 4.30 |
| **Hardness** | mg $L^{-1}$ | 155 | 137 | 307 | 154.5 | 127 | 342 | 183.5 | 159 | 345 |
| **Cl-** | mg $L^{-1}$ | 9.7 | 5.0 | 65 | 12.9 | 5.2 | 60.5 | 12.7 | 7.5 | 56.5 |
| **Total $Na^+$** | mg $L^{-1}$ | 19.5 | 8 | 132 | 26 | 8 | 211 | 57.5 | 9 | 182 |
| **Total $K^+$** | mg $L^{-1}$ | 1.35 | 0.8 | 7.4 | 1.6 | 0.8 | 12.9 | 3.1 | 1.2 | 8 |
| **Total $Ca2^+$** | mg $L^{-1}$ | 36.35 | 25.4 | 53 | 33.1 | 24.2 | 59.7 | 38.4 | 36.3 | 66.2 |
| **Total $Mg2^+$** | mg $L^{-1}$ | 15.45 | 13.3 | 39.9 | 16.6 | 13.4 | 37.2 | 19.7 | 13.1 | 41.3 |
| **Alkalinity** | mg $L^{-1}$ | 126 | 96 | 352 | 119 | 67 | 238 | 162.5 | 119 | 245 |
| **$HCO3^-$** | mg $L^{-1}$ | 143 | 97 | 375 | 136.5 | 82 | 278 | 189 | 145 | 270 |
| **$SO4^{-2}$** | mg $L^{-1}$ | 63.6 | 41.4 | 268 | 77.4 | 41.2 | 467 | 137 | 39.8 | 425 |
| **Total coliforms** | MPN $100mL^{-1}$ | 1550 | 387 | >2420 | 1300 | 201 | >2420 | >2420 | 201 | >2420 |
| ***E. coli*** | MPN $100mL^{-1}$ | 15 | <1 | 161 | 91 | 23 | >2420 | 141 | 70 | 687 |
| **Total Suspended Solids** | mg $L^{-1}$ | 5 | bd3 | 70 | 6 | bd3 | 23 | 13 | bd3 | 47 |

**Appendix 4.2.** Median, minimums and maximums for metal and pesticide variables for the Aetna Irrigation District Primary (n=8) and Return Flow sites (n=8).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.97 | 0.32 | 1.43 | | | | 0.45 | 0.24 | 0.83 |
| **Arsenic** | mg $L^{-1}$ | 0.0013 | 0.0012 | 0.0017 | | | | 0.0014 | 0.0014 | 0.0018 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.15 | | | | bd0.05 | bd0.05 | 0.15 |
| **Copper** | mg $L^{-1}$ | 0.001 | bd0.001 | 0.002 | | | | 0.00075 | bd0.001 | 0.002 |
| **Iron** | mg $L^{-1}$ | 0.6385 | 0.249 | 0.973 | | | | 0.2965 | 0.167 | 0.481 |
| **Lead** | mg $L^{-1}$ | 0.00035 | 0.0002 | 0.0006 | | | | 0.0002 | 0.0001 | 0.0003 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | | | | bd0.01 | bd0.01 | bd0.01 |
| **Manganese** | mg $L^{-1}$ | 0.0255 | 0.014 | 0.032 | | | | 0.0115 | 0.005 | 0.017 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | bd0.002 | | | | bd0.002 | bd0.002 | bd0.002 |
| **Selenium** | mg $L^{-1}$ | 0.0003 | bd0.0004 | 0.0009 | | | | 0.00035 | bd0.0004 | 0.0008 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | | | | bd0.0001 | bd0.0001 | 0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.0195 | 0.006 | 0.067 | | | | 0.0125 | 0.005 | 0.05 |
| **Uranium** | mg $L^{-1}$ | 0.0004 | 0.0003 | 0.0005 | | | | 0.0004 | 0.0003 | 0.0006 |
| **Vanadium** | mg $L^{-1}$ | 0.003 | 0.001 | 0.004 | | | | 0.002 | bd0.001 | 0.003 |
| **Zinc** | mg $L^{-1}$ | 0.007 | 0.004 | 0.023 | | | | 0.0125 | 0.005 | 0.016 |
| **2,4-D** | µg $L^{-1}$ | 0.082 | 0 | 0.216 | | | | 0.084 | 0 | 0.212 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0.021 | 0 | 0.087 | | | | 0.029 | 0 | 0.064 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |

**Appendix 4.2.** Median, minimums and maximums for selected metal and pesticide variables for the Bow River Irrigation District Primary (n=16), Secondary (n=48) and Return Flow sites (n=44), including AEP-P3 and AEP-S2.

