Idaho State Department of Agriculture
Surface Water Pesticide Fact Sheet
Lake Lowell Agricultural Return Drains, 2014

ISDA Surface Water Fact Sheet February 2014

In 2014, the Idaho State Department of Agriculture (ISDA) conducted a follow-up from the 2010 monitoring study for the presence of pesticides residues within four major agricultural return drains that discharge into Lake Lowell (Figure 1). These four drains transport irrigation return waste water along with canal spill water into Lake Lowell. The four drains monitored were Highland Wasteway-3, Bernard Drain, Coulee Drain, and Garland Drain (Figure 1). Lake Lowell is located in Canyon County approximately five miles west of Nampa, Idaho and has a drainage area of approximately 62 square miles (39,680 acres).

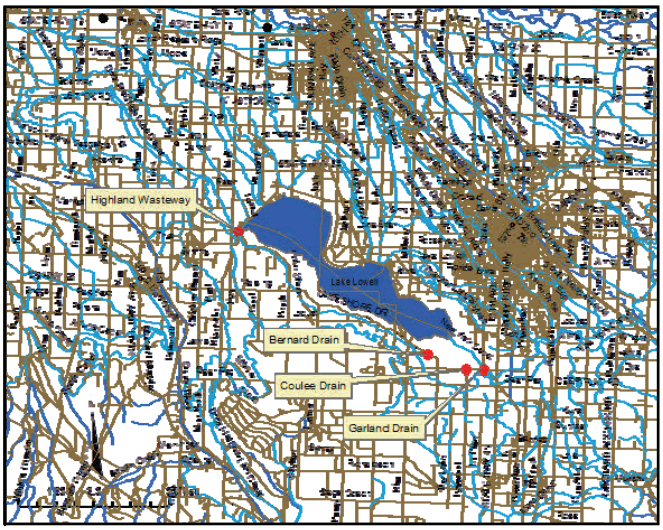

Figure 1. Lake Lowell Drains Monitoring Sites.

The four return drains monitored during this study had a total of 284 total pesticide detections which consisted of 29 different pesticide compounds (Figure 2). Of the 284 detections 229 detections were herbicides, 44 were insecticides, five were fungicides, and six were the degradate of atrazine (desethyl atrazine). The general use pesticides (GUP) with the greatest number of detections were the herbicides pendimethalin (38), metolachlor (36), and 2,4-D (29) (Figure 2). The greatest number of detections of an insecticide were the restricted use pesticides (RUP) chlorpyrifos (24) and methomyl with four detections. The GUP insecticide dimethoate also had four detections (Figure 2). Chlorpyrifos is an organophosphate insecticide which is highly toxic to fish and aquatic invertebrates while dimethoate and methomyl are moderately toxic to fish and can be highly toxic to aquatic invertebrates.

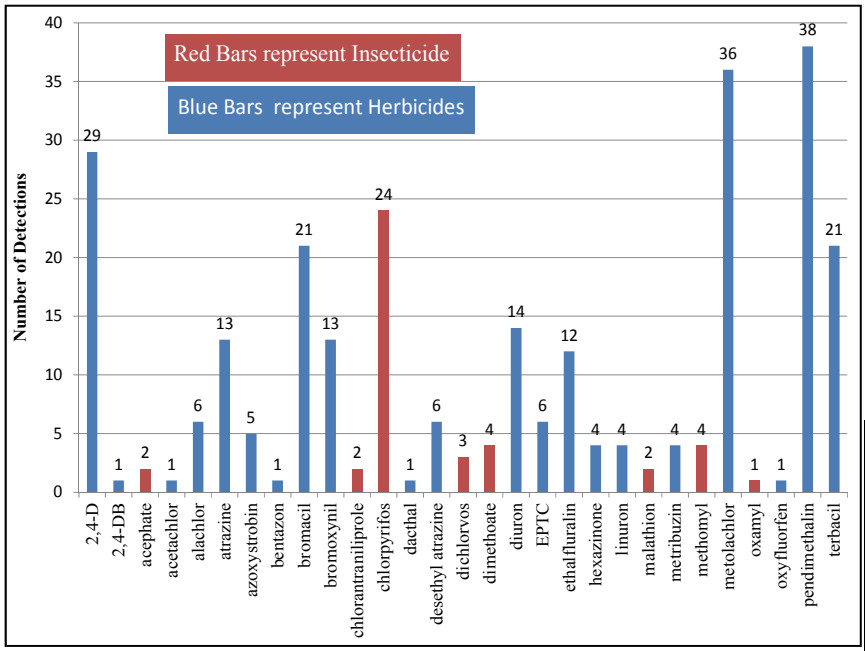

Figure 2. Total pesticides detected during this study.

