

ATTACHMENT 1

Program for Groundwater MonitoringI. Introduction and Scope

Commonwealth Edison Company currently has several groundwater monitoring studies in progress at new station construction sites. Monitoring is done to establish background conditions, and is continued through various phases of site development to determine if construction or operation of the facility affects groundwater quality.

Following an inspection at Byron Station by the Nuclear Regulatory Commission (NRC), specific requests were made by that agency to the Company to incorporate changes into its groundwater monitoring programs. These changes were to establish an "action" guide that would be activated when specific limiting values of the parameters monitored were exceeded, and to develop a data presentation technique to more readily show trends in the parameters measured.

In addition to the requested changes, Environmental Affairs Department is establishing common criteria for all groundwater monitoring at future sites. This program will provide uniform guidelines for all phases of groundwater monitoring.

The program is divided into five areas: 1) well selection; 2) monitored parameters; 3) length of phases of monitoring program; 4) determination of action levels; and 5) specific action plan. These areas are detailed in the following sections.

II. Well Site Selection and Well Construction Criteria

Well sites for monitoring should be selected according to the groundwater hydrology characteristics of the area. The basic premise is to select representative locations on and/or around the construction site.

New wells should be constructed uniformly, in accordance with the following guidelines. The wells should be at least 4" in diameter, with solid casings, preferably of PVC or similar material. The depth of the wells should be determined by the groundwater hydrology of the area, with all wells drawing from the same surface aquifer. Wells should be capped and be easily accessible for monitoring. Construction of wells should

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be such as to permit sampling by bailing. Existing wells can be incorporated into the survey if they meet the criteria for new wells.

III. Parameter Selection

The following classes of parameters have been selected for monitoring:

A. For Nuclear Station Sites:

<u>Parameter</u>	<u>Reason for Selection</u>
1. Depth*	Excavation or operation may affect groundwater level.
2. pH	Construction and operating activities might effect changes in this parameter.
3. Dissolved Solids	Shows decrease or increase in groundwater flow and dissolved parameters.
4. Sulfate, SO ₄	Sulfuric acid is used in construction activities.
5. Boron, B	Boron is used in neutron-absorbing materials at stations.
6. Oil & Grease	Used in station activities normally not found in groundwater.

B. For Fossil Station Sites:

The same parameters included for nuclear sites, plus the following. Boron is included due to its presence in combustion by-products.

* Depth should be reported to the nearest inch and be measured from the top of the well casing to the water level.

Parameter

Reason for Inclusion

1. Sulfite, SO₂
2. Arsenic, As*
3. Cadmium, Cd*
4. Chromium, Cr*
5. Lead, Pb*
6. Selenium, Se*

These parameters are ones required by the Resource Conservation and Recovery Act for combustion by-product disposal sites.

* Total Metals.

C. Site - Specific

Those parameters which have some special relevance to a specific construction site or site-related peculiarity, e.g. cyanide (CN) at Byron.

IV. Length of Sampling Program Phases

Sampling shall begin at least one year prior to the commencement of construction activities at the site, and be continued through at least one year of commercial station operation. At the end of the sampling period, the monitoring program will be evaluated to determine if the program should be continued.

The frequency of sampling shall be monthly during the background and construction phases. Samples will be collected quarterly after the station begins commercial operation.

V. Determination of Action Plans

Data collected prior to the commencement of construction shall be used to establish the action levels for each specific parameter for each well.

For pH, the action levels shall be either 0.5 pH units greater than the highest observed background value, or 0.5 pH units less than the lowest observed background value.

For all other parameters, the action levels shall be 50% greater than the highest observed background value or 50% less than the lowest observed background value.

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VI. Action Plan

During the background monitoring period (pre-construction), monitoring data will be reported by the laboratory performing the analyses to the Environmental Affairs Department (EAD). At the end of the background period, EAD will then determine the action values for each parameter for each well. The Director of Water Quality will notify the laboratory of the exact action values and of the action plan to be followed.

Upon the determination that an action value has been exceeded, the laboratory will notify EAD as soon as possible, reporting the specific well, parameter and value determined. The laboratory will resample the well within one week after it is determined that an action value has been exceeded and re-analyze for the parameter in question. EAD will be notified of the date and result of the resampling. If the resampling does not show the action value to be exceeded, normal sampling will be resumed.