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.07 | bd0.01 | 2.74 | 0.09 | bd0.01 | 0.40 | 0.085 | bd0.01 | 1.53 |
| **Arsenic** | mg $L^{-1}$ | 0.0011 | bd0.0004 | 0.0032 | 0.0014 | bd0.0004 | 0.0091 | 0.0019 | bd0.0004 | 0.0032 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.21 | bd0.05 | bd0.05 | 0.21 | bd0.05 | bd0.05 | 0.19 |
| **Copper** | mg $L^{-1}$ | 0.001 | bd0.001 | 0.003 | 0.001 | bd0.001 | 0.003 | 0.0015 | bd0.001 | 0.003 |
| **Iron** | mg $L^{-1}$ | 0.048 | 0.015 | 0.196 | 0.083 | 0.018 | 0.354 | 0.115 | 0.019 | 1.610 |
| **Lead** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0002 | bd0.0001 | bd0.0001 | 0.0007 | 0.0001 | bd0.0001 | 0.0009 |
| **Lithium** | mg $L^{-1}$ | 0.01 | bd0.01 | 0.02 | 0.01 | bd0.01 | 0.05 | 0.02 | 0.01 | 0.04 |
| **Manganese** | mg $L^{-1}$ | 0.006 | 0.002 | 0.047 | 0.015 | 0.002 | 0.056 | 0.025 | 0.004 | 0.084 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | 0.003 | bd0.002 | bd0.002 | 0.003 | bd0.002 | bd0.002 | 0.005 |
| **Selenium** | mg $L^{-1}$ | 0.0007 | bd0.0004 | 0.01 | 0.0008 | bd0.0004 | 0.0017 | 0.0008 | bd0.0004 | 0.0018 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0001 | bd0.0001 | bd0.0001 | 0.0003 | bd0.0001 | bd0.0001 | 0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.002 | bd0.001 | 0.054 | 0.003 | 0.0005 | 0.039 | 0.0075 | bd0.001 | 0.056 |
| **Uranium** | mg $L^{-1}$ | 0.0015 | bd0.001 | 0.0019 | 0.0016 | 0.0009 | 0.0020 | 0.0016 | 0.0006 | 0.0027 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.006 | bd0.001 | bd0.001 | 0.005 | bd0.001 | bd0.001 | 0.005 |
| **Zinc** | mg $L^{-1}$ | 0.007 | bd0.004 | 0.036 | 0.006 | bd0.004 | 0.016 | 0.008 | bd0.004 | 0.030 |
| **2,4-D** | µg $L^{-1}$ | 0.069 | 0 | 0.148 | 0.044 | 0 | 0.526 | 0.120 | 0.034 | 1.284 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.234 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.039 | 0 | 0 | 0.060 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0.016 | 0 | 0 | 0.123 | 0.022 | 0 | 0.283 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.016 | 0 | 0 | 0.098 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0.074 | 0.035 | 0 | 0.072 | 0 | 0 | 0.288 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.042 | 0 | 0 | 0.076 |