Bernard Drain had the highest number of overall detections (109) in 2014 as it did in 2010 (98 detections). Coulee Drain had 83 overall detections in 2014 and 76 detections in 2010. Garland Drain had 58 overall detections in 2014 and 50 in 2010, and Highland Wasteway had three less total detections in 2014 (34) then in 2010 (37) (Table 1).

Table 1. Overall Detections.

Site	Total Detects	Herbicides	Insecticides	Fungicides	Degradate
Garland	58	49	9	0	0
Coulee	83	69	13	0	1
Bernard	109	83	17	4	5
Highland	34	28	5	1	0

Pesticides of Concern (POC)

ISDA defines a pesticide of concern (POC) as any pesticide that is detected at a concentration that is greater than or equal to fifty percent (≥50%) of an established Environmental Protection Agency (EPA) Aquatic Life Benchmark. These benchmarks were developed based on concentrations of pesticides and their acute and chronic effects on fish and aquatic invertebrates and acute effects on vascular and nonvascular plants. Acute toxicity of a pesticide refers to the effects from a single dose or repeated exposure over a short period of time (i.e. a few hours or a day). Chronic toxicity is the ability of a substance to cause adverse health effects resulting from long-term or repeated low levels of exposure.

Table 2. Lake Lowell Drains-Pesticides of Concern (POC).

Pesticide Detected	Pesticide Type	[1]Trade Name	Detects	ISDA POC
2,4-D	Herbicide	Weedar 64	29	
2,4-DB	Herbicide	2,4-DB200	1	
acephate	Insecticide	Orthene 7	2	
acetachlor	Herbicide	Guardian	1	
alachlor	Herbicide	Lasso	6	
atrazine	Herbicide	Aatrex	13	
azoxystrobin	Fungicide	Heritage	5	
bentazon	Herbicide	Basagram	1	
bromacil	Herbicide	Hyvar X	21	
bromoxynil	Herbicide	Buctril	13	
chlorantraniliprole	Insecticide	VoliamExpress	2	
chlorpyrifos	Insecticide	Lorsban	24	YES
dacthal	Herbicide	Dacthal W-75	1	
desethyl atrazine	Degradate	NA	6	
dichlorvos	Insecticide	Card-O-Vap 8	3	YES
dimethoate	Insecticide	Cygon	4	YES
diuron	Herbicide	Karmex	14	
EPTC	Herbicide	Eptam	6	
ethalfluralin	Herbicide	Sonalan	12	
hexazinone	Herbicide	Velpar	4	
linuron	Herbicide	Lorox	4	YES
malathion	Insecticide	Fyfanon	2	YES
metribuzin	Herbicide	Sencor	4	
methomyl	Insecticide	Lannate	4	
metolachlor	Herbicide	Dual	36	YES
oxamyl	Insecticide	Vydate L	1	
oxyfluorfen	Herbicide	Goal	1	
pendimethalin	Herbicide	Prowl	38	
terbacil	Herbicide	Sinbar	21	
Pesticides in Red are Insecticides				
[1] Other trade names may apply				

Recommendations

- Read and Follow Label Directions-Always follow label directions for water quality protection.
- Follow Chemigation Law/Rules-applicators must be licensed and follow state Chemigation laws.
- Conduct maintenance and calibration of application equipment.
- Implementation of management strategies-Field scouting, evaluation of pest control needs, selection of proper pesticide, irrigation management etc.
- Implement BMPs including conservation buffers, vegetative filter strips, sediment basins, and pump back systems.
- Avoid runoff due to weather events check the forecast prior to pesticide applications.
- Avoid overspray and drift
- Match application rates to pest problem

For additional information about this program contact Kirk Campbell, Idaho State Department of Agriculture at 208-332-8598 or email kirk.campbell@agri.idaho.gov