If the resampling reveals that the action value is still exceeded, EAD will notify appropriate on-site personnel, and coordinate and arrange a joint field investigation. During the period of investigation, weekly samples will be collected from the well in question, and analyzed for the suspect parameter.

Environmental Affairs will be notified of the results of the field investigation. If the investigation reveals that a specific cause exists for the action value exceedance, then EAD will notify the appropriate Company departments. If a specific cause of the exceedance cannot be determined, EAD will request the suspension of the investigation, and the resumption of normal sampling. In the event that no cause is discovered, action values will be re-examined to determine if adjustments should be made due to the naturally occurring variability of groundwater.

Each excursion from the prescribed action values will be documented in the EAD files. In all probability, most excursions of specific parameters will not be explainable, due to their normally occurring variability; results of groundwater monitoring programs should be viewed with this fact in mind.

ATTACHMENT 2

Byron Station
Groundwater Monitoring Program

I. Introduction

Groundwater quality has been monitored at several locations in the vicinity of Byron Station since December, 1975. Monitoring was formerly carried out under two separate sampling programs.

A review of the well locations, physical conditions of the wells, parameters selected and monitoring data collected has been undertaken. The conclusion has been reached that modification of the existing program is desirable, based on the need for justification of the parameters measured and on the poor conditions of certain wells. Therefore, in conjunction with the recently formulated Program for Groundwater Monitoring (attached) which is to be implemented at future station construction sites, the following revised program will be implemented.

II. Monitoring Wells

The following wells shall be monitored:

PC I

PC II

Spink

Hageman

Well #7 (Edison Real Estate Office)

Well #8 (Motosports Park)

Locations are shown on the attached maps. These wells have been selected according to the criteria set forth in Section II of the Program for Groundwater Monitoring.

III. Parameters to be Monitored

The following parameters have been selected for monitoring at all wells, according to Section III of the Program for Groundwater Monitoring:

A. For Nuclear Station Sites:

Depth	Sulfate
pH	Boron
Dissolved Solids	Oil and Grease

B. Site Specific:

Due to former cyanide and heavy-metal dumping in the area prior to the commencement of station construction activities, the following additional parameters are included:

Cyanide	Lead (total)
Cadmium (total)	Zinc (total)

IV. Action Levels

Action levels have been determined for those wells for which sufficient monitoring data is available and are listed in Table 1. Due to the changes effective with this revised monitoring program, sufficient data to determine action levels is not now available for certain parameters for specific wells. In those cases, background data will be collected for

the required period and action levels determined at the end of the background monitoring phase.

V. Action Plan

Operational Analysis Department will be responsible for the collection and analysis of samples from the wells selected.

In the event that an action level is exceeded, OAD will notify Environmental Affairs Department and resample the well within one week. Determination of the cause of the excursion will proceed according to the Program for Groundwater Monitoring.