**Appendix 4.2.** Median, minimums and maximums for selected metal and pesticide variables for the Eastern Irrigation District Primary (n=8), Secondary (n=48) and Return Flow sites (n=40).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.305 | 0.13 | 2.71 | 0.075 | bd0.01 | 0.32 | 0.05 | bd0.01 | 0.74 |
| **Arsenic** | mg $L^{-1}$ | 0.0006 | 0.0005 | 0.013 | 0.0012 | 0.0005 | 0.0065 | 0.0012 | 0.0008 | 0.0027 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.15 | bd0.05 | bd0.05 | 0.15 | bd0.05 | bd0.05 | 0.16 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.006 | bd0.001 | bd0.001 | 0.021 | bd0.001 | bd0.001 | 0.008 |
| **Iron** | mg $L^{-1}$ | 0.253 | 0.101 | 2.22 | 0.062 | 0.017 | 0.262 | 0.064 | 0.013 | 0.711 |
| **Lead** | mg $L^{-1}$ | 0.0002 | 0.0001 | 0.0014 | bd0.0001 | bd0.0001 | 0.0003 | bd0.0001 | bd0.0001 | 0.0022 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.01 | bd0.01 | bd0.01 | 0.03 |
| **Manganese** | mg $L^{-1}$ | 0.0145 | 0.008 | 0.045 | 0.015 | 0.008 | 0.191 | 0.015 | 0.005 | 0.072 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | 0.004 | bd0.002 | bd0.002 | 0.005 | bd0.002 | bd0.002 | 0.004 |
| **Selenium** | mg $L^{-1}$ | 0.0008 | bd0.0004 | 0.0012 | 0.0006 | bd0.0004 | 0.0012 | 0.0006 | bd0.0004 | 0.0013 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0006 | bd0.0001 | bd0.0001 | 0.0021 | bd0.0001 | bd0.0001 | 0.0003 |
| **Titanium** | mg $L^{-1}$ | 0.008 | 0.003 | 0.038 | 0.002 | bd0.001 | 0.032 | 0.0015 | bd0.001 | 0.042 |
| **Uranium** | mg $L^{-1}$ | 0.0007 | 0.0006 | 0.0009 | 0.0007 | 0.0006 | 0.0009 | 0.0008 | 0.0006 | 0.0014 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.007 | bd0.001 | bd0.001 | 0.004 | bd0.001 | bd0.001 | 0.002 |
| **Zinc** | mg $L^{-1}$ | 0.012 | bd0.004 | 0.031 | 0.007 | bd0.004 | 0.022 | 0.008 | bd0.004 | 0.043 |
| **2,4-D** | µg $L^{-1}$ | 0.044 | 0 | 0.203 | 0.048 | 0 | 0.369 | 0.054 | 0 | 0.819 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.024 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.010 | 0 | 0 | 0.006 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0.325 | 0 | 0 | 0.130 | 0.042 | 0 | 2.070 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0.071 | 0 | 0 | 0.114 | 0 | 0 | 0.056 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.046 | 0 | 0 | 0.054 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.022 |

**Appendix 4.2.** Median, minimums and maximums for selected metal and pesticide variables for the Lethbridge Northern Irrigation District Primary site samples (n=8), Secondary site samples (n=40) and Return Flow site samples (n=16).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.23 | 0.13 | 0.54 | 0.18 | 0.04 | 2.99 | 0.80 | 0.23 | 7.42 |
| **Arsenic** | mg $L^{-1}$ | 0.0002 | bd0.0004 | 0.0004 | 0.0015 | bd0.0004 | 0.0038 | 0.0025 | 0.0018 | 0.0038 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.16 | bd0.05 | bd0.05 | 0.18 | bd0.05 | bd0.05 | 0.24 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.002 | 0.001 | bd0.001 | 0.004 | 0.003 | 0.001 | 0.007 |
| **Iron** | mg $L^{-1}$ | 0.134 | 0.072 | 0.347 | 0.128 | 0.038 | 2.82 | 0.718 | 0.226 | 6.32 |
| **Lead** | mg $L^{-1}$ | 0.0001 | bd0.0001 | 0.0002 | 0.0001 | bd0.0001 | 0.0014 | 0.0004 | 0.0001 | 0.0033 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.05 | bd0.01 | bd0.01 | 0.02 |
| **Manganese** | mg $L^{-1}$ | 0.004 | 0.003 | 0.008 | 0.016 | 0.004 | 0.055 | 0.040 | 0.019 | 0.17 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | bd0.002 | bd0.002 | bd0.002 | 0.005 | bd0.002 | bd0.002 | 0.009 |
| **Selenium** | mg $L^{-1}$ | 0.0007 | bd0.0004 | 0.0019 | 0.0007 | bd0.0004 | 0.010 | 0.0007 | bd0.0004 | 0.0014 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | 0.0010 | bd0.0001 | bd0.0001 | 0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.005 | 0.003 | 0.040 | 0.008 | 0.001 | 0.062 | 0.046 | 0.006 | 0.141 |
| **Uranium** | mg $L^{-1}$ | 0.0004 | 0.0003 | 0.0004 | 0.0006 | 0.0003 | 0.0010 | 0.0009 | 0.0006 | 0.0015 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.002 | 0.001 | bd0.001 | 0.010 | 0.004 | 0.001 | 0.018 |
| **Zinc** | mg $L^{-1}$ | 0.006 | bd0.004 | 0.022 | 0.008 | bd0.004 | 0.050 | 0.0115 | bd0.004 | 0.056 |
| **2,4-D** | µg $L^{-1}$ | 0 | 0 | 0.024 | 0.046 | 0 | 0.263 | 0.082 | 0.023 | 0.354 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.025 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.058 | 0 | 0 | 0.043 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0.012 | 0 | 0 | 0 | 0 | 0 | 0 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.075 | 0 | 0 | 0.036 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Appendix 4.2** Median, minimums and maximums for selected metal and pesticide variables for the Magrath Irrigation District Primary site samples (n=24), Secondary sites (n=16) and Return Flow site samples (n=8), including sites AEP-P1, AEP-S1 and AEP-S2.

