Level 1 Instructions

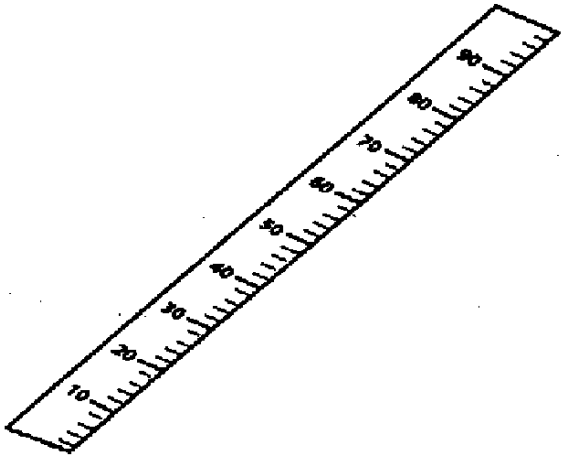
Level I Monitoring Equipment and Materials

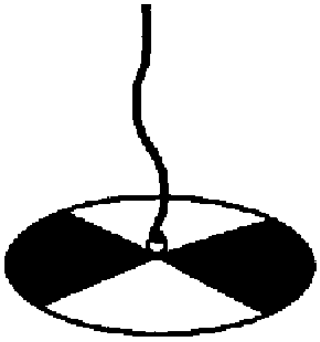
Volunteers provide:

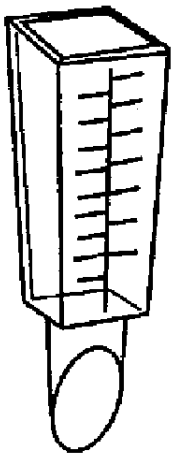
- Easy daily access to the lake you wish to monitor. (Living on the lake you monitor is ideal, but not necessary if you have an access point.)
- Access to a boat and a place to launch it.
- A life jacket.
- A dock or fixed post for a lake level gauge.
- Approximately five minutes each day and about 30 minutes once a week.
- A pencil (pens don't work well on the "rite-in-the-rain" datasheets) and a hard surface to write on (e.g., a clipboard or notebook)

King County provides:

- Training
- Datasheets
- Lake Level Gauge
- Rain Gauge
- Secchi Disk







Level I Monitoring Procedures:

The following instructions are provided to ensure that all Level I monitors collect data in the same manner. Please read these instructions thoroughly. Proper data collection and entry will help to eliminate discrepancies and ambiguities in your data and will also lead to simplified data entry and analysis. Furthermore, if all volunteers collect and record data according to these protocols, data from different lakes can easily be compared and contrasted.

Choose your sampling Dates and Times

Conduct your daily measurements at the same time each day, if possible. For weekly measurements, conduct them on the same day of the week and at the same time of day. The most important thing to remember is to be consistent from day to day and from week to week.

Fill out identifying information on your datasheet

Ensure your name and lake name are on the datasheet. This is extremely important!

Important: If you are unable to record measurements, leave the space blank or write "No Data". If you are going to be away for more than a few days, try to arrange for a substitute.

Level I Daily Tasks

Measure Precipitation

1. Install your rain gauge in an area open to the sky and away from overhanging objects (such as trees or buildings).
2. Try to read your gauge at the same time each day and record the total rainfall in millimeters. Record this number in the "Precipitation" column and then empty your gauge.
3. If snow collects in your rain gauge, take it inside, allow the snow to melt, and then record the millimeters of water in the gauge. If extended freezing occurs, make sure your rain gauge is empty or take it inside until temperatures rises above freezing, otherwise the gauge may crack. Also, be sure to write "frozen" on your data sheet for these dates.

Measure Lake Level

1. Staff will assist you in identifying a place on your dock or other permanent fixture in the lake to locate your lake level gauge. Complete installation instructions for your lake level gauge are found in Appendix B.
2. Try to record your lake level at the same time each day. Record this number in centimeters on your data sheet in the "Lake Level" column. On windy days, you may have to estimate the approximate lake level by taking an average of the high or low marks created by each wave.