IV. Action Levels

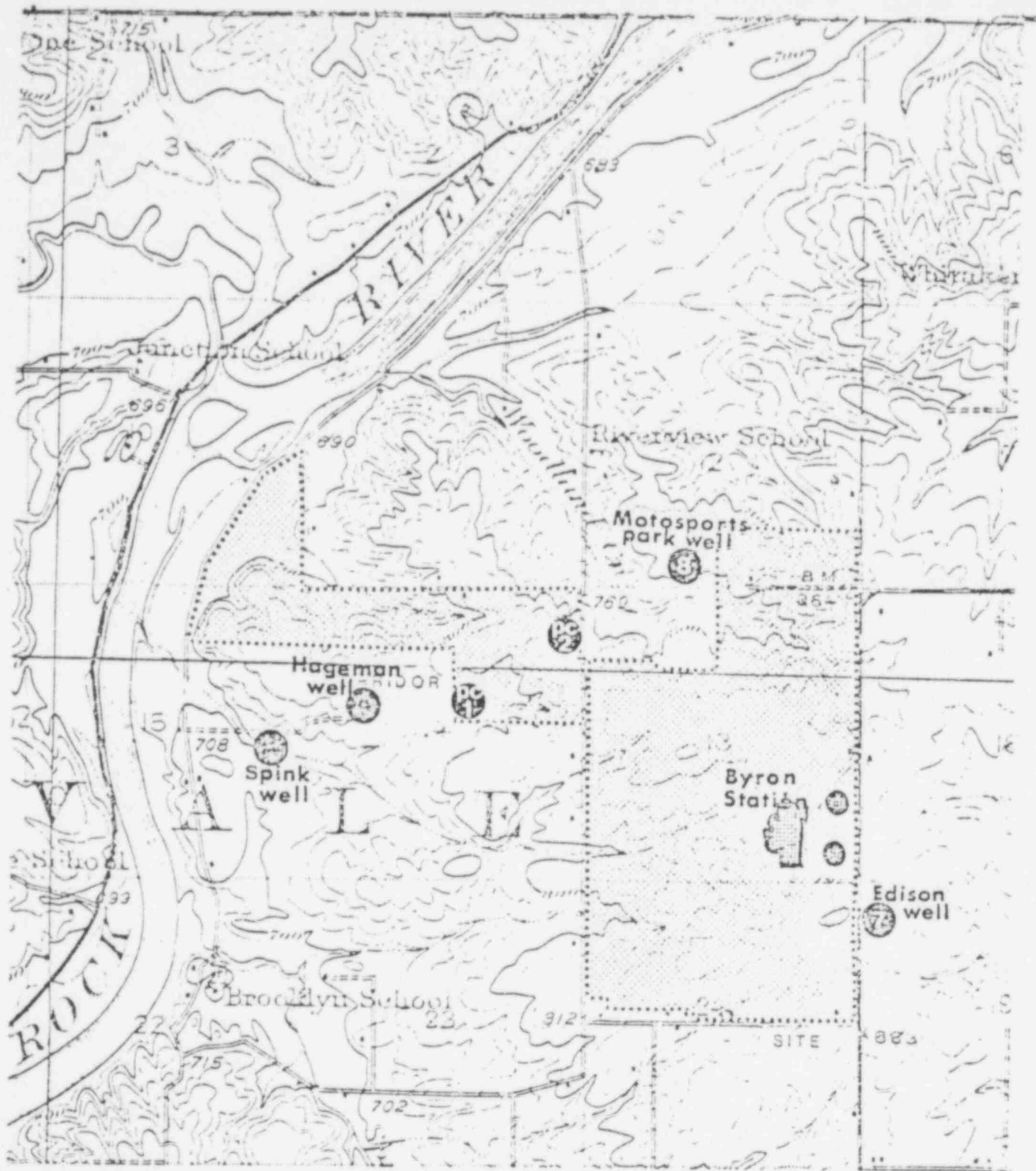
Well	PC I	PC II	Spink	Hageman	#7	#8
Depth, inches	N.D.	N.D.	N.D.	N.D.	*	*
pH	N.D.	N.D.	N.D.	N.D.	8.1/6.8	8.2/6.7
milligrams per liter						
Dissolved Solids	N.D.	N.D.	N.D.	N.D.	1480/160	715/165
Sulfate	N.D.	N.D.	N.D.	N.D.	95/16	87/15
Boron	N.D.	N.D.	N.D.	N.D.	2.9/<0.2	1.2/<0.2
Oil and Grease	N.D.	N.D.	N.D.	N.D.	11/ 1	17/<1
Cyanide	0.015/<0.002**	0.021/<0.002	0.024/<0.002	0.021/<0.002	0.008/<0.002	0.008/0.003
Cadmium (total)	0.06/<0.02	0.05/<0.02	0.03/<0.02	0.03/<0.02	N.D.	N.D.
Lead (total)	1.8/<0.1	2.7/<0.1	0.2/<0.1	0.2/<0.1	N.D.	N.D.
Zinc (total)	3.0/0.02	1.78/<0.02	5.1/<0.02	2.25/<0.02	N.D.	N.D.

* = These wells have electric pumps in place, so depth cannot be determined.

** = Higher action value/lower action value.

N.D. = Not Determined. Background data has not yet been collected to determine action levels. This will be accomplished after one year of background data is collected.

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BYRON NUCLEAR GENERATING STATION
UNITS 1 & 2

Groundwater
monitoring sites
Byron Station

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