| | | Primary | | | Secondary | | | Return | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.14 | 0.03 | 1.00 | 0.15 | 0.04 | 0.52 | 0.57 | 0.02 | 3.62 |
| **Arsenic** | mg $L^{-1}$ | 0.0006 | bd0.0004 | 0.002 | 0.0005 | bd0.0004 | 0.0006 | 0.0007 | bd0.0004 | 0.0010 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.21 | bd0.05 | bd0.05 | 0.19 | bd0.05 | bd0.05 | 0.49 |
| **Copper** | mg $L^{-1}$ | 0.001 | bd0.001 | 0.083 | bd0.001 | bd0.001 | 0.002 | 0.002 | bd0.001 | 0.004 |
| **Iron** | mg $L^{-1}$ | 0.103 | bd0.05 | 0.838 | 0.109 | 0.034 | 0.305 | 0.615 | 0.148 | 2.850 |
| **Lead** | mg $L^{-1}$ | 0.0001 | bd0.0001 | 0.0013 | bd0.0001 | bd0.0001 | 0.0002 | 0.0002 | bd0.0001 | 0.0017 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.02 |
| **Manganese** | mg $L^{-1}$ | 0.003 | 0.001 | 0.037 | 0.005 | 0.002 | 0.01 | 0.016 | 0.009 | 0.107 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | 0.002 | 0.001 | bd0.002 | bd0.002 | bd0.002 | bd0.002 | 0.004 |
| **Selenium** | mg $L^{-1}$ | 0.0004 | bd0.0004 | 0.0011 | bd0.0004 | bd0.0004 | 0.0009 | 0.0017 | bd0.0004 | 0.0031 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0006 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | 0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.005 | bd0.001 | 0.042 | bd0.001 | bd0.001 | 0.04 | 0.018 | bd0.001 | 0.094 |
| **Uranium** | mg $L^{-1}$ | 0.0004 | 0.0002 | 0.0009 | 0.0003 | 0.0002 | 0.0004 | 0.0017 | 0.0009 | 0.0041 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.004 | bd0.001 | bd0.001 | 0.001 | 0.002 | bd0.001 | 0.009 |
| **Zinc** | mg $L^{-1}$ | 0.008 | bd0.004 | 0.118 | 0.008 | bd0.004 | 0.026 | 0.011 | bd0.004 | 0.025 |
| **2,4-D** | µg $L^{-1}$ | 0.025 | 0 | 0.126 | 0 | 0 | 0.526 | 0.045 | 0 | 0.090 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.061 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.136 | 0 | 0 | 0.184 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.024 | 0 | 0 | 0 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0.050 | 0 | 0 | 0 | 0 | 0 | 0.121 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.015 |

**Appendix 4.2** Median, minimums and maximums for metals variables for the Mountain View Irrigation District Primary site samples (n=8) and Return Flow site samples (n=8).