Level I Weekly Tasks

Gather your sampling gear

Get your anchor, life jacket, and monitoring equipment, go to your sampling station, and anchor your boat. (see "Sampling Location" section, pages 11-12).

Note the time and weather

- Under "Time," enter the time using a 24-hour time format: (e.g. 6 a.m.= 0600, Noon =1200, 6 p.m.=1800, and Midnight=2400).
- In the space provided on the data sheet, indicate cloud cover, wind conditions, and optional goose counts. In the "Lake Use" column, indicate the total number for each category; include your boat in the count. In the comment column, make notes on other items of interest or unusual conditions.

Measure Secchi Depth

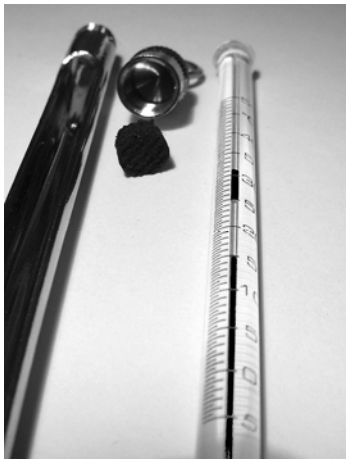
1. On sunny days, work on the shady side of the boat to eliminate glare.
2. If you are wearing sunglasses, remove them before you begin making your measurements.
3. The Secchi disk line is marked in 0.1 or 0.25 meter increments. Lower the Secchi disk into the water. Continue lowering the disk into the water until the disk is no longer visible.

4. Place your finger on the line at the water's surface to mark that point.
5. Raise the disk until it becomes visible again. Mark this spot on the line with your other hand.
6. Record the midpoint between these two measurements as the Secchi depth, estimating your value to the nearest 0.1 meter.

Measure Temperature

1. Take your temperature measurement at the same location as the Secchi depth measurement.
2. Measure lake temperature by lowering the thermometer to one meter below the surface and leaving it for approximately two minutes. Pull the thermometer from the water quickly and read it immediately.
3. Record the lake temperature on your data sheet under "Temp" to the nearest 0.5 degrees Celsius (Centigrade).

SIDEBAR:
Important!



If the fluid in the thermometer separates, as pictured, temperature readings will not be accurate.
See Appendix B for instructions on recombining the fluid

If the fluid will not recombine, contact a Lake Stewardship Program staff member to request a replacement