| | | Primary | | | Secondary | | | Return | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.09 | 0.03 | 0.11 | | | | 0.42 | 0.08 | 1.71 |
| **Arsenic** | mg $L^{-1}$ | 0.0011 | 0.0009 | 0.0014 | | | | 0.0013 | 0.0010 | 0.0023 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.14 | | | | bd0.05 | bd0.05 | 0.19 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | bd0.001 | | | | 0.0008 | bd0.001 | 0.002 |
| **Iron** | mg $L^{-1}$ | 0.112 | 0.061 | 0.174 | | | | 0.492 | 0.19 | 1.23 |
| **Lead** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0001 | | | | 0.0002 | bd0.0001 | 0.0007 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | | | | bd0.01 | bd0.01 | 0.01 |
| **Manganese** | mg $L^{-1}$ | 0.042 | 0.03 | 0.144 | | | | 0.012 | 0.006 | 0.107 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | bd0.002 | | | | bd0.002 | bd0.002 | 0.002 |
| **Selenium** | mg $L^{-1}$ | bd0.0004 | bd0.0004 | 0.0009 | | | | 0.0004 | bd0.0004 | 0.0008 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | | | | bd0.0001 | bd0.0001 | bd0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.003 | 0.001 | 0.033 | | | | 0.009 | 0.003 | 0.055 |
| **Uranium** | mg $L^{-1}$ | 0.0003 | 0.0002 | 0.0004 | | | | 0.0004 | 0.0003 | 0.0014 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | bd0.001 | | | | 0.0015 | bd0.001 | 0.005 |
| **Zinc** | mg $L^{-1}$ | 0.012 | bd0.004 | 0.021 | | | | 0.0105 | 0.005 | 0.018 |
| **2,4-D** | µg $L^{-1}$ | 0.023 | 0 | 0.062 | | | | 0.042 | 0 | 0.048 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0.013 | | | | 0 | 0 | 0 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |

**Appendix 4.2** Median, minimums and maximums for selected metal and pesticide variables for the Raymond Irrigation District Primary site samples (n=8) and Return Flow site samples (n=16).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.18 | 0.13 | 0.31 | | | | 1.35 | 0.45 | 2.55 |
| **Arsenic** | mg $L^{-1}$ | 0.0008 | 0.0006 | 0.0008 | | | | 0.0016 | 0.0010 | 0.0025 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.17 | | | | bd0.05 | bd0.05 | 0.20 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.002 | | | | 0.002 | 0.001 | 0.004 |
| **Iron** | mg $L^{-1}$ | 0.139 | 0.098 | 0.241 | | | | 1.050 | 0.454 | 2.040 |
| **Lead** | mg $L^{-1}$ | 0.0001 | bd0.0001 | 0.0002 | | | | 0.0006 | 0.0003 | 0.0012 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | | | | bd0.01 | bd0.01 | 0.01 |
| **Manganese** | mg $L^{-1}$ | 0.009 | 0.008 | 0.012 | | | | 0.035 | 0.017 | 0.093 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | bd0.002 | | | | bd0.002 | bd0.002 | 0.003 |
| **Selenium** | mg $L^{-1}$ | 0.0006 | 0.0004 | 0.0015 | | | | 0.0008 | 0.0005 | 0.0091 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | | | | bd0.0001 | bd0.0001 | 0.0004 |
| **Titanium** | mg $L^{-1}$ | 0.005 | 0.003 | 0.039 | | | | 0.034 | 0.016 | 0.074 |
| **Uranium** | mg $L^{-1}$ | 0.0005 | 0.0003 | 0.0008 | | | | 0.0010 | 0.0006 | 0.0016 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.002 | | | | 0.004 | 0.003 | 0.006 |
| **Zinc** | mg $L^{-1}$ | 0.007 | bd0.004 | 0.016 | | | | 0.010 | bd0.004 | 0.022 |
| **2,4-D** | µg $L^{-1}$ | 0.057 | 0.025 | 0.164 | | | | 0.125 | 0 | 0.634 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0.027 | | | | 0 | 0 | 0.056 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0.049 | | | | 0 | 0 | 0.070 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | | | | 0 | 0 | 0.023 |

**Appendix 4.2.** Median, minimum and maximum values for selected metal and pesticide variables for the St. Mary River Irrigation District Primary site samples (n=24), Secondary site samples (n=39) and Return Flow site samples (n=55).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.19 | 0.05 | 0.72 | 0.21 | 0.02 | 1.67 | 0.22 | 0.01 | 2.84 |
| **Arsenic** | mg $L^{-1}$ | 0.0009 | 0.0005 | 0.0032 | 0.0014 | 0.0005 | 0.030 | 0.0017 | 0.0006 | 0.080 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.25 | bd0.05 | bd0.05 | 0.15 | bd0.05 | bd0.05 | 0.17 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.002 | 0.001 | bd0.001 | 0.003 | 0.001 | bd0.001 | 0.004 |
| **Iron** | mg $L^{-1}$ | 0.146 | 0.047 | 0.649 | 0.189 | 0.019 | 1.11 | 0.197 | 0.026 | 2.440 |
| **Lead** | mg $L^{-1}$ | 0.0001 | bd0.0001 | 0.0004 | 0.0001 | bd0.0001 | 0.0006 | 0.0001 | bd0.0001 | 0.0015 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.01 | bd0.01 | bd0.01 | 0.01 | 0.01 | bd0.01 | 0.02 |
| **Manganese** | mg $L^{-1}$ | 0.014 | 0.008 | 0.104 | 0.019 | 0.009 | 0.221 | 0.024 | 0.009 | 0.205 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | 0.009 | bd0.002 | bd0.002 | 0.002 | bd0.002 | bd0.002 | 0.003 |
| **Selenium** | mg $L^{-1}$ | 0.0004 | bd0.0004 | 0.0012 | 0.0004 | bd0.0004 | 0.0013 | 0.0004 | bd0.0004 | 0.0012 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | 0.0004 | bd0.0001 | bd0.0001 | 0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.005 | 0.002 | 0.036 | 0.006 | bd0.001 | 0.055 | 0.007 | bd0.001 | 0.059 |
| **Uranium** | mg $L^{-1}$ | 0.0008 | 0.0004 | 0.0012 | 0.0009 | 0.0005 | 0.0013 | 0.0009 | 0.0005 | 0.0014 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.003 | bd0.001 | bd0.001 | 0.007 | 0.001 | bd0.001 | 0.007 |
| **Zn** | mg $L^{-1}$ | 0.007 | bd0.004 | 0.022 | 0.006 | bd0.004 | 0.029 | 0.007 | bd0.004 | 0.025 |
| **2,4-D** | µg $L^{-1}$ | 0.116 | 0.036 | 0.789 | 0.093 | 0.028 | 1.765 | 0.125 | 0.030 | 37.384 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0.015 | 0 | 0 | 0.030 | 0 | 0 | 0.017 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0.008 | 0 | 0.098 | 0 | 0 | 0.117 | 0 | 0 | 0.460 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.042 | 0 | 0 | 0 |
| **MCPA** | µg $L^{-1}$ | 0.047 | 0 | 0.590 | 0.047 | 0 | 0.618 | 0.043 | 0 | 1.391 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0.037 | 0 | 0 | 0.055 | 0 | 0 | 0.090 |

**Appendix 4.2.** Median, minimum and maximum values for selected metal and pesticide variables for the Taber Irrigation District Primary site samples (n=8), secondary site samples (n=24) and Return Flow site samples (n=16).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.12 | 0.06 | 0.19 | 0.06 | 0.01 | 0.53 | 0.12 | 0.03 | 0.45 |
| **Arsenic** | mg $L^{-1}$ | 0.0008 | 0.0006 | 0.0015 | 0.0018 | 0.0006 | 0.0025 | 0.0020 | 0.0011 | 0.0026 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.15 | bd0.05 | bd0.05 | 0.22 | bd0.05 | bd0.05 | 0.24 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.002 | bd0.001 | bd0.001 | 0.003 | 0.001 | bd0.001 | 0.002 |
| **Iron** | mg $L^{-1}$ | 0.079 | 0.059 | 0.145 | 0.067 | 0.013 | 0.333 | 0.130 | 0.039 | 0.559 |
| **Lead** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | 0.0002 | 0.0001 | bd0.0001 | 0.0003 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.01 | bd0.01 | bd0.01 | 0.02 | bd0.01 | bd0.01 | 0.02 |
| **Manganese** | mg $L^{-1}$ | 0.010 | 0.007 | 0.017 | 0.020 | 0.008 | 0.056 | 0.028 | 0.013 | 0.05 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | bd0.002 | bd0.002 | bd0.002 | 0.004 | bd0.002 | bd0.002 | bd0.002 |
| **Selenium** | mg $L^{-1}$ | 0.0006 | bd0.0004 | 0.0008 | 0.0005 | bd0.0004 | 0.0014 | 0.0006 | bd0.0004 | 0.0011 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0002 | bd0.0001 | bd0.0001 | 0.0001 | bd0.0001 | bd0.0001 | bd0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.003 | 0.002 | 0.029 | 0.002 | bd0.001 | 0.034 | 0.003 | bd0.001 | 0.027 |
| **Uranium** | mg $L^{-1}$ | 0.0008 | 0.0006 | 0.0012 | 0.0008 | 0.0006 | 0.0014 | 0.0010 | 0.0007 | 0.0020 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.001 | bd0.001 | bd0.001 | 0.002 | 0.001 | bd0.001 | 0.002 |
| **Zinc** | mg $L^{-1}$ | 0.006 | bd0.004 | 0.012 | 0.006 | bd0.004 | 0.065 | 0.008 | bd0.004 | 0.044 |
| **2,4-D** | µg $L^{-1}$ | 0.104 | 0.059 | 0.195 | 0.199 | 0 | 0.795 | 0.335 | 0.103 | 0.756 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.014 | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0.011 | 0 | 0.047 | 0.028 | 0 | 0.117 | 0.047 | 0 | 0.136 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0.111 | 0 | 0 | 0.046 |
| **MCPA** | µg $L^{-1}$ | 0.035 | 0 | 0.137 | 0.050 | 0 | 0.384 | 0.060 | 0 | 0.237 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0.037 | 0 | 0 | 0.076 | 0 | 0 | 0.082 |