END SIDEBAR

Observe Algae and Particles

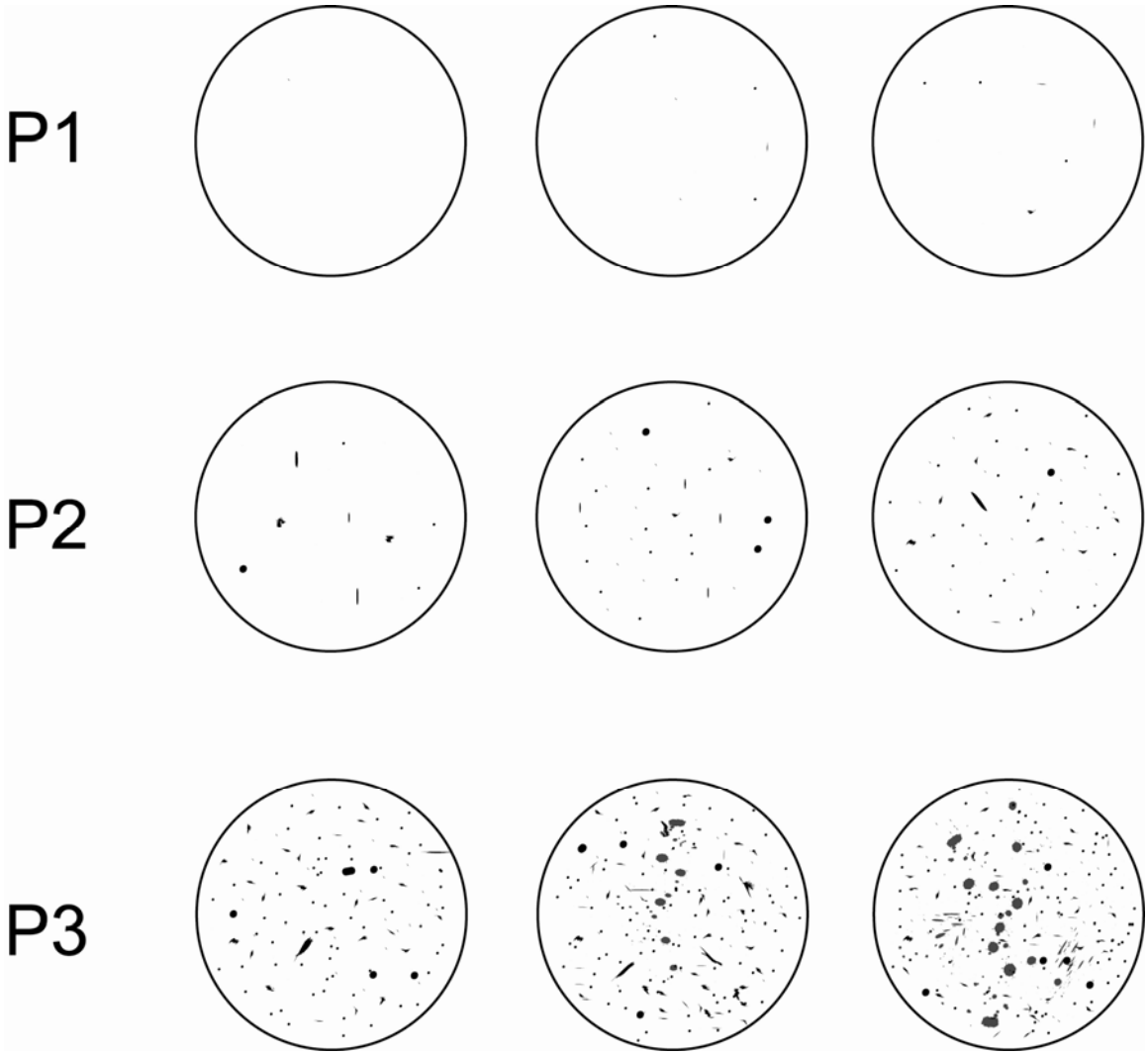
Each time you venture onto the lake to collect a sample and/or measure physical attributes, record the density of algae and particles you see in the water at your sampling site. Use the following guidelines when making your observations of algae and particles density and distribution.

Categorizing Visible Particles

Algae in the water can appear as nebulous clouds or as small floating particles, depending on the species. Please do not count particles smaller than the period at the end of this sentence. Lower the Secchi disk to a depth of about five inches below the

surface, at which depth the volume of water above the white portions of the disk will be approximately two liters. Count the number of particles in the water above the white portions of the disk, and use that number of particles to determine the rating. Alternately, you can pour two liters of water into a clean white bucket to make the assessment. Use the chart on the next page as a guide in making your observations.

Rating	Description	Count in ~2liters of water
P1	Few algae particles visible above disk	0-10
P2	Moderate numbers of particles	10 - 100
P#	A lot off algae – bloom conditions	>100



Nuisance Goose Count

Citizens who live on several King County lakes have noted large numbers of Canada geese on their lakes. Counting the number of geese you see will give us a general idea of how many geese are present at a lake and when. This information can then be used

to assess the likelihood of geese contributing to water quality issues and what can be done about it.

Recording goose count data is optional. If you do not see large numbers of geese on your lake or do not perceive them as a problem, it is unnecessary to record goose counts. If you do want to participate in the goose count, please choose **one** option below. We are unable to compare data from multiple counting methods, so please choose the option that is best suited to your time availability for the entire season and then inform the Lake Steward Program staff of your choice.

Choose one of the following options:

Daily count for Level I Monitors: If you choose to do a daily count, record the greatest number of geese you see **at once** anywhere on the lake, at any time of day. For example, if you see 10 geese in the morning, eight at noon and 14 in the evening, record "14." Do **not** add up the total number of geese you've seen throughout the day. This method will provide the most thorough goose population information for each lake.