**Appendix 4.2.** Median, minimum and maximum values for selected metal and pesticide variables for the United Irrigation District Primary site samples (n=8), secondary site samples (n=8) and Return Flow site samples (n=16).

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.05 | 0.02 | 0.19 | 0.08 | 0.04 | 0.13 | 1.74 | 0.27 | 6.17 |
| **Arsenic** | mg $L^{-1}$ | 0.0002 | bd0.0004 | 0.0004 | 0.0005 | 0.0004 | 0.0006 | 0.0012 | 0.0008 | 0.0022 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.13 | bd0.05 | bd0.05 | 0.17 | bd0.05 | bd0.05 | 0.19 |
| **Copper** | mg $L^{-1}$ | bd0.001 | bd0.001 | bd0.001 | bd0.001 | bd0.001 | bd0.001 | 0.002 | bd0.001 | 0.005 |
| **Iron** | mg $L^{-1}$ | 0.042 | 0.025 | 0.125 | 0.066 | 0.033 | 0.085 | 1.165 | 0.132 | 4.830 |
| **Lead** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | 0.0001 | bd0.0001 | bd0.0001 | 0.0004 | 0.0006 | 0.0001 | 0.0028 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | bd0.01 | 0.01 |
| **Manganese** | mg $L^{-1}$ | 0.002 | 0.002 | 0.004 | 0.012 | 0.008 | 0.052 | 0.030 | 0.006 | 0.125 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | bd0.002 | bd0.002 | bd0.002 | bd0.002 | 0.002 | bd0.002 | 0.005 |
| **Selenium** | mg $L^{-1}$ | bd0.0004 | bd0.0004 | 0.0007 | 0.0003 | bd0.0004 | 0.0013 | 0.0004 | bd0.0004 | 0.0007 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 |
| **Titanium** | mg $L^{-1}$ | 0.002 | bd0.001 | 0.024 | 0.002 | 0.001 | 0.035 | 0.044 | 0.005 | 0.126 |
| **Uranium** | mg $L^{-1}$ | 0.0003 | 0.0002 | 0.0003 | 0.0003 | 0.0003 | 0.0004 | 0.0006 | 0.0004 | 0.0007 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | bd0.001 | bd0.001 | bd0.001 | bd0.001 | 0.004 | 0.001 | 0.014 |
| **Zinc** | mg $L^{-1}$ | 0.006 | 0.004 | 0.016 | 0.008 | 0.002 | 0.034 | 0.013 | 0.005 | 0.037 |
| **2,4-D** | µg $L^{-1}$ | 0 | 0 | 0 | 0.024 | 0 | 0.316 | 0.093 | 0 | 0.618 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Dicamba** | µg $L^{-1}$ | 0 | 0 | 0 | 0.011 | 0 | 0.114 | 0.042 | 0 | 0.226 |
| **Mecoprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.007 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.008 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004 |

**Appendix 4.2.** Median, minimum and maximum values for selected metal and pesticide variables for the Western Irrigation District Primary site samples (n=24), secondary site samples (n=32) and Return Flow site samples (n=8), including AEP-P2.

| | | Primary | | | Secondary | | | Return Flow | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Units** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** | **Median** | **Min** | **Max** |
| **Aluminum** | mg $L^{-1}$ | 0.14 | 0.06 | 0.54 | 0.30 | 0.09 | 1.6 | 0.94 | 0.06 | 3.01 |
| **Arsenic** | mg $L^{-1}$ | 0.0010 | bd0.0004 | 0.0072 | 0.0011 | 0.0005 | 0.0021 | 0.0023 | bd0.0004 | 0.0047 |
| **Boron** | mg $L^{-1}$ | bd0.05 | bd0.05 | 0.13 | bd0.05 | bd0.05 | 0.15 | bd0.05 | bd0.05 | 0.18 |
| **Copper** | mg $L^{-1}$ | 0.001 | bd0.001 | 0.002 | 0.001 | bd0.001 | 0.013 | 0.003 | bd0.001 | 0.008 |
| **Iron** | mg $L^{-1}$ | 0.125 | 0.061 | 0.446 | 0.2625 | 0.094 | 1.23 | 0.736 | 0.069 | 2.06 |
| **Lead** | mg $L^{-1}$ | 0.00015 | bd0.0001 | 0.0004 | 0.0002 | bd0.0001 | 0.0011 | 0.0004 | 0.0001 | 0.001 |
| **Lithium** | mg $L^{-1}$ | bd0.01 | bd0.01 | 0.03 | bd0.01 | bd0.01 | 0.02 | 0.015 | bd0.01 | 0.05 |
| **Manganese** | mg $L^{-1}$ | 0.018 | 0.011 | 0.039 | 0.019 | 0.01 | 0.05 | 0.044 | 0.004 | 0.14 |
| **Nickel** | mg $L^{-1}$ | bd0.002 | bd0.002 | 0.003 | bd0.002 | bd0.002 | 0.004 | 0.004 | bd0.002 | 0.007 |
| **Selenium** | mg $L^{-1}$ | 0.0010 | 0.0005 | 0.0015 | 0.0009 | 0.0004 | 0.0015 | 0.0010 | bd0.0004 | 0.0015 |
| **Thallium** | mg $L^{-1}$ | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | bd0.0001 | 0.0002 | bd0.0001 | bd0.0001 | 0.0015 |
| **Titanium** | mg $L^{-1}$ | 0.004 | 0.002 | 0.037 | 0.008 | 0.002 | 0.046 | 0.024 | 0.001 | 0.062 |
| **Uranium** | mg $L^{-1}$ | 0.0012 | 0.0007 | 0.0024 | 0.0012 | 0.0007 | 0.004 | 0.0016 | 0.0006 | 0.0052 |
| **Vanadium** | mg $L^{-1}$ | bd0.001 | bd0.001 | 0.006 | 0.002 | bd0.001 | 0.004 | 0.004 | bd0.001 | 0.009 |
| **Zinc** | mg $L^{-1}$ | 0.004 | bd0.004 | 0.062 | 0.005 | bd0.004 | 0.204 | 0.011 | 0.004 | 0.048 |
| **2,4-D** | µg $L^{-1}$ | 0.255 | 0.025 | 1.756 | 0.388 | 0.081 | 18.616 | 0.210 | 0.054 | 1.282 |
| **Bromoxynil** | µg $L^{-1}$ | 0 | 0 | 0.037 | 0 | 0 | 0.092 | 0 | 0 | 0.067 |
| **Clopyralid** | µg $L^{-1}$ | 0 | 0 | 0.025 | 0 | 0 | 0.051 | 0 | 0 | 0.021 |
| **Dicamba** | µg $L^{-1}$ | 0.044 | 0 | 0.464 | 0.056 | 0 | 6.733 | 0.064 | 0 | 0.419 |
| **Mecoprop** | µg $L^{-1}$ | 0.093 | 0 | 2.331 | 0.093 | 0 | 0.429 | 0.019 | 0 | 0.098 |
| **MCPA** | µg $L^{-1}$ | 0 | 0 | 0.121 | 0 | 0 | 1.766 | 0 | 0 | 0.156 |
| **Dichlorprop** | µg $L^{-1}$ | 0 | 0 | 0.050 | 0 | 0 | 0.040 | 0 | 0 | 0.020 |