Weekly count for Level I Monitors: Every week, record the greatest number of geese you've seen at once anywhere on the lake, over the past week. For example, if you see five geese on Monday morning, 15 on Tuesday morning, 12 Tuesday evening and 10 on Friday, you would record "15" on your data sheet for that week. Do **not** add up the total numbers of geese you've seen throughout the week.

Submit Your Completed Data Sheet

At the end of each month, make a copy of your data sheet for yourself, then fold, seal, and mail in the original. Please double check that you have filled in your name and contact information!

Level One Weekly Datasheet

Week Starting	Date, Time, Secchi, Temp.		Cloud Cover	Wind Conditions	Algae & Aquatic Plants	Shoreline	Sample site	Bird Count	Shoreline	Sample site	Lake Use	Comments
1-Jul-02	Date:	3-JULY	☐ Sunny	☐ None (glassy water)								
	Time (24hr):	1430	☐ Pt. Cloudy	☑ Slight (ripples)	Algae	NA	NA	Canada Geese	4	Ø	Boats 11	Cold day for July!
	Secchi (m):	3.25	☐ Cloudy	☐ Breezy (small wavelets)							Fishing 2	
	Temp. (° C at 1m):	17	☑ Raining	☐ Storm (waves/whitecaps)	Aquatic plants	F1/S1	NP	Domestic Geese	Ø	Ø	Swimmers Ø	
7-Jul-02	Date:	10-JULY	☐ Sunny	☐ None (glassy water)								
	Time (24hr):	1545	☑ Pt. Cloudy	☐ Slight (ripples)	Algae	NA	NA	Canada Geese	4	Ø	Boats 2	
	Secchi (m):	3.5	☐ Cloudy	☑ Breezy (small wavelets)							Fishing 1	
	Temp. (° C at 1m):	18	☐ Raining	☐ Storm (waves/whitecaps)	Aquatic plants	F1/S1	NP	Domestic Geese	Ø	Ø	Swimmers Ø	
14-Jul-02	Date:	16-JULY	☑ Sunny	☐ None (glassy water)								
	Time (24hr):	1500	☐ Pt. Cloudy	☑ Slight (ripples)	Algae	NA	NA	Canada Geese	5	Ø	Boats 1	
	Secchi (m):	3.5	☐ Cloudy	☐ Breezy (small wavelets)							Fishing Ø	
	Temp. (° C at 1m):	20	☐ Raining	☐ Storm (waves/whitecaps)	Aquatic plants	F1/S1	NP	Domestic Geese	Ø	Ø	Swimmers Ø	
21-Jul-02	Date:	24-JULY	☐ Sunny	☑ None (glassy water)								
	Time (24hr):	1430	☑ Pt. Cloudy	☐ Slight (ripples)	Algae	NA	NA	Canada Geese	6	Ø	Boats 3	
	Secchi (m):	3.75	☐ Cloudy	☐ Breezy (small wavelets)							Fishing 1	
	Temp. (° C at 1m):	20	☐ Raining	☐ Storm (waves/whitecaps)	Aquatic plants	F1/S1	NP	Domestic Geese	Ø	Ø	Swimmers Ø	
28-Jul-02	Date:	31-JULY	☑ Sunny	☑ None (glassy water)								
	Time (24hr):	1415	☐ Pt. Cloudy	☐ Slight (ripples)	Algae	P1	P1	Canada Geese	4	Ø	Boats 4	Green algae; Bloom began 30-July
	Secchi (m):	3.0	☐ Cloudy	☐ Breezy (small wavelets)							Fishing 1	
	Temp. (° C at 1m):	21	☐ Raining	☐ Storm (waves/whitecaps)	Aquatic plants	F1/S2	NP	Domestic Geese	Ø	Ø	Swimmers 4	

Record observations of algae, aquatic plants, and birds at both the shoreline (your launch site) and your sample location.

KEY: **Algae:** No algae (NA) Cloudy algae (C1-C3) Particulate algae (P1-P3) **Aquatic plants:** None (NP) Floating (F1-F3) Submersed (S1-